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Title page

Utilization of services provided by village based ethnic minority midwives in Vietnam: lessons from Implementation Research

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Abstract

Background: Global progress in reducing maternal mortality requires improving access to maternal and child health services for the most vulnerable groups. This paper reports results of implementation research which aimed to increase the acceptability of village-based ethnic minority midwives (EMMs) by local communities in Vietnam, through implementing an integrated interventions package.

Methods: The study was carried out in two provinces in Vietnam, Dien Bien and Kon Tum. A quasi experimental with pretest-posttest design was adopted, which included 6 months of intervention implementation. The interventions package included introductory 'launch' meetings, monthly review meetings at community health centers, and 5-day refresher training for EMMs. A mixed methods approach was used, using both quantitative and qualitative data. A structured questionnaire was used in pre-test and post-test, complemented by in-depth interviews and focus group discussions with EMMs, relatives of pregnant women, community representatives and health managers.

Results: Introductions of EMMs to their local communities by local authorities and supervision of performance of EMMs, had contributed to significant increase in utilization of services provided by the EMMs, from 58.6% to 87.7%. Key facilitators included information on how to contact EMMs, awareness of services provided by EMMs, and trust in services provided by EMMs. The main barriers to utilization of EMMs' services, which may affect sustainability of EMM scheme, were low self-esteem of EMMs, and small allowances to EMMs which also affected the recognition of EMMs in the community.

Conclusions: Continuous support and integration of EMMs within frontline service provision and ensuring adequate local budget for monthly allowances are the key factors which should allow sustainability of the EMM scheme and continued improvement of access to maternal and child health care amongst poor ethnic minority people living in mountainous areas in Vietnam.

Key words: human resource for health, village based midwifes, ethnic minority midwifes, maternal health, Vietnam, Asia, implementation research

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Background

Global progress in reducing maternal mortality requires enhancing and incorporating effective midwifery services within primary health services, complemented by timely, competent and efficient referral to hospital care. Interventions need to be targeted towards the most vulnerable groups such as rural and poor populations, ethnic minorities and other under-privileged groups.[1] In resource-constrained settings, trained midwives are desperately needed for areas with extreme health needs[2], and many countries implement innovative strategies to improve access to maternal health services.[3] Questions, however, are raised about ways of ensuring the sustainability of such schemes.[4] In Vietnam, there are 52 vulnerable ethnic minority groups, comprising 13.3% of population. About 91.5% inhabit rural and mountainous areas, live in relative poverty and have low levels of education.[5] Low utilization of maternal health care among ethnic minority groups has been highlighted in several studies. The risk of not giving birth in a health facility among ethnic minority women in 2012 is nearly 20 times higher than among women of majority ethnicity.[6] Disparities in access to safe maternal services are likely to increase over time[7], and therefore need urgent attention.

Research shows that childbearing practices within ethnic minority groups are highly influenced by cultural values and beliefs. Cultural traditions and local customs can constrain the utilization of maternal health care.[8] Modern health care provision in Vietnam is less culturally-adapted to ethnic minorities. This is because most health staff are Kinh, the majority ethnic group, who rarely speak local languages and often do not understand traditions and values of ethnic minorities. Negative attitude and discrimination by health staff discourage women from ethnic minorities to seek healthcare.[9] These intrinsic and contextual factors are inter-linked and constitute a complex web of influences, which determines the low accessibility of maternal healthcare by the ethnic minority groups.[10]

To respond to these challenges and improve utilization of maternal services among ethnic minorities, since 2012 the Ministry of Health in Vietnam has been scaling up the scheme of recruiting and training village-based ethnic minority midwives (EMMs). [11] In this scheme, young (under 35) ethnic women, nominated by their communities, participate in a 6-month training program on midwifery which includes attending at least 20 deliveries under the supervision and mentorship by experienced midwives. Afterwards, the newly-trained EMMs are expected to return to their villages to provide free maternal and neonatal counseling, antenatal check-ups, assist normal deliveries at home, provide postnatal and new-born care, "first aid" for complicated deliveries and referrals to a community health center or a district hospital.[11]

Similar schemes, targeting hard-to-reach areas were implemented elsewhere, for example in Mali, Somalia and Sudan.[3] Studies suggest that many schemes faltered after initial support had ended.[4]

