GAVI HEALTH SYSTEMS STRENGTHENING SUPPORT (HSS) STUDY

REPORT

Acronyms and Abbreviations

ANC	Antenatal Care
BEmONC	Basic Emergency Obstetric and Newborn Care
CEM	Coarsened Exact Matching
CEmOC	Comprehensive Emergency Obstetric Care
CHE	Catastrophic Health Expenditure
DSF	Demand Side Financing
DTP3	Diphtheria, tetanus, pertussis vaccine
Gavi	The Global Alliance for Vaccines and Immunization (now, Gavi, The Vaccine Alliance)
GGE	General Government Expenditure
GGHE	General Government Health Expenditure
HEF	Hospital Equity Fund
HITAP	The Health Intervention and Technology Assessment Program
HSS	Health Systems Strengthening Support
HSSO	Health Systems Strengthening Officer
iDSI	International Decision Support Initiative
M&E	Monitoring and Evaluation
MCHVS	Maternal and Child Healthcare Voucher Scheme
MDHS	Myanmar Demographic Health Survey
MIMU	Myanmar Information Management Unit
MoHS	Ministry of Health and Sports, Myanmar
OOPE	Out of Pocket Expenditure
PCA	Principle Component Analysis
PDA	Personal Digital Assistant
PNC	Post-natal care
PPS	Probability Proportional to Size
RHC	Rural Health Center
SARA	Service Availability and Readiness Assessment
SBA	Skilled Birth Attendant
SRHC	Sub-Rural Health Center
THE	Total Health Expenditure
TMO	Township Medical Officer
U5	Under 5 years
WHO	World Health Organization

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Executive Summary

The Government of the Republic of the Union of Myanmar received the Gavi Health Systems Strengthening Support (HSS) grant and initiated activities in 2012. This grant was closed in 2017 through a no-cost extension. One of the key components of the support were two health financing schemes, the Hospital Equity Fund (HEF) and Maternal Child Healthcare Voucher Scheme (MCHVS). As part of the closure assessments, the World Health Organization (WHO), commissioned the Ministry of Health and Sports (MoHS), Myanmar, to conduct a study with technical assistance from the Health Intervention and Technology Assessment Program (HITAP) to determine the impact of the Gavi HSS schemes on out-of-pocket expenditure (OOPE) on health. The study was underpinned by a conceptual framework with seven key questions and employed a document review, a self-assessment form completed by program managers of the HEF, analysis of secondary data and a household survey comprising intervention and control groups.

The results of the study show that the Gavi HSS schemes have expanded over the course of the support, with the HEF reaching close to 70,000 beneficiaries across 119 townships and the MCHVS covering about 10,000 beneficiaries in two townships. There was awareness of the schemes in the community, particularly about MCHVS, although this did not appear to influence utilization of services for either schemes. While the schemes aimed to target beneficiaries in need, self-reported users of the scheme were found to be from across the income spectrum, although the MCHVS was relatively more pro-poor. The benefits package of services covered by HEF appears to be appropriate in terms of addressing catastrophic health expenditure (CHE) of households. There was no significant difference in utilization of services except in the uptake of immunization services which was higher in MCHVS townships, a priority area for Gavi. In terms of financial protection, the study found that the MCHVS was effective in reducing CHE of households. One of the main bottlenecks in program implementation was the transfer of funds to the township level for the HEF. There is room for improvement in the monitoring and evaluation (M&E) of the support even as an M&E system had been put in place and there were mechanisms to make mid-course corrections to the scheme.

The schemes will not continue in their current form after the completion of this HSS support but as one of the earliest and largest schemes of its kind, the Gavi HSS schemes offer important lessons for implementing universal health coverage in Myanmar. It is recommended that for health financing schemes such as the HEF and MCHVS, the MoHS should: (1) Raise awareness of services covered by the scheme to improve health-seeking behavior (2) Define clear and easy-to-apply criteria for identification of beneficiaries (3) Design health benefit package in a systematic, evidence-based manner (4) Ensure timely flow of funds to the service delivery points (5) Invest in an M&E system to ensure timely feedback on progress of the program (6) Provide relevant training to staff to administer schemes and deliver services (7) Allocate more financial resources to improve maternal and child health and (8) Scale up schemes to have an impact on health outcomes and out-of-pocket expenditure at the population level. Specific recommendations for implementation of each model are also provided. Finally, it is recommended that Gavi implement a holistic approach to immunization programs to cover maternal and child health.

Background

The second largest country in Southeast Asia, Myanmar is a lower middle-income country with a population of about 53 million of which almost three quarters are economically active [1]. A quarter of the population lives in poverty and nearly three fourths of this segment lives in rural areas. Compared to its neighbors, the level of income inequality in the country is relatively low with a Gini Index of 0.29 even as there is variation across states and regions [2].

One dimension of inequality is access to healthcare services, a sector that has also witnessed variation in indicators across the country. Government spending on health is low and has been less than 1% of GDP for nearly two decades [1]. Only a small proportion of the population is covered by insurance schemes and out-of-pocket expenditure (OOPE) has accounted for more than 90% of private expenditure since 1995 [1]. In its efforts to achieve "Health for All", the Government has taken several bold steps towards universal health coverage (UHC) [3]. In 2008, the Government of the Union of Myanmar submitted a proposal for Health Systems Strengthening Support (HSS) to Gavi, a global agency that supports children's access to vaccines, to bolster efforts for a system-wide approach to address shortcomings in maternal and child healthcare. Approved in the same year, funding was received in 2011 with activities starting in 2012. Over three years, the program was expanded to over a hundred townships in a phased manner, covering a range of activities including developing coordinated township health plans, package of health services to hard-to-reach areas, health financing schemes, provision of supply and equipment, and construction of sub-centers. The programs closed in 2015 and implementation was continued with a no-cost extension in 2016 and 2017 [4].

As part of this program, two health financing schemes, the Hospital Equity Fund (HEF) and the Maternal and Child Health Care Voucher Scheme (MVS or MCHVS), were introduced to mitigate demand-side constraints to accessing healthcare using different modalities. These schemes are among the earliest and largest implemented in Myanmar.

The HEF intervention was launched in 2012 in 20 townships in each of the 17 states and regions, and then expanded to new townships each year, covering 119 Gavi-supported townships in 2015. The intervention was aimed at providing financial support to poor households, particularly women and their children, for inpatient care related to pregnancy conditions, complications of diarrhoea, pneumonia, and malaria and other life-threatening conditions needing hospitalization. The HEF provided township hospitals with funds to cover the cost of transportation, food for patients and care givers, medicines which are not already covered by government support as medical care is provided for free in public facilities. The scheme was later extended to cover all poor people who suffered life-threatening conditions and needed emergency hospitalized care.

On the other hand, the MCHVS sought to increase the service utilization of antenatal care, delivery by SBA, immunization of newborn and children among poor pregnant women and children. This was done by giving pregnant women vouchers redeemable at health facilities or with skilled birth attendants (SBAs). The program targeted poor pregnant women and provided

incentives for receiving maternal and child healthcare services with skilled health personnel to reduce maternal and neonatal deaths within the two townships where it was implemented. The scheme also incentivized community health workers to provide these services to pregnant women at home or at health facilities.

With the closure of the Gavi HSS program, the World Health Organization (WHO), on behalf of the Ministry of Health and Sports (MoHS), requested the Health Intervention and Technology Assessment Program (HITAP), Ministry of Public Health, Thailand, to provide technical support to conduct a study which could understand the impact of the program especially health financing schemes of the HEF and MCHVS schemes and the impact of the program on OOPE.

Objective and Key Questions

The objective of this study is to examine the impact of the Gavi HSS program's health financing schemes with a focus on providing financial protection to the poor and addressing inequities in access to health care services.

The study will explore the following key questions:

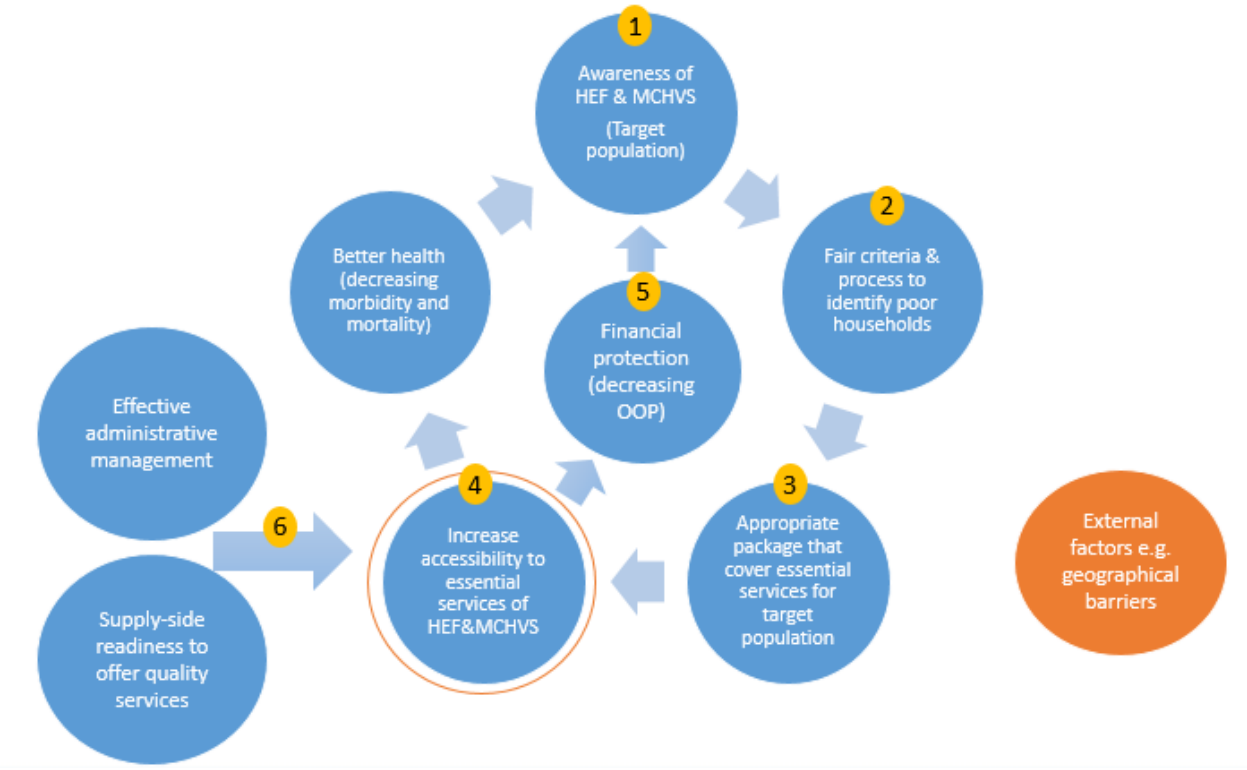
1. What is the level of awareness of HEF and MCHVS in the target population?
2. Is the process to identify the target population adequate in targeting the eligible and vulnerable?
3. Are the health services covered by schemes appropriate for reducing out-of-pocket expenditure (OOPE) or Catastrophic Health Expenditure (CHE) of households?
4. Has utilization of the target health services increased as a result of the schemes?
5. What is the impact of the HEF and MCHVS on Out-of-pocket expenditure (OOPE)/Catastrophic Health Expenditure (CHE) of households?
6. What kind of incentives and disincentives do providers and administrators face when extending services to patients eligible for HEF and MCHVS?
7. Are these interventions sustainable and do they serve as the first step in achieving UHC?

Framework

This study applied an evaluation approach embedded in the program in order to provide feedback to policy makers for improving this program as well as informing similar initiatives in the country that may be modelled on its design. A theory of change was developed and is shown in Figure 1: increased awareness of HEF and MCHVS among the target groups, raises the demand for the schemes necessitating identification of beneficiaries using a fair set of criteria; once beneficiaries are identified, there is a demand for developing a benefits package of healthcare services that fits their needs and leads to increased utilization of services covered by the schemes; higher utilization of services is enabled by supply-side factors as well as administrative and management effectiveness of the schemes. With an increase in the accessibility of healthcare services covered by the schemes, there is increased financial protection of the target group (poor) and better health outcomes, both of which reinforce the cycle. All these elements together

determine the sustainability of the program. This process operates in the local context where external factors such as geographical barriers play a role. The numbers indicated in Figure 1 show the associated key questions above as they relate to each part of this process. The framework for this study was discussed and refined during a consultation meeting held in Yangon on 25-27 October, 2016.

Figure 1: Theory of Change



Note: Numbers indicate corresponding key questions under "Objective and Key Questions"

Methods

This study applied a multi-pronged approach to answer the key questions raised above. The methods are: Document Review, Self-Assessment Form for HEF, Analysis of Existing Data and a household survey. Each of these methods addressed multiple key questions listed above (see *Objective and Key Questions).* All of the data collected was used to answer the question on whether HEF and MCHVS serve as the first step towards achieving UHC in Myanmar, which for the purpose of completeness has been analyzed in the Discussion section of this report.

The different methods employed in this study have been summarized in Table 1 below:

Table 1: Summary of Methods

	Method	Description	Data Sources	Key Questions						
				1	2	3	4	5	6	7
1.	Document Review	Review of documents on Myanmar and its health system, health financing schemes and Gavi HSS in Myanmar. Tacit knowledge of administrators was also incorporated while synthesizing the findings.	Online databases	✓	✓	✓	✓	✓	✓	✓
2.	Self-Assessment Form for HEF	A seven-question form was developed and distributed to those involved in administration or management of the HEF. Content analysis of responses was conducted.	Primary data collection			✓			✓	✓
3.	Analysis of secondary data	M&E data on HEF and MCHVS from Gavi HSS from 2012 through 2016 was combined, cleaned and analyzed. Descriptive statistics analysis was conducted. Existing datasets such as the Demographic Health Survey (DHS) 2015 were explored.	M&E data Socio-economic survey data		✓		✓	✓		✓
4.	Survey	A household survey of potential beneficiaries of schemes in ten townships across five states and regions was conducted.	Primary data collection	✓	✓	✓	✓	✓		✓

Document Review

A document review was conducted to inform all the key questions of the study. The document review covered three areas: country context of Myanmar, literature on OOPE and the Gavi HSS support in Myanmar. Documents from the MoHS as well as international organizations, among others, were identified to gain an understanding of the country and the health system. Gavi HSS progress reports for Myanmar as well as mid-term evaluations which are publicly available were accessed. The literature on OOPE was found through a search on PubMed using search term OOPE or CHE published between 2000 and 2016. The literature was categorized in terms of general literature on OOPE and CHE, literature exploring OOPE in the context of maternal and child health, literature on demand side financing schemes (DSF) and OOPE literature focused on Myanmar. A sample of the documents reviewed are presented in Table 2.

Table 2: Selected list of documents reviewed

- **Health System in Myanmar**
  - MoHS Documents
  - Asia Pacific Observatory (APO) brief on Health Systems
  - World Bank: Systematic Country Diagnostic/Country Partnership Strategy/Project Appraisal Document/Public Expenditure Review, 2014
  - Myanmar Service Availability and Readiness Assessment (SARA) Report, 2014
  - Health Financing Review Myanmar, 2012 (Authors not identified)
- **OOPE Studies**
  - Soe Aung et al, "Health Services Utilization and Self-Reported Acute Illnesses among Urban Families In Thanlyin Township, Yangon Region, Myanmar", 2015
  - Gorter et al, "Evidence Review: Results-Based Financing of Maternal and Newborn Health Care in Low- and Lower-Middle-Income Countries", 2013
  - O'Donnell et al, "Explaining the incidence of catastrophic expenditures on health care Comparative evidence from Asia", 2005
- **Gavi HSS in Myanmar**
  - Gavi HSS Annual Progress Reports (2008-2014)
  - HITAP MCHVS Feasibility Study, IHPP Performance Review, HITAP MCHVS Mid-term Review
  - HEF "Targeting Benefits of Myanmar's Hospital Equity Fund" (Unpublished)
  - Presentations by MoHS staff

Self-Assessment Form for HEF

The objective of fielding the self-assessment form was to gain a better understanding of the HEF. A seven-question form was developed by HITAP and distributed by the WHO to those who were involved in administration or management of the scheme. Respondents were given about ten days to respond. Once received, the data was recorded in MS Excel, content analysis

was conducted. The information gained from the form informed discussions and other parts of the study. The form is available in the links to resources in Annex 1.

Analysis of Secondary Data

As part of the Gavi HSS support, monitoring and evaluation (M&E) data was collected on a regular basis and is available for the period 2012 through 2016. Townships where there were gaps in posting of Health System Strengthening Officers (HSSOs), who were responsible for collecting M&E data on the program, were excluded.

Additionally, other survey conducted in the country such as the Myanmar Poverty and Living Conditions Survey (MPLCS) in 2015, the Integrated Households Living Conditions Survey (IHLCS) in 2010 and the Myanmar Demographic Health (MDHS) in 2016. The MDHS data, which was made publicly available in March 2017, was explored and details of the analysis are provided in Annex 3.

Household Survey

A cross-sectional, quantitative survey of households was conducted during March and April 2017.

Survey design:

An impact evaluation approach was applied. Thus, in addition to collecting data from groups where the intervention was implemented, control groups that are similar to the intervention groups on observable characteristics except for the presence of the intervention were included in the study. HEF and MCHVS were viewed as two interventions. This study design compares the outcome of interest in three groups: two intervention groups, to account for the two schemes, and one control group (townships without HEF/MCHVS). By doing so, one can see the differences in the outcomes of interest such as OOPE between the control and intervention groups and estimate how much of the difference can be attributed to the intervention.

Survey Instrument:

A questionnaire was used to collect data on household characteristics, household income, household expenditure, living conditions, service utilization and awareness of HEF and MCHVS. The first draft of the questionnaire was developed and tested in 1 rural and 1 urban communities during the consultation meeting in October, 2016. Subsequently, a team from HITAP, in consultation with the MoHS, finalized the questionnaire between October and December 2016. A handbook was also prepared to assist data collectors with the questionnaire. The survey instrument was translated into Myanmar by the MoHS and HSSOs separately. After that, a meeting with senior consultants was held to review the translated questionnaire and changes were made to the questionnaire to reflect the true essence of the questions. A simplified template was used to document changes that were made to the questionnaires. The questionnaire and instructions are available in the links to resources in Annex 1.

