Is Community Intervention Effective for Improving Maternal, Newborn and Child Health Care in Hard-to-Reach Areas of Chin State, Myanmar?

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To tackle the maternal, newborn and child health (MNCH) care needs is a challenging situation in remote and hard-to-reach areas. Intervention activities focusing on strengthening community health care network through community participation and supporting Basic Health Staffs for MNCH services have been implemented in Kanpetlet and Paletwa townships since 2014. A community-based, pre-test, post-test study was done in 2017 to compare the knowledge and practices of mothers on MNCH care after the community intervention and the challenges during the intervention. Face-to-face interviews with mothers of children under 2 years and key informant interviews with responsible providers and in-depth interviews with volunteers were conducted. A total of 291 mothers participated in the end-line assessment. Higher proportions of mothers from end-line than baseline had correct knowledge on number of ante-natal care needed (44.9% *vs.* 67.3%, p<0.01), knew more than 2 danger signs regarding ante-natal (47.5% *vs.* 94.9%, p<0.001) and post-natal (40.2% *vs.* 55.1%, p<0.05). More mothers received their first ante-natal care within first trimester (38% *vs.* 74%, p<0.01), received delivery with skilled birth attendants (50% *vs.* 85.5%, p<0.01), post-partum and newborn care services (14.1% *vs.* 74.2%, p<0.01). Considerably higher proportion of mothers from end-line used contraception (43.2% *vs.* 55.3%, p<0.05) and many of them received contraceptive service from voluntary health workers (7.7% *vs.* 51.9%, p<0.01). More than 77% of mothers were aware of village health committee (VHC) and 65.6% had received health education from them. Responsible township health officers acknowledged the improvement in immunization coverage and increased referral from the villages because of community intervention.

Keywords: Maternal, Newborn and child health, Community intervention, Hard-to-reach areas

INTRODUCTION

Globally, the health of women, mothers and children is fundamental to development of the country. Hence, under 3MDG's (3 Millennium Development Goals) activities, maternal, newborn and child health (MNCH) is the largest component covering maternal, newborn health, child health, immunization, nutrition and health promotion. The focus of investment was to support township health planning and service delivery aiming to scale-up and strengthen access to health services. The maternal mortality ratio (MMR) in Myanmar is 282 deaths per 100,000 live births which is the second highest among ASEAN countries. According to 2014 census, around 2,800 women die during pregnancy or childbirth every year. Infant mortality rate is 62 per 1,000 live births,

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compared to 25 in Cambodia and 11 in Thailand. Among different States and Regions of Myanmar, highest MMR of 357 is seen in Chin State showing geographic disparity in maternal mortality when comparing to national average.[1] Furthermore, according to Public Health Statistics Report (2014-2016), Kanpetlet and Paletwa Townships were included in the twenty townships needed for maternal health intervention.[2]

To tackle the MCH care needs of communities in hard-to-reach areas of Chin State, with the support of 3 MDG, International Rescue Committee (IRC) has designed a maternal and child health program in partnership with Township Health Department and local NGO. Working in partnership with State and Region Health Departments under the Ministry of Health and Sports, the program is supporting the work of Basic Health Staff (BHS). Besides support to facility-based healthcare services, the fund is also providing significant financing for community-based health care work by supporting Community Health Workers (CHW) and Auxiliary Midwives (AMW) for identifying the need for an emergency referral.

Strengthening local capacities to improve MNCH was launched in 2010 across 100 villages in Southern Chin State up to 2013 by European Union fund. Starting from 2014, with support of 3 MDG fund, it was expanded to the whole townships of Paletwa and Kanpetlet in Southern Chin State. Project interventions were supporting BHS for MNCH activities, training of CHWs, AMWs and Village Health Committee (VHC) for raising awareness of community and emergency referral. Implementation of community health prevention and behaviour change communication (BCC) activities was done in collaboration with BHS.

