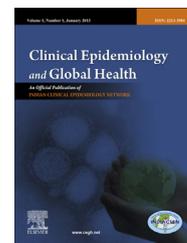




ELSEVIER

Available online at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/locate/cegh

Original Article

Evaluation of non communicable disease control pilot programme of National Rural Health Mission in Thiruvananthapuram district

Regi Jose ^{a,*}, Ramdas Pisharady ^b, P.V. Benny ^a, Zinia T. Nujum ^c,
S. Rema Devi ^d, Sara Varghese ^e, P.S. Indu ^f

^a Associate Professor, Community Medicine, Sree Gokulam Medical College & RF, Venjaramoodu, Kerala, India

^b Principal, Professor, Nephrology, Govt. Medical College, Thiruvananthapuram, India

^c Associate Professor, Community Medicine, Govt. Medical College, Thiruvananthapuram, India

^d Consultant INCLIN, Rtd. Professor of Sociology, Govt. Medical College, Thiruvananthapuram, India

^e Professor, Community Medicine, Govt. Medical College, Thiruvananthapuram, India

^f Additional Professor, Community Medicine, Govt. Medical College, Thiruvananthapuram, India

ARTICLE INFO

Article history:

Received 1 July 2013

Accepted 29 August 2013

Available online xxx

Keywords:

NRHM

Programme evaluation

NCD programme

ASHA

Health system

ABSTRACT

Non-communicable diseases (NCDs) have emerged as a major public health challenge in India and more so in Kerala. Realizing this, NRHM conducted a pilot intervention programme in Neyyattinkara Taluk of Thiruvananthapuram district through the existing health system. A process evaluation of the pilot programme can bring out unbiased gaps in the implementation and necessary modification can be suggested.

Aims: To evaluate the NCD control pilot programme.

Methods: qualitative methods – Fifty-five in-depth interviews (IDI) and 8 Focus Group Discussions (FGD) were conducted.

Results: The programme proceeded with an action plan as there was no written programme document. Training was good in terms of clinical aspects; but sensitization regarding the programme was inadequate. The quality of data from the field surveys by Accredited Social Health Activists (ASHA) varied from place to place. The detection camps were overcrowded. Programme was well supported (Funds, Logistics) by NRHM, All patients who were examined by doctors were given medicines for one month and were kept under close follow up by ASHA, and enabled to gain confidence of the community.

Conclusions: The programme could change the attitude of community regarding health care delivery. The study points to the need for pro-activeness in program management and a clear programme guideline to all the supervisors and implementers. People should be made aware of the program services and benefits through social mobilization campaigns. Quality medicines & equipments should be made available for the detection camps. ASHA can play an important role in controlling NCDs at the community level.

Copyright © 2013, INDIACLEN. Publishing Services by Reed Elsevier India Pvt Ltd. All rights reserved.

* Corresponding author. Tel.: +91 (0) 472 3041234x2205, +91 (0) 9446475035 (mobile).

E-mail addresses: regipaul@gmail.com, regipaul@yahoo.com (R. Jose).

2213-3984/\$ – see front matter Copyright © 2013, INDIACLEN. Publishing Services by Reed Elsevier India Pvt Ltd. All rights reserved.

<http://dx.doi.org/10.1016/j.cegh.2013.08.004>

1. Introduction

Non communicable diseases are a major cause of morbidity and mortality in India.¹ Public health experts have also predicted a global epidemic of cardiovascular disease (CVD)² on the basis of current trends. National Rural Health Mission (NRHM) extends its service to the neglected rural people through its trained community volunteer, Accredited Social Health Activist (ASHA). The epidemiological transition and rising trend of NCD in the developed nations is also reflected in Kerala. Diabetes and Hypertension are the two focus issues in the pilot programme. Prevalence of Diabetes and Hypertension in Kerala is high compared to the national level.^{3,4} In 1996 prevalence of Diabetes among the rural population was 5%⁵ and in 2009 it was 20%. These progress to chronic heart diseases and chronic kidney diseases (CKD).^{6,7} Diabetes is considered as a coronary risk equivalent according to American Heart Association (AHA).^{8,9} Early detection and proper control is the key to prevent the complications. The strategies of NCD control pilot programme of NRHM include burden assessment and IEC by ASHAs, screening for Diabetes and Hypertension at sub centre level by Junior Public Health Nurse (JPHN) and ensuring continuous supply of medicines through sub centres and follow up by ASHAs. Process evaluation gives an understanding of how the service operates and provides what it is supposed to, or to know why a service is effective.^{10,11}