The Myanmar questionnaire was then tested in communities. The approach for translation and the need for interpretation were discussed during a consultation meeting in

December 2016. Finally, the questionnaire was input into personal digital assistants (PDAs) for data entry at the point of collection.

Target Population:

The target population of the survey comprises households with pregnant women, mothers with children aged 0-5 years, children who have suffered acute illnesses, and members who have accessed emergency care in the twelve months preceding the survey. All eligible members of the households were interviewed. Participants of the study were identified in the selected administrative units (see *Sampling Strategy and Size)*. Participants who may be infirm were excluded from the study population.

Sampling Strategy and Size:

A multi-stage sampling approach was undertaken for the survey. Townships were categorized into three groups: (1) Townships where both MCHVS and HEF were implemented, (2) Townships where only HEF was implemented and (3) Townships where neither HEF nor MCHVS were implemented. Groups (1) and (2) served as intervention groups while group (3) served as the control group. Two townships were purposively selected under Group (1). For Groups (2) and (3), intervention and control townships were matched with each other using Coarsened Exact Matching (CEM) based on state or region, SBA rates, DTP3 coverage rates, and township population size. The SBA and DTP3 coverage rates prior to HEF were used to match townships because these criteria were used in selecting the Gavi HSS townships. Townships with security issues were excluded as were townships where the 3MDG Fund's health financing program was operational. Additional factors such as geographic variation (hilly, coastal, delta, and central plains), type of hospital (measured by number of beds), and phase of implementation, were taken into account. In total, ten townships were selected (see Table 3).

Table 3: List of selected townships and number of households

Group	State/region	Township	No. of RHCs	No. of SRHCs	No. of Rural Households	No. of Wards	No. of Urban Households	No. of Households per Township
MCHVS and HEF	Bago	Yedashe	5	19	285	8	136	421
		Paukkhaung	3	11	165	5	75	240
	Shan	Nyaungshwe	3	11	165	2	30	195
HEF only	Tainnthary	Myeik	3	11	165	9	135	300
	Sagaing	Kalewa	1	3	45	1	15	60
	Ayeyardwady	Yegyi	2	5	75	2	30	105
Neither HEF nor MCHVS	Shan	Ywangan	2	8	120	1	15	135
	Tainnthary	Dawei	1	4	60	9	135	195
	Sagaing	Mawlaik	1	4	60	1	15	75

	Ayeardwaddy Zalun	4	14	210	3	45	255
Total		**25**	**90**	**1350**	**41**	**631**	**1981**

To ensure urban and rural areas were adequately represented, number of sampling units were determined based on the ratio of the population residing in rural and urban areas in each township. Wards were used as the administrative unit for sampling urban areas while Rural Health Centres (RHCs) and Sub-Rural Health Centres (SRHCs) were used as the sampling units in rural areas. The number of households required in each township was determined by using a Probability Proportional to Size (PPS) approach (available in links to resources in Annex 1). Urban wards were randomly selected using data from the Myanmar Information Management Unit (MIMU) for the urban population and sub-centers were randomly selected with the administrative data from the MoHS for the rural households. In each ward or sub-center, 15 households were randomly selected using systematic random sampling approach. A total of 1,981 households were selected across the ten townships. A summary of the approach applied for sampling is provided in Table 4 below.

Table 4: Summary of approach for sampling

Feature	Selection of Rural Villages	Selection of Urban Wards
Estimation of number of households	Determined number of SRHCs based on the ratio of the rural population in each township and rural population in all townships within the same group	Determined number of wards based on the ratio of the urban population in each township and urban population in all townships within the same group.
Data source	MoHS administrative data	MIMU
Method of selecting SRHCs/wards	• Randomly selected RHC using PPS • Randomly selected up to 4 SRHCs in each RHC • Randomly selected 3 villages in each SRHC with a random order of priority. • Used systematic random sampling to select fifteen households from the first priority village in each SRHC. If it was not feasible to obtain 15 eligible households in the 1st priority village, moved to 2nd or 3rd priority village.	• Randomly selected wards using PPS • Used systematic random sampling to select fifteen to seventeen households from each selected ward

Survey preparation and Data collection:

The data collection process was supervised by fourteen HSSOs with thirty-six data enumerators, hired through the Health Assistant's Association; Figure 2 shows some snapshots from the process. The central Gavi HSS team served as the field coordinators and oversaw the survey and manage all field teams, including planning, budgeting and logistics. The HITAP team provided technical support and training.

Figure 2: Photographs of data collection

Training of supervisors and enumerators was conducted centrally on 13-19 February 2017 in Nay Pyi Taw and covered topics on the purpose of the survey, the questionnaire, handbook development, testing, methods on conducting interviews, use of tablets for conducting interviews and ethical aspects. A manual with forms covering the roles, responsibilities, and procedures to be followed was provided to supervisors. A coordination meeting was held among supervisors to facilitate data collection in March 2017. Supervisors spent about ten days in the field during data collection and enumerators travelled in teams. Advocacy meetings were held with stakeholders in townships to ensure a smooth data collection process. Interviews were conducted using PDA through a software company, Xavey Research Solutions. Translation of responses to open-ended questions was done by supervisors and verified by the central team, who transmitted the final version through the server for analysis.

Data Cleaning and Analysis:

The data collected was reviewed by the central team and then organized into usable format by the software company, following discussions in April 2017. Data cleaning was conducted on 5-6 June and 12-23 June, 2017 by the MoHS, Xavey and HITAP teams.

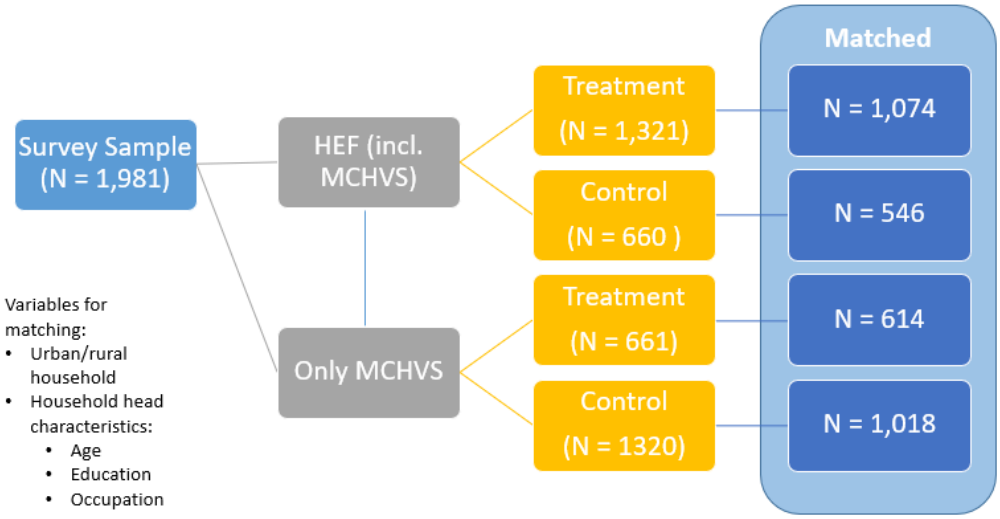
To ensure that households were comparable, we applied CEM to match the groups based on certain covariates and thus made statistically equivalent comparison groups estimate the impact of the HEF and MCHVS on Catastrophic Health Expenditure (CHE) of households. CHE was calculated as OOPE on health exceeding ten percent of non-subsistence expenditure.

CEM was used to create comparable subgroups of households based on age, education level and occupation of the household head, the area of residence, and wealth status. CEM was chosen over other matching techniques, such as propensity score matching (PSM), to reduce the need for multiple iterations and re-matching, and to maximize the number of possible matches in the sample.

Using CEM, each household was assigned into one specific strata in which all households were exactly matched on a set of coarsened variables. Matched members were then assigned a weight specific to that stratum and was representative of the proportion of all members present in that stratum. Then, a statistical measure called distance was calculated. It varies between 0

and 1: values close to zero indicate that the matching is perfect and ensures the comparability of the two groups [5]. The distance before and after applying CEM was calculated and was found to have been reduced after applying CEM. A lower distance ensures minimal imbalance between the two comparison groups. The number of households used in the analysis after matching is shown in Figure 3.

Figure 3: Summary of matching of households for analysis



Four measures were used to classify households as described in Table 5, with details in Annex 2 (a). A wealth index was constructed using the principal component analysis (PCA) on 14 assets, and other household data. In the PCA, the first component explains the largest proportion of the total variance, so assets that were more unequally distributed across the sample had a higher weight in the first component. We used the weights (coefficients) for each asset from this first component to generate the wealth scores, so that higher scores indicated higher wealth status and vice versa. Finally, based on quintiles, the scores were converted to five ordered categories from poorest (1st quintile) to richest (5th quintile), to determine each household wealth status. A second approach involved benchmarking data from the survey sample with the national population using the Equity Tool for Myanmar [6]. This approach also uses an asset-based index based on fifteen questions. In the third approach, household income was calculated using section 3 of the questionnaire and categorizing households into quintiles. The fourth approach used the pre-qualification poverty assessment provided in the guidelines for HEF and is provided in Annex 2 (b).

Table 5: Types of indices

Sr. No.	Index	Type
1	Wealth Index	Asset-based
2	National Quintile	Asset-based
3	Income Quintile	Income-based
4	HEF Criteria/Poverty Assessment	Income and asset-based

Descriptive statistics for the pooled sample and matched sub-samples were then reported. Chi 2 statistic was used to compare the differences between groups. A logistic regression model was used to estimate the effect of HEF and MCHVS schemes on CHE. The effects were reported in terms of odds ratios (OR) and 95% confidence interval (CI).

All data analysis was performed using Stata 14 [7].

Reporting:

The quantitative results of the study been reported in column and bar charts, pie charts, tables and tree-diagrams. Figures and tables have been used to present the qualitative data. Financial data has been reported in Myanmar Kyats (MMK) in this report. The amount in US Dollars (USD) has been indicated in the text and relevant tables using the average exchange rates for the reference period using data from the Central Bank of Myanmar [8]. The exchange rates used in this report have been provided in Annex 4.

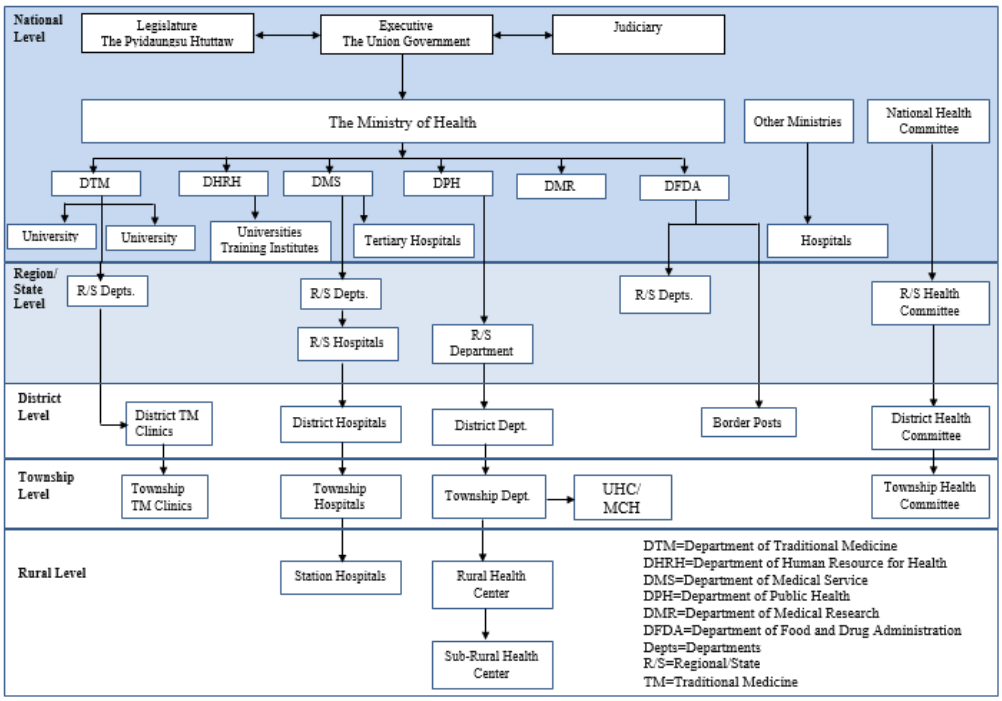
Health system in Myanmar and the Gavi HSS Schemes

Provision of healthcare in Myanmar

The health system and the roles of the key players in Myanmar has evolved with the change in political and administrative situation [9]. The MoHS remains the major player in the sector both, as a governing agency as well as a provider of comprehensive health care. Myanmar has a public and private system in the financing and provision of health services. Service provision in the public sector is extends down to rural settings through a network of health care facilities at different administrative levels comprising station hospitals, RHCs and SRHCs.

While the MoHS is the organization primarily responsible for raising the health status of the people, the Ministries of Defense, Railways, Mines, Industry, Energy, Home Affair, Transport, Labour also provide health care for their employees and their families. Township health departments, managing the township health system, are the backbone of the primary health care (PHC) system and provide comprehensive health services at the local level. Regional and State Health Departments provide supervisory and technical support and manage the provision of tertiary care and referral services. The structure of the health system is depicted in Figure 4.

Figure 4: Organization of the health system in Myanmar



Source: Adapted from APO Brief and updated to reflect structure since April 2015 [9]

The private sector also plays a significant role in the health system, particularly in the provision of ambulatory care [9]. The reach of the private sector is largely confined to urban settings where it provides intensive and institutional care. The private sector relies on the medical professionals working in public facilities who are allowed to practice privately after office hours and access to care is based on capacity to pay rather than health need. Private, not-for-profit organizations run by Community Based Organizations (CBOs) and religious societies also provide ambulatory care.

The provision of maternal and child health services is of primary importance in Myanmar given the attention in the Millennium Development Goals. has been categorized into Basic Emergency Obstetric and new born care services (BEmONC) and Comprehensive Emergency Obstetric care services (CEmOC). These services are available at different facility levels according to the Service Availability and Readiness Assessment (SARA) report. Observed guidelines and trained staff appear to be limited for BEmONC services and while CEmOC is available at general and specialized hospitals, only 49% of township and station hospitals and 23% of private hospitals offer the package [10]. International partners such as the Burnett Institute and PATH have implemented HSS projects for maternal and child healthcare [11, 12].

Health Financing in Myanmar

Public expenditure on healthcare is low and between 2003 and 2011, General Government Health Expenditure (GGHE) as a percentage of GDP was 0.2–0.3% [1]. Further, GGHE as a percentage of General Government Expenditure (GGE) was 1% during this period. Total Health Expenditure (THE) as % GDP averaged 1.9% between 2001 and 2011 [1]. In recent years,

GGHE as a percentage of GDP and of GGE increased significantly and was in 2012–2013 0.76% and 3.14%, respectively. THE as a percentage of GDP has increased to 2.5% in 2014 [1].

OOPE by households remains the dominant source of financing for health and accounts for 79% of total health expenditure [1]. It can push or keep households in poverty and it prevents many from seeking necessary health care. There is no formal coordinated social protection mechanism and only a small proportion of formal-sector workers, one percent of the total population, are covered by the current formal social-security system (1.3% of GGHE). Initiatives to introduce formal social protection in the country and in the process of piloting and introducing some community-based and demand-side approaches as interim measures. Studies on OOPE in Myanmar suggest that expansion of benefits to include outpatient care could alleviate financial burden on households. OOPE is higher in households which are eligible, or with elderly and young children, chronically ill individuals. Utilization of healthcare can be explained by monthly family income, age of household's head, age and sex of ill person. Low awareness of health insurance; upon explanation, average annual willingness to pay (WTP) was estimated to be 19,767 kyats or $20 [13].

Several types of localized financing mechanisms have evolved in the country which may be grouped into funding for community and funding for health facilities. Under community funding, pre-payment, contributory or mixed models are prevalent while health facilities may charge user fees, maintain revolving funds or be funded by government budget [14]. These models are summarized in Table 6.

Table 6: Types of health financing schemes

Sr. No.	Type	Examples
Funding for community		
1	Pre-payment model	• Village Health Committee pre payment Scheme • Township Micro-protection pre payment Scheme
2	Contributory	• Township Trust Fund • Free direct Health care provision by NGO
3	Pre-payment and contributory	Community based Organization or Health Foundation Schemes
Funding for health facility		
4	User fee	Community Cost Sharing
5	Seed money	Drug revolving fund
6	General	Government Operational Budgets

There are three notable projects initiated by international partners that address emergency care for maternal and child healthcare services. The Joint-Initiative on Maternal, Newborn and Child Health was implemented in the wake of Cyclone Nargis and was built on by

the Emergency Referral Fund by the 3MDG group. The Gavi HSS schemes were also implemented in the early part of the decade to, through the HEF, cover emergency cases and through the MCHVS, increase access to MCHVS services at the community level. The various schemes are provided in Table 7 below.

Table 7: Health financing schemes supported by international organizations

No.	Name	Organisation	Description
1	Joint-Initiative on Maternal, Newborn and Child Health	UNOPS/UK, Norway, Australia	• Initiated in response to Cyclone Nargis • Implemented in 6 townships in Ayeyrawaddy with a focus on hard to reach areas • Period: 2010-12
2	Emergency Referral Fund	3MDG	• Emergency referral for pregnant women and children under 5 • Standardisation of Emergency Referral Guideline • Period: 2013 – Current
3	Gavi HSS	Gavi/WHO/MoHS	• Hospital Equity Fund (HEF) in 119 townships • Maternal and Child Voucher Scheme MCHVS) in two townships • Period: 2012-2017

Gavi HSS Schemes

The Government of Myanmar applied for Gavi HSS support in 2008 and received the first tranche in 2011. Preparation activities were undertaken in the same year and activities were initiated in 2012. The focus of Gavi HSS activities was at the township level including health planning and management which involved the Township Medical Officer (TMO) and the Township Health Committee (THC). Gavi HSS also emphases covering hard-to-reach populations in the proposal [15]. Gavi HSS support was expanded over three years: in the first year, 20 townships were covered; in the second year, an additional 40 townships were covered and in the final year, 60 additional townships were brought into the fold of the program, bringing the total to 120 townships. One township in Kachin, was however, excluded for the HEF. The annual expansion of Gavi HSS by State and Region is given in Table 8.