This paper contributes to a growing, though still limited, knowledge on experience of implementing, scaling up and sustaining such schemes, drawing on our assessment of the EMM scheme in Vietnam. We report results from implementation research[12], sponsored by the WHO, which included designing and implementing interventions package in order to improve acceptability of EMMs by ethnic minorities and ultimately improve utilization of their services. Objectives of this paper are: (1) to report changes in acceptability and utilization of EMM services following implementation of interventions, and (2) to identify key facilitators of and barriers to utilization of EMMs' services. We do not examine the effectiveness of the EMM services on maternal and child health outcomes, but report changes in the use of services and key factors which determine the utilization of maternal and child (MCH) care provided by the EMMs. Our results and experience should be of interest and relevance to different stakeholders in many countries who are interested in, or are in the process of, implementing innovations to improve access to maternal healthcare among vulnerable groups.

Methods

The study was carried out in 2 provinces, representing two main highland regions in Vietnam, Dien Bien and Kon Tum. A quasi experimental with pretest-posttest design was adopted, with the caveat

that because women delivered only once during the project timeframe we did not examine changes in responses of the same respondents. A pretest survey which was conducted in September 2015 and reported elsewhere[13] had informed the design of interventions package. The intervention was implemented for 6 months (October 2015- April 2016), with support from and involvement of village leaders, commune health workers, district and provincial supervisors. The posttest was conducted in May 2016. We now describe the study setting, and intervention and evaluation components of the study.

Study setting

The two provinces, Dien Bien and Kon Tum, were selected for their high proportion of ethnic minorities and low utilization of maternal health care services. In each province, we selected 2 districts and 2 communes within each district with all corresponding villages. A total of 31 villages from 8 communes with all EMMs (n= 31), were included in the study.

Intervention component

Integrated package of interventions included three elements: 'launch' meeting to introduce EMMs in their respective villages, EMM monthly performance review and supervision meetings with staff at community health centers, and 5-days refresher training for EMMs; each set out next.

Launch meeting

In each village, an introductory or 'launch' meeting was organized by the leader or head of the village and community health workers, which involved between 30 and 60 participants including village women's union representatives, and most importantly the couples or individual women of reproductive age. These meetings were aimed to improve local knowledge of, and attitudes towards, the EMMs; and enhance perceptions of benefits of having EMMs services, thus increasing utilization of services provided by the EMMs. The costs of each meeting were 500,000 VND (about $25) which included logistics management and snacks and refreshments. Each meeting lasted between 60 and 90 minutes. After initial introductions by the village leader, the head of commune health center (CHC) introduced EMMs, updated participants on their training, and their key competencies and

responsibilities. An EMM then introduced herself, reiterating the services they can provide and how she can be reached. The district health center representative, head of the village, and women's union representative then each provided further information about the benefits of the scheme. Following subsequent answers to participants' questions, meetings were usually concluded with some entertainment activities.

Monthly review and supervision meetings with community health center staff

The monthly CHC meetings were aimed to improve EMM services (number / types / quality) and enhance their job satisfaction. The meetings during the intervention period included EMM, health center leadership and staff, representative of district health center (attended bi-monthly) and provincial reproductive health center (attended once).

During these meetings, an EMM reported and reflected on the activities conducted during the past month in her village to a midwife at CHC who supervised EMM work in each province. Where required, the information was triangulated with reports from the midwife and other village health workers. The subsequent discussion was then aimed to provide further guidance to EMM by the midwife and head of CHC, and agree the plan for next month.

Refresher training

All EMMs received 5-days refresher training on postnatal and new-born care, to improve their competencies and confidence in providing services. The training was designed by the Department of MCH of the Ministry of Health and conducted by the Provincial Reproductive Health Center under the National Targeted Programme for Health.

Evaluation component

Sampling

We adopted a mixed methods approach, combining quantitative and qualitative data collection and analysis. Quantitative data was collected using a structured questionnaire with pregnant mothers, to determine utilization of services provided by EMMs and key influences on this utilization. All mothers in EMM's villages with an infant under 12 months (during pre-test) or less than 6 months (in

post-test) were invited. The response rates were 91.4% and 96.6% in pre-test and post-test, respectively. Data from 244 mothers in the pre-test and 236 of mothers in the post-test, who knew about EMM, were included in the analysis. These sample sizes were calculated based on single proportion sample size formula with level of confidence of 95%, sampling error tolerated 4%, proportion (P) of women who use any EMM services was 50% in pre-test and 58.6% in post-test (recalculated using result from pre-test), and design effect of 2.

