

## Research article

# Effect of DSF-MCHVS program on pregnant women in Myanmar: Service utilization, health and economic outcomes

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## ABSTRACT

Utilization of maternal and child health (MCH) services are still major challenges in many developing countries including Myanmar. Demand side financing maternal and child health voucher scheme (DSF-MCHVS) is one of the solutions for maternal health challenges which has been piloted in Yedashae Township, Myanmar as a 3 years pilot program since 2013. This study was to explore the effect of DSF-MCHVS program on pregnant mothers. We conducted a cross-sectional household survey. As results from survey, in terms of service utilization, receiving care with skill birth attendant (SBA) after MCHVS was significantly increased, delivery at health facilities was not significantly increased and even slightly decreased in receiving PNC. For the vaccination, there was no statistically increased. In terms of type of delivery, normal delivery decreased and caesarian session increased after implementation. In cost comparison from patient perspective, direct medical cost to get treatment only needed in delivery and there was no significantly decreased after implementation. For direct non-medical and indirect cost of ANC, delivery and PNC, there was a significant increased and for vaccination, there was no statistically significant. Awareness, satisfaction and care seeking behavior for future also described with frequency and proportion. From this study, we can estimate how MCHVS implementation can effect on pregnant mothers and can use those data for MCHVS evaluation.

## 1. INTRODUCTION

Maternal and child health (MCH) service during pregnancy, childbirth and after delivery is vital part for the survival and well-beings of both mothers and their children. Antenatal care (ANC) can reduce health risk for mothers and their children through monitoring for pregnancies and screening for complications; delivery with skill birth attendants (SBAs) can reduce complications and infections during deliveries; and timely postnatal care (PNC) can not only treat complication arising from delivery but also teach the mother how to care for herself and her child<sup>1</sup>.

Despite their importance, utilization of MCH services are still major challenges in many developing countries including Myanmar because of not accessible to quality health care services due to resource shortage, high out-of-pocket payments for MCH services and high rate of delivery with traditional birth attendants (TBAs)<sup>2</sup>. Currently, the country meets only 36% of its target for the infant mortality rate (36 per 1000 live births) and 62% for the maternal mortality rate (130 per 100 000 live births)<sup>3,4</sup>. According to demographic and health survey of Myanmar 2015-16, ANC coverage was 81%, delivery at health facilities was 37%, however 60% of delivery was with SBAs and 71% of mother and 36% of newborn received the recommended postnatal checkup within the first 2 days after birth<sup>1</sup>.

But reduction of maternal and neonatal mortality remains a major challenge in Myanmar especially in low socioeconomic status region and maternal and child health care is the priority issue in the National Health Plan. Government finds ways for maternal health challenges and implemented pilot program of demand side financing MCHVS as one of the solutions<sup>3</sup>. DSF scheme for maternal and child health services have been adopted in a number of low-income countries, e.g., Bangladesh, Bolivia, Cambodia, India, Kenya and Pakistan in recent years (2004-2010). In Myanmar, DSF-MCHVS program was implemented as a pilot program which was initiated in one of the low socioeconomic regions, Yedashae township, Myanmar on 11<sup>th</sup> May, 2013 after conducting the feasibility study by Health Intervention and Technology Assessment Program (HITAP), WHO and MOHS, Myanmar with the support of Global Alliance for Vaccines and Immunizations- Health System Strengthening (GAVI-HSS). The main objectives were to increase access to essential maternal health services and to enhance the equity in utilization of these services<sup>5</sup>.

Six months after implementation, they conducted mid-term review but did not include value for money assessment of MCHVS which is crucial and relevant for determining the future resource allocation of both the local government and international donors<sup>3</sup>. This article was part of the study of MCHVS program evaluation to explore the effect of DSF-MCHVS program on

pregnant mother in term of its service utilization, health outcomes, economic outcomes, awareness and satisfaction and care seeking behavior, .

## 2. MATERIALS AND METHODS

### 2.1. Study Design

Cross-sectional household survey analysis was conducted in Yedashae township, Myanmar to find the effect of DSF-MCHVS program on pregnant mother in that area as an individual level impact.

### 2.2. Study Population

We conducted household survey in pilot area, Yedashae township, which is situated in Bago (east) province. Total population of Yedashae township was 209,217, total delivery patients were 4,222 and ANC coverage was 91% according to 2014 data. It has one 25-bedded township hospital, 1 MCH center, 3 station hospital, 1 station health unit and 7 rural health center (RHC). Although it is not very far from Nay Pyi Taw, capital city of Myanmar which was only 40 miles away, its socioeconomic status is low<sup>6</sup>.

