

Original Research Article

Contribution of community health volunteers in facilitating mobilization for nutritional screening among adolescents (10-19 years) residing in urban Puducherry, India: an operational research study

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ABSTRACT

Background: Many countries have experimented with community health volunteers (CHVs) to expand their health systems. Adolescents represent 20% of India's population and serve as a vital resource in transforming its social and economic fortunes. Thus, we aimed at evaluating the contribution of CHVs in mobilizing adolescents for the adolescent health clinics (focusing on adolescent nutrition and anaemia) in a selected primary health centre (PHC) of Puducherry.

Methods: A community-based operational research study was conducted in the urban field practice area of JIPMER, Puducherry. Around 5-6 volunteers were selected from each of the 13 anganwadis functioning under the PHC. The volunteers were interviewed before enrolment for willingness. About four batches of sensitization and training sessions were conducted to provide necessary training regarding the prioritized topic. CHVs were then given three months to mobilize the adolescents. This model was evaluated using the theoretical underpinning technique.

Results: Of the total 85 CHVs suggested, around 65 (76.5%) showed willingness in rendering services. About 32 (49.2%) discontinued during the initial weeks of the intervention due to various reasons. The remaining CHVs reached 61 (17.2%) new adolescents and motivated around 48 (78.6%) individuals to visit the health center. All 48 were screened for malnutrition and anemia. About 25 (52%), 5 (10.2%) and 31 (64%) adolescents were diagnosed to have undernourishment (BMI<18.5), obesity (BMI>25) and anaemia (Hb<12) respectively.

Conclusions: About half of the CHVs who volunteered remained till the end. The involved volunteers improved the adolescent coverage by tripling the number of adolescent beneficiaries.

Keywords: Community health volunteers, Adolescent, Operational research, Health promotion, Nutrition, Anemia

INTRODUCTION

Primary health care's (PHC) four main pillars include: community participation, inter-sectoral coordination, use of appropriate technology, and equitable distribution.¹ In recent years, many countries have experimented on community participation by involving community health volunteers (CHVs) to expand their health systems.^{2,3} There is ample evidence to prove that CHVs can improve access to primary health care, especially among underdeveloped and developing nations.⁴⁻⁶

CHVs can be defined as members who hail from the same locality, has an in-depth understanding of the community structure, language, and existing social beliefs nominated by the community through an active participatory process. It has always been a necessity that CHVs must undergo the necessary training to deliver a defined package of health promotion activities to the community at a grass-root level. They can also serve as an effective medium to establish formal linkages between the community and the health system. Globally, as an extension of their contribution towards the needy population, they have also been utilized in providing various services like making referrals to

health facilities, diagnosing and treating illnesses (such as malaria, pneumonia, and diarrhea), providing health education, conducting nutrition surveillance, collecting vital events data, assisting with immunization, and providing other aspects of maternal and child health care and family planning services.⁷⁻⁹

Adolescents (10–19 years) represent about 20 percent of India's population, and young people (10–24 years) contribute to 33 percent of the people. Improvement of adolescent health will have an immediate, direct and positive impact on the health status of the nation, especially in achievement of the millennium development goals (MDGs) 1, 2, 3, 4, 5, and 6.¹⁰ In view to address the health and development needs of adolescents, Ministry of Health and Family Welfare launched the Rashtriya Kishor Swasthya Karyakram (RKSK) on 07 January 2014.¹¹

The premier strategy under RKSK is to shift the existing clinic-based curative approaches to a more holistic model shouldering community-based health promotion and preventive care.

Currently, RKSK has emphasized a convergent service delivery model that engages adolescents with the field workers like teachers, accredited social health activists (ASHAs), auxiliary nurse midwives (ANMs), and other volunteers selected from the community. This provides an effective medium to strengthen mechanisms for access and equity. Adolescent nutrition is a primary concern nowadays and has an inter-generational effect; i.e. nearly 33% of the disease burden and around 60% of premature deaths among adults can be affiliated with unhealthy behaviors like tobacco and alcohol use, poor eating habits, risk-taking behavior, etc.¹²

We have also identified one such significant barrier hindering service delivery to adolescents is inaccessibility. This strategy of utilizing CHVs might help facilitate access to available health services by rationalizing and strengthening healthcare delivery's existing capacity. The present study attempts to evaluate the contribution of CHVs in mobilizing adolescents for the Adolescent health clinics being conducted in our PHC, thereby increasing coverage of health services.