The study aims to understand the problems in programme management, implementation and service utilization. This will also help in understanding the strengths of the present system which need to be continued; the problem areas that need modification and some new policies which can be adopted. Role of ASHA in the prevention, early diagnosis and control of the NCD can also be assessed from the community perspective.

2. Methods

2.1. Study design

Descriptive; Qualitative methods like in-depth interviews and FGDs were used for the process evaluation and a cross-sectional survey was used for prevalence estimates.

2.2. Setting

Community; Neyyattinkara Taluk Thiruvananthapuram district.

2.3. Study population

Stakeholders in the programme at various levels including District Programme Manager (DPM), Medical Officers of PHCs (MO), Programme Coordinators, Health supervisors, Junior Public Health Nurses (JPHN), Junior Health Inspector (JHI), ASHAs, local authorities, and community members.

2.4. Sample size

Fifty-five IDIs and eight FGDs selected through Stratified purposive sampling. [Table 1](#)

2.5. Data analysis

Free listing, domain identification, coding and summarizing of Qualitative data with use of qualifiers. The results were described as ethnographic summary and quotable quotes were used appropriately. Qualifiers used for semi-quantitative expression of observations as <10% (1+), 10–24% (1+), 25–49% (2+), 50–74% (3+), 75–89% (4+), ≥90% (5+) and the adjectives used to express these were very few, some, approximately half, majority, most and almost all respectively.

2.6. Quality assurance measures

The development of interview schedule has been done using the operational manual of the programme as guide and discussed with the users of the evaluation. Audio recording of interviews and video recordings of focus group discussions were done to give credence to the conduct and validity of interviews, to supplement the statements missed out during writing of field notes and to cross check the transcribed schedules. Data triangulation was done using stakeholders from different categories. Method triangulation was done by combining information from the two methods: IDIs and FGDs.

Table 1 – Details of stakeholder categories; in-depth interviews & FGDs.

Stakeholder category	Stakeholder	Number
Programme Planners and Managers	State Programme Manager	1
	Additional Director of Health Services	1
	State Programme Coordinator	1
	District Programme Manager	1
Programme Implementers	Block Coordinators (PRO)	4
	MO PHC	7
	HS/LHI	2
	JPHN/HI	6
Field level functionaries	ASHA	14
Community representatives	Panchayat Authorities	2
	Community Members	16
Total		55

Focus Group Discussions.

Eight FGDs were conducted among ASHAs and Community Members. Amboori (High land), Vellarada (Mid land), Pozhiyoor (Low land – coastal), Perumkadavila (Mid land) of Neyyattinkara Taluk of Trivandrum district. Sociograms were drawn during all FGDs. [Fig. 1](#)