For household survey, we recruited 100 pregnant mothers who registered with voucher during Phase IV from 9 pilot setting area in Yedashae township which was based on 40% of voucher coverage for one month in those 9 pilot setting areas. (3 year MCHVS implementation had 4 phase: Phase I from May, 2013 to October 2013; Phase II from November 2013 to June 2014; Phase III from June 2014 to April 2015 and Phase IV from May 2015 to April 2016). As MCHVS program was a pilot program and it didn't have similar result data before this study, we only used percentage of its coverage for sample size calculation rather than using formula. For sampling technique, interviewees were recruited proportionately based on number of pregnant mother registration with voucher from each setting area to be representative for the whole township. We selected respondent randomly (i.e., interviewers picked up respondents randomly from registry book rather than taking continuously.) For example, if one setting area has 45 voucher registrations for one month, we recruited 40% of its voucher registrations (i.e, 18 interviewees) from that setting area randomly in term of one interviewee in 20 days to cover whole phase IV.

## 2.3. Data Collection Method

### 2.3.1. Structured interview of beneficiaries

Our survey questionnaire was designed to know about experiences and expenses of patients related to pregnancy and child delivery before and after implementation and intended to know about the experience and satisfaction of using MCHVS program. Questionnaire, which was modified from feasibility study of MCHVS program and mid-term review of MCHVS program, was pretested with 2 pregnant women in a nearby village who were recruited with local health authorities<sup>3,7</sup>. Based on the result of pretest, some numbers of questionnaire were revised for some difficult to understand question. We selected midwives from that 9 pilot setting area as a data collector based on feasibility and convenience and gave one day training to understand thoroughly about questionnaire. Informed consent was obtained from each respondent before asking questions. The objectives of the survey and the risks and benefits of participation were explained and let them know assurance of confidentiality.

### Data Analysis Method

For survey data, demographic information

was presented by mean with standard deviation (SD), frequency and proportion. We compared service utilization and health status of pregnant mother before and after MCHVS implementation by using McNemar test. We also compared cost for getting MCH service from patient perspective (expenses on treatment or direct medical cost, direct non-medical cost and cost of time loss or indirect cost) before and after MCHVS implementation by using Wilcoxon Signed Rank test. Then we also presented awareness and satisfaction of using MCHVS by frequency and proportion. Also, care seeking behavior and knowledge of family planning in future were presented by frequency and proportion. For statistical analysis, we used SPSS version 21 software.

## 3.RESULTS

### 3.1. Demographic data

From survey questionnaire, we can see that overall total mean age was 28.13 ( $\pm 6.785$ ) and average number of family were 4.25 ( $\pm 1.164$ ). Detailed data for education level, monthly family income and number of previous child from patients which we interviewed for our survey is shown in Table 1.

**Table 1.** Demographic data of pregnant mother in Yedashae Township (n= 100)

Variable	Value
Patient Age (n=100)	28.13 ( $\pm 6.785$ )
No. of family (n=97)	4.25 ( $\pm 1.164$ )
Patient Education (n=100)	
(i) No education	4 (4 %)
(ii) Non-formal education	5 (5%)
(iii) Primary education (lower)	39 (39%)
(iv) Primary education (higher)	32(32%)
(v) Secondary education	20 (20%)
Family income (n=97)	
(i) <50,000	26 (26.8%)
(ii) 50,000 to 100,000	34 (35.1%)
(iii) 100,001 to 150,000	24(24.7%)
(iv) 150,001 to 200,000	13 (13.4%)
No. of previous child (n=100)	
(i) No previous child	43 (43%)
(ii) One child	28 (28%)
(iii)Two child	21 (21%)
(iv) Three child	8 (8%)

### 3.2. Effect of MCHVS on utilization, outcome and cost of MCH services

To assess effect of MCHVS on pregnant women in terms of service utilization and health outcome, we compare before and after MCHVS to know whether they significantly different or not. In service utilization results, we can see that receiving care with SBA after MCHVS was significantly

increased as expected. Delivery at health facilities was not significantly increased and even slightly decreased in receiving PNC. For the vaccination, there was no statistically increased. In health outcome, in term of type of delivery, normal delivery decreased and caesarian session increased after implementation. We present those comparison outcomes with both percentage and P value with Table 2.