Table 8: Overview of Gavi HSS implementation

State / Region	2012-13	2013-14	2014-15	Total
Ayeyarwady	1	2	4	7
Bago	2	4	4	10
Chin	1	2	3	6
Kachin	2	2	3	7
Kayah	1	4	1	6
Kayin	1	2	2	5
Magway	1	3	6	10
Mandalay	0	2	4	6
Mon	2	2	3	7
Nay Pyi Taw	2	0	0	2
Rakhine	1	2	2	5
Sagaing	1	3	5	9
Shan	3	7	15	25
Tanintharyi	1	3	3	7
Yangon	1	2	5	8
Total	**20**	**40**	**60**	**120**

The HEF expanded to townships with the Gavi HSS program. It initially covered pregnant women and children under 5 (U5) and was later extended to all emergency patients identified as eligible [3]. Eligibility was defined by income and asset-based criteria. In 2012, beneficiaries were identified based on a social mapping activity whereby beneficiaries were identified beforehand and received an "HEF card". However, 2012 onwards, the TMO or those in charge of patients were responsible for determining the eligibility of the beneficiaries. A set of guidelines with a form outlining criteria for eligibility is also available to determine the eligibility of the beneficiary (available in links to resources in Annex 1). The THC approved the list of beneficiaries on the basis of information provided at regular intervals. However, patients or caregivers receive the payment or reimbursement upon discharge from the hospital. A mid-term review of 20 townships covered by HEF stated that it was the first step towards comprehensive financial protection [16].

The MCHVS was developed after a feasibility study conducted by HITAP showed that it was good value for money [17]. A protocol for MCHVS was developed and the scheme covered four antenatal care visits, a delivery and one post-natal care visit for the mother and immunization (three to five) for the child. The protocol also specified the criteria for identifying beneficiaries who would be given vouchers. The scheme provided for monetary incentives for both, the mother and the provider, typically the mid-wife. The incentive varied depending on whether the service was provided at home or at a health facility. The MCHVS was piloted in 2012 and implemented in 2013 in Yedarshe township. A mid-term review conducted in 2013 suggested that guidelines were being followed and also identified areas for improvement [18]. The MCHVS was subsequently expanded to Paukkaung Township in 2014. Both townships are in the central region of Bago.

The key elements of the two schemes are summarized in Table 9 below.

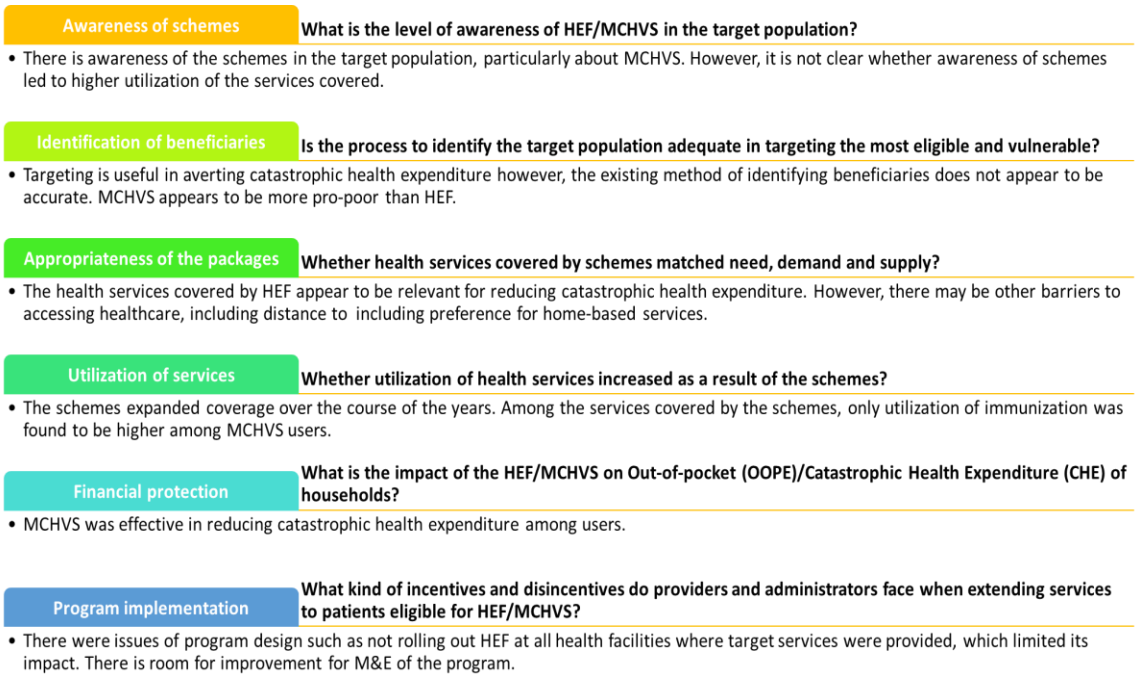
Table 9: Comparison of HEF and MCHVS

Particular	Hospital Equity Fund (HEF)	Maternal and Child Health Voucher Scheme (MCHVS)
Level of operation	Township hospital	Sub-township and community level
Number of townships	119	2
Number of beneficiaries	67,601	9,938
Benefits package	• Emergency procedures • Management of complicated delivery • Other life saving emergencies • Management of child hood acute illness	• Antenatal care • Delivery by skilled birth attendant • Postnatal care • Immunization of children
Benefits	For patients: • Daily allowance for patient and care giver • Travel allowance • Treatment costs Total reimbursement not exceeding 100,000 kyats. Exceptional cases accepted by TMO and HSSOs in consultation with the central team. Since 2015, reimbursement for medicines and investigation were not to be more than 10% of total fund allocation to the township.	For patients: • Daily allowance for patient • Travel allowance for facility visit For providers: • Daily allowance for midwives • Travel allowance for home visit
Target group	• All pregnant women and children under 5 • All emergency patients especially with life threatening conditions or in case of emergency	• All pregnant women living in hard to reach areas or in areas with high proportion of deliveries by non-skilled birth attendants, low economic status or lack of asset ownership, identified as eligible by HEF • Mid-wives (providers)
Beneficiary identification	• One-time social mapping using pre-assessment questionnaire based on income and assets (2012) • Identification by TMO or relevant staff. • Approval of beneficiaries by Township Health Committee at regular intervals	• Living in hard to reach areas or in areas with high proportion of deliveries by non-skilled birth attendants • Low economic status or lack of asset ownership (motorcycle, car, phone) • Identified as eligible for HEF

Results

In this section, the overall impact of the schemes is presented followed by detailing the findings on the seven key questions which have been gleaned from the document review, self-assessment form, M&E data for HEF and MCHVS and the household survey data. The highlights of the findings are shown in Figure 5 below:

Figure 5: Results highlights

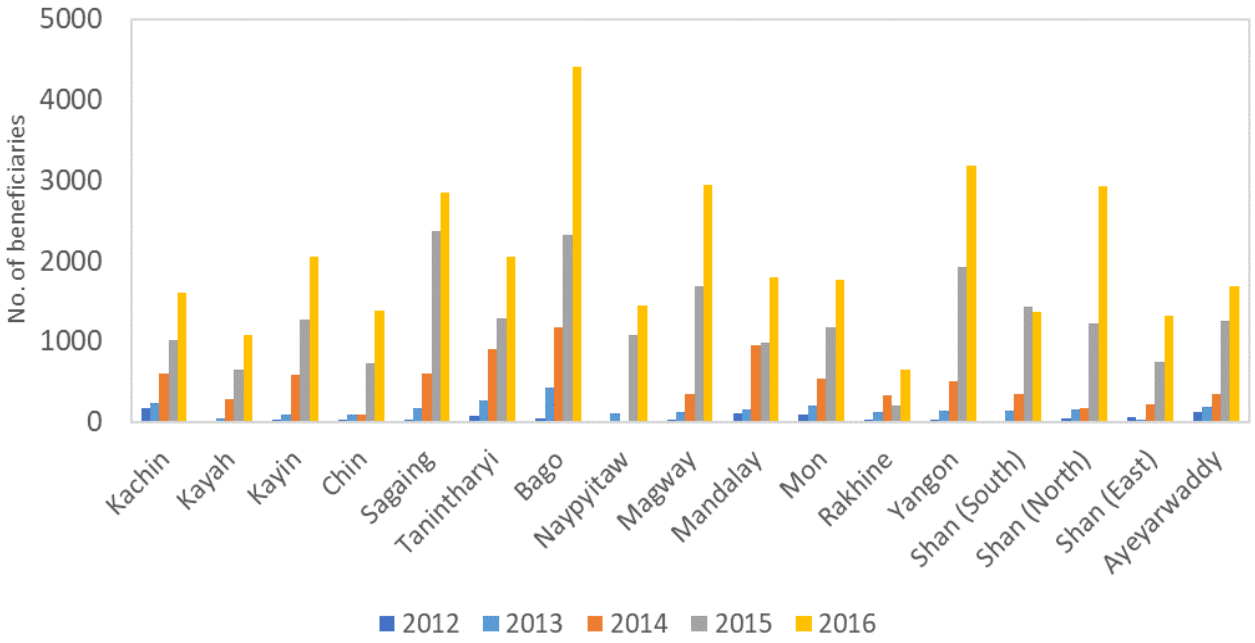


Overview

The overall impact of the two schemes is presented in terms of number of beneficiaries as recorded by the program managers and perceived outcomes by HEF program managers. Figures 6 and 7 show the number of persons who received benefits under the HEF scheme in terms of states and regions as well as zones as per the M&E data. As Figure 6 shows, the number of HEF beneficiaries increased year-on-year in each of the states and regions. This increase was in parallel with the expansion of the HEF scheme from 20 townships in 2012-13 to 60 townships in 2013-14 to 120 (excluding one) in 2014-15. Figure 7 shows that there were fewer number of beneficiaries in the Delta and Coastal zone, reflecting the distribution of townships covered by the schemes.

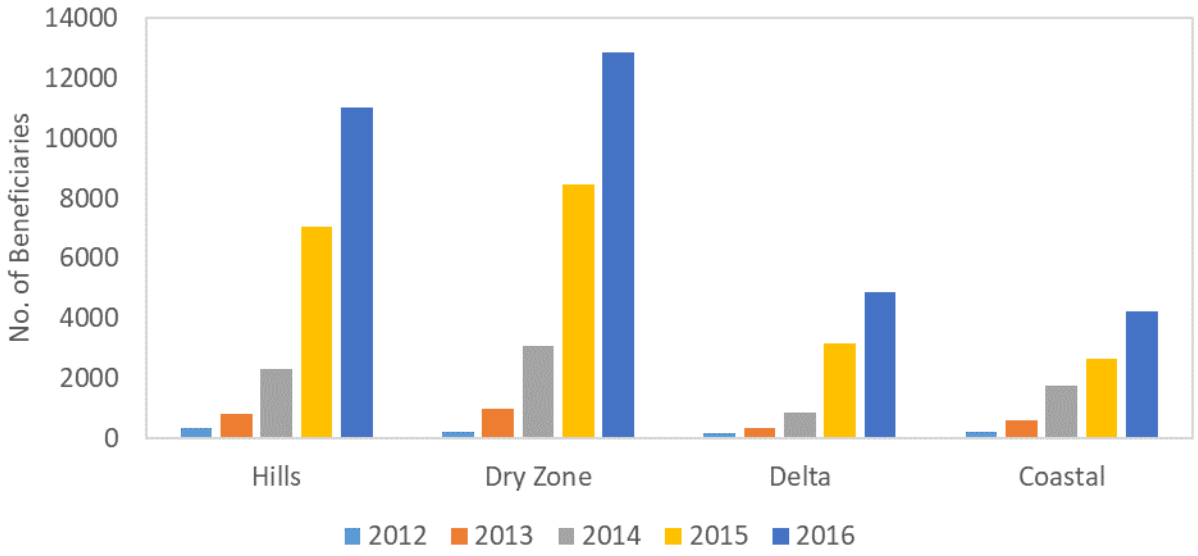
Note: Zonal classification of townships is as follows (1) Hills include Chin, Kachin, Kayah, Kayin, Shan (2) Dry Zone consists of Bago, Magwe, Mandalay, Sagaing (3) costal area includes Rakine, Mon, Taninthayi and (4) Delta consists of Ayeyarwaddy and Yangon.

Figure 6: Number of HEF beneficiaries by State and Region (2012-16)



Source: Gavi HSS M&E Data

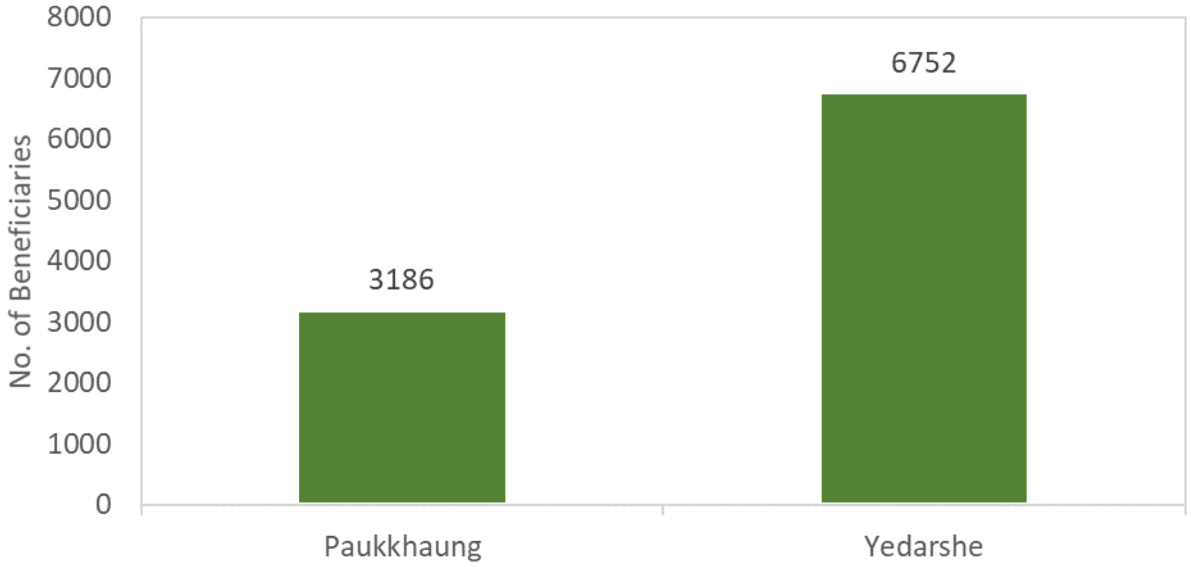
Figure 7: Number of HEF beneficiaries by zone (2012-2016)



Source: Gavi HSS M&E Data

Figure 8 shows the aggregate number of beneficiaries in the two townships where MCHVS was implemented. There were twice as many beneficiaries in Yedashe as compared to Paukkhaung, which was implemented later.

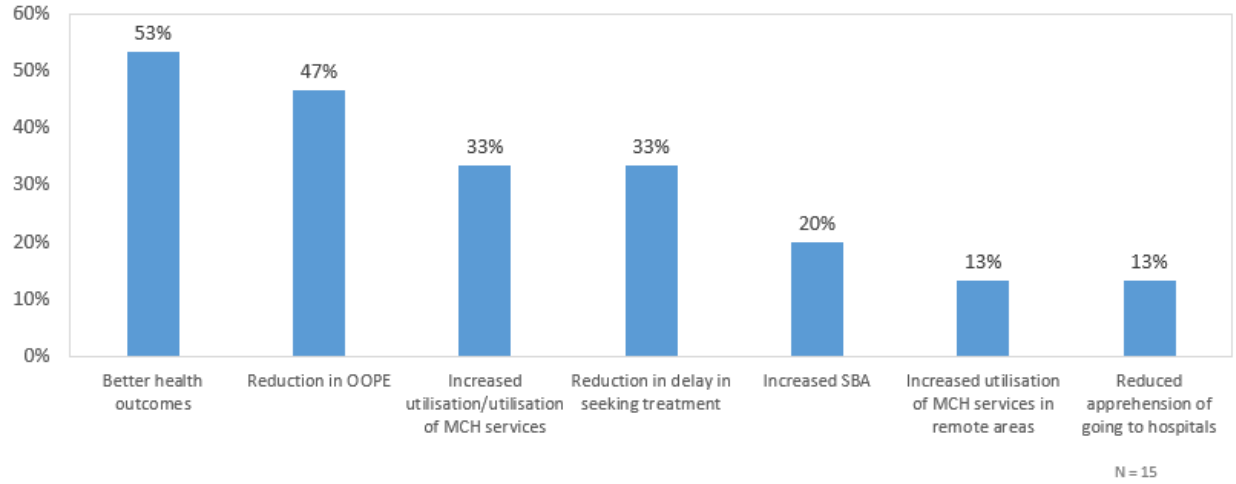
Figure 8: Number of MCHVS Beneficiaries (2013-16)



Source: Gavi HSS M&E Data

Respondents to the self-assessment form articulated a range of outcomes from the HEF as shown in Figure 9: most respondents noted that the HEF led to better health outcomes (53%) and reduction in out-of-pocket expenditure (47%). Respondents also suggested that there was an increase in the utilization of services, including maternal and child healthcare services (33%), particularly in remote areas (13%). Two interesting points relate to reduction in the delay in seeking treatment (33%) and reduced apprehension of going to the hospital (13%).