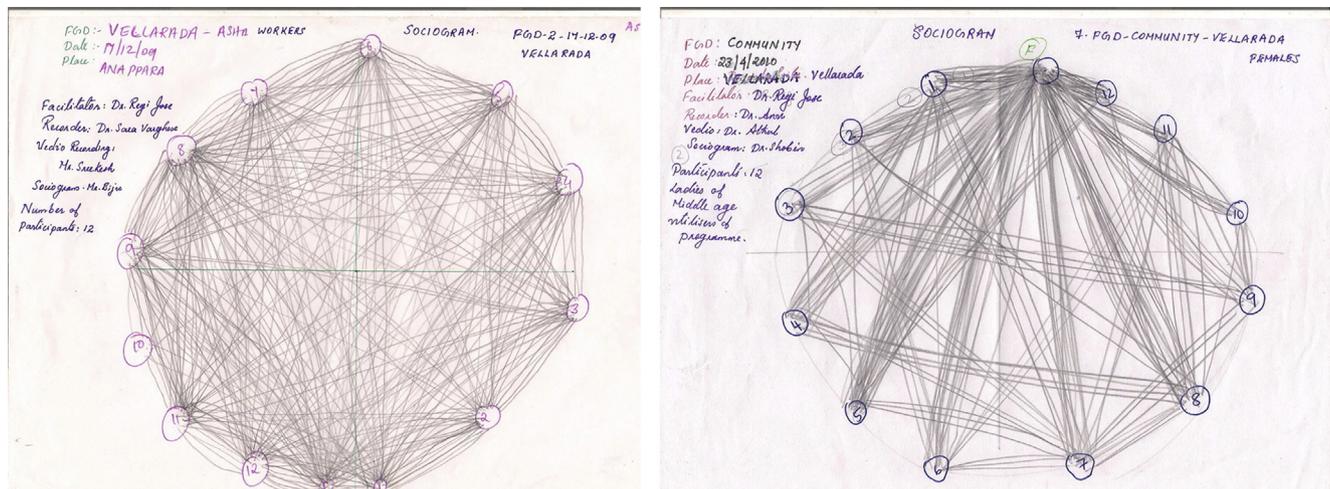


Fig. 1 – Sociograms of FGD ASHA and Community (females) showing discussion dynamics.

2.7. Ethical considerations

Interviews and FGDs, audio and video recordings were conducted after taking written informed consent. Ethical committee clearance was obtained from Govt. Medical College Trivandrum. The study was in accordance with national and international GCP protocols.

3. Results

3.1. Process evaluation

NCD programme was evaluated in phases of Conceptualization, Planning, Funds and Logistics, Preparation of training materials and survey form for data collection, training, community level implementation, field survey by ASHA, detection camps, follow up camps, and monitoring of the Diabetic and Hypertensive patients; and evaluation of the programme and surveillance. The programme proceeded with an action plan as there was no written programme document. It involved huge human resources, logistics and a large number of beneficiaries. As with any other new programme this programme also suffered its childhood difficulties; but soon it could easily continue in a better way. Coordination committees existed at all levels and were effective. The Block Coordinators of NRHM did a very crucial role in the coordination and smooth conduct

of this programme. There was poor involvement of department of education, private sector and other systems of medicine. Information Education and Communication (IEC) component in the programme was weak. Field surveys by ASHAs were done but the quality of the data varied from place to place. The coverage was good based on the number of forms, but the categorization of high risk individuals was biased. Even though all individuals above the age of 30 yrs were invited; only a small proportion attended the detection camps due to lack of intensive social mobilization campaign.

1. Programme conceptualization

NRHM was originally envisaged for the services of the rural people with more importance to communicable diseases and family welfare services. The peculiar health situation of Kerala where non communicable disease poses an equal burden as the other health issues; compelled the authorities to address this issue; and as an initial programme. The NCD programme was piloted in two districts of Kerala (Wayanad and Thiruvananthapuram).

Diabetes and Hypertension were perceived as a problem by most of the Programme Managers (4+) and Implementers (4+), nearly all ASHAs (5+) and majority of Community (3+) members. Most of the Programme Managers (4+), and nearly all of the Implementers (5+) and ASHAs (5+) were convinced about the need of NCD programme.

Table 2 – Opinion regarding adequacy and quality of training material, equipments and medicines.

Logistics → Domains ∇	Training material			Equipments			Medicines		
	PM*	PI**	ASHA	PM	PI	ASHA	PM	PI	ASHA
Adequacy	2+	1+	3+	3+	1+	2+	5+	4+	5+
Procurement and stocks	3+	2+	3+	2+	1+	2+	5+	3+	5+
Good quality	2+	1+	2+	2+	1+	2+	4+	3+	4+
Needs modification/change	4+	4+	4+	3+	4+	3+	2+	2+	2+

PM* – Programme Managers, PI** – Programme Implementers.

2. Planning and coordination

Planning was done by programme managers and implemented through PHC machinery and ASHAs. The DPM coordinated the programme through Block Coordinators and MOs were not part of the team for planning. Coordination committees existed at all levels and were effective. The PROs of NRHM did a very crucial role in the coordination and smooth conduct of this programme. There was poor involvement of education, private sector and other systems of medicine.