METHODS

Our study is an operational research study conducted in the urban field practice of a tertiary care hospital in Puducherry. The centre is located in an urban slum near the coastal region of Puducherry. It provides comprehensive primary care services to four wards (which had 13 anganwadis) with a total population of around 8500. The study was conducted during August–December 2018. The four wards of the service area were split up into two batches, A and B, respectively. A batch consisted of 6 anganwadis, and the B batch had seven Anganwadi areas. A staff nurse supervised each batch along with a field health worker coordinating under her.

This article is a part of a larger study that encompassed CHV's contribution in facilitating health care delivery in selected areas like mobilization for NCD screening, adolescent clinics, blood donation camps, and reduction of mosquito breeding sites. This research article covers the contribution of CHVs in the propaganda of adolescent clinic services available at the centre's AFHCs. The centre runs AFHCs weekly, once every Saturday. The centre served only 31 adolescent beneficiaries, i.e. 4.4% of the total teenage population (31/740 adolescents). Brainstorming sessions with the centre's health staff working resulted in enlisting the reasons for limited coverage, which were poor motivation, inaccessibility, and inconvenient adolescent clinic timings (Saturday being a school-working day). We have thus tried to bridge the gaps so that comprehensive adolescent care services can be delivered.

Existing system

Until the commencement of this study, the adolescent health services were at their infancy in the service area due to various proposed reasons. By this model of reaching the unreached vulnerable adolescent population, we aimed at improving the coverage and identify more relevant adolescent health issues. For this study, we adopted the first two indicators under adolescent nutrition of RKSK, i.e. screening for nutritional anemia and evaluation of nutritional status. We trained the CHVs regarding the symptoms of adolescent anemia and emphasized attention to screening for nutritional status. These sessions also covered steps to empower the adolescents to attend AFHCs by emphasizing the services delivered through AFHCs.

In consultation with the community, we had planned to involve 5-6 volunteers from each Anganwadi area; each Anganwadi catered to a population of around 600-800. A total of 65 volunteers were selected from all the 13 anganwadis present in the service area. These community volunteers were chosen in consultation with the community and their expression of willingness for facilitating the delivery of various health care services in their locality. They were not given any honorarium for their involvement but were adequately motivated by the investigators and the health staff by making frequent visits.

The volunteers were administered a pretested semi-structured questionnaire (face validated by experts and pilot tested) which had two parts. The first part was to gather information regarding the socio-demographic characteristics, priority areas of interest to work upon, and the second part focused on assessing their baseline knowledge. The CHVs were invited to attend sensitization sessions and training sessions on the priority areas chosen for intervention. About four batches of sensitization meetings (each batch consisting of 15-20 volunteers) were conducted to understand their responsibilities in carrying out the identified priority activities. Later four batches of training sessions were conducted. Through the training sessions, CHV were given health education regarding the

burden and epidemiology of adolescent nutrition, symptoms of anemia, the importance of nutritional anemia screening, and the need for AFHC. After the training sessions, the CHVs were given three months to facilitate mobilizing adolescents to avail services from the health center.

The volunteers were requested to make a line list of the adolescents they met, motivated, and referred to the health center for undertaking necessary screening. A register was maintained to track the adolescents who reported to the health center for undertaking screening following sensitization. The names obtained from the forms of volunteers and the registers were cross-checked to ensure credibility.

The adolescents reaching the centre were checked for their height, weight, and hemoglobin. Height was recorded using a validated stadiometer with a precision of 0.1 cm. The adolescents were asked to remove slippers and ornaments, stand with legs joined together, heads straight, and arms by the side, and shoulders relaxed. The stadiometer's headpiece was pulled down on the top of the head; the reading on the tape at the investigator's eye level was recorded. Weight was measured using a validated digital weighing machine with a precision of 0.1 kg by making them stand in the middle of the weighing scale. Hemoglobin was measured using a digital hemoglobinometer. Adolescents diagnosed with undernutrition and anemia were given health education and started on treatment.

Being an operational research study, we decided to evaluate this volunteer-led mobilization for adolescent screening using the theoretical underpinning technique. We devised a logic model by framing input, process, output, and outcome indicators. Data were entered into Microsoft excel, and analysis was done using statistical package for the social sciences (SPSS) version 19. Continuous variables such as age were summarized as mean and standard deviation (SD). Categorical variables such as gender, education, occupation were summarized as proportions. A schematic diagram depicting the logic model was prepared and reviewed by the authors.