**Table 2.** Service utilization and health outcome before and after MCHVS

Variable	Before MCHVS	After MCHVS	P-value
<b>SERVICE UTILIZATION</b>			
<b>HCPs for receiving care</b>			
<i>ANC</i>			0.000
Care with SBA	57.1%	98%	
Care with non-SBA	42.9%	2%	
<i>Delivery</i>			0.000
Care with SBA	56.1%	98%	
Care with non-SBA	43.9%	2%	
<i>PNC</i>			0.000
Care with SBA	57.9%	98%	
Care with non-SBA	42.1%	2%	
<b>Place for receiving care</b>			
<i>ANC</i>			0.000
Health facilities	50%	98%	
Home	50%	2%	
<i>Delivery</i>			1
Health facilities	24.6 %	27%	
Home	75.4 %	73%	
<i>PNC</i>			1
Health facilities	24.6%	26%	
Home	75.4%	74%	
<i>Vaccination</i>			0.815
Yes	78.9%	85%	
No	21.1%	15%	
<b>HEALTH STATUS</b>			
<b>Type of delivery</b>			0.031
Normal delivery	96.5%	88%	
Caesarian session	3.5%	12%	
<b>Complication</b>			1
Yes	14%	10.5%	
No	86%	89.5%	

ANC= Antenatal care, PNC= Post-natal care, SBA= Skill birth attendant

In case of cost from patient perspective, we compared average cost of direct medical cost, direct non-medical and indirect cost before and after implementation. In cost comparison, we can see that direct medical cost for receiving treatment only needed in delivery and there was no significantly decreased after implementation. For direct non-medical and indirect cost of ANC, delivery and PNC, there was a significant increased. For vaccination, we can see that direct non-med-

ical cost and indirect cost slightly decreased even there was no statistically significant. We present those costs comparison from patient perspective with both average cost (mean) and P value with Table 3.

We also present awareness and satisfaction percentage of respondents with frequency and percentage with Table 4 and care seeking behavior for future with frequency and percentage with Table 5.

**Table 3.** Cost (USD) before and after MCHVS from patient perspective (Mean  $\pm$  SD, Median)

Cost component	Before MCHVS	After MCHVS	P-value
<b>ANC</b>			
OOP	0	0	
DNMC	0.98 ( $\pm$ 2.29), 0	2.39 ( $\pm$ 3.01), 1.67	0.000
IDC	1.08 ( $\pm$ 2.35), 0	1.75 ( $\pm$ 2.64), 0	0.001
<b>Delivery</b>			
OOP	5.87 ( $\pm$ 2.27), 3.34	5.37 ( $\pm$ 2.66), 0	0.259
DNMC	3.01 ( $\pm$ 4.82), 0	4.12 ( $\pm$ 4.87), 2.5	0.036
IDC	0.51 ( $\pm$ 0.73), 0	0.73 ( $\pm$ 0.78), 0.83	0.000
<b>PNC</b>			
OOP	0	0	
DNMC	1.99 ( $\pm$ 3.59), 0	5.14 ( $\pm$ 15.79), 0	0.016
IDC	3.53 ( $\pm$ 5.14), 0	5.02 ( $\pm$ 5.52), 5.84	0.001
<b>Complication</b>			
OOP	0	0	
DNMC	0	0.27 ( $\pm$ 2.67), 0	0.317
IDC	0	0	
<b>Vaccination</b>			
OOP	0	0	
DNMC	1.42 ( $\pm$ 2.29), 0	1.31 ( $\pm$ 1.55), 0.83	0.751
IDC	1.56 ( $\pm$ 2.75), 0	1.28 ( $\pm$ 1.79), 0	0.539

1 USD = 1199.07 in 2015 average exchange rate;

ANC= Antenatal care, PNC= Post-natal care, OOP= Out of pocket, DNMC=Direct non-medical cost, IDC= Indirect cost

**Table 4.** Awareness and Satisfaction of MCHVS

Variable	Frequency (%)
<b>Awareness of MCHVS (n=100)</b>	
(i) VDs	42 (42%)
(ii) Posters at health facilities	10 (10%)
(iii) Pamphlet	1 (1%)
(iv) Midwives	2 (2%)
(v) > one place	45 (45%)
<b>Reason of using MCHVS (n=100)</b>	
(i) Reputation of health facilities	44 (44%)
(ii) Advice from others (midwives)	1 (1%)
(iii) >one reason	55 (55%)
<b>Decision maker (n=100)</b>	
(i) Yourself	76 (76%)
(ii) Your husband	1 (1%)
(iii) Other person (Midwife)	1 (1%)
(iv) > one person	22 (22%)
<b>Satisfaction of ANC with MCHVS</b>	
	n=97
(i) yes	97 (100%)
(ii) no	
<b>Satisfaction of delivery with MCHVS</b>	
	n=98
(i) yes	96 (98%)
(ii) no	2 (2%)
<b>Satisfaction of PNC with MCHVS</b>	
	n=98
(i) yes	97 (99%)
(ii) no	1 (1%)
<b>Satisfaction of Complication with MCHVS</b>	
	n=13
(i) yes	11 (84.6%)
(ii) no	2 (15.4%)
<b>Satisfaction of Vaccination with MCHVS</b>	
	n=85
(i) yes	85 (100%)
(ii) no	
<b>Level of satisfaction</b>	
	n=97
(i) Same	46 (47.4%)
(ii) More than expectation	49 (50.5%)
(iii) Less than expectation	2 (2.1%)
<b>Willingness to pay for satisfaction</b>	
	n=97
17.09 USD ( $\pm$ 8.51)	