Qualitative data was collected, using in-depth interviews (IDIs) and focus group discussions (FGDs), to understand stakeholders' views on determinants of performance and acceptability of EMMs. Key informants who were involved in training, supervision and other support for EMMs at provincial, district, and community levels were purposively selected. These included: (1) EMMs; (2) mothers-in-law and husbands of women having child under 1-year (who accompanied women to CHCs, in consideration that women already spent significant time completing structured questionnaire); (3) village leaders, village health workers, women representative in the village; and (4) health managers at commune, district, and provincial levels. In total, 10 IDIs and 17 FGDs were conducted during both pre-test and post-test.

Study variables

A structured questionnaire was developed and used in pre-test and post-test, which included questions on socio-demographic characteristics, knowledge and attitude about EMMs' services and utilization of services provided by EMMs. Socioeconomic characteristics included variables on age, ethnicity, educational level, household economic status (poor or non-poor, using government poverty threshold of monthly household income of 400,000 VND/US$ 20), road condition surrounding residence, and distance to a nearest health facility. Knowledge about EMM services included knowing that EMM was trained, and how to reach an EMM whenever required. The attitude towards EMM services was measured through perceived trust in each of services provided by EMMs, which was self-rated using a 5-point Likert scale. Utilization of EMM services was defined as receiving any of the following services: counseling, receiving "first aid" for complicated case,

referral to a health facility, antenatal check-up, delivery support, and postnatal care in pregnant, intra-partum, or postnatal periods.

Detailed question guides for IDIs and FGDs were developed to aid qualitative data collection, which had the following sections: work performed by EMM and their confidence, acceptability of EMMs, facilitators and barriers in providing services in the villages, and support available to EMMs from local community authorities and health sectors.

Data collection

Data was collected by two researchers from the Hanoi University of Public Health (HUPH) and two health staff from the Provincial Reproductive Health Centers. All data collectors were trained beforehand and were female. Community health workers sent out invitation letters to all eligible respondents via village health workers or EMMs. Most mothers were interviewed at community health centers except in the two remote villages where interviews were conducted in their villages. Interviews were conducted in Vietnamese (an official language in Vietnam). For those who could not understand Vietnamese (about 3% of participants), interpretation was done by the other ethnic minority women, women village health workers, or community health workers. Completion of questionnaire took about 30 minutes.

Qualitative data collection started with three IDIs and eight FGDs in Dien Bien province during pre-test. Insights gained from previous interviews informed the subsequent interviews, including the selection of further informants. Thereafter, two IDIs and six FGDs were conducted in KonTum, using revised interview guide. In addition, researchers observed eight monthly review and supervision meetings at CHCs. Five IDIs and three FGDs were held at post-test to compare results with pre-test, and triangulate quantitative post-test results. Each IDI or FGD lasted 45–60 minutes. All IDIs and FGDs were audio-recoded, following informed consent. All IDIs and FGDs during pre- and post-test were transcribed and analyzed by two researchers from HUPH, using Thematic Framework Approach[14].

Data analysis

Quantitative data was entered using EpiData and double-checked before cleaning and analysis using SPSS v20. Due to small number of EMMs and participants in each province, we are not able to compare and analyze the data by each province. To test for differences between pre-test and post-test, Chi-Square test and independent sample t-test was applied. Multivariate logistics regression using Enter method was applied to identify factors associated with using any EMM services. The adjusted odds ratio and 95% CI were estimated using the logistic regression coefficient. The goodness-of-fit of the model was assessed using the Hosmer–Lemeshow statistics. All statistical tests were two-sided and considered significant at $p<0.05$.

Qualitative data was analyzed using Thematic Framework Approach which includes stages of familiarization, development of coding framework, mapping and interpretation.[14] The coding framework was developed from topic guides, study objectives, results from quantitative analysis, and themes emerging from the data. All transcripts were coded, data charts were developed for each theme, and these charts were used to describe the themes. Given the manageable volume of qualitative data, analysis was conducted mostly manually, and results were summarized using MindMapping software.