3. Funds and Logistics

Funds and logistics were from NRHM. Opinion regarding adequacy and quality of training material, equipments and medicines are summarized as per Table 2 among the Programme Managers, Programme Implementers and ASHA.

Majority (3+) had the opinion that the funds and logistics were adequate. There were widespread complaints regarding the instruments used in the screening camp. Only glucometer strips were supplied by the programme not the glucometers. The medicines were good quality and adequate amounts were stocked for the whole year. Most (4+) had the opinion that the training material could be modified with more emphasis on the programme implementation.

“The medicines and blood glucose test strips were stocked for the whole year and till now there is no shortage of medicines” (PV11-Block Coordinator).

4. Training

Half day training was given to Medical officers and one day training to ASHA. No specific training was given to other implementers at the PHC level viz. HS, LHS, Hi, LHI, JHI, and JPHN. Block Coordinators were trained along with the medical officers. Most (4+) MOs and ASHA (4+) attended the training.

There was a training module for MOs with focus on clinical aspects of NCDs; but no treatment guidelines and less emphasis on implementation and other components of the programme. Although nearly all MOs were aware of the detection camps (5+); very few had idea regarding the other components like IEC activities for prevention management, follow up and evaluation (<1+). Only about half of MOs had an idea regarding their roles and responsibilities (2+) and believed that their role was only to go to camps and treat detected cases.

ASHA module 2 NRHM was used for the training. Training was for lifestyle diseases, their risk factors and lifestyle modification. Most (4+) felt that their knowledge is inadequate. Even though survey forms were briefed; there was less emphasis on IEC and Anthropometric measurements. Most (4+) ASHAs were aware of their role which include Household survey, detection camps, medicine distribution and follow up (4+) at home.

5. Community level implementation

1. Survey and IEC by ASHA

Almost all (5+) claimed 100% survey coverage. ASHA reported self reported prevalence of Diabetes and Hypertension. There were problems in recording habits and physical activity score. According to nearly half (2+) Implementers & ASHA they could not impart adequate knowledge as IEC materials were not provided.

“No notices or posters were supplied to us by the NRHM. We went from house to house telling people about the camps.” (A308-ASHA)

2. Detection and follow up camps

All individuals of 30 yrs and above were invited for the initial detection camps at ward level/sub centre level/ASHA block. On an average 300–500 people attended the initial camps with minimum 50% screening coverage. During the camp anthropometric measurements, Blood sugar estimation, Blood pressure measurement by JPHN or JHI and detailed clinical examination by medical officers were done. Medicines were dispensed as per doctor's order. Monthly follow up camps were organized at sub centre by JPHN and ASHA. There were widespread complaints regarding the instruments used in the detection camps. Doctors examined only high risk individuals or those with high BP or blood sugar. Some doctors had other duties like immunization programme or classes on the same day of the camp which caused time constraints. The care to each individual was inadequate as the number of people invited to the camp was very high. Some quit the camp because of the crowd and long waiting time. The quantity of medicines stocked was adequate. Everyone who needed treatment was given medicines for one month and they were kept under close follow up. This was a very good aspect of the programme and helped to gain the confidence of the community.

3. Opinion regarding measurements at the camp

Anthropometric measurements – height, weight, waist and hip circumference, Blood sugar estimation by glucometer and blood pressure measurement by sphygmomanometer were done. Most of Community and ASHA (4+) opined that the measurements at the camp were very useful as it could screen a large group who were left unscreened. Majority (3+) of ASHA and Community members felt that the quality of measurements were good.

“It is good that government thought about the poor diabetics in the rural areas who had difficulty in doing these tests and arranged the camps at our door steps.” (LA10-A local leader)

3.2. Distribution of medicines

Medicines distributed at the camps were Atenolol, Enalapril, Glibenclamide, Metformin, Aspirin & Frusemide. These were adequately stocked and were supplied for one month and was

welcomed by all participants. When asked about the programme, most (4+) of the community members appreciated the monthly medicine distribution and were thankful to the government. Very few (<1%) who were already on treatment for long years and those who had other problems like CVD etc were reluctant to change their drugs. Choice of medicines was less. According to most (4+) of implementers and ASHAs (5+) there was a drastic improvement in compliance to treatment.

