ORIGINAL ARTICLE

HOW EFFECTIVELY DO COMMUNITY HEALTH WORKERS SPREAD HEALTH AWARENESS VIA WOMEN'S SELF-HELP GROUPS IN RURAL INDIA?

J. Sophie von Lieres[1,*], Anish K. Abraham[1] and Renu Raveendran[1]

[1]Center for Women's Empowerment and Gender Equality, Amrita Vishwa Vidyapeetham, Amritapuri, Kollam 696525, Kerala, India

*** Corresponding author: J. Sophie von Lieres**
E-mail: sophia.vonlieres@ammachilabs.org

ABSTRACT

In many lower- and middle-income countries, the public health system is made more accessible in rural areas through training lay people to become community health workers (CHWs) within their communities. This mixed-methods study aims to evaluate such a CHW program in rural Uttarkashi, India, which is being run by a non-government organization (NGO). In the CHW program to be evaluated, the CHWs give monthly health awareness classes during women's self-help group (SHG) meetings. By involving women's SHGs, community participation is supposed to be fostered and health knowledge spread. Therefore, it was hypothesized that communities with an active CHW should achieve a higher number of correct answers on a health knowledge test than communities without an active CHW. Moreover, using qualitative methods, we explored the SHG members' and CHWs' viewpoints on the impact of the awareness classes held during SHG meetings. Five focus group discussions were conducted with members of SHGs, as well as with NGO-trained CHWs and government-employed CHWs. Results confirmed that the respondents from a community with an NGO-trained CHW performed significantly better on the health knowledge test, although not uniformly across all sampling areas. The qualitative data revealed a substantial impact of the health awareness classes on behavior changes among SHG members and their families. Further, the NGO-trained CHWs collaborated well with other government-employed CHWs. In conclusion, the authors feel that is would be worthwhile to employ more NGO-run CHW programs throughout India, to supplement the government-run programs, especially in remote and underserviced areas.

***Keywords**: Community health workers; health knowledge; self-help groups; rual India*

INTRODUCTION

Even though India's economy is rapidly growing, the country continues to face challenges in the domain of public health care[1]. For example, there is still a shortage of public health centers in rural areas[2]. In India, the most frequent causes of death for children under the age of five are still related to communicable diseases: acute respiratory infections, followed by diarrhea[3]. Moreover, chronic respiratory disorders cause much illness in the rural adult population in India[4].

To improve access to healthcare services for rural people, India's National Rural Health Mission has been employing minimally-trained community health workers (CHWs) called Accredited Social Health Activists (ASHAs) since 2005. The role of CHWs is to act as intermediaries between traditional beliefs and the formal health care services and as agents of social change[5]. ASHAs are paid on an incentive basis for mobilizing women to avail mother and child healthcare services[2]. Moreover, since 1975, Anganwadi workers (AWWs) focus on pre-school education and supplementary nutrition for young children at Anganwadi Centers[6].

ASHAs have substantially improved maternal and neonatal survival in India, but they are also facing several hurdles. For instance, ASHAs are only remunerated for specific tasks and numeric outcomes, but not for activities related to being agents of social change[7]. Moreover, community participation is often low[8].

To supplement the work of the government-employed CHWs, a cadre of CHWs was trained by Amrita SeRVe (Self-Reliant Village), a project of the non-government organization Mata Amritanandamayi Math, in Amritapuri, Kerala, India. The Amrita SeRVe project is working towards sustainable development in village clusters across India[9]. To improve the health awareness and ultimately the health of villagers, Amrita SeRVe is employing CHWs to give monthly awareness classes during women's microfinance self-help group (SHG) meetings on various topics of preventative health measures, such as hygiene, sanitation, and nutrition[10]. SHGs are often facilitated by NGOs, who provide trainings on various subjects and forge the link between the SHGs and formal microfinance institutions[11]. Moreover, the Amrita SeRVe-trained CHWs perform duties that the government-employed ASHAs and AWWs do not receive remuneration for, such as home visits and giving awareness classes to women's SHGs, thus supplementing the work of the ASHAs and AWWs.