Results

In this section, describe respondent characteristics, followed by changes in utilization of EMM's services and key determinants of this utilization.

Insert Table 1 here

As shown in Table 1, distributions of mother's age group, and distance to the nearest health facility were significantly different between the pre-test and post-test. Compared to pre-test, in the post-test, there were more participants in Dien Bien than in Kon Tum, more participants under 20 years old and those living further than 5 km from a nearest health facility. All other socioeconomic characteristics were similar. Changes in utilization of EMM's services

Figure 1 compares utilization of services provided by EMMs between the pre-and post-test.

Insert Figure 1 here

After the intervention, the proportion of mothers who used any EMM services significantly increased from 58.6% to 87.7% ($p<0.05$). The biggest increase was identified for counseling, ante-natal check-ups, postnatal care services, and home delivery assistance. Utilization of all these services were increased by over 30%, and reached 84.3%, 70.3%, 66.9%, and 60.9% in post-test, respectively ($p<0.05$). The smaller significant changes were observed for supporting mothers with danger signs (20%; $p<0.05$). Utilization of other services (referral and support during referral) also increased, though the changes were not statistically significant.

Determinants of utilization of services provided by EMMs

Three determinants of utilization of services provided by the EMMs emerged from our analysis, which we set out next.

Knowledge of, and trust in, EMM's services

Knowledge about, and trust in, maternal health services provided by EMMs were associated with utilization of EMMs' services after adjusting for other socioeconomic variables in bivariate logistics regression and multivariate logistics regression (see Table 2).

Insert Table 2 here

Two factors were significantly associated with use of any EMM services in bivariate analysis: (1) knowledge of EMM services; and (2) being able to contact an EMM. After adjusting for other potential factors in multivariate logistic regression using Enter method, mothers who thought that they could contact an EMM whenever they needed were 4.24 times more likely to use EMM services than those who did not (aOR=4.24; CI: 2.33 – 7.69; $p<0.05$); mothers who knew about EMM's services were 1.22 times more likely to use EMM services (aOR=1.22; CI: 1.02 – 4.06; $p<0.05$).

Insert Figure 2 here

As shown in Figure 2, women's awareness and knowledge of EMM services significantly increased from pre-test to post-test ($p<0.05$), particularly in relation to knowledge of home delivery assistance

(69 to 76.5%), ANC check-ups (46 to 62%), and postnatal care (40 to 50%). The knowledge of other services such as counseling and neonatal care also increased though not significantly.

Utilization of EMM services increased proportionately with level of trust in EMM services. Mothers who scored trust in EMM services higher were 1.1 times more likely to use any EMM services than those who scored trust lower (OR=1.1; CI: 1.05 – 1.15; p<0.05). Mean of trust in all EMM services significantly increased between pre-test and post-test (3.58 vs. 3.88, respectively, p t-test for equality of means < 0.001).

Increased knowledge of, and trust in, EMMs' services were also evident in qualitative findings:

> *"[People in the village] trust me because of the monthly women's union meeting talk about me. Because of this meeting, they trust me more and I am not feeling shy in providing services at their house"* (IDI_2_KT_EMM2)

The introductory launch meetings were perceived as being particularly useful. In addition, EMM were also introduced in some other meetings such as meetings with women representatives.

EMM's confidence in providing services

During the intervention period, the monthly meetings, supportive supervision by CHC's staff and the refresher training programme provided an opportunity for EMMs to improve their skills and plan for delivery of services in the villages, which perceived by some as ultimately contributing to improved health outcomes.

> *"I want to have EMM working at the village. EMM working at the village is good for people and contributed to the work of community health centers… [which helps] provide maternal health care services better"* (IDI_2_DB_HW1).

However, qualitative results showed that not all EMMs were fully confident in providing services. This was due to their perceived lack of knowledge, skills and experience. One EMM reflected that she:

> *"…cannot do much, because of my competence, my competence is low, I am afraid of not being trusted by mothers…I don't know all of pregnant women in the village, those whom I know are*

mainly because mothers' belly is visible. Because I am a newbie, I am so embarrassed to ask if they are pregnant. I don't dare to ask directly…I am not yet married so I feel so embarrassed." (IDI_2_KT_EMM1)

In post-intervention assessment, we found that EMMs particularly lacked confidence in assisting home deliveries, and many EMMs preferred not to provide obstetric services for mothers having their first child, and instead referred women to deliver in health facilities.