3.3. Other problems

- Increase in workload for most of the implementers overlap of areas caused confusion.
- Disbursement of honorariums was also a difficult as there was difficulty in verifying the number of completed forms and there was delay in disbursement of honorarium in the second year.
- Medical Officers were not involved in Monitoring and supervision and PROs played a crucial role in supervising ASHAs and JPHNs

3.4. Opinion regarding the programme

Majority (3+) community members, ASHAs, JPHNs, JHIs, PROs and Medical Officers had very good opinion about the programme. Some (1+) opined that the programme is good but had scope for improvement. Very few observed that it was too early to comment about the programme (Table 3).

“NCD programme is basically good. The concept is excellent. We can give medicines to poor people, but we are not able to go to subcenters regularly where patients come regularly for follow up. JPHNs can manage subcenters and needy patient may be referred to PHC for consulting doctor” (MOP05-Medical Officer)

3.5. Opinion regarding sustainability

When asked about the future of the programme almost all (5+) wanted the programme to continue in the future with some modifications. Some (1+) were apprehensive regarding the cost of drugs and the feasibility of long term treatment, as it could become a burden to the health system and government. As the services are being utilized by the rich and poor alike, it

may become a financial burden for NRHM and may eventually have to be stopped.

Most (4+) of the community members also believed that the programme will continue without interruption. ASHAs (4+) also felt that this will be a continuous programme. Some (1+) of the PHC machinery and the PROs have some apprehensions regarding the sustainability.

“This programme will definitely go on as Diabetes and Hypertension need continuous control and long term follow up” (MOV02-Medical Officer)

“It is a huge burden on the Government. Impossible to supply medicines to all people (APL and BPL), so I am not sure whether Government is capable of going on like this. Impossible to conduct camps regularly” (MOP05-Medical Officer)

3.6. Community perceptions regarding the programme and its implementation and ASHA

- ✓ Community welcomed the programme wholeheartedly (4+)
- ✓ Requested it should be an ongoing programme (4+)
- ✓ Majority (3+) of the beneficiaries though not aware of the name ‘ASHA’; were aware of the workers and knew them by their names
- ✓ Nearly all (5+) – ASHA does her work earnestly and sincerely
- ✓ Most (4+) – ASHA is acceptable person to deliver community services

Most of the ASHAs were educated up to 12th standard and were working with voluntary agencies or were doing voluntary work and so they were familiar to the community. There was no problem in their acceptance and the community stressed their need. They are a part of the community and could gain their confidence within a short time.

“She is like our daughter; she visits me often, enquires about my drug intake and brings me when it is over. We can call her any time, because she lives nearby and I wish if she could check my BP and then I could avoid going to hospital for checkup. She gives us Packet drink (ORS) for vomiting or loose stools.” (A212-an elderly community member)

Table 3 – Opinion regarding the programme.

	Community	ASHA	Health workers	PRO	Medical Officers
Good	3+	3+	3+	3+	3+
Good but to be improved	1+	1+	1+	1+	1+
Not very useful	<1+	0	<1+	<1+	0
Difficult to commend	<1+	<1+	<1+	<1+	1+
Not good/burden	0	0	0	0	0

“At least we are getting medicines regularly from the sub-centers. ASHA comes home and remind me of the camp on the day before the camp, she also enquires whether I take the medicines regularly or not. When there is somebody to remind us or asks in between, we will definitely take the medicine. ASHA reminds my wife to give me medicines regularly.” (FGD-Community) All most all were of the same opinion.

“Just because she (ASHA) was there, I could attend the camp and now I am taking the medicines regularly”. (P208-A community member)

3.7. Suggestions for improvement

3.7.1. Medical Officers

1. All medical officers should be motivated and everybody should have a written guideline of the programme so that there will be more clarity and uniformity in implementation.
2. Survey findings should be communicated to the medical officer to enable him to pass on the benefit to society by giving special attention and advice to high risk individuals.
3. Follow up camps may be managed at the sub centre level by JPHN and ASHA and a special clinic for NCD may be conducted on a fixed day once or twice in a month as is already being done by some PHCs.
4. The choice of medicines may be widened as people wanted medicines for cholesterol, CAD etc. As the prevalence of diabetes was very high, Insulin may also be stocked in the PHCs for use in uncontrolled diabetics, which would help in better control without much financial burden to the patient.
5. Medicine like Frusemide and Aspirin seemed slow moving; their number in the stock may be reduced so as to avoid wastage. It would be of great help to many if Amlodipine is also included in the kit. Enalapril may be replaced with Amlodipine.
6. The PHC labs should have the facility to check plasma sugar so that uncertainties regarding glucometer values can be clarified at the PHC level itself.