Figure 9: Perceived outcomes or achievements of HEF



Source: Self-assessment form

Key Question 1: Awareness of schemes

What is the level of awareness of HEF/MCHVS in the target population?

Key messages

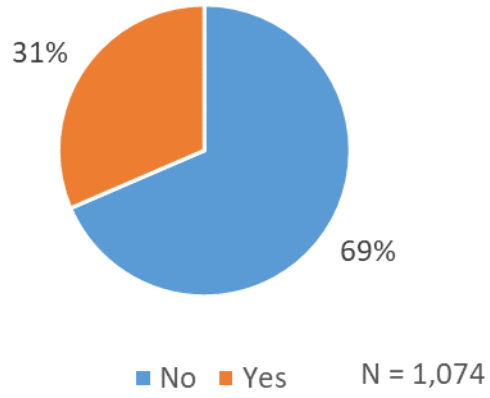
- HEF and MCHVS managers have succeeded in promoting these two schemes although there is room for improvement.
- MCHVS has been more successful in raising awareness of the scheme among households.
- Awareness of schemes does not appear to be related to higher use of services covered by each scheme.

In this section, awareness of the schemes has been assessed by reviewing responses to questions on awareness of the schemes and knowledge of the schemes in the household survey. For each scheme, respondents were asked four questions in the case of HEF and five questions in the case of MCHVS about their knowledge of the benefits.

The schemes appear to have been known in the intervention townships of HEF and MCHVS. Of the 1,074 respondents from the intervention townships who answered the question on awareness of HEF, 31% had heard or seen information on the HEF (Figure 10). On the other hand, of the 614 households from the MCHVS townships, 60% of households indicated that they had heard or seen information on the scheme (Figure 11). In terms of respondents' knowledge of HEF, it was found that around 10% of participants in HEF townships answered more than four questions correctly, around 70% answered up to four questions correctly, and 20% did not know at all about HEF. When compared with households in control townships, it shows that 60% did not know at all about HEF and 40% had correct answers for up to four questions. Regarding the

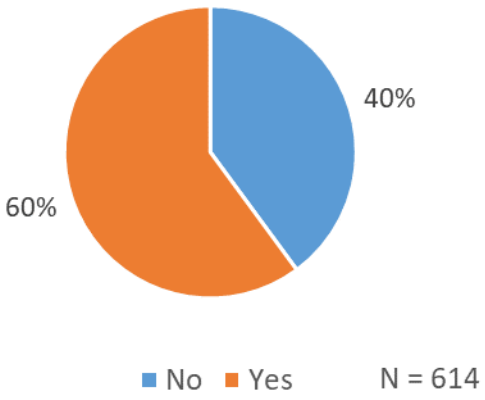
knowledge related to MCHVS, it was found that 55% of respondents in intervention group answered more than five questions correctly and 45% answered up to four questions correctly. When considering households in control townships, the results show that 20% answered more than five questions correctly and 80% had up to five correct answers. From these findings, in general, it can be inferred that respondents in intervention townships had a better understanding of MCHVS than of HEF.

Figure 10: Awareness of HEF among households



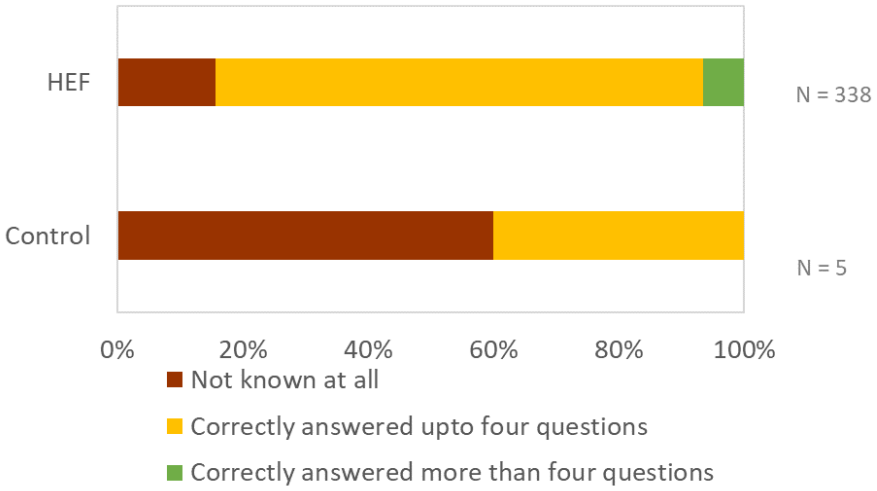
Source: Household survey

Figure 11: Awareness of MCHVS among households



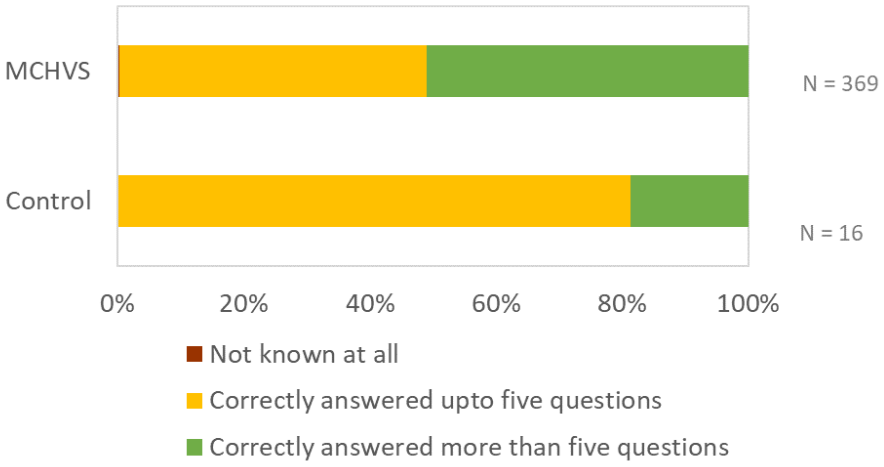
Source: Household survey

Figure 12: Knowledge of HEF



Source: Household survey

Figure 13: Knowledge of MCHVS

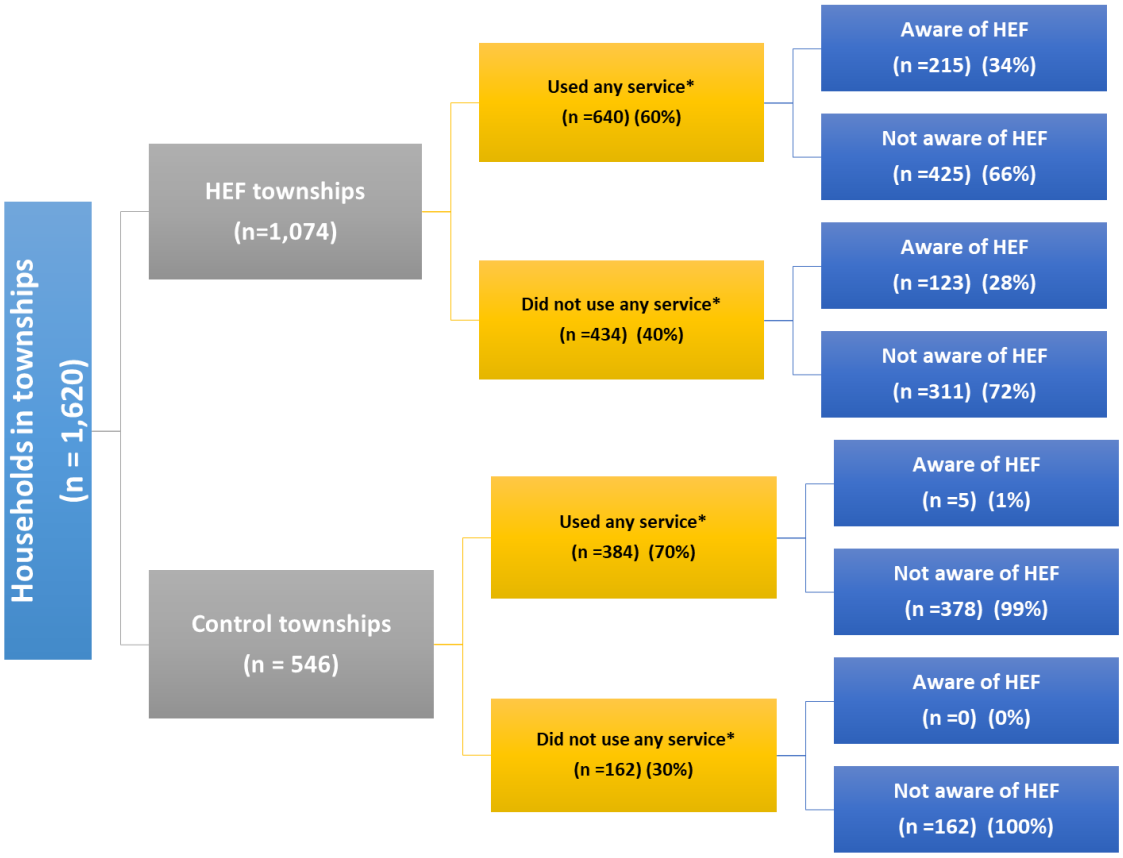


Source: Household survey

In Figures 14 and 15, the relationship between awareness of HEF among households that utilize the services covered is explored. Sixty percent of households residing in HEF townships reported utilizing any service i.e. delivery, emergencies and childhood acute illnesses while 70% of households in control townships reported utilization of any of the services. Among households

in HEF townships that had utilized any of the covered services, 34% of households were aware of the HEF scheme while 28% of households that did not utilize the services were aware of HEF scheme. Hence, while the awareness of HEF seem to be associated with use of services covered by HEF, the difference in awareness among users and non-users of the services was not significant (Chi2 test, p=0.069). Lower percentages of awareness are observed in control townships (1% and 0%). The diagram shows that the level of HEF awareness in control townships was not different among households that utilize and not utilize the services. The comparison of awareness between control and intervention townships suggests that households residing in HEF townships are more likely to be aware of the HEF scheme.

Figure 14:Use of service and awareness of HEF



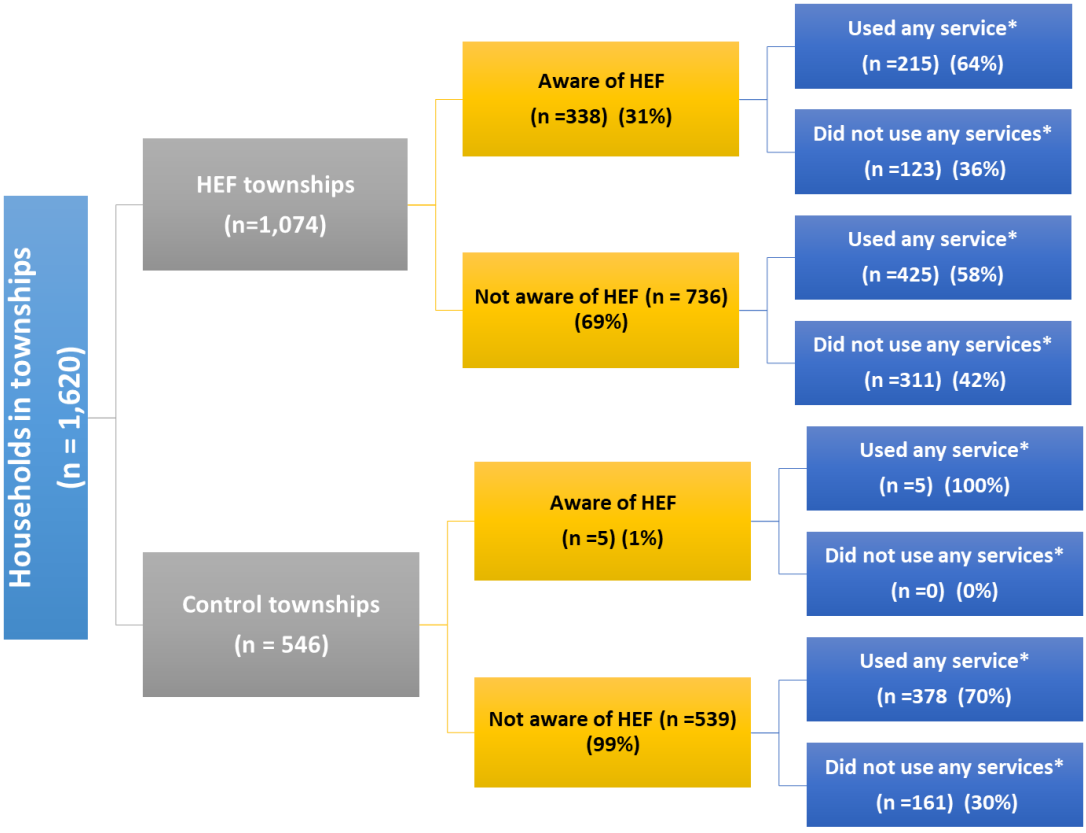
** Services include deliveries, emergencies and childhood acute illnesses*

Source: Household survey

To observe whether awareness was associated with higher level of utilization, Figure 15 shows the utilization rate of any service under HEF scheme conditional on awareness of HEF and residence in an intervention or control township. Thirty-two percent of households residing in HEF townships reported being aware of HEF scheme while 1% of the households in control townships reported aware of the HEF. In HEF townships, 64 % of households that were aware of the HEF scheme utilized any service while 58% of households that were not aware of the HEF utilized any service under the scheme, with the difference not being significant (Chi2 test,

p=0.693). In the control townships, all households that were aware of the scheme utilized the services covered by HEF and about 70% of households that were not aware of the scheme also utilized the services.

Figure 15: Awareness of HEF and use of services

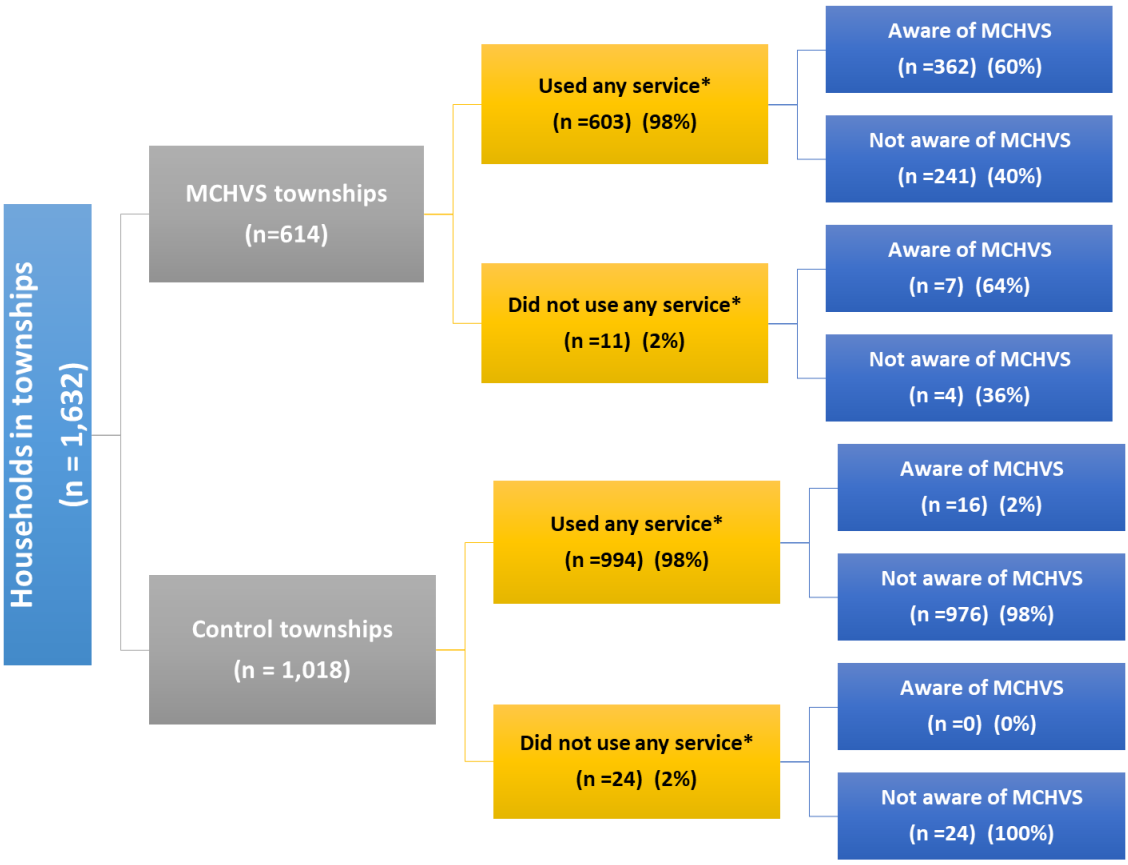


** Services include deliveries, emergencies and childhood acute illnesses*

Source: Household survey

Similarly, the Figure 16 shows the level of awareness among households in MCHVS townships (n = 614) and control townships (n = 1,018) that utilize or not utilize the services. In both, intervention and control townships, 98% of households reported utilize any service including ANC, deliveries, PNC and immunization. Among households in MCHVS townships, 60% of households that utilized any service were aware of the MCHVS scheme while 64% of households that did not utilize the services were aware of the MCHVS scheme (Chi2 test, p=0.809). Lower percentages of awareness are observed in control townships (2% and 0% for users and non-users of MCHVS services, respectively). The diagram shows that the level of MCHVS awareness among households that utilize the services was 2% which is not too different from households that did not utilize the services (0%).