Contextual factors

We found that two contextual factors determine utilization of services provided by the EMMs: distance to a nearest health facility and their allowances.

Distance to a nearest health facility was associated with using any EMM services. Table 2 showed that mothers who lived less than 5 km to a nearest health facility were 2.3 times more likely to use any EMM services than those who lived further away (aOR=2.3, CI: 1.19 – 4.46, p<0.05). Distance also forms an important determinant for EMMs' ability to attend review meetings at CHC:

"I need to visit CHC twice per month, once to participate in monthly CHC meeting, another time is for submitting my report. However, my place is quite far from CHC, about 9 km, road condition is bad, and I have difficulty to afford petrol cost" (FGD_1_DB_EMM1)

In 2013 the Ministry of Health recognized the EMMs as a health cadre[11]. EMMs started receiving monthly salary equivalent to village health workers (about USD25–30) in return for provision of services free of charge. However, payments to EMMs depended on availability of resources within the provincial budget, which meant delayed and insufficient payments. In both Dien Bien and Kon Tum, EMMs received supplementary allowances from the National Targeted Programme (about $10). Small and irregular allowances discouraged EMMs from performing their responsibilities. Their husbands and family members also objected to them continuing with their responsibilities, which led to some EMMs quitting their jobs and seeking other employment:

"My husband is angry when I am going out for work as EMM frequently. He scolds me that I go for work all day but have no money, even for buying petrol…" (FGD_2_DB_EMM2)

However, even though EMMs' services are free of charge, some people provided the EMMs with small amounts of money as an appreciation of their work or invited them to attend a ceremony of giving name to a newborn. This can build EMMs' confidence and can encourage EMMs to continue with their work.

Discussion

After the intervention, the utilization of EMM's services increased, with nearly 90% of mothers using at least one service provided by the EMMs and with the strongest increases being in assisting home deliveries and antenatal care. Similar results were reported from a similar scheme in Indonesia.[15] However, the increase in utilization of services we found in the short-term was much higher than what was found in Pakistan 4 years after the launch of a similar scheme [4] or in Indonesia, 3 years after the introduction of a scheme.[15] The different timeframes, i.e. 6 months in our case versus several years in these two studies, raise a question, and perhaps the need to sustain significant short-term gains.

A key task for EMMs was to assist women delivering at health facilities, because facility-based intrapartum and emergency obstetric care are effective strategies to save mothers' lives.[16] The proportion of home deliveries was reduced between pre-test and post-test, though it was statistically insignificant among the study population. Our findings are similar to results from other studies.[4] On reflection, two reasons may explain the modest changes. First, the intervention period was relatively short, most of EMM lacked confidence and felt they lacked skills and experience in counseling, particularly taking account of local birth culture and norms in their work[17]. Second, strong preference of home delivery needs a possible time lag before substantial changes can be observed. Better understanding of ways of improving motivation of EMMs and aligning their training and work with cultural norms of ethnic minorities is an agenda for future research to help sustain the EMM scheme.

Increase in referral rate of women by the EMMs to high-level health facilities was also found to be relatively modest. As EMMs' self-confidence grows they are likely to assist more home deliveries,

possibly leading to a reduction in the rate of referrals. The balance between potentially assistance of home deliveries and promoting facility births as a safer option, represents a question for consideration for policymakers in Vietnam, and in other countries implementing similar schemes.

Trust is a key determinant of choice of health service provider.[18] We also found that trust in EMM services represents important determinants of utilization of their services. We recognize, however, that trust is a complex phenomenon which is determined by a multitude of factors. For example, the young age and limited experience of EMMs can influence the choice of traditional birth attendants by people who rarely use health services. On the other hand, people who are familiar with healthcare, can perceive EMMs as being less competent, than nurses or fully-qualified midwives.[4,18] The need to better understand the underlying causes of (mis)trust is evident from our project, was also emphasized in similar studies, and is another area for future research.

We found that EMMs were not self-confident about their skills and expertise, which can be important contributor to trust, and ultimately utilization, of their services.