3.7.2. Block Coordinators, HSs, HIs, JHIs and JPHNS

1. Uniformity in implementation should be ensured
2. Equipments should be made available and their quality should be ensured
3. Training at intervals helps in motivation and knowledge up gradation.
4. Choice of drugs in the ASHA kit may be widened.
5. Vitamins tablets may be included in the ASHA kit as there is widespread demand from Diabetics.
6. Everyone should be well aware of their responsibilities and a proper team work should be ensured by the medical officer.

3.7.3. ASHA

1. Needed more training about NCDs (risk factors, normal values of blood sugar, and blood pressure) to take anthropometric measurements, Blood pressure and blood sugar, and also basic information about drugs in ASHA kit.

2. Follow up regarding drug intake can be done by ASHA, and camps can be conducted in the area of each ASHA to enhance the coverage of screening. Once the screening is completed; follow up camps may be conducted at sub centres.

4. Discussion

The objective NRHM is to provide accessible, affordable, accountable, effective and reliable health care, especially to the poor and the vulnerable sections of the population in rural areas. Prevention and control of communicable and non communicable diseases including locally endemic diseases are one among the many goals of NRHM. ASHA is one of the major strategies under NRHM to reach out to the rural people. ASHA will be the first portal for any health related demand of deprived sections of the population, especially women and children, who find it difficult to access health services. The community welcomed the programme wholeheartedly when it was launched in December 2008. At this point of time (after a year of its launch) the programme has almost achieved its short term goal of sensitizing the community. But long term follow up and drug intake is the key to control of NCDs, and the programme would need fine tuning. An evaluation at this point by qualitative techniques to bring out the strengths and weaknesses and assess the community's perception seemed relevant. An independent external body could do this in an unbiased manner and the observations would help, in improving the programme as well as in, more meticulous planning, before widespread implementation.

4.1. Unique features of the programme

4.1.1. Quick service delivery

No time was lost after the launch of the programme. Training programmes, acquisition of logistics, conduct of the survey, conduct of the camps, everything was very quick, or without any lag or inactive period. The medicines could be stocked before the start of the camps; and so authorities were able to distribute the medicines from the first camp itself. Thus the confidence of the community could be easily achieved.

4.2. Omnipresent Block Coordinators & ASHAs

Optimum utilization of a person outside the existing health system such as the Block Coordinators and ASHA, in a rejuvenating fashion, is unique to this programme.

4.3. Acceptance in the community

Unlike other programmes, the community received the programme wholeheartedly. There was little opportunity for the cynics and skeptics to carry negative propagandas.

The programme helped to increase the confidence of common people in the health system. Both the rich and poor utilized the programme and this changed the common concept that government hospitals are for the poor only. More people had their disease status under control, as the ASHAs visited them and ensured drug intake. People became more

aware about the NCDs and the need to control it. Many more persons have shown interest in screening.

It rejuvenated the existing public health care system, which was lethargic, monotonous and insensitive to people's needs. The social status of JPHNs and JHIs improved as most people with Diabetes and Hypertension started attending the subcentres. The rush in the general Out Patient Department decreased and Medical officers could give more time and care to other diseases.

Medical Officers; even though they were very busy, was interested in the programme as it had continuous supply of medicines.

4.4. ASHA workers

The NCD programme made the community aware about ASHA. They started getting the recognition and respect they never before had. Most people started to see ASHA as part of the health care system and gave them respect. Even though they work without fixed salary; they considered the acknowledgement and respect they get as their reward.