Previous community intervention studies have documented the successful application of various strategies including BCC in promoting maternal, newborn and child health care.[3-7] The BCC strategy has been used to implement advocacy, communication and social mobilization activities in order to increase knowledge and utilization of health services for improved maternal and child health outcomes of the target population.

According to the project design, midwives (MWs) and supportive staff have to conduct individual support supervision visits to each village focusing on early detection and timely referral of MCH cases, health education and community mobilization for health promotion. CHWs/AMWs are also participating in MW outreach and health education actions not only as part of hands-on training but also for strengthening the linkages between CHWs/AMWs/VHCs and MWs, and health facilities. BHS and IRC programme staff carried out continuous support activities for CHW/AMWs, which foster sustainable capacity and improve the quality of services. With the aim of determining progress of the project in the communities by comparing with the baseline assessment which was carried out in 2015,[8] an end-line assessment was carried out during September and December 2017.

MATERIALS AND METHODS

Study design and study population

A community-based, pre- and post-intervention study was conducted applying both quantitative and qualitative methods at Kanpetlet Township and Paletwa Township, Southern Chin State. Baseline assessment was carried out in 2015 and end-line assessment was conducted during September-December 2017. Study population included mothers of less than 2 years old children and health care providers.

Inclusion criteria

Mothers of under 2 years old children who are staying at least 2 years at the study township

Exclusion criteria

Mothers of under 2 years old children who were moving into the study township after delivery of the index child. Participants

included in the qualitative assessment were responsible providers from public sector, focal persons from international and local non-governmental organizations, volunteers and VHC members.

Intervention components and process

Program intervention activities were supporting BHS for MNCH activities such as providing travel expenses to attend monthly meeting, financial support for meeting with VHC, outreach and supervision support; revitalizing village health committee, and training of CHWs, AMWs and VHC for raising awareness of community and emergency referral. In particular, CHWs, AMWs and VHCs were trained under the leadership of Township Health Officer and BHS regarding the danger signs and need of emergency referral to implement community health prevention and behavior change communication (BCC) activities in collaboration with BHS.

A process called Accountability, Equity, and Inclusion (AEI) practice cycle was also conducted as a series of meetings between BHS, VHC and local NGO. It is applied to identify the gaps in MNCH care after discussions have been made between local NGO, BHS and VHC thereby aiming for improving MNCH care. AEI cycle was carried out as the step-by-step approach aiming to recognize challenges, search for the solutions and make final decision after discussion with focal person from public sector.

Sample size and sampling

Sample size was calculated considering a difference in proportions of mothers on knowledge about danger signs before and after the intervention as 25% (50% before intervention and 75% after intervention). Therefore, total number of mothers needed in each township would become 140 for 95% confidence level, power of 80%, design effect of 2, and non-response rate 5%. Cluster sampling was applied to recruit the required sample size. At each township, seven villages were randomly chosen considering to include from different geographical areas and after excluding the no-go zones and conflict areas. At each selected village, a total of 20-25 eligible participants were recruited. A total of 12 qualitative interviews were done by using purposive sampling.

Data collection

Training of interviewers was done at Department of Medical Research before field data collection. Using a pre-tested, structured questionnaire, face-to-face interviews were conducted with mothers of under two years old children by well-trained interviewers. In some villages, interviews were done with the help of trained translators. Outcome measures for quantitative assessment were knowledge and practice of mothers on antenatal, delivery and post-natal period. Key informant interviews (KIIs) with responsible service providers and in-depth interviews (IDIs) with volunteers and VHC members were also carried out using the guidelines. Confidentiality of the participants' information was ensured.

Data management and analysis

Data entry was done using EpiData-3.1 and analyses were conducted using SPSS version 20. Descriptive statistics were shown as frequency and percentage for categorical variables and as mean or median for continuous variables. Comparison of outcome measures was done using Chi square test. Manual thematic analysis was applied for qualitative information. Triangulation of the research results was done from both quantitative and qualitative information to capture the comprehensive understanding of the program.