The present study was conducted to evaluate the effectiveness of the Amrita SeRVe-trained CHWs regarding spreading health awareness, in order to find out if the program should be scaled-up to include more rural areas throughout India. The hypothesis for the quantitative part of the study was: Women living inside an Amrita SeRVe-trained CHW's catchment area achieve a higher number of correct responses on a standardized health-knowledge test than women living outside such a catchment area. Additionally, we wanted to find out what the perspectives of the Amrita-SeRVe-trained CHWs and the SHG members were through the use of qualitative data collection methods. An additional objective was to explore the CHWs' collaboration with the ASHA and AWW.

METHODS

Setting

We visited three villages – Dunda, Udalka, and Jagdumga – which are part of Dunda Gram Panchayat (local governing body) in Uttarkashi District, Uttarakhand, northern India, located in the foothills of the Himalayas. At the time of the study, Dunda was serviced by an Amrita-SeRVe-trained CHW, as well as by an ASHA. Udalka, a smaller hamlet, had another Amrita SeRVe-trained CHW assigned to it. Because of its location at a higher altitude and its distance from the main road, it was only partially serviced by the ASHA. Jagdumga village, another hamlet, was not serviced by an Amrita SeRVe-trained CHW, but by the ASHA.

Sample

The sample size for the health knowledge test consisted of altogether 94 female respondents. The test was administered to 30 randomly selected residents of Dunda (treatment group 1), 31 randomly selected residents of Udalka (treatment group 2) and 33 conveniently sampled residents of Jagdumga (control group).

Table 1 gives an overview of the demographic data. Significant differences between the three groups were found regarding economic status (Likelihood Ratio = 5.998, df = 2, p = .05, Contingency Coefficient C = .245), educational level (Likelihood Ratio = 20.677, df = 10, p = .023, Contingency Coefficient C = .391), and mean age (analysis of variance, ANOVA, $F(2, 91)$ = 3.741, p = .027, Eta squared = .076). Tukey's Honest Significant Difference Test showed the difference to be between the treatment group 1 and 2 (mean age: 36.48 vs. 44.97 years). Thus, treatment group 1 had the youngest and most educated respondents.

Table 1: Comparison of demographic data between the 3 groups

		Treatment group 1 (Dunda)	Treatment group 2 (Udalka)	Control group (Jagdumga)
	N	31	30	33
	Mean age	**36.48**	**44.97**	38.55
Marital status	Single	9.7%	0.0%	6.1%
	Married	87.1%	83.3%	90.9%
	Widowed	3.2%	16.7%	3.0%
Type of household	Nuclear family	51.6%	43.3%	69.7%
	Joint family	41.9%	56.7%	30.3%
	Female-headed household	6.5%	0.0%	0.0%
Economic status	Above poverty level	**30.0%**	**20.0%**	**58.5%**
	Below poverty Level	**70.0%**	**80.0%**	**51.5%**
Educational level	Never went to school	**25.8%**	**66.7%**	**45.5%**
	Completed primary school	9.7%	6.7%	3.0%
	Completed 8th class	6.5%	13.3%	12.1%
	Completed 10th class	12.9%	6.7%	9.1%
	Completed 12th class	19.4%	0.0%	15.2%
	College education	**25.8%**	**6.7%**	**15.2%**

Data collection methods

To quantitatively measure the level of health knowledge, we used a 10-item health knowledge test. The first six items of the test were derived from a nutrition knowledge test designed by Jones et al.[12], which had been used in a study in Nepal to evaluate a kitchen garden promotion program and nutrition education intervention.

For the present study, we added four more items regarding health topics, which the Amrita SeRVe-trained CHWs were assumed to have covered during their health awareness classes (See Table 2). Informed consent was obtained from all respondents before testing them on their health knowledge. The number of correct answers was entered into SPSS 23, along with the demographic data, for further statistical analysis.

Table 2: Health knowledge test

Health Knowledge Test
1. What causes night-blindness?
2. Name foods rich in vitamin A.
3. What causes anemia?
4. Name foods rich in iron.
5. At what age should children be fed diets other than breastmilk?
6. Name the ingredients of a nutritious complementary food.
7. When (after or before which activities) should you wash your hands?
8. How does open defecation lead to diseases?
9. What should you do if a child has diarrhea?
10. How often should children/adults have worm treatments?

To gather qualitative data, five focus group discussions (FGDs) were conducted: two FGDs with two SHGs each in Dunda and Udalka. Each FGD comprised 6-8 members of the respective SHG as informants. One FGD was performed with the AWW, ASHA, Amrita SeRVe-trained CHW, and a medical supervisor of a local NGO. Informed consent was obtained from all informants, as well as permission to audio record the FGDs. The audio recorded material was transcribed into English, and content analysis was performed. The transcriptions were coded, and sub-categories and themes were derived from the codes. Approval was obtained by the institutional ethics committee of Amrita SeRVe.