Self-confidence of health staff is an important indicator of their ability and competence[19], and can determine staff retention. In Taiwan, nearly one third of newly-graduated nurses left their first jobs within 3 months because of lack of self-confidence.[20] Although some studies attempt to understand levels of confidence across different health cadre[19] or key determinants of staff confidence[21], limited evidence exists in relation to confidence as experienced by midwives, particularly those providing services at community level such as EMMs. Investigating causes of confidence in detail was outside the scope of our study, but is an important question to address in further research.

Distance to a nearest health facility was consistently reported as barrier to the use of MCH in mountainous areas of Vietnam. The EMMs involved in our study all lived in their respective villages and provided services within a walking distance. On the other hand, the longer distances to community health centers represented clear challenges to EMMs. These, combined with limited allowances, contributed towards resistance of EMMs' families to continue with their responsibilities. There is a need to find ways of ensuring easy access of pregnant mothers to EMMs' services without

putting unnecessary strain on the EMMs themselves. Possible practical issues in resolving this include aligning the timing of the submission of monthly reports and monthly meetings, and varying location of monthly meetings, including considering meetings in EMMs' villages. It would be important, however, to remember the need to integrate the EMMs within the health system as one way of building and maintaining their self-confidence and ensuring appropriate access to peer-support.

A key question is what is the contribution of the implemented intervention to the increased utilization of services provided by EMMs. Increased utilization of EMM services clearly requires efforts from both the demand (i.e. users) and the supply side (i.e. service providers). On the *demand side*, the intervention included launch meetings in the villages. These meetings, apart from raising awareness about EMMs were also a possibility for EMMs to increase their self-confidence. The meeting costs were relatively small, compared with effects on awareness, trust and self-confidence. Replication and scaling up of similar schemes need to carefully consider required investments at larger scale. On the *supply side*, attending monthly meetings at CHCs became part of EMMs' routine.[11] Attendance of monthly meetings and submission of monthly reports faced different challenges (distance, limited allowances), raising the need to possibly align the timing of different visits to CHCs and perhaps even vary locations of such meetings, for example scheduling some meetings in the EMMs' villages.

Ensuring sustainability of community health worker schemes is important. Different countries experiment with different approaches. For example, in Indonesia and Pakistan to sustain the scheme and motivate outreach services provision, out of pocket payments for services delivery were introduced. However, in Pakistan this led to decreased utilization of services[4] and in Indonesia, midwives could not financially sustain their practices and started serving wealthier clients, effectively excluding those in greater need.[22] Increased and targeted government subsidies can alleviate such pitfalls and ensure more equitable access to quality services. However, feasibility of

such additional funding remains a challenge for many resource-constrained settings. Rapid economic developments in Asia may provide an opportunity for increased government subsidies.

Study limitations

We acknowledge the following study limitations. Our small-scale evaluation was designed without a 'control group' for comparison. Increased knowledge, change in level of trust and increasing the utilization of EMM, thus, may be altered by others factors. The age brackets of respondents in pre- and post-intervention periods were different, potentially affecting our results. Furthermore, participation of women from Dien Bien in the post-test accounted for almost two-thirds of all responses during post-test which may have also introduced respondent bias. However, more participants living within longer distances from health facilities in the post-test gives us assurance that our results were not too skewed. The total number of respondents was too small to analyze data by province, thus, limiting our ability to explain differences by province. Exploring reasons for different response rates (such as those linked to distance, or differences in the implementation of intervention) represents an agenda for a larger follow-on study. We did not explore experiences of prior pregnancies and deliveries, which may affect a woman's decision whether to utilize EMMs' services. Further studies need to consider this issue. Because interventions were developed as an integrated package, we did not aim to establish any hierarchy of intervention components. We recognize, however, that different combinations and sequence of implementation of intervention components can have varying implications on study results. Last, assessing the intervention effects on health outcomes (such as maternal mortality) was outside the scope and timeframe of this study as we focused on service utilization. Larger and longer studies can usefully explore the link between the EMM scheme and health outcomes.

Overall, considering the benefits we identified so far, we remain optimistic about the potential for the EMM scheme to improve access to MCH services to ethnic minorities in Vietnam. The three-component intervention implemented within our study provided useful insights on possible support measures to strengthen, replicate and sustain the scheme from both the demand and the supply

components. It also revealed possible adjustments that can improve the scheme, such as alignment of timing of monthly reports and meetings, and varying location of monthly reviews. Finally, we identified agenda for further research which should help evaluate, and further strengthen, the EMM scheme.