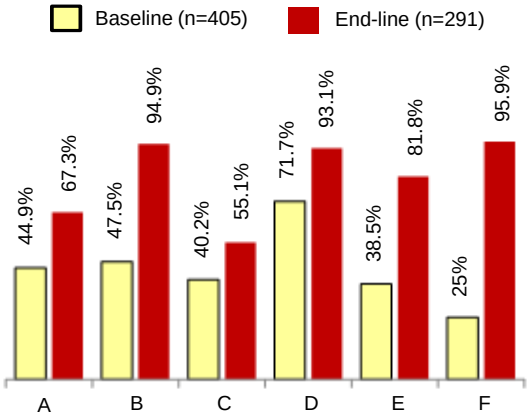
Ethical consideration

Verbal informed consent was taken from all the participants after thorough explanation about the assessment. Anonymity and confidentiality of the information were ensured using the code numbers and only investigators have accessed to the information. The study was approved by the Ethics

Review Committee of Department of Medical Research, Myanmar (Ethics/DMR/ 2017/ 159).

RESULTS

A total of 291 respondents participated in the end-line assessment. Background characteristics of the participants were not different between baseline and end-line. Age of the mothers ranged from 17 to 49 years with the mean age of 29.0±6.1 years at baseline and 29.2±6.4 years at end-line. Mean age of children were 12.9±7.4 months and 13.2±7.3 months at baseline and end-line, respectively.



A = Number of ANC
B = ≥2 ante-natal danger signs
C = ≥2 post-natal danger signs
D = Keeping baby warm
E = Keeping baby clean
F = Breast feeding

Fig. 1. Proportions of mothers having correct knowledge on antenatal, delivery and newborn care at baseline and end-line

Figure 1 illustrates the proportions of mothers having correct knowledge on antenatal, delivery and newborn care at baseline and end-line. Significantly higher proportions of mothers from end-line have correct knowledge on number of AN care needed (44.9% *vs* 67.3%, p<0.01), new more than >2 ante-natal (47.5% *vs* 94.9%, p<0.001) and post-natal danger signs (40.2% *vs* 55.1%, p<0.05). Similarly, more mothers from end-line have correct knowledge on newborn care such as keeping baby warm (71.7% *vs* 93.1%, p<0.05), keeping baby clean (38.5% *vs* 81.8%, p<0.001) and breast feeding (25.0% *vs* 95.9%, p<0.001).

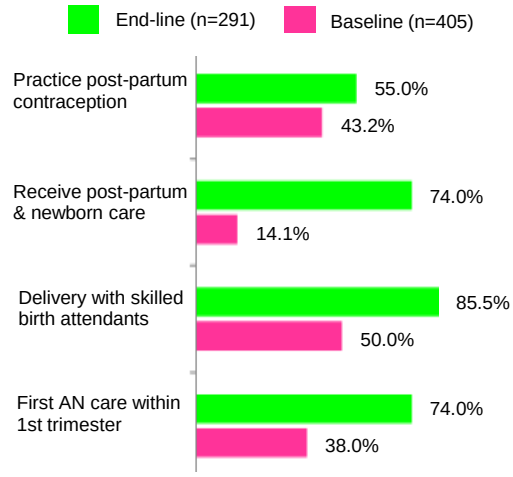


Fig. 2. Practice of mothers regarding antenatal, delivery and post-natal care at baseline and end-line

Practice of mothers regarding antenatal, delivery and post-natal care at baseline and end-line is shown in Figure 2. Considerably higher proportion of mothers from end-line received their 1st AN care within first trimester (38.0% *vs* 74.0%, p<0.01), delivered with skilled birth attendants (50.0% *vs* 85.5%, p<0.01), received post-partum and newborn care (14.1% *vs* 74.0%, p<0.001), and practiced post-partum contraception (43.2% *vs* 55.0%, p<0.05). Many of them received contraceptive service from voluntary health workers (7.7% *vs*. 51.9%, p<0.01).