RESULTS

Analysis of the quantitative data

When combining the two treatment groups to form a total treatment group, the only significant difference in demographic data between the total treatment group and the control group was economic status with Pearson's Chi-square = 5.284, *df* = 1, *p* = .022, and Contingency Coefficient *C* = .232. Therefore, the authors needed to investigate whether economic status influenced health knowledge by comparing the level of health knowledge of women from above poverty line (APL) versus below poverty line (BPL) households. The non-parametric, independent-samples Mann-Whitney *U* test was used because the variable "number of correct answers" was not normally distributed. However, no significant difference was found (*p* = .066). Therefore, economic status was not considered in subsequent analyses.

Comparing total treatment and control group regarding the number of correct responses given during the health knowledge test was also done using the independent-samples Mann-Whitney *U* test (see Table 3). However, the test did not show the difference to be significant (*p* = .163).

Table 3. Difference in correct responses on the health knowledge test between the total treatment and the control group

	N	Median	Mann-Whitney *U*	*Z*	*p*	*r*
Total treatment group	61	4	831.5	-1.395	.163	-.826
Control group	33	3				
Total	94					

Analyzing the results for only treatment group 1 does show a significant difference, though, with *p* = .003 (see Table 4). No significant differences in education level were found between treatment group 1 and the control group with Pearson's Chi-square (*p* = .458) or in mean age with ANOVA, *F* (1, 62) = .515, *p* = .476 (Eta squared = .008). Therefore, we did not need to consider differences in education level or age.

Table 4. Difference in correct responses on the health knowledge test between the treatment group 1 and the control group

	N	Median	Mann-Whitney *U*	*Z*	*p*	*r*
Treatment group 1	31	6	288.5	-3.016	.003	-.563
Control group	33	3				
Total	64					

When comparing the treatment group 2 with the control group, no significant difference could be found with p = .504 (see Table 5). Again, no significant differences were found between treatment group 2 and the control group regarding educational level (Pearson's Chi-square p = .192) or mean age F (1, 62) = 3.838, p = .055 (Eta squared = .055), so we did not need to consider differences in education level or age.

Table 5. Difference in correct responses on the health knowledge test between the treatment group 2 and the control group

	N	Median	Mann-Whitney *U*	*Z*	*p*	*r*
Treatment group 2	30	3	447.0	-.668	.504	-.902
Control group	33	3				
Total	63					

Analysis of the qualitative data

The qualitative data revealed in more detail how health knowledge was disseminated during SHG meetings and how the SHG members were able to spread this knowledge to other community members. As a result of the content analysis of the transcription texts, the following themes emerged:

Addressing health issues during SHG meetings:

The women mentioned that the benefit of joining the SHG was a chance to gain new health-related knowledge. "*If a woman is suffering from anemia, we can discuss what can be done regarding medicines or a person who needs ORS [oral rehydration salts].*" Community participation was achieved by collective clean-up drives and other joint activities. "*And if it is about cleaning the village or if there is marriage ceremony, they organize it collectively, and all SHG ladies work together*."

Spreading health awareness:

The women claimed that family members were listening and following health instructions.

"*Yes, children, husband, even parents-in-law follow it*." "*Here everybody has been made aware.*
All maintain cleanliness." "*Small kids understand and older people. Yes, a few do so, others don't*."

The CHW agreed that SHG members were spreading awareness, "*They, too, spread awareness,*
means they also tell other people what they have heard."

Developing healthy habits:

This theme refers to changes in health behavior that have occurred. "*All people clean, bathe, wash. Some older adults don't, but all children do. All except a few clean themselves at our place*."

Instructing children, who will in turn monitor other family members' health behavior, seems to be a good tactic to change behavior.

"*All people clean themselves. Even if it is not done, children say, 'Mummy, first wash the hands.' Today's children are like that*."