Figure 16: Use of service and awareness of MCHVS

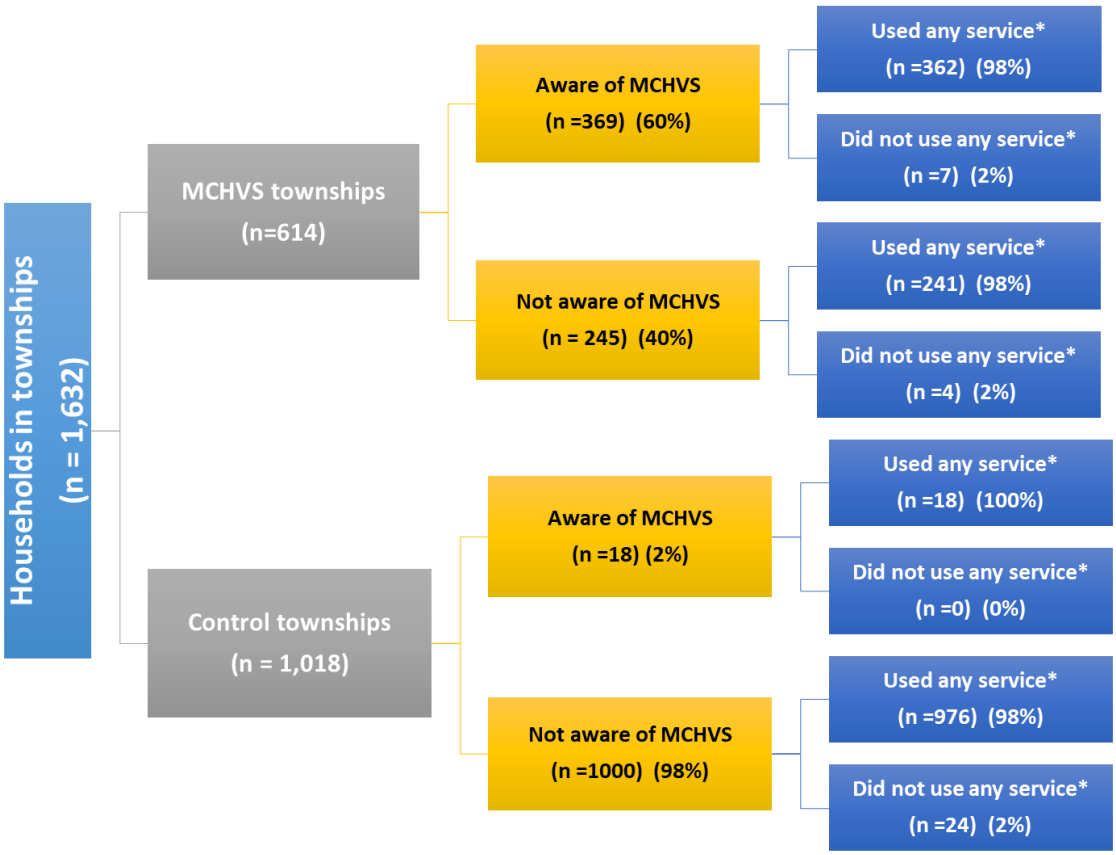


**Services: ANC, Deliveries, PNC, Immunization*

Source: Household survey

The diagram in the figure below shows utilization rate of any service covered by MCHVS among households that were aware and unaware of MCHVS in intervention and control townships. Sixty percent of households residing in MCHVS townships reported being aware of MCHVS scheme while 2% of the households in control townships reported aware of the MCHVS. In intervention townships, regardless of the level of awareness, 98% of households utilized any services. In the control townships, a similar pattern is observed showing that all households that were aware of the scheme utilized the services and almost all households (98%) that were not aware of the scheme also utilized the services. In short, awareness of MCHVS did not seem to have relationship with the utilization of the services under the scheme.

Figure 17: Awareness of MCHVS and use of service



**Services: ANC, Deliveries, PNC, Immunization*

Source: Household survey

Key Question 2: Identification of beneficiaries

Is the process to identify the target population adequate in targeting the most eligible and vulnerable?

Key messages

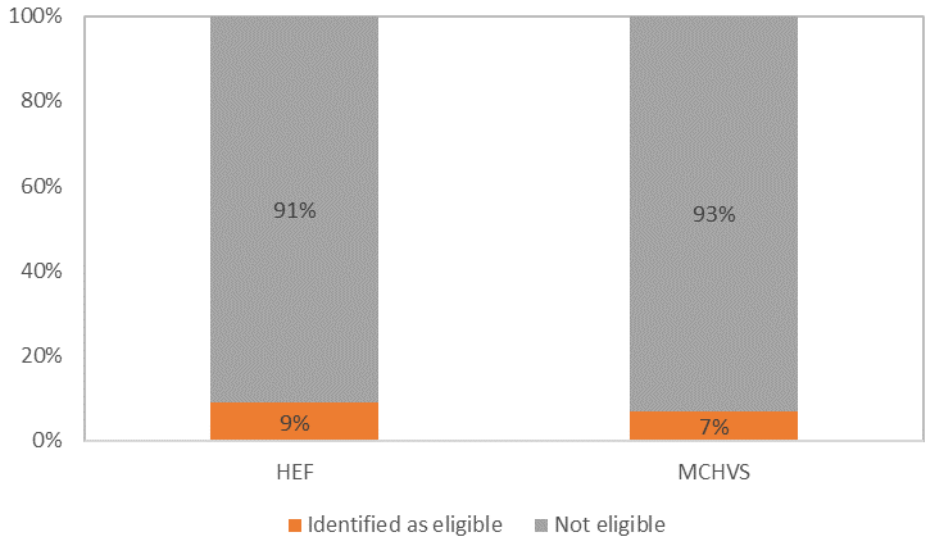
- Use of the original HEF criteria does not appear to be an appropriate measure of identifying beneficiaries and alternative measures need to be used.
- Targeting of beneficiaries is needed as the poor are more likely to experience CHE
- Beneficiaries of HEF and MCHVS come from across the income spectrum, although, MCHVS appears to be more pro-poor.
- The beneficiaries of HEF and MCHVS are predominantly female and live in rural areas.

In this section, the measures for identifying beneficiaries are discussed and distribution and characteristics of the beneficiaries of HEF and MCHVS are presented. The term “beneficiary”

is used when referring to M&E data. In the case of MCHVS, beneficiaries were referred to "clients". The "beneficiaries" reported from the household survey are self-reported users.

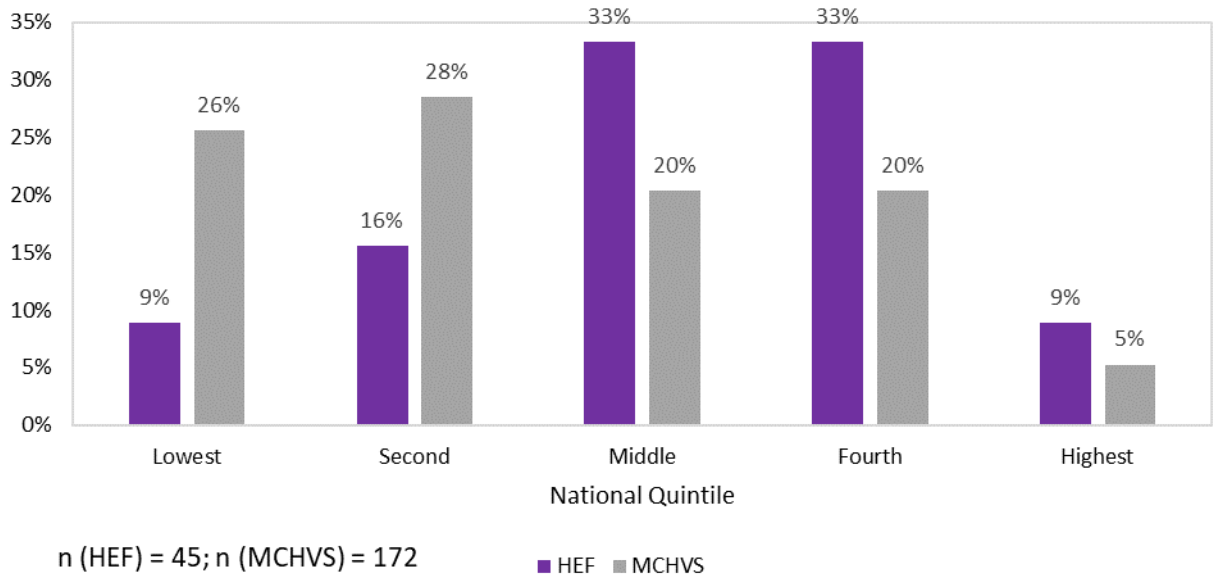
There are different methods for identifying target beneficiaries such as the national quintile, income quintile, wealth index quintile and HEF eligibility criteria. When aiming to identify beneficiaries, the use of the original HEF criteria does not appear to be an appropriate measure as it identified less than 10% of the self-reported users of the schemes (Figure 17). Besides the eligible benefit from HEF and MCHVS, there appears to be beneficiaries from the upper quintiles, although, MCHVS appears to be more pro-poor (Figure 18). There is therefore a need for alternative measures to be used.

Figure 18: Eligibility based on HEF criteria



Source: Household survey

Figure 19: Distribution of self-reported users of the Hospital Equity Fund (HEF) and Maternal and Child Health Voucher Scheme (MCHVS) by National Quintile



The results of the logistic regression make a case for targeting of the scheme as the poor are more likely to experience CHE compared to those not identified as poor, defined as the bottom 40% of households using the wealth index. In Table 10, the likelihood of experiencing CHE in both, unmatched and matched subsamples has been presented. The adjusted odds ratio (AOR) with 95% confidence interval (CI) for households classified as poor and non-poor experiencing CHE. In the matched samples, poor households were 1.3 times more likely to experience CHE (95% CI 0.99, 1.75; p value = 0.06), compared with those not identified as poor.

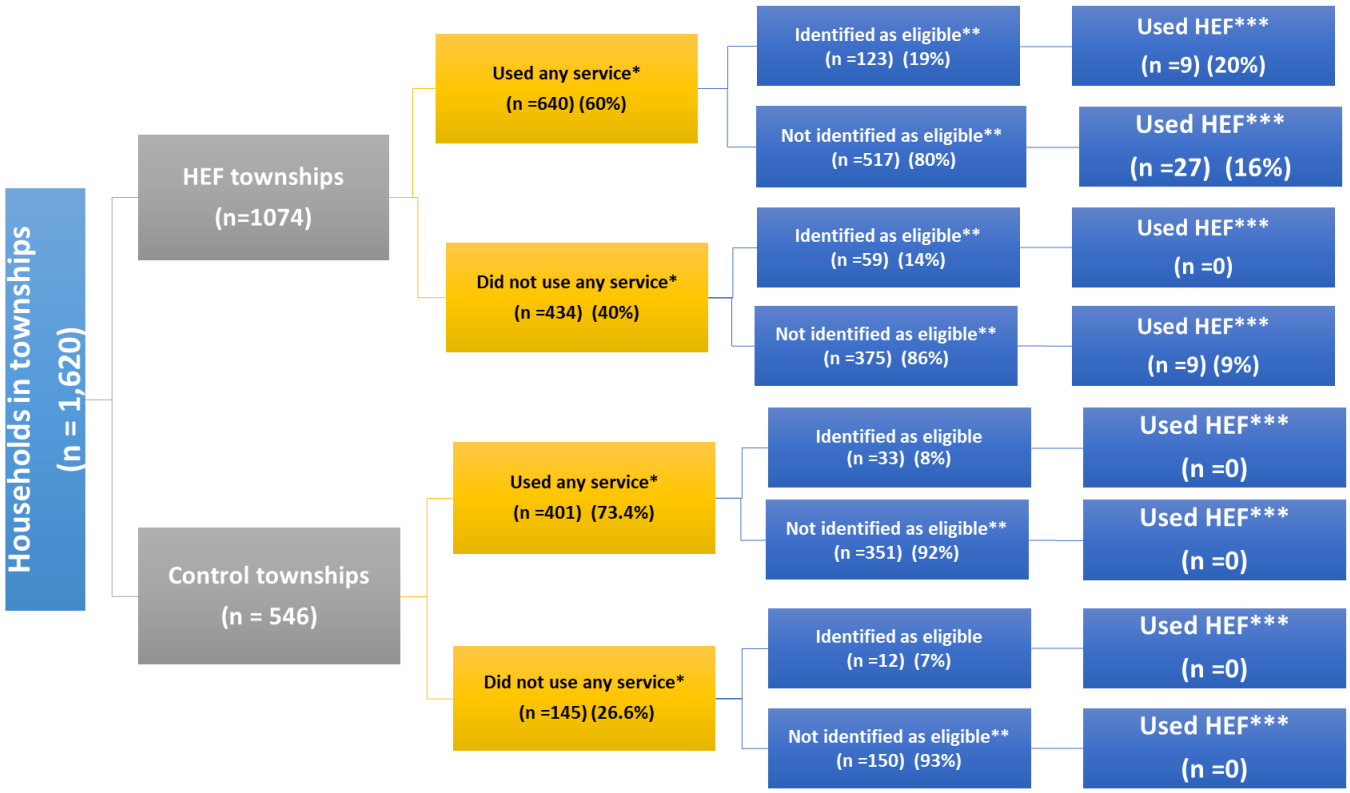
Table 10: Catastrophic health expenditure and the poor (Results from logistic regression)

	Unmatched sample (n = 1,981)		**Matched sample (n = 1,242)**	
	OR (95% CI)	**P Value**	**OR (95% CI)**	**P Value**
Identified as poor based on Wealth Index				
Not poor	(Reference)	0.39	(Reference)	0.06
Poor	1.11 (0.87, 1.39)		1.32 (0.99, 1.75)	

The Figures 20 and 21 take this analysis further by looking at service utilization, eligibility, as per HEF criteria and wealth index for HEF and MCHVS, respectively, and reported use of the two schemes. It shows the analysis of households that were eligible for the benefits based on HEF criteria. The total of 1,620 households in townships was divided into two groups: the households in HEF townships (n = 1,074) and the control (n = 546). Sixty percent of households in HEF townships reported using any of the services covered by HEF viz deliveries, emergencies,

childhood acute illnesses. Among households that used these services, the proportion of households identified as eligible for the HEF benefits was only 19 %, of which only a fifth reported receiving HEF benefits. On the other hand, those households that reported using the service but were not eligible for HEF as per the criteria, 16% reported receiving HEF benefits. In total, 45 respondents reported receiving HEF benefits.

Figure 20: Use of service, eligibility and reported use of HEF

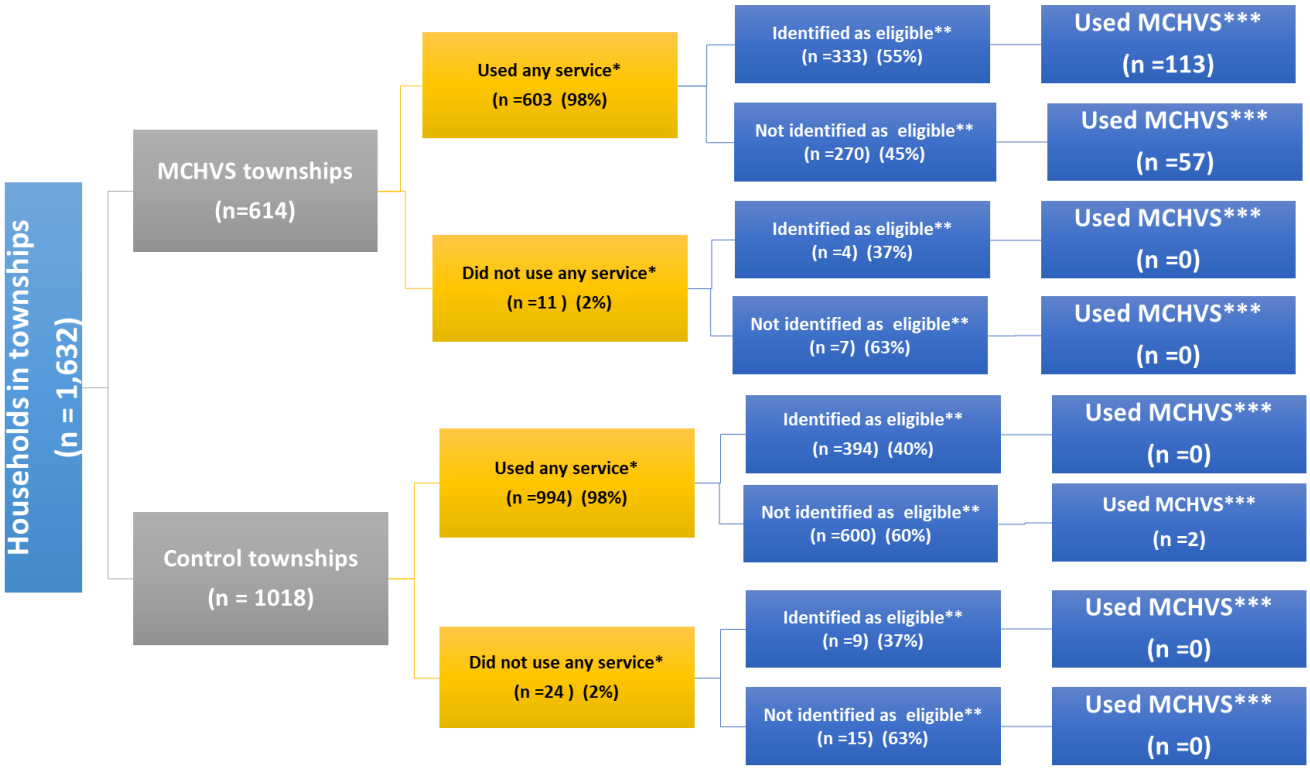


**Services: Deliveries, emergencies, childhood acute illness*
*** Based on HEF criteria*
****Number of respondents reporting HEF use = 45*
Source: Household survey

Similarly, in analyzing the beneficiaries for MCHVS, a total of 1,632 households were divided into households in MCHVS townships (n = 614) and control (n = 1,018). In MCHVS townships, 98% of households reported using any service covered by MCHVS viz ANC, deliveries, PNC and immunization. This was also the case in control townships. Using the wealth index as a criterion for eligibility, more than half (55%) of the users of the services covered were identified as eligible for the MCHVS benefits. Out of these, 57 respondents (33%) were identified as not eligible based on the wealth index criteria. MCHVS use shows that 172 respondents received MCHVS scheme. Two respondents from control townships reported receiving the MCHVS scheme

which may be because respondents received the scheme and then migrated to control townships.