Table 1. Proportions of children immunized at end-line assessment

Characteristics	Number of eligible children	Immunization received n(%)
BCG	269	221/269(82.2)
>2 months old children		
Pentavalent & OPV		
>2 months old children	269	219/269(81.4)
>6 months old children	224	188/224(83.9)
Measles		
>9 months old children	186	134/186(72.0)
>12 months old children	134	111/134(82.8)
>18 months old children	77	64/77(83.1)

As shown in Table 1, over 80% of children received BCG, pentavalent and measles immunization according to their age.

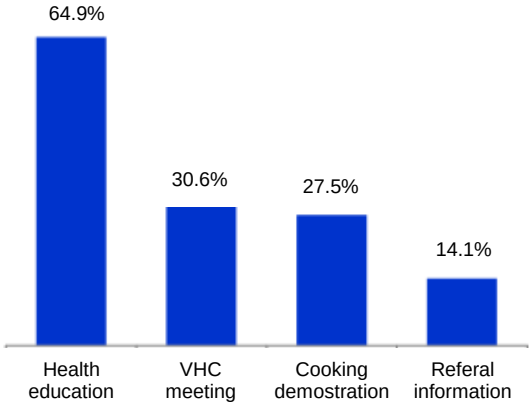


Fig. 3. Activities of village health committee attended by mothers from end-line assessment

Activities of village health committee (VHC) attended by mothers from end-line assessment such as health education, VHC meeting, cooking demonstration and meeting on referral information are described in Figure 3. Commonest VHC activity attended by mothers was health education (64.9%) which was followed by VHC meeting (30.6%), cooking demonstration (27.5%) and referral information (14.1%). Village health committees were strengthened and health volunteers were actively participated in MNCH care. They could identify the risk mothers and referred them for delivery at health facility, and help in nutrition promotion.

Information from qualitative assessment

Providers' perspective on scope and coverage of the intervention, and challenges during implementation

During key informant interviews and in-depth interviews, focal persons from public sector acknowledged the achievement of MNCH project especially on the success of immunization coverage and referrals from the villages. With the support of IRC, midwives from each RHC could attend monthly meeting at Township Hospital. Therefore, MWs could carry back the immunization boxes which could able to enhance the immunization programs at the villages. Revitalization of the village health committees (VHC) was another major achievement of the program. VHC members actively participated in the MNCH care as well as environmental sanitation. Promotion of community participation is also achieved through VHC activities. Another important achievement was establishment of emergency fund at each village run by VHC.

Some of their responses during the interviews were as follows:

"IRC give travel support to all midwives, so they could attend the monthly meeting at Township Hospital. Then, they could carry back the immunization boxes. It helps to improve EPI coverage. In the past, EPI coverage is about 70%. Now, it becomes 90%. This is the main success of the program…"

(Focal person, public sector)

"In the past, EPI (Expanded Program of Immunization) was carried out in only 19 villages. After initiation of the MNCH project, we could cover the whole township for EPI…"

(Focal person, local NGO, Kanpetlet)

"…AEI practice cycle is useful and also successful. We like the process as it could help in negotiating the gaps between community and BHS"

(Focal person, local NGO, Paletwa)

"…Community participation is improved. In the past, villagers were not willing to help the midwives for carrying immunization box. Now, it's good that volunteers are helping the MWs for immunization …"

(Focal persons, local NOG, both townships)

"Establishment of 'emergency fund' led by VHC is successful. In some villages, they have about 10 lakhs …"

(Focal person, local NGO, Paletwa)

Besides achievement, service providers also highlighted the challenges and difficulties they have faced during different stages of the program implementation. Challenges they mentioned were:

- Limited human resource in public sector
- Language barrier in some rural areas
- Presence of restricted areas
- Difficulty in communication which hinder the preparation of activities
- Absence of communication channel like telephone to monitor village health volunteers
- Very sparse situation of villages
- Weakness in volunteer reporting system
- Attrition of volunteers in some villages

DISCUSSION

Community intervention approach significantly improved the knowledge and practice of mothers on maternal and newborn health care as well as strengthened the community health care network through community participation. Furthermore, revitalization of village health committee and using volunteer health workers was beneficial and suitable especially in hard-to-reach areas. Applying Accountability, Equity, and Inclusion (AEI) practice cycle could also identify the gaps in MNCH care and able to recognize the challenges and search for the solutions. Such kind of approach seems effective since all concerned people included in the process which could enhance the community participation and ownership.