Different roles of AWW, ASHA, and Amrita SeRVe-trained CHWs:

The Amrita SeRVe-trained CHW and the ASHA have similar tasks regarding tracking pregnant women and child immunizations. Some tasks are assigned separately to the CHW and ASHA, though. Both the AWW and the ASHA collaborate with the CHW and all three help each other. However, this does not decrease the workload. "*We have our own work, but sometimes we help each other*." "*The work isn't less, though*." "*No, my work has stayed the same. No one's has decreased. It's not a matter of the help*." "*We have all the ones who are pregnant. It's in the survey, but not the account number or the Aadhar [identity] card number. She has everything, so when there is a need, I ask her*."

Challenges faced by all three CHWs:

Negative remarks made by the clients were seen as challenges. "*People answer in such a manner that we don't feel like going there again, but it is our job to go to that area, so we just say 'Namaste' and say that we will come again*." "*Then we are hurt, as we are doing this for them, for the country, in whatever way possible*."

The government-employed CHWs voiced their complaints about their salaries. "*It's a lot of work to do morning till night. And not a lot of money*." "*That salary, too, does not come on time to us.*"

Both ASHA and Amrita SeRVe-trained CHW are facing the challenge of a lack of transportation facilities. They have to travel on foot to perform their duties during house visits. "*Our work is just to walk*."

What is seen as helpful:

The Amrita SeRVe-trained CHWs found discussing health issues during the SHG meetings useful.

"*So, like when a meeting of SHG takes place, women discuss various matters which may be useful. There is an exchange of views at such meetings.*"

CHW, ASHA, and AWW help each other.

"*All three help one another, we are three people, we help one another, no one from outside.*"

The CHWs found that children had a better understanding due to their school education and that they were the ones helping with the tasks. "*Children are helpful; children come everywhere; they understand whatever is said to them.*" "*Women of my age, they may understand a bit, but children understand the most.*"

DISCUSSION

The quantitative analysis showed a tendency towards a higher level of health knowledge in the total treatment group compared to the control group, even though the difference was not significant. However, treatment group 1 (Dunda) showed a significantly higher level of health knowledge compared to the control group. We could thus show that the active services of an Amrita SeRVe-trained CHW in addition to the services of the ASHA was more effective in increasing health knowledge than the services of the ASHA alone.

The fact that the respondents in treatment group 2 (Udalka) did not score worse on the health knowledge test compared to the control group could also be seen as a sign of the effectiveness of the CHW in Udalka. The ASHA did not cover Udalka completely, and the village is located higher up on a mountain slope further away from the market and primary health center, and thus from sources of health information. The effect sizes (*r*) are moderate to large for all Mann-Whitney *U* tests conducted, so with larger sample sizes the differences between treatment and control group would assumedly be detected. In this way, we can say that the Amrita SeRVe CHW program is effectively supplementing the work of the government-employed ASHA and AWW.

The qualitative data confirm this finding. SHG meetings seem to be an effective avenue for spreading health awareness throughout the community. SHG members seem to be spreading health awareness, especially knowledge about hygiene and nutrition, to other members of their household, which have led to a perceived change in behavior. The government-trained CHWs and the Amrita SeRVe-trained CHW apparently work in harmonious cooperation with each other and help each other out. Nonetheless, their workload was found to remain high and was not alleviated by their mutual collaboration.

These findings are in line with other research studies that have shown health outcomes to improve when NGOs focus on women from SHGs. For example, a study conducted in rural India showed that teaching women SHG members masonry skills to build toilets in their own village was successful in ending open defecation[13]. In Jharkhand and Odisha, eastern India, guiding women's SHGs through a cycle of participatory learning and action by an ASHA was shown to effectively reduce infants' deaths[14]. A study in South Africa showed that SHG members who received training on gender roles and health issues had better outcomes on empowerment and domestic violence measures, as well as on health behavior, compared to members of "standard" SHGs[15].

However, our role might have biased the results as we were seen as representatives of the Amrita SeRVe project and the university run by the Mata Amritanandamayi Math. In this way, the informants might not have given the actual account of their experiences but presented a more socially desirable outcome.

Another limitation of the study is that no pre- and post-test was performed regarding health knowledge. Therefore, no causality can be implied. Health knowledge could have originated from sources other than the Amrita SeRVe-trained CHW. Another limitation is that the treatment groups significantly differed concerning demographic data from each other and the control group.