Figure 21: Use of service, eligibility and use of MCHVS



**Services: ANC, Deliveries, PNC, Immunization*
***Based on wealth index*
****Number of respondents reporting MCHVS use = 172*
Source: Household survey

The profiles of the self-reported users of HEF suggests that of the 45 participants reported using HEF (4 %), 36% had primary school education and 31% obtained informal education (see Figure 22) and more than half were dependents or housewives (see Figure 23). The M&E data shows the distribution of female beneficiaries of HEF. Female patients, aged greater than 5 years, constitute about 40-80 percent of the patients across the states or regions (see Figure 24). This indicates that women are the dominant beneficiary of HEF in most states and regions compared to children or non-female emergency cases. The number of female beneficiaries has increased across zones over the years as well (see Figure 25). Yangon appears to have the lowest number of beneficiaries under 5 years of age U5 beneficiaries across the years and the proportion of the U5 beneficiaries appears to be declining the hilly zone (Figure 26). The proportion of U5 beneficiaries is about 30-40 percent across all zones (Figure 27). Most HEF users were from rural areas as seen in Figure 32.

Figure 22: Characteristics of self-reported users of HEF: Education

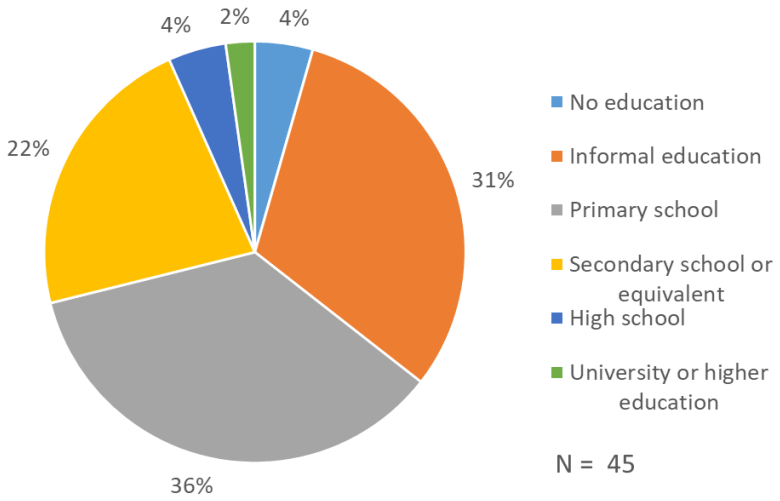


Figure 23: Characteristics of self-reported users of HEF: Occupation

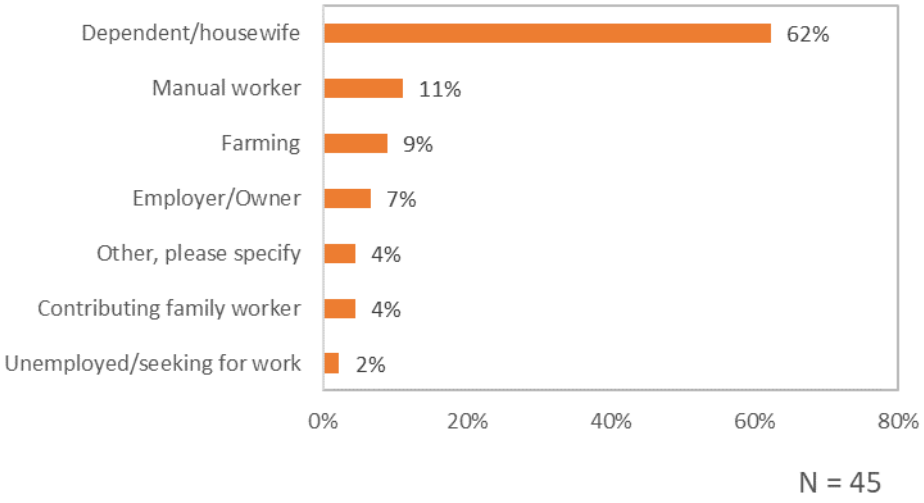
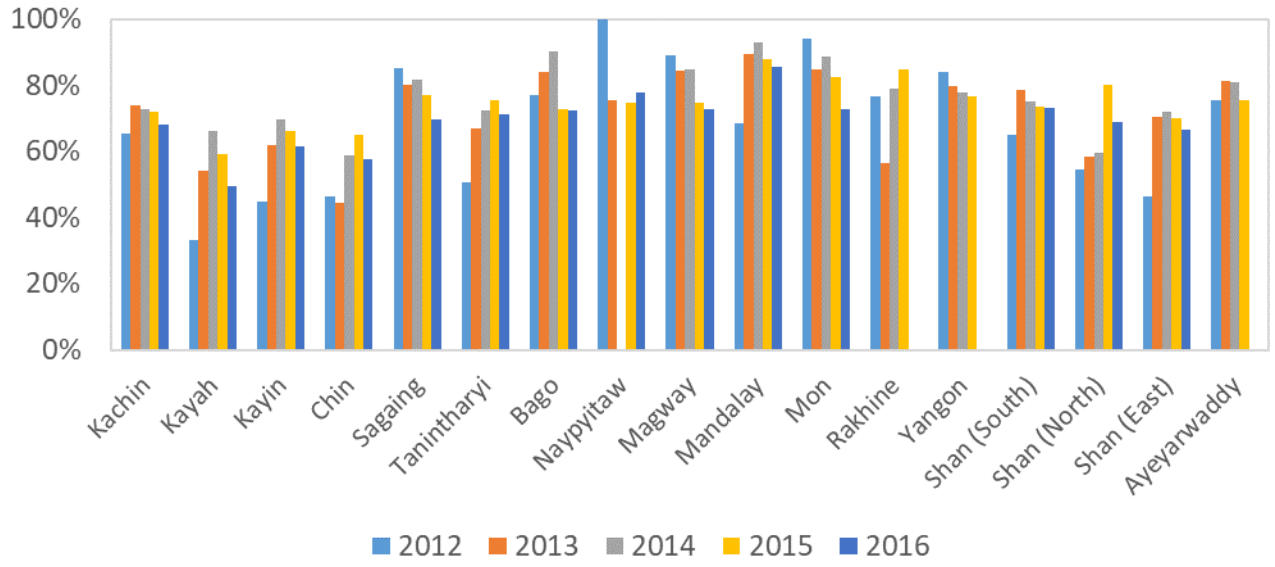
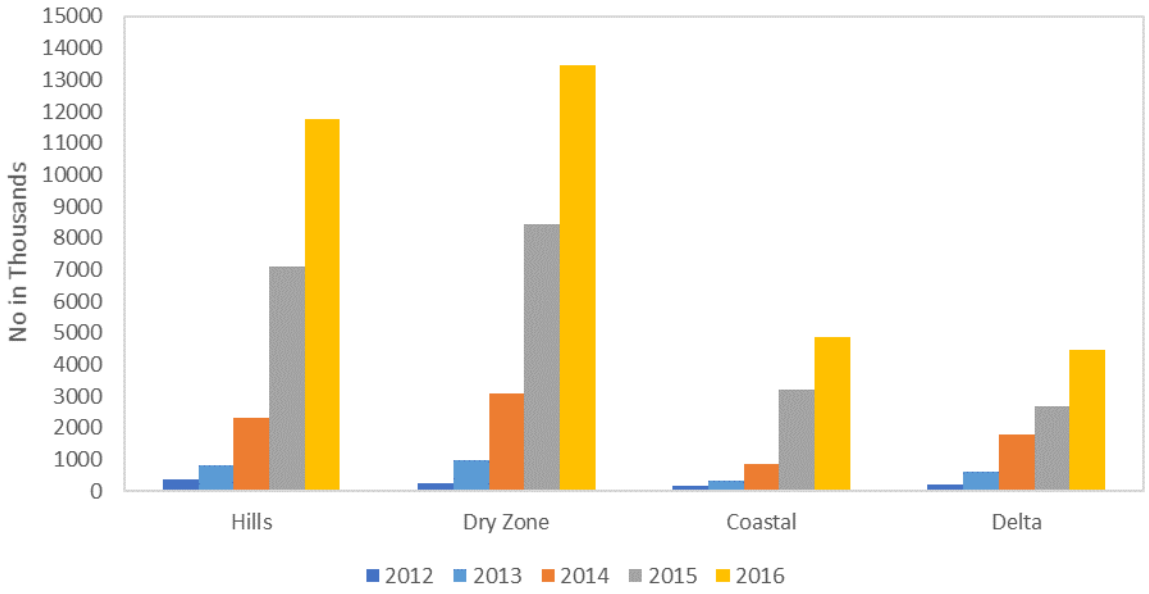


Figure 24:Distribution of female HEF beneficiaries by State or Region (2012-16)



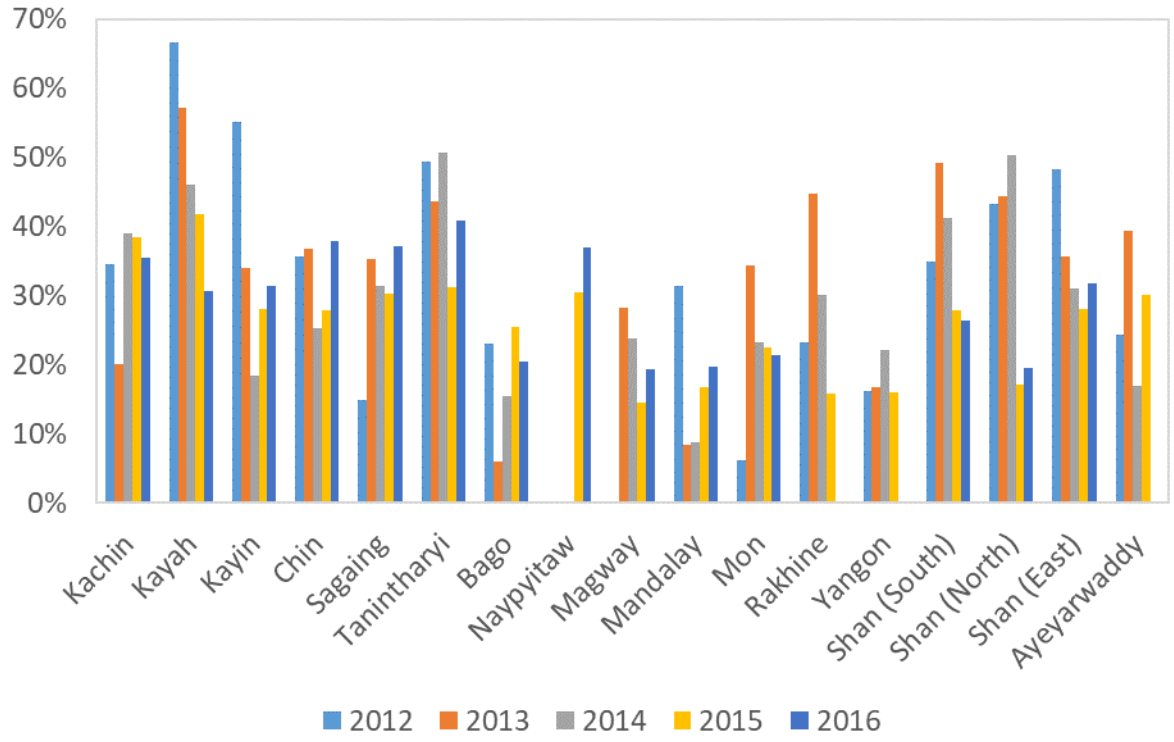
Source: Gavi HSS M&E Data

Figure 25:Distribution of female HEF beneficiaries by Zone (2012-16)



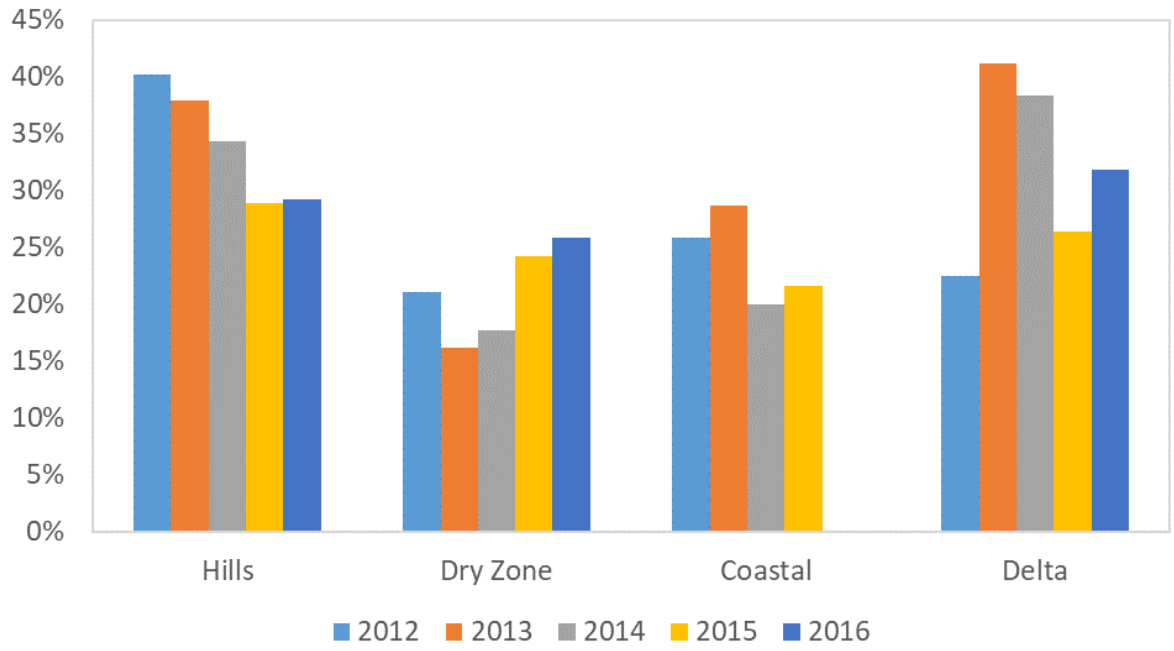
Source: Gavi HSS M&E Data

Figure 26: Distribution of Under 5 beneficiaries by State or Region (2012-16)



Source: Gavi HSS M&E Data

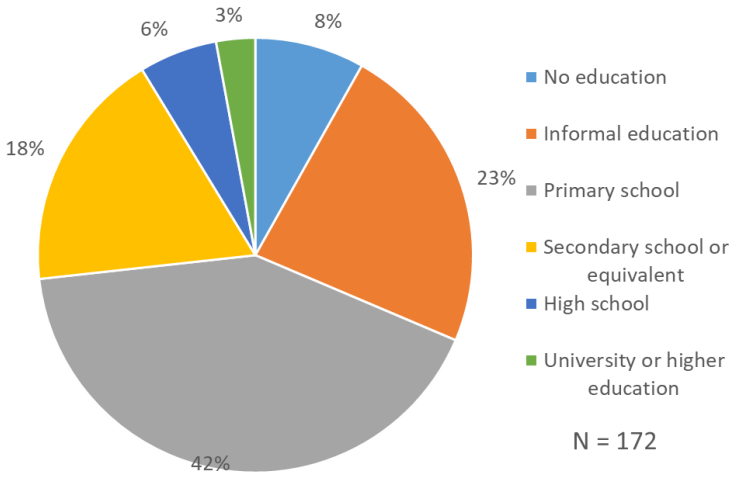
Figure 27: Distribution of Under 5 HEF beneficiaries by Zone (2012-16)



Source: Gavi HSS M&E Data

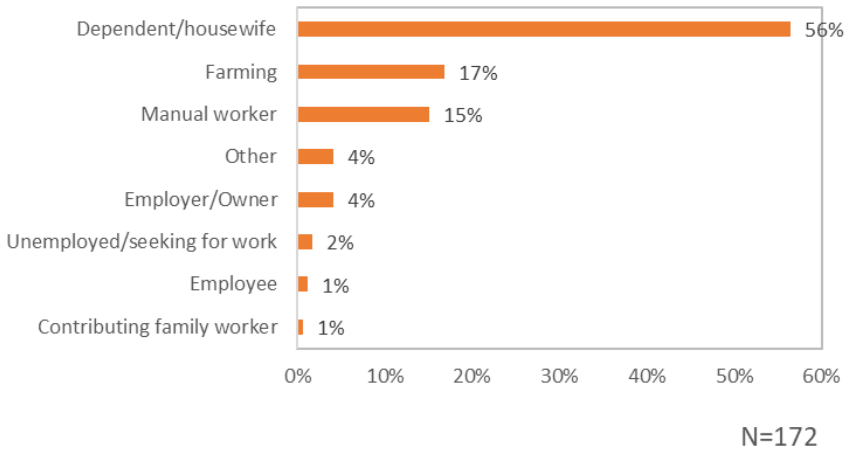
In the case of MCHVS, of the 172 households who reported using MCHVS, 42% completed primary school and 23% obtained informal education (see Figure 28). Similar to HEF, dependents or housewives were the main users (49%) followed by farmers (21%) as in Figure 29. Like the HEF, a majority of the self-reported users (75%) resided in rural areas (Figure 32). The M&E data shows that more than half of the MCHVS beneficiaries were in the 20 to 30 year age group (see Figure 30) while more than three quarters of the beneficiaries only had a primary school education. This suggests that targeting of the vouchers was appropriate in terms of women of reproductive age and economic status, using education and location as proxies.