RESULTS

A total of 65 nominated and willing volunteers were invited for the sensitization and training sessions at the health center. The training was provided by the investigators, medical officer, and other health staff posted in the center. Table 1 depicts the socio-demographic characteristics of the nominated CHVs; out of the total 85 CHVs who the community members nominated, around 65 (76.5%) showed a willingness to undergo training sessions and render services (not shown in tables). Of the 65 who volunteered, a majority (67.7%) belonged to the 18-45 years age group, with the mean age being 35.3±6.8 years and one-third 22 (33.8%) were males. Nearly 50 (76.8%) had a minimum education of primary schooling, and 40

(61.6%) were unemployed. Around 86.2% (56) were married, and 66.2% (43) belonged to the middle or above socioeconomic class as per the modified BG Prasad scale.

Table 1: Socio-demographic characteristics of the community health care volunteers among the selected wards of urban Puducherry, (n=65).

Variable and category	Frequency (%)
Age (years)	
18-30	20 (30.7)
31-45	24 (37)
46-50	16 (24.6)
51-65	5 (7.7)
Gender	
Male	22 (33.8)
Female	43 (66.2)
Education	
No formal education	5 (7.6)
Primary	10 (15.4)
Higher secondary	41 (63)
Graduate	9 (13.8)
Employment status	
Unemployed	40 (61.6)
Employed	25 (38.4)
Marital status	
Married	56 (86.2)
Unmarried	9 (13.8)
Socio economic status	
Lower class	3 (4.6)
Lower middle class	19 (29.2)
Middle class	25 (38.5)
Upper middle class	12 (18.4)
Upper class	6 (9.3)
Prior involvement in social service activities	
Yes	11 (17)
No	54 (83)
Women self-help group member	
Yes	11 (17)
No	54 (83)

Out of 65 volunteers, 8 (12.3%) were excluded since they moved out from the field service area. About 39.6% (24) discontinued rendering services during the initial few weeks of the intervention period. We used a semi-structured questionnaire to capture their reasons for discontinuation. The reason for dropouts was "inadequate family support, lack of time due to work stress, multiple meetings, and absence of remuneration". The retention rate was 50.8% for three months intervention period.

Table 2 represents the logic model depicting the various indicators used for evaluating our framework. The inputs constituted manpower, materials, money, and minutes represented as: number of sensitization meetings conducted, the number of training sessions conducted, number of hours spent for training the volunteers, and the

number of people involved training. We arranged the sensitization and training sessions in 4 batches (15-20 volunteers per batch) before the intervention. Around 2.5 to 3 hours were spent training the volunteers. The investigators, medical officers, staff nurses, and ANMs posted in the center gave the necessary training. Figure 1 explains the process indicators that were used. Out of the

57 persons who volunteered, all attended the sensitization meetings, and about 48 (84%) participated in the training sessions. There were few dropouts too after the training session, and ultimately only 33 volunteers contributed to the program. We have analyzed the results only for the Anganwadi areas where these 33 active volunteers contributed.

Table 2: Logic model depicting the contribution of CHVs towards NCD screening among the selected wards of urban Puducherry, (n=65).

Activity	Inputs	Process N (%)	Output N (%)
Nutrition and anemia screening	Number of sensitization meetings = 4	Proportion of members attending the sensitization meetings* = 57 (100)	Proportion of adolescents newly screened for malnutrition [§] = 48 (100%)
	Number of training sessions conducted = 4	Proportion of members attending the training sessions* = 48 (84.2)	Proportion newly diagnosed as undernourished (BMI <18.5) = 25 (52%)
	Number of hours of training of training provided = 9 hours (mean - 2.25 hours per session)	Proportion of Adolescents reached [†] = 61 (17.1%)	Proportion newly diagnosed as overweight (BMI >25) = 5 (10.4%)
	Number of people involved in training = 9 health care personnel	Proportion of adolescents convinced to visit the centre [‡] = 48 (78.6%)	Proportion of adolescents newly screened for anaemia [§] = 48 (100%)
		Extra benefit = 12.7% (4.4% → 17.1%)	Proportion newly diagnosed as anaemia (Hb<12) = 31 (64%) Proportion diagnosed as severe anaemia (Hb<7) = 0

*Out of the 57 members who were present in the field practice area, †out of the adolescents who were age >30 years, non-diabetic/hypertensives and not screened in the past 1 year (N=353), ‡out of the community members those who were reached by the volunteers, and §among the people who were convinced to visit the center