Implications for Policy and Practice

- Combination of launch meetings, monthly reviews and supervision meetings had enabled to significantly increase the utilization of services provided by EMMs in the context of Vietnam.
- Utilization of services provided by the EMMs in Vietnam is determined by knowledge of and trust in EMM services; confidence of EMMs themselves; and wider context (distance to a nearest health facility and supportive policies).
- Integrated health systems interventions, such as the three-component intervention used in this study, can help increase the uptake of services provided by EMMs and ultimately ensure sustainability of the EMM scheme in Vietnam and other similar schemes in other contexts.

Conclusion

Utilization of services provided by EMMs had significantly increased following the implementation of the three-component intervention. Key determinants of service utilization included knowledge of, and trust in, the EMMs' services, EMMs confidence, distance to a nearest health facility, and allowances provided to EMMs. Continuous support and integration of EMMs within frontline service provision and ensuring adequate local budget for monthly allowances should help sustain the EMM scheme and ensure continued access to maternal and child health care to vulnerable populations in Vietnam.

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List of abbreviations

CHC: community health center

EMM: Village based ethnic minority midwife

FGD: Focus group discussion

HUPH: Hanoi University of Public Health

IDI: In-depth interview

OR: odd ratio; aOR: adjusted odd ratio

List of Figures

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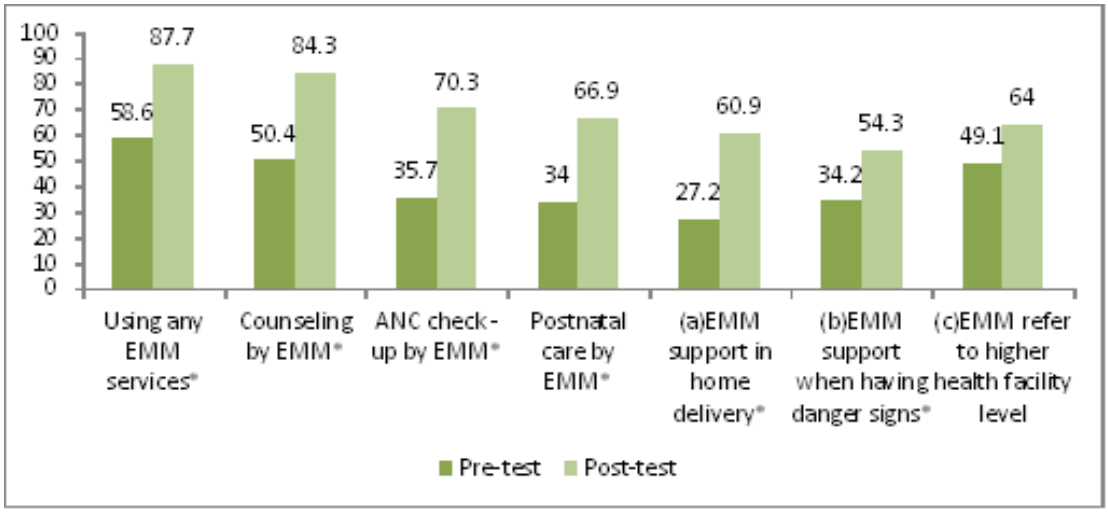
Table 1. Characteristics of the study respondents

Characteristics	Pre-test (N = 244), %	Post-test (N=236), %	p (χ^2)
Province			0.011
Dien Bien	52.5	64.0	
Kon Tum	47.5	36.0	
Age group			<0.0001
<20	13.1	26.3	
20 - 34	77.0	68.6	
>=35	9.8	5.1	
Mean	25.5 ± 5.91	23.40 ± 5.85	<0.0001
Ethnic group			
Hmong	49.2	58.9	0.081
Xo Dang, Hlang	38.9	33.1	
Others	11.9	8.1	
Educational Level			0.976
No school education	33.6	33.5	
With school education	66.4	66.5	
Household Economic Status			0.662
Poor or Near poor	82.0	83.5	
Average	18.0	16.5	
Road condition			0.052
Not difficult	74.6	66.5	
Difficult	25.4	33.5	
Distance to a nearest health facility			0.032
< 5km	75.0	66.1	
>=5km	25.0	33.9	
Home delivery			0.110
Yes	64.8	58.5	
No	35.2	41.5	
Having danger signs during pregnancy, intrapartum, and postnatal periods			0.723
No	68.9	70.3	
Yes	31.1	29.7	
Being referred to higher level during pregnancy, intrapartum, and postnatal periods			0.887
No	78.3	78.8	
Yes	21.7	21.2	