Figure 28:Characteristics of self-reported users of MCHVS: Education



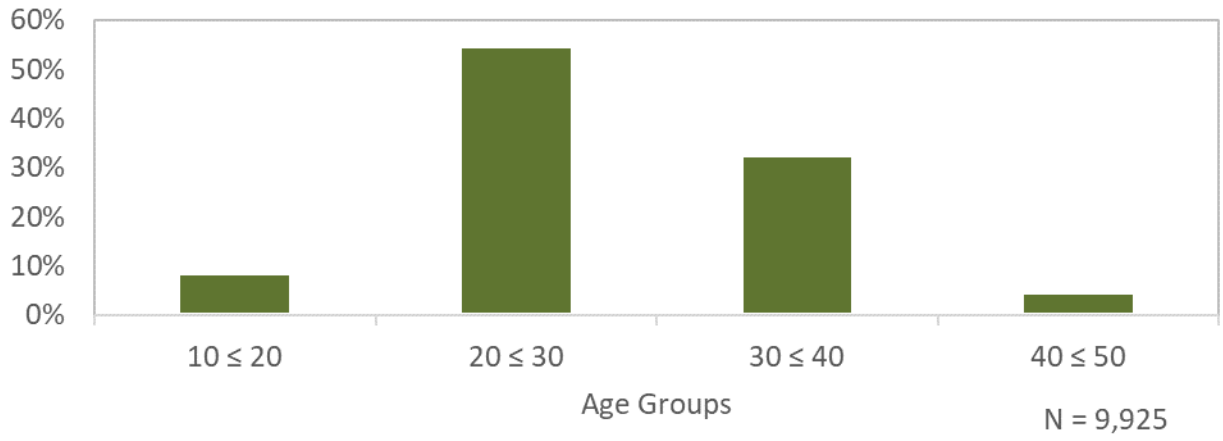
Source: Household survey

Figure 29:Characteristics of self-reported users of MCHVS: Occupation



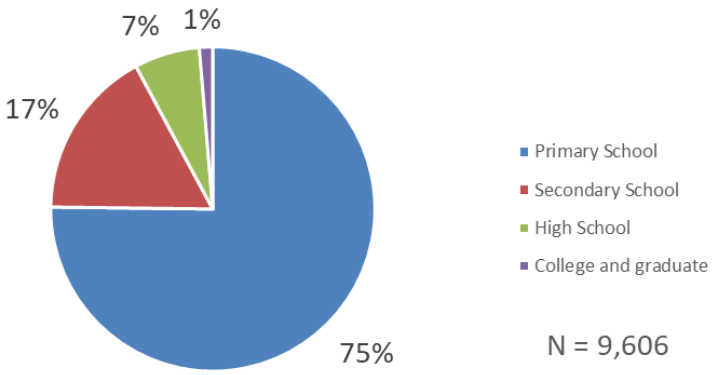
Source: Household survey

Figure 30: Characteristics of MCHVS beneficiaries: Age (2013-16)



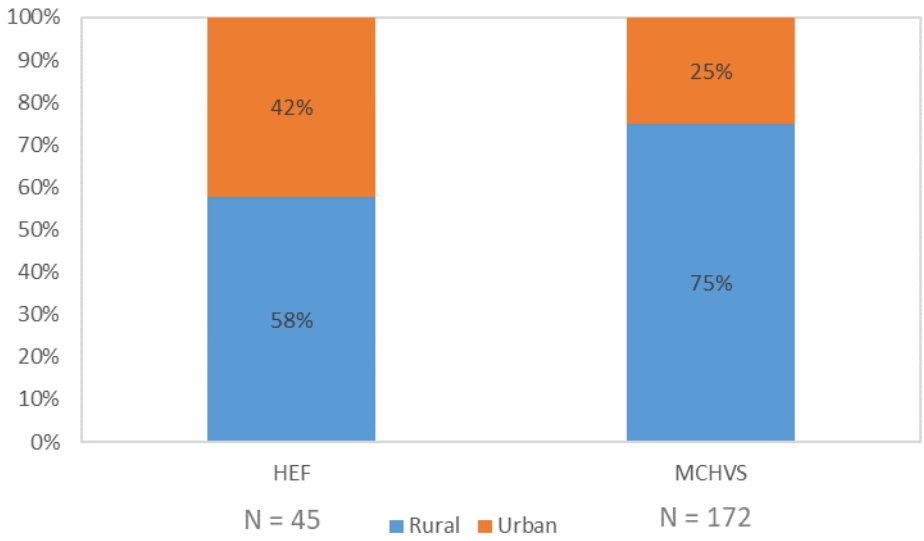
Source: Gavi HSS M&E Data

Figure 31: Characteristics of MCHVS beneficiaries: Education



Source: Gavi HSS M&E Data

Figure 32: Distribution of HEF and MCHVS Self-reported Users by Rural and Urban areas



Source: Household survey

Key Question 3: Appropriateness of packages

Are the health services covered by schemes appropriate for reducing out of Out-of-pocket (OOPE) or Catastrophic Health Expenditure (CHE) of households?

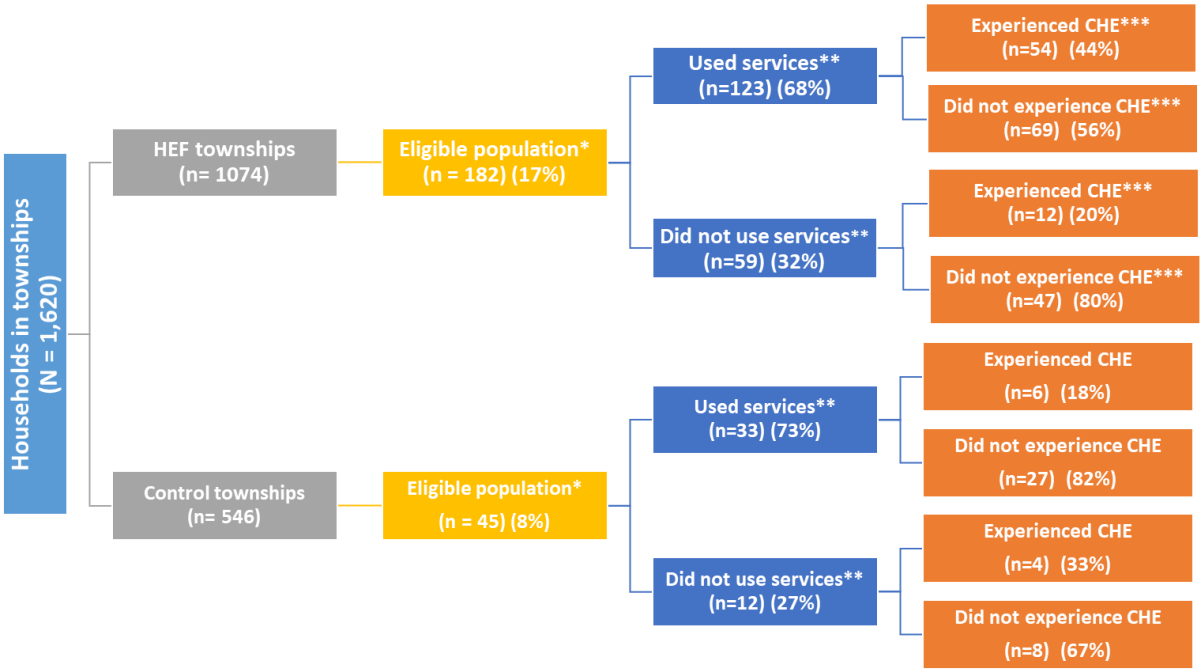
Key messages

- The services covered by HEF appear to be appropriate as there is a higher likelihood of experiencing catastrophic health expenditure. Those who use HEF-covered services also experience a higher risk of experiencing catastrophic health expenditure compared to those who do not use HEF-covered services.
- Distance of the health facility and OOP considerations were reported as being constraints in accessing formal healthcare services. High usage of home-based services indicates other factors affecting healthcare usage.
- It is not clear whether the referral system is operating in case of complications arising because of complications were reported in only a few cases and in those cases, were resolved primarily through counselling or provision of medicines.

The appropriateness of the benefits package of HEF and MCHVS has been analyzed in three ways. First, one may infer whether the services covered by HEF and MCHVS were those requiring financial protection by comparing the number of households experiencing catastrophic health expenditure conditional on their use of services covered by the two schemes using the household survey. Second, one may explore other barriers that households experience in accessing healthcare. Third, one may analyze the link between HEF and MCHVS in the two townships where both schemes were implemented.

As illustrated in Figure 33, The 1,620 households in townships were divided in the treatment group and control group where eligible populations based on the HEF criteria (n = 182 and 45 respectively) were identified. Of the eligible populations, 68% of households in the intervention group reported using any service while 73% was found in the control group. Forty four percent of households that used the service in the intervention group experienced CHE compared to 20% to households in the intervention group who did not experience CHE. The difference is significant suggesting that the services covered by HEF are those that push households to CHE.

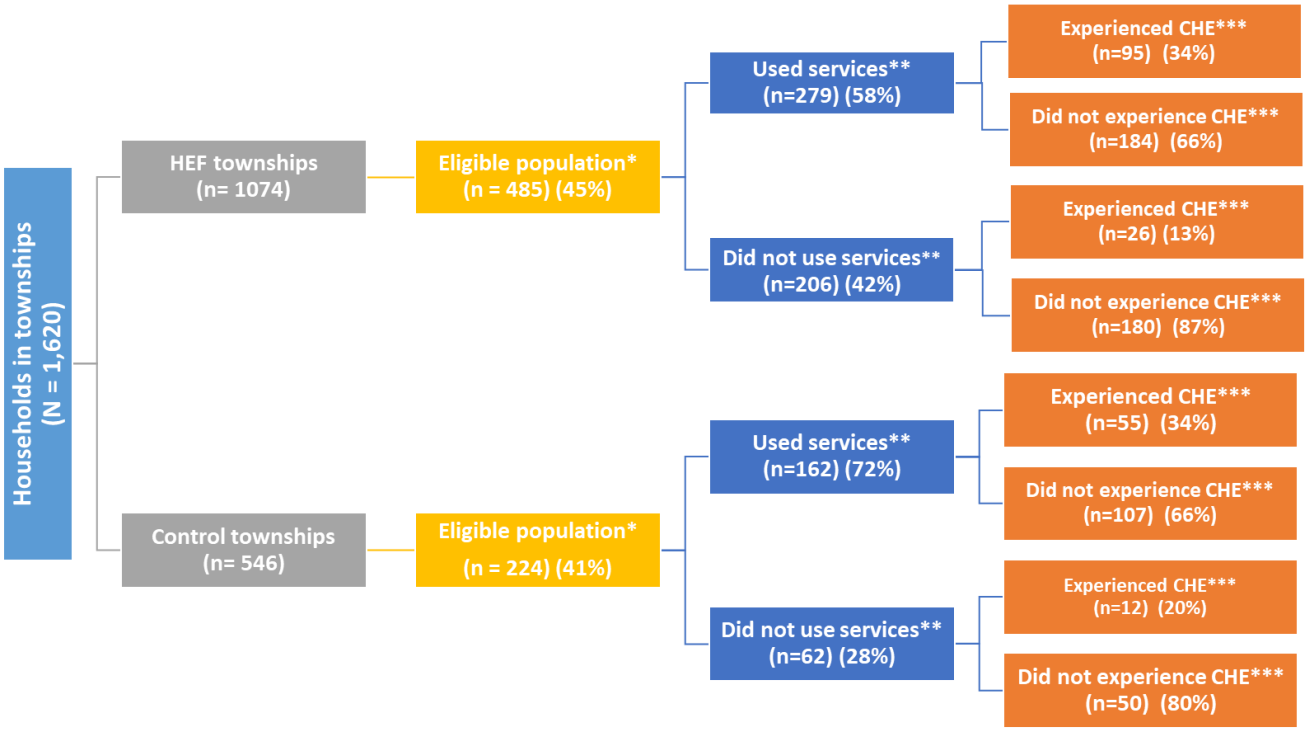
Figure 33: Experience of services covered by HEF and experience of CHE (HEF criteria)



**Eligibility based on HEF Criteria*
***Services: Deliveries, emergencies, childhood acute illness*
**** Significant, P Value < 0.05*
Source: Household survey

These findings are confirmed by using the wealth index as a measure of eligibility (Figure 34). The number of people eligible for HEF scheme was higher using the wealth index compared to using the HEF criteria, with 485 people being eligible in the intervention group and 224 households in the control group. Of the eligible population, 58% in the intervention group reported using any service while 72% was found in the control group. A third of the households among users in the intervention group experienced CHE, with the difference being significant between non-users (Chi2 test, p=0.001).

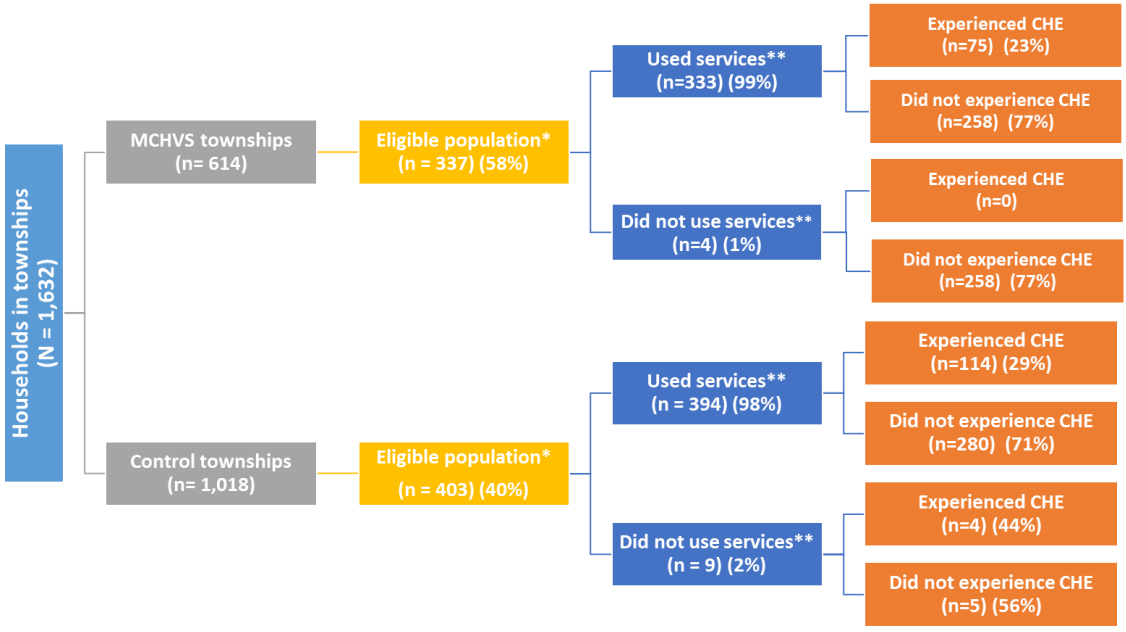
Figure 34: Experience of services covered by HEF and experience of CHE (Wealth index)



**Eligibility based on wealth index*
***Services: Deliveries, emergencies, childhood acute illness*
**** Significant, P Value < 0.05*
Source: Household survey

The MCHVS experience among the households based on the wealth index eligibility criteria was explored (Figure 35). The number of people that were eligible for MCHVS scheme was 337 people for intervention group and 403 people for control group. Of the eligible populations, 99% in the intervention group reported using any service and 98% was found in the control group. Close to a quarter of the users in the intervention group and a third of users in control group experienced CHE upon using the services, although this difference was not statistically significant (Chi2 test, p=0.282). While utilization of MCHVS-covered services was higher in the eligible population, experience of CHE was as common across the quintiles.

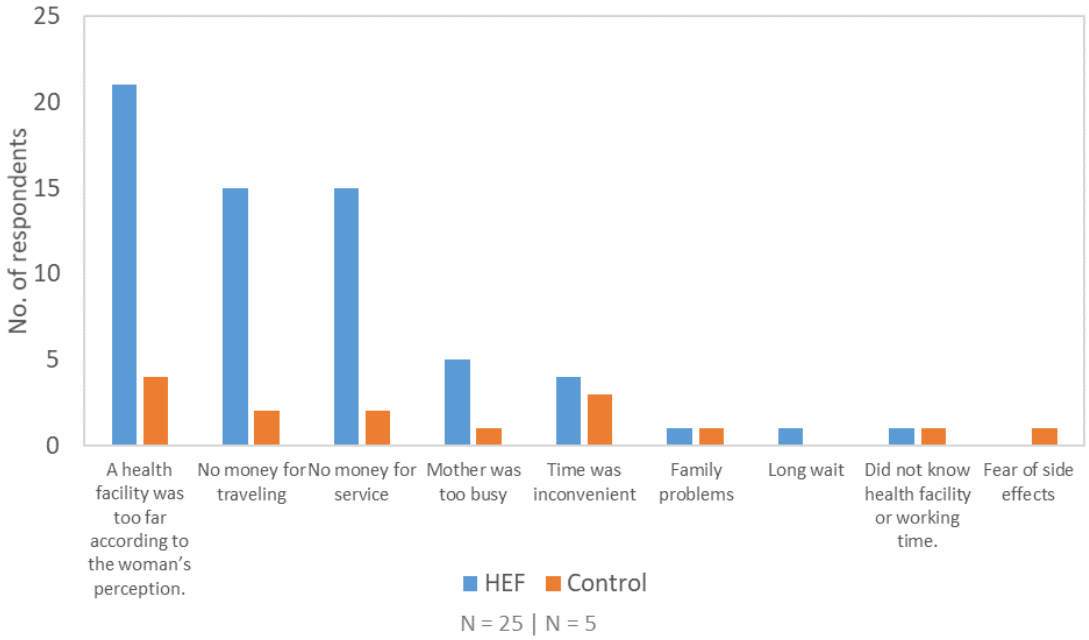
Figure 35: Experience of services covered by MCHVS and experience of CHE (Wealth index)



**Eligibility based on wealth index*
***Services: ANC, Deliveries, PNC, Immunization*
Source: Household survey

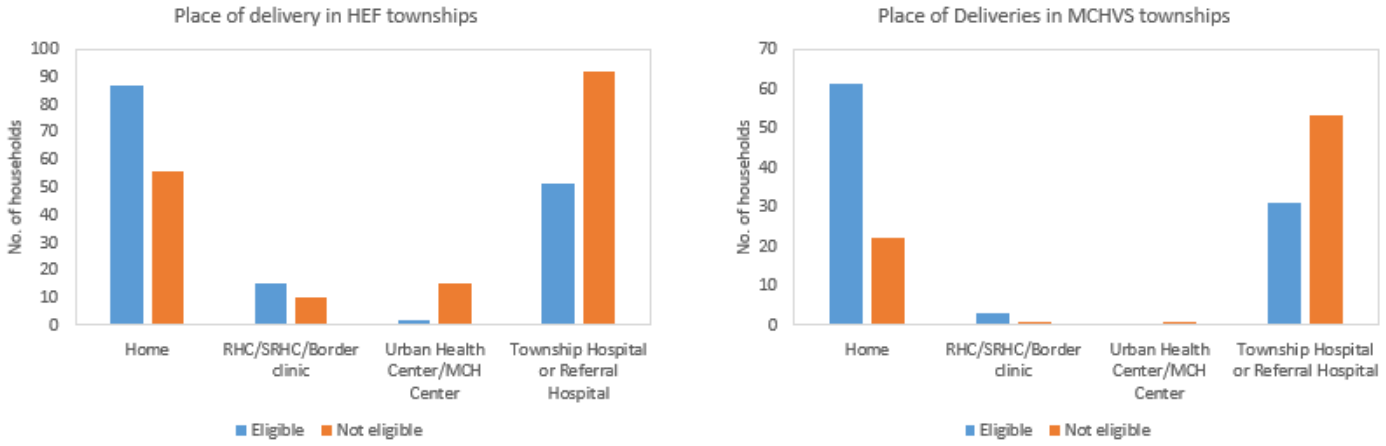
Another element of appropriateness of the design of the benefits package is about tackling the barriers related to the Reasons for not seeking deliveries from SBAs were explored (Figure 36). The top three reasons for not seeking deliveries from SBAs among the HEF households were 1) a health facility was too far; 2) no money for travelling; and 3) no money for service. For the control group, those were 1) a health facility was too far; 2) time was inconvenient; and 3) no money for travelling and service. In terms of deliveries, there appears to be a preference for home-based deliveries especially in the eligible population as shown in Figures 37 for both, HEF and MCHVS townships. This trend is observed in the M&E data for MCHVS as well, where mid-wives also receive an incentive to provide home-based deliveries (Figures 38).