VDs= Voucher distributors

**Table 5.** Care Seeking Behavior for future

Variable	
Plan to get children in future	n= 97
(i) Yes	57 (58.8%)
(ii) No	40 (41.2%)
Average year to get next child (Mean, SD)	3.15 ( $\pm$ 1.2)
Plan to use MCHVS in future	n= 55
(i) Yes	55 (100%)
(ii) No	
Variable	
Place to choose for future pregnancy	n=55
(i) At health facilities	53 (96.4%)
(ii) At home	2 (3.6%)
Health care provider for future pregnancy	n=55
(i) Care with SBA	55 (100%)
(ii) Care with non-SBA	
Willingness to advice to use MCHVS	n=100
(i) Yes	100 (100%)
(ii) No	
Place to advice for MCH service in future	n=100
(i) At health facilities	100 (100%)
(ii) At home	

SBA= Skill birth attendant

#### 4. DISCUSSION

This study has summarized impact of MCHVS on pregnant mother in terms of service utilization, health outcomes, cost of MCH services from patient perspective, awareness and satisfaction, care seeking behavior and future plan to use MCH services with SBAs. which can give empirical evidence of status of pregnant mother concerning with MCH services in that area to hospital/public health administrator and also policy maker.

Starting from theoretical basic, unlike supply side financing mechanism, DSF is directly targeted to patients by encouraging usage of pre-specified health services by giving incentives which is also helpful in protecting households from the catastrophic household expenditure in low socioeconomic area. It is the effective mechanism of targeting essential health services to specific population groups such as pregnant women, children or the poorest<sup>5,8</sup>. As this pilot study township area

is low socioeconomic area although it is near to Nay Pyi Taw, capital city of Myanmar, implementing DSF-MCHVS in that township was a good option to reduce financial barrier for receiving MCH service at the primary level and to attract pregnant women with incentive<sup>7</sup>.

In service utilization results, we can see that delivery at health facilities was not significantly increased and even slightly decreased in receiving PNC but it didn't mean negative results because even they chose home for receiving services, they chose home delivery service with SBA for their convenience and distance from health facilities. For the vaccination, there was no statistically increased but it also can be too young to vaccinate for current child rather than not receiving service.

In health outcome, in term of type of delivery, normal delivery decreased and caesarian session increased after implementation. This was because patients preferred caesarian when they

became quite rich as it made them feel more safe than normal delivery and can avoid last minute difficulties which can be faced in normal delivery process. So it didn't mean negative effect and it only depended on patient's preference.

In cost comparison from patient perspective, although difference in treatment expense might be consequence of MCHVS, direct non-medical cost and indirect cost might be different scenario such as their economic status, severity, etc. as they need to pay for those costs whether they get incentive or not. We can see that treatment expense (direct medical cost) only needed in delivery and there was no significantly decreased after implementation because most of the treatment expense were for donation to health facilities rather than medicine. For direct non-medical and indirect cost of ANC, delivery and PNC, there was a significant increase but it was not because of MCHVS program. Whether they get incentives or not, they need to pay for transportation, meal, and their time. So those difference can be because of their economic status or their severity of health status. For vaccination, we can see that direct non-medical cost and indirect cost slightly decreased even there was no statistically significant.

Because of cost comparison from patient perspective, we can estimate burden of MCH services cost on society which can be helpful in priority setting and formulating healthcare policy for policy decision maker<sup>9</sup>.

#### 4.1. Limitation

Small sample size is the major limitation and since health facilities are not evenly distributed in Myanmar and utilization of healthcare services depend on the attitude of providers and quality of care, this study cannot be representative for the whole country. Despite this limitation, it can give the idea about care seeking behavior of pregnant mother at least at that township by seeing the impact of MCHVS program on pregnant mother.

#### 5. CONCLUSION

The present study provides impact of MCHVS on pregnant mother in terms of service utilization, health outcomes, economic outcomes (MCH service cost from patient perspective), awareness and satisfaction and care seeking

behavior. Even though there were some limitation, we can estimate how MCHVS implementation can effect on pregnant mother at that township and can use those data for MCHVS evaluation study.

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