Table 2. Factors associated with utilization of any EMMs' services in Vietnam in 2015 - 2016

Characteristics	OR (95% CI)	aOR (95% CI)
Testing point		
Pre-test	1	1
Post-test	5.04 (3.17 – 8.02)*	3.41 (2.02 – 5.77)*
Province		
Kon Tum	1	1
Dien Bien	1.12 (0.74 – 1.68)	2.26 (1.09 – 4.67*)
Age		
	1	1
	0.96 (0.93 – 0.99)*	0.97 (0.93 – 1.02)
Educational Level		
No school education	1	1
With school education	1.12 (0.73 – 1.71)	1.07 (0.59 – 1.94)
Household economic status		
Poor or Near poor	1	1
Average	0.83 (0.50 – 1.40)	0.86 (0.46 – 1.60)
Road condition		
Not difficult	1	1
Difficult	1.01 (0.65 – 1.57)	0.84 (0.45 – 1.54)
Distance to a nearest health facility		
>=5km	1	1
< 5km	1.21 (0.78 – 1.87)	2.3 (1.19 – 4.46)*
Knowledge about EMM services		
	1	1
	1.43 (1.24 – 1.65)*	1.22 (1.02 – 1.46)*
Knowing that EMM has been trained		
No	1	1
Yes	2.91 (1.70 – 5.00)*	0.99 (0.48 – 2.01)
Being able to contact EMM		
No	1	1
Yes	7.92 (4.70 – 13.33)*	4.24 (2.33 – 7.69)*
Trust in EMM services		
	1	1
	1.16 (1.11 – 1.20)	1.10 (1.05 – 1.15)*
		N= 480, Hosmer-Lemeshow test χ 2 = 11.395, df = 11, p = 0.18

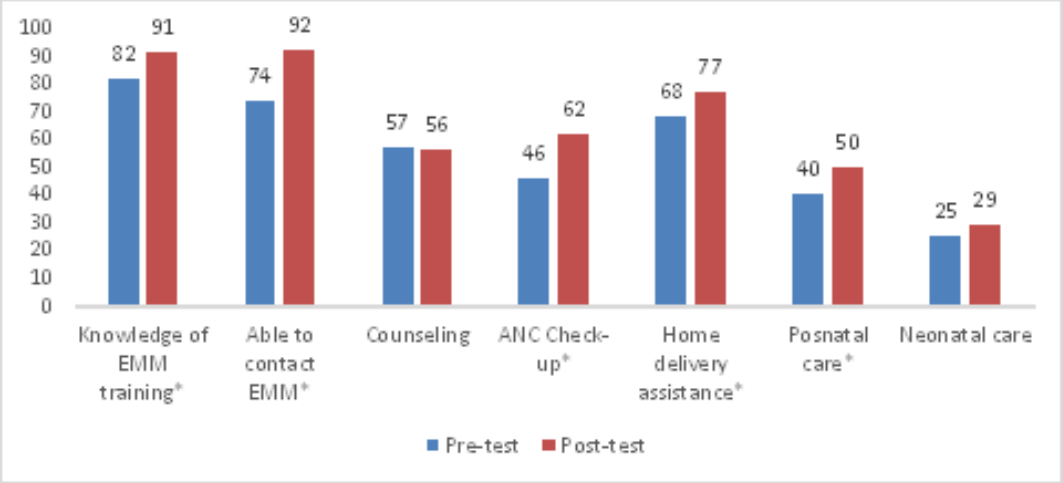
*p<0.05



(a) Among mothers delivery at home; (b) Among mothers having danger signs; (c) Among mothers were referring to higher health facility level;

* p< 0.05, significant difference between pre-test and post-test

Figure 1. Utilization of services provided by EMMs from pre-test and post-test in 2015 - 2016



(*) p< 0.05, significant difference between pre-test and post-test

Figure 2. Knowledge of EMM services from pre-test and post-test in 2015 - 2016