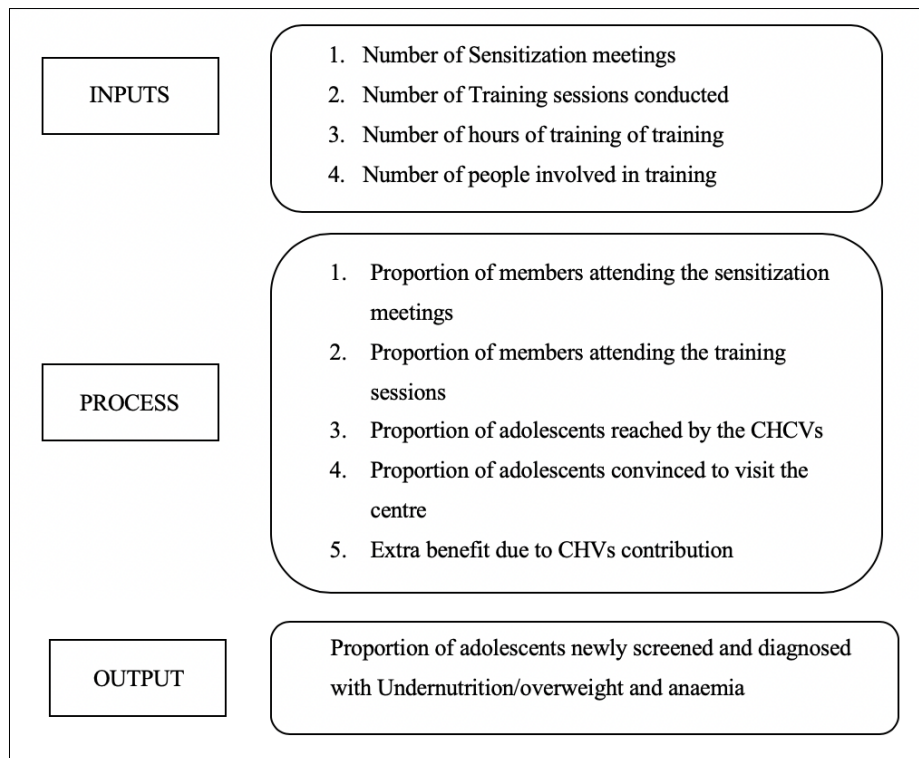


Figure 1: Schematic diagram depicting the logic model for evaluating the service by volunteers.

These 33 volunteers belonged to 6 Anganwadi areas; 4 from batch A and two from batch B. In the remaining seven Anganwadi areas, where few volunteers withdrew initially in the initial stages, other volunteers from the same Anganwadi areas have too discontinued rendering services.

Based on the enumeration data, about 353 eligible adolescents belonged to the six Anganwadi areas where the volunteers contributed. We found that the CHVs were able to reach about 61 (17.2%) new adolescents. This information was gathered from the line list obtained from the volunteers. Out of 61 adolescents that the volunteers could meet, they successfully motivated 48 (78.6%) individuals to visit the health centre for screening.

The outcome indicators were determined based on the feasibility of evaluating the model. Data for assessing outcome indicators were collected from the registers maintained in the centre and by comparing it with the line list maintained by the volunteers. We found that of the 48 adolescents who visited the centre, everyone (100%) was screened for malnutrition and anemia. From the total members who were screened, about 25 (52%) and 5 (10.2%) were diagnosed to have undernourishment (BMI<18.5) and obesity (BMI>25), respectively. The adolescents reaching the centre were counselled regarding sanitation, proper diet, and physical activity. Of the adolescents who were screened for anemia, about 31 (64%) had anemia (Hb<12), and none had severe anemia (Hb<7).

DISCUSSION

This was a community-based operational research study undertaken to evaluate the effectiveness of CHVs in motivating adolescents to attend health centers for a screening program in selected wards of urban Puducherry. The logic model was used for this purpose. The retention rate of volunteers was around 50% for the three months intervention period without any remuneration. The main reasons for dropouts were inadequate family support, lack of time due to work stress, and absence of remuneration. The volunteers made a vital contribution by mobilizing about 8.6% of the total eligible adolescents for nutrition and anemia screening. Of the individuals who got themselves screened, the proportion with undernutrition and anemia among them were 52% and 64%, respectively.

This idea of CHV utilization in health is not new; similar programs have been undertaken in various regions of the world deploying frontline workers, lay health volunteers, CHVs, and other non-specialist health care providers.¹³ The scope of their contribution is broad, ranging from increasing vaccination coverage, mosquito control, maternal and child health, and chronic diseases like acquired immune-deficiency syndrome (AIDS) and tuberculosis.¹⁴⁻¹⁶ Their roles and responsibilities are diverse, ranging from preventive to curative care, but are more often country or region-specific.