5. Conclusions and recommendations

Programme was successful as a pilot programme, but needs modification before large scale implementation. The small gaps in the implementation are mainly due to lack of clarity among the planners and implementers. Overall the programme made a very positive response in the community and the health system. At the community level the programme helped to increase the confidence of common people in the health system. The PHC machinery was well utilized by the programme in terms of manpower and resources. The programme rejuvenated the existing public health care system. The social status of JPHNs and JHIs improved due to this programme. Most people started to see ASHA as part of the health care system and respected them. The subcentre regained its importance and became an active health care delivery point at the grass root level. More people had their disease status under control, as the ASHAs visited them and ensured medicine intake. As most people with Diabetes and Hypertension started attending the sub centres, the rush in the general Out Patient Department decreased and Medical officer could give more time and care to other diseases. Role of Block Coordinators and ASHA in this programme is very vital and they worked selflessly with enthusiasm and the programme could enhance their self esteem.

Screening to identify high risk individuals and correctional measures can be incorporated into the programme. A model for community level intervention of non communicable disease has emerged and insights from the study could be used for fine tuning of the programme before widespread implementation.

6. Limitations of the study

This study had the potential limitations of any rapid appraisal procedures (RAP) both intrinsic to the methodology and

extrinsic for the purpose of generalization. The problems are primarily related to the accuracy of information, representative nature of the respondents and their responses, cultural inappropriateness, subjectivity of the investigators leading to a bias in the interviews and subsequent interpretation of data. The study was begun earlier than would have been appropriate for evaluation, as the programme was only just 8 months into its beginning.

Conflicts of interest

All authors have none to declare.

Acknowledgements

CERTC Medical College Trivandrum, Funding from NRHM.

REFERENCES

1. World Health Organization. *Action Plan for the Global Strategy for the Prevention and Control of Noncommunicable Diseases: World Health Assembly Document*; 2008. <http://www.who.int/nmh/Actionplan-PC-NCD-2008.pdf>. Accessed 12.06.13.
2. World Health Organization. *Chronic Diseases in Low and Middle Income Countries, Facing the Facts*; 2005. <http://www.who.int/chp/>. Accessed 12.06.13.
3. Ramankutty V, Soman CR, Joseph A, Vijayakumar K, Pisharady R. Random capillary blood sugar and coronary risk factors in a south Kerala population. *J Cardiovasc Risk*. 2002;9:361–367.
4. Hypertension Study Group. Prevalence, awareness, treatment and control of hypertension among elderly in Bangladesh and India: a multi centre study. *WHO Bull*. 2001;79(6):490–498.
5. Kutty VR, Soman CR, Joseph A, Pisharody R, Vijayakumar K. Type 2 diabetes in southern Kerala: variation in prevalence among geographic divisions within a region. *Natl Med J India*. 2000;14(6):287–292.
6. Soman CR, Safraj Shahulhameed, Ramankutty V, et al. Cohort profile: the PROLIFE study in Kerala, India. *Int J Epidemiol*. 2009;9:1–5.
7. Sugathan TN, Soman CR, Sankaranarayanan K. Behavioural risk factors for non communicable diseases among adults in Kerala, India. *Indian J Med Res*. 2008;6(127):555–563.
8. Grundy Scott M, Howard Barbara, Smith Sidney, Eckel Robert, Redberg Rita, Bonow Robert O. *Diabetes and Cardiovascular Disease: Executive Summary: AHA Prevention Conference VI, Conference Proceeding for Healthcare Professionals from a Special Writing Group of the American Heart Association*. 2002;vol. 105:2231–2239. <http://www.circulationaha.org>.
9. Ghaffar A, Reddy KS. Burden of non-communicable diseases in South Asia. *BMJ*. 2004;328(7443):807–810.
10. John Ovretveit. *Evaluating Health Interventions: an Introduction to Evaluation of Health Treatments, Services, Policies and Organizational Interventions*. Open University Press; 2000. ISBN: 13: 978–0335199648.
11. World Health Organization. *Evaluation of Psychoactive Substance Use Disorder Treatment: Workbook 4: Process Evaluations*. WHO/MSD/MSB 00.2e. World Health Organization; 2000. http://www.emcdda.europa.eu/...cfm/att_5866_EN_4_process_evaluations.pdf.