Application of different intervention strategies have been documented in previous studies showing improvements in MNCH care as well as challenges faced by the implementers.[3-7,9,10] In Vietnam, assessment on MCH handbook intervention was done and challenges were identified. Although MCH outcomes were improved, weakness in recording handbook by mothers as well as provider was seen as a challenge.[4] In Kenya, assessment was done to see the MNCH outcomes after using monitoring and tracking tool for community health volunteers. After using the tool, volunteers could able to plan their activities and workloads, identify requirements of beneficiaries for MNCH care. Voluntary health workers acknowledged the usefulness of the tool and MNCH outcomes were also improved.[9] A community-based randomized controlled trial conducted in rural Ethiopia documented the role of mobile health intervention. The study showed that improved MCH outcomes were achieved with the use of mobile phone equipped with short message service linking community health workers to health centers.[10]

In achieving reduction of maternal mortality, improved knowledge and practice of mothers is essential since most maternal deaths occurred during delivery and immediate post-natal period. Successful outcomes in current study were improvement in knowledge as well as practice of mothers regarding MNCH. Specifically, knowledge of mothers on AN care, danger signs during pregnancy, delivery and postpartum were improved at end-line. In addition, more mothers from end-line received AN, delivery and PN care services than baseline. These showed the positive outcomes from community intervention at the townships which need maternal health intervention.

These findings are also consistent with a review done in 2015 to assess the effectiveness of community-based intervention packages in reducing maternal and neonatal morbidity and mortality. According to the review, community-based intervention packages had provided the encouraging evidences of the interventions in reducing morbidity for women, morbidity and mortality for babies through a range of community health workers and health promotion groups. It was also shown that community-based interventions also improved the uptake of immunization and other health care seeking practices.[11]

Another major achievement of the current MNCH project was increased immunization coverage in both townships as mentioned by the responsible public providers. Supporting

midwives to attend the monthly meeting could enable them to carry back the immunization boxes thereby increasing the immunization coverage at remote areas where routine immunization was impossible. All the focal persons from public sector and local NGO acknowledged the success of immunization coverage after initiation of the project although it was still lower than national average.

Successful MNCH outcomes were achieved along with the improvement in community participation. It was also linked with the revitalization of village health committees (VHC) and establishment of "emergency fund" at the villages. As part of community intervention, village health committees were strengthened to help mothers for emergency referral, nutrition promotion, emergency fund raising and health education. However, sustainability of these VHCs and their activities after the project remained as a challenge.

There were certain limitations which should be acknowledged. First of all, at the time of data collection, the survey team could not get access to some villages from conflict and very hard to reach areas and we could not know the situation of mothers from these areas. Therefore, findings from current assessment reflect only to the areas which are free from these constraints. Secondly, there was a limitation in communication at some areas due to language barrier though trained translators were used to help for interviewing the participants. However, these limitations were overcome by including villages from different geographical areas and providing detailed explanation about the questionnaire to the translators.

Besides achievements, there were challenges in different stages of the program implementation. Limited human resource in public sector, presence of restricted areas, communication difficulty hindering the preparation of activities and language barriers were the major challenges as identified by the local implementing partners. Practical and sustained ways should be identified and implemented for maintaining achievement in immunization coverage. Ways and means for the sustainability of the village health committees, volunteers, emergency referral fund and community mobilization should be considered as to maintain the achievements in MNCH care. Strengthening of the linkage between BHS and VHC is also recommended.

Competing interests

The authors declare that they have no competing interests.

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