Adolescence is a period where an individual experiences rapid mental, emotional and psychological development. This period is highly vulnerable to many nutritional problems. If necessary, counseling for dietary and other lifestyle-related conditions is imparted, there are high chances of preventing many chronic diseases during later pregnancy and womanhood. Iron deficiency anemia is the most common micronutrient deficiency affecting adolescents, which considerably reduces the learning and working capacity, resulting in lower productivity. NFHS 4 data shows that about 53.1% of women (age 15-49), are anemic and about 22.9% of women are undernourished (BMI<18.5).¹⁷ Our study also had similar results regarding the prevalence of anemia but had a higher proportion affected with undernutrition compared to NFHS data. Literature from Tamil Nadu, India, also shows a similar prevalence of anemia compared to our study.¹⁸ The factors contributing to such high nutritional problems among adolescents could be due to low accessibility of health centers for adolescents (during regular working time), lack of targeted adolescent health care approach, gender discrimination, and other socio-cultural norms.

To tackle these unmet needs in terms of education, reproductive health, and nutrition, the Ministry of Women and Child Development, Government of India, devised "Kishori Shakti Yojna" (KSY) to improve the nutritional and health status of adolescent girls and to upgrade their home-based and vocational skills and personal hygiene.^{19,20} The Rajiv Gandhi scheme for empowerment of adolescent girls (RGSEAG) -"SABLA" is implemented through Anganwadi centers under ICDS have now replaced both KSY and NPAG programs. It aims at improving adolescent nutrition, health status and promoting awareness about adolescent reproductive and sexual health (ARSH). Having seen the effectiveness of CHVs in the mobilization of adolescents in the present study, their help could be further extended to provide take home rations (THR), iron and folic acid (IFA) tablets, identification and training of sakhis and sahelis, promote physical activity, providing nutritional and adolescent and sexual health education during Kishori was/VHNDs.²¹

It is important to note that unless the myths, misconceptions, and customs pertaining to adolescent health are embarked upon, it is challenging to improve adolescents' nutritional and healthy well-being. For achieving this, community participation is very crucial. It is necessary to involve CHVs, panchayats, non-governmental organizations (NGOs), and other community-based organizations (CBOs) for awareness generation at the community level.

These CHVs can also take up vocational training for the adolescents in collaboration with the SHGs/CBOs in the community, thereby providing a cost-effective way of improving the community's socio-economic development at large.

Our study showed a positive impact of CHVs in community mobilization in adolescent nutritional screening activities. Similar studies involving CHVs towards adolescent health pertaining to the Indian context are sparse yet studies from sub-Saharan Africa have established the contribution of CHVs in adolescent service delivery.^{22,23} A study done by Mahalakshmi et al in 2018 in the same setting showed similar results of poor utilization of adolescent health services and the need for awareness generation and community action to improve coverage.²⁴

The major strength of our study was the fact that we employed a logistic model for evaluating the CHVs contribution in community mobilization for adolescent health screening. Our analysis also adds to the limited literature evaluating CHV's contribution to health promotion activities, especially towards adolescent health in South India. Our framework emphasizes one of the significant pillars of primary health care, i.e. community participation, which is necessary to strengthen adolescent health services. This strategy might help in facilitating access to available health services by rationalizing and enhancing the existing capacity of health care service delivery. We suggest more research on these primary health care collaborative interventions to improve adolescents' nutrition, social and reproductive health. However, our model requires flexibility in adaptation during local implementation. In this regard, we welcome feedback regarding the framework from all relevant stakeholders.

However, our study had certain limitations. This paper discusses only the involvement of CHVs in adolescent nutrition using specific indicators. Supportive evidence to include more indicators to this framework is essential. We had only a short intervention period of 3 months; thus, further follow-up is necessary to evaluate volunteers' long-term participation and retention. We could not ascertain a control group to compare our results as we planned this intervention as a service component in our service area. This study could serve as a baseline for further research initiating new interventions on the same front.

CONCLUSION

About half of the CHVs who volunteered to impart health care services remained with us till the end of the intervention. Almost four in every five elected volunteers attended the training sessions. The involved volunteers could improve coverage in the service area, increasing the population covered by three times. This process of effective community participation would enable us to tackle Indicators 13 and 14 of the global monitoring frameworks on NCDs. CHVs can function as a vital tool in strengthening health service delivery, thereby decentralizing it as close as possible to the community.

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