Figure 36: Reasons for not seeking deliveries from SBAs



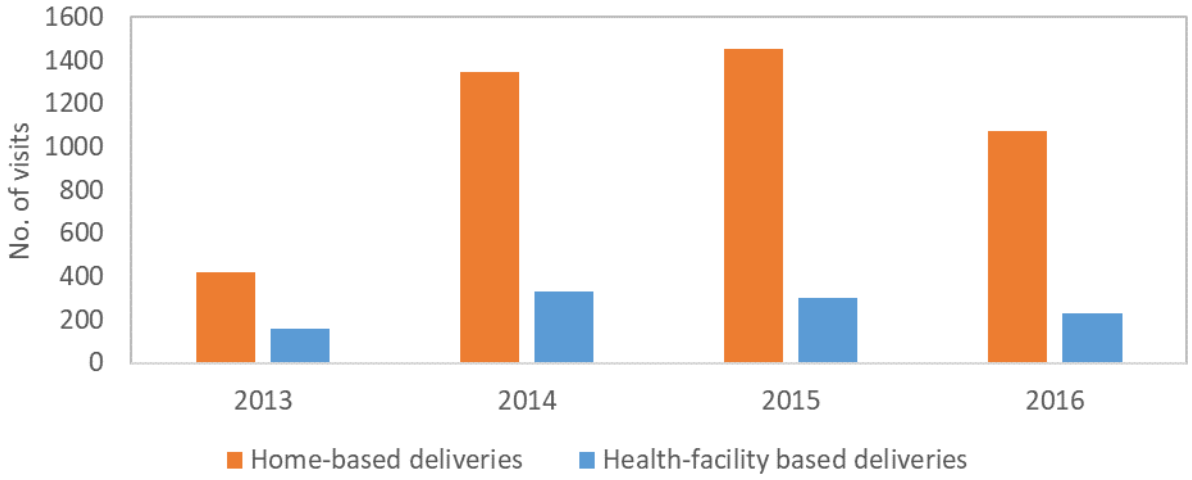
Source: Household survey

Figure 37: Deliveries by place and eligibility for HEF and MCHVS (Wealth index)



Source: Household survey

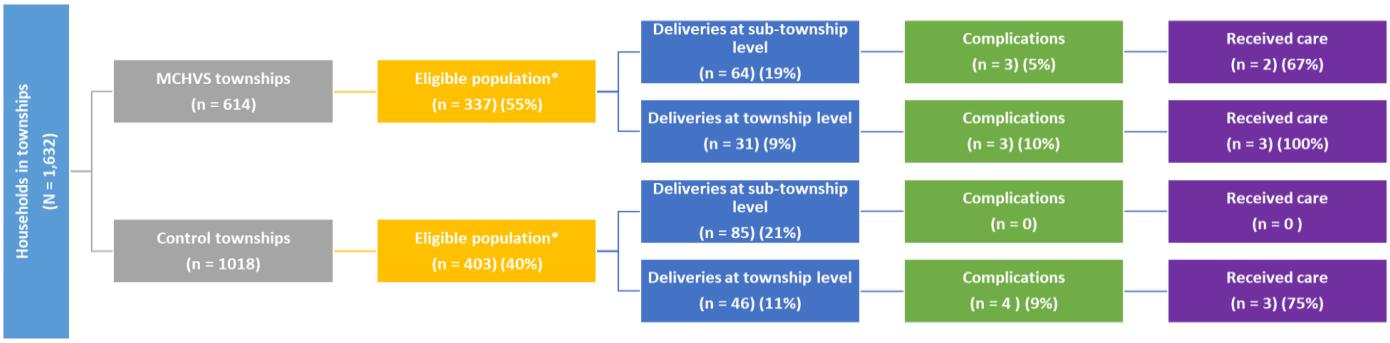
Figure 38: Deliveries under MCHVS by place



Source: Gavi HSS Financial Data

Among the 337 eligible households in the intervention group, 64 people (19%) reported having deliveries at sub-township hospitals and 31 people (9%) at township level. Three cases from each group reported experiencing complications and of these, two received care. In the control group, 85 people (21%) reported having deliveries done at sub-township hospitals and 46 people (11%) at township level. Four cases who delivered their baby in township level experienced complications. In most cases, receiving care on account of complications was done through counseling and not referrals. This is presented in Figure 39.

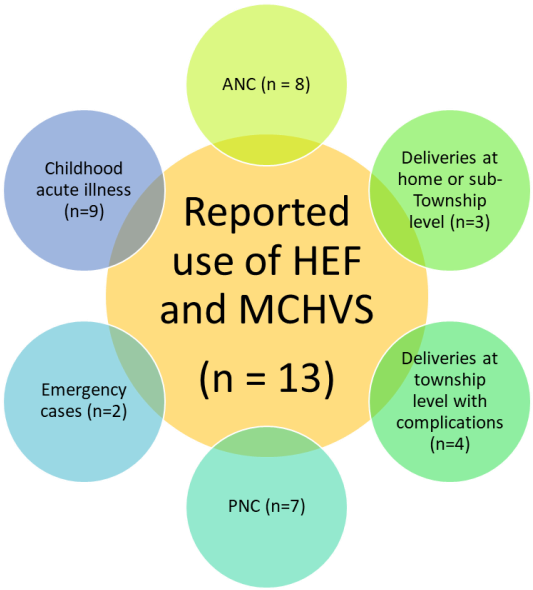
Figure 39: Link between MCHVS and HEF through referrals



**Eligibility based on wealth index*
Note: Matched for MCHVS townships only
Source: Household survey

The households in townships reporting use of HEF and MCHVS were explored (Figure 40). In total, there were only thirteen users who had used both, HEF and MCHVS. The service where the most households reported use of HEF and MCHVS was childhood acute illness (n = 9) followed by ANC (n = 8) and PNC (n = 7). Only four households reported using deliveries at the township level due to complications. As suggested in Figure 39, there were no referrals reported hence it is not clear whether there was actually a link between the use of the two schemes.

Figure 40: Use of both HEF and MCHVS



Source: Household survey

Key Question 4: Utilization of services

Has utilization of the target health services increased as a result of the schemes?

Key messages:

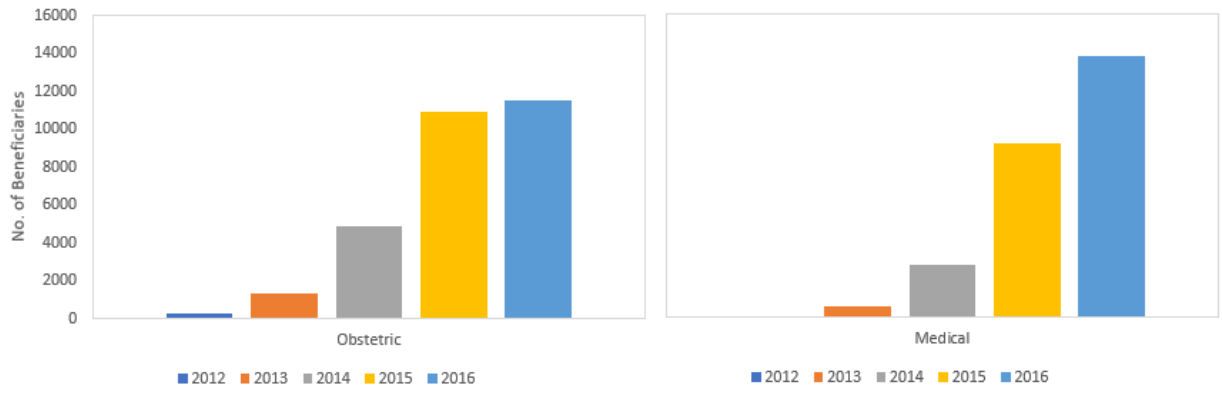
- There has been an increase in reported utilization of services over the years of the Gavi HSS support.
- For MCHVS, utilization dipped in 2016, a no-cost extension year, possibly due to limited number of printed vouchers.
- The eligible population appears to use home-based deliveries in the intervention townships.
- There appear to be inconsistencies in the financial data, proxy for use, regarding ANC, deliveries and PNCs for MCHVS.

One of the aims of the two schemes is to improve access and utilization of target health services. The utilization of targeted services has been analyzed by examining the M&E data and household survey data. In the case of HEF, the services covered are deliveries with complications,

emergency services and childhood acute illness whereas in the case of MCHVS, ANC, deliveries, PNC and immunization of children are included. Additionally, usage of single versus multiple services covered has also been reviewed.

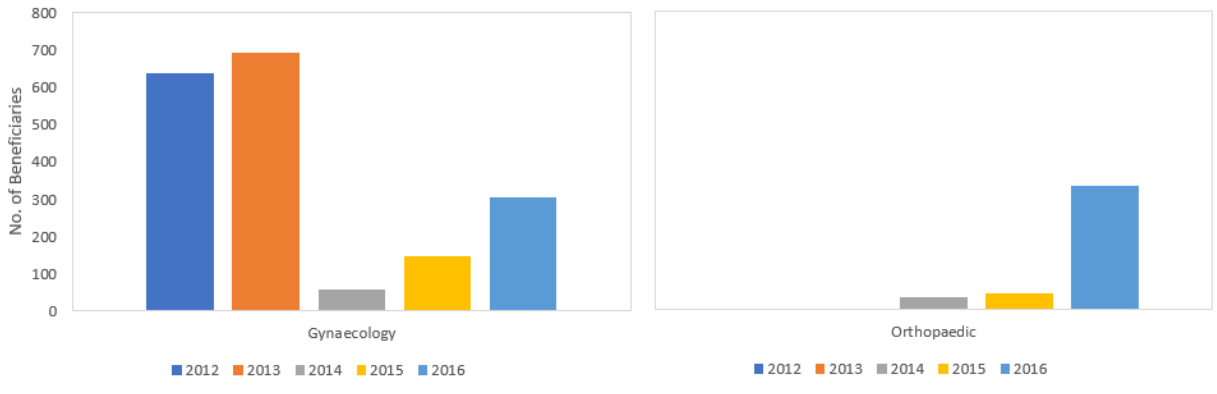
The HEF M&E data suggests that there has been a year-on-year increase in the number of beneficiaries covered. Looking at the breakdown in treatment types in Figures 41-43, one observes that the number of beneficiaries increased dramatically in 2015 and continued to increase in 2016 for surgical, medical and obstetric cases. On the other hand, gynecology cases reduced in 2014 but have picked up in 2015 and 2016. Orthopedic cases have been included starting 2014 and grew in 2016. There has been a change in the composition of the types of treatments covered as depicted in Figure 44: in 2012, a fifth of the beneficiaries were classified as gynecology cases (21%) whereas by 2016, close to half of the cases were medical cases (46%), followed by obstetric cases (38%).

Figure 41: Number of beneficiaries by treatment type: Obstetric and Medical



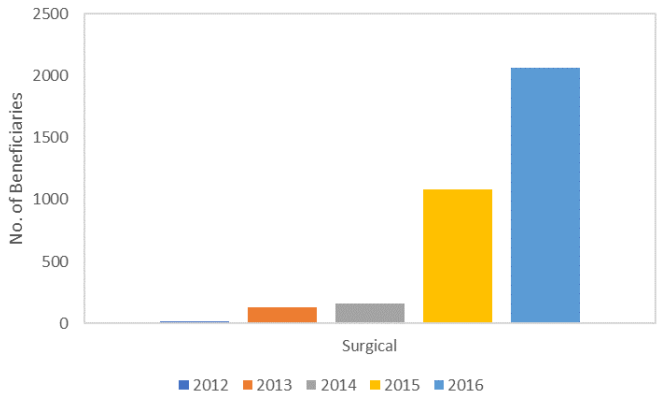
Source: Gavi HSS M&E Data

Figure 42: Number of beneficiaries by treatment type: Gynaecology and Orthopaedic



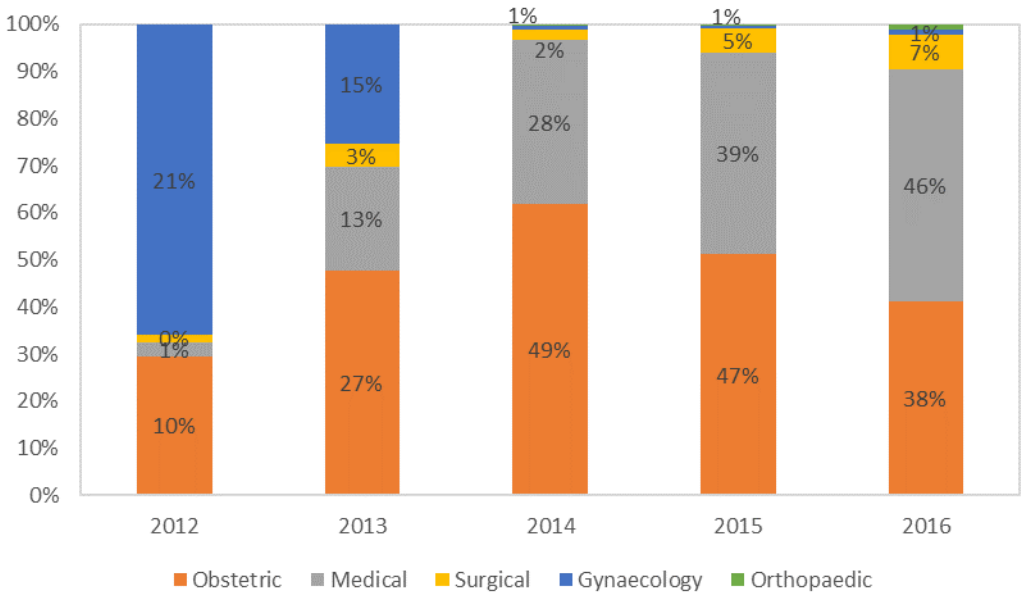
Source: Gavi HSS M&E Data

Figure 43: Number of beneficiaries by treatment type: Surgical



Source: Gavi HSS M&E Data

Figure 44: Composition of beneficiaries by treatment type (2012-16)

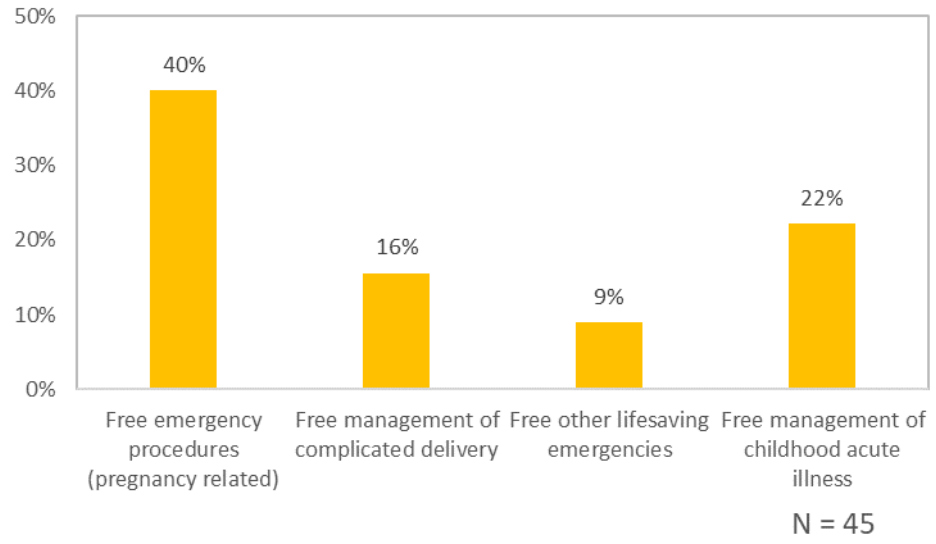


Source: Gavi HSS M&E Data

Among the 45 households who reported using services under HEF (4% of total in group), the most frequent service utilized was the free emergency procedure related to pregnancy, followed by free management of childhood acute illness (Figure 45). The majority of participants (53%) reported receiving only one service under the HEF (Figure 46). A comparison of all households in the treatment and control groups shows, however, that childhood acute illness was the most common of the services that was used and while the use of emergency services for deliveries were marginally higher in HEF townships, the difference was not significant (Figure 47).