CONCLUSIONS

The CHW program run by Amrita SeRVe seems to be promising and worth scaling up. More CHWs should be trained and employed in more villages throughout India, especially in areas which are not sufficiently serviced by a government-employed CHW. However, future research is recommended with larger and purely randomly selected samples so that demographic variables can be controlled for by including them as independent variables. Otherwise, samples with similar demographics should be recruited. More studies should be conducted that compare different methods of health knowledge dissemination. Further, strategies need to be found in future research on how to give CHWs adequate support. Children were found to be the pivotal agents of change within the household, and future interventions need to focus on educating children about health issues.

CONFLICT OF INTEREST

There is no conflict of interest, as there was no funding from any agency.

ACKNOWLEDGEMENTS

We would like to thank the residents of Dunda, Udalka, and Jagdumga, the CHWs, and the local Amrita SeRVe staff for their enthusiastic participation and cooperation in this research. We also thank our university - Amrita Vishwa Vidyapeetham – and the Center for Women's

Empowerment and Gender Equality for giving us the opportunity to conduct this research.

REFERENCES

1. Bagchi S. Growth generates healthcare challenges in booming India. *CMAJ* 2008; ***178***(8):981-3.

2. Ministry of Health and Family Welfare, Government of India. Five years (2009-2014). Achievements & New Initiatives. New Delhi, India: Aravali Printers 2014.

3. The Million Death Study Collaborators. Causes of neonatal and child mortality in India: A nationally representative mortality survey. *Lancet* 2010; **376**:1853-60.

4. Viswanathan K, Rakesh PS, Balakrishna S, et al. Prevalence of chronic respiratory diseases from a rural area in Kerala, southern India. *Indian J Tuberc* 2018; **65**:48-51.

5. Lehman U, Friedman I, Sander D. Review of the utilisation and effectiveness of community-based health workers in Africa. Global Health Trust, Joint Learning Initiative on Human Resources for Health and Development (JLI), *JLI* Working Paper 2004; **4**:1-44. https://pdfs.semanticscholar.org/7a0c/fd44975b00b045c7957c9327a87c9fcc6b63.pdf (accessed 23 Jun 2020).

6. Government of India, Ministry of Women and Child Development, Child Development Bureau and National Institute of Public Cooperation and Child Development. Potential good practices. The ICDS experience. 2013 April; P144. https://icds-wcd.nic.in/Best%20Practices.pdf (accessed 23 Jun 2020).

7. Scott K, Shanker S. Tying their hands? Institutional obstacles to the success of the ASHA community health worker in rural north India. *AIDS Care* 2010; **22**(Suppl 2):1606-1612.

8. Haines A, Sanders D, Lehmann U, et al. Achieving child survival goals: Potential contribution of community health workers. *Lancet* 2007; **369**(9579):2121-31.

9. Amrita Self-Reliant Village. Transforming Rural India. 2014; P16. https://amritaserve.org/wp-content/uploads/2018/09/Amrita_SeRVe_Brochure_2014-1.pdf (accessed 23 Jun 2020).

10. Amrita SeRVe. Self-Reliant Village. Wellbeing for all. Health workers in Amrita SeRVe Villages. 101 Village Project. Mata Amritanandamayi Math. 2017; P5. https://amritaserve.org/wp-content/uploads/2018/09/2017_health_brochure.pdf (accessed 23 Jun 2020).

11. Rajani KG, Vijay Lakshmy KV. Involvement of SHGs for women empowerment in Kerala – a theoretical approach. *International Review of Research in Emerging Markets and the Global Economy (IRREM). An Online International Monthly Journal* 2014; **1**(2):66-80.

12. Jones KM, Specio SE, Shrestha P, et al. Nutrition knowledge and practices, and consumption of vitamin A-rich plants by rural Nepali participants and nonparticipants in a kitchen-garden program. *Food & Nutrition Bulletin* 2005; **26**(2):198-208.

13. Sheshadri S, Coley C, Rao BR. Training India's first female toilet builders: An argument for improving sanitation through women empowerment and social inclusion. In International Conference on Sustainable Development, UN Sustainable Development Solutions Network, New York 2015 Sep 23 (Vol. 24).

14. Tripathy P, Nair N, Sinha R, et al. Effect of participatory women's groups facilitated by Accredited Social Health Activists on birth outcomes in rural eastern India: A cluster-randomized controlled trial. *Lancet Glob Health* 2016; **4**:e119-28.

15. Kim J, Ferrari G, Abramsky T, et al. Assessing the incremental effects of combining economic and health interventions: The IMAGE study in South Africa. *Bull World Health Organ* 2009; **87**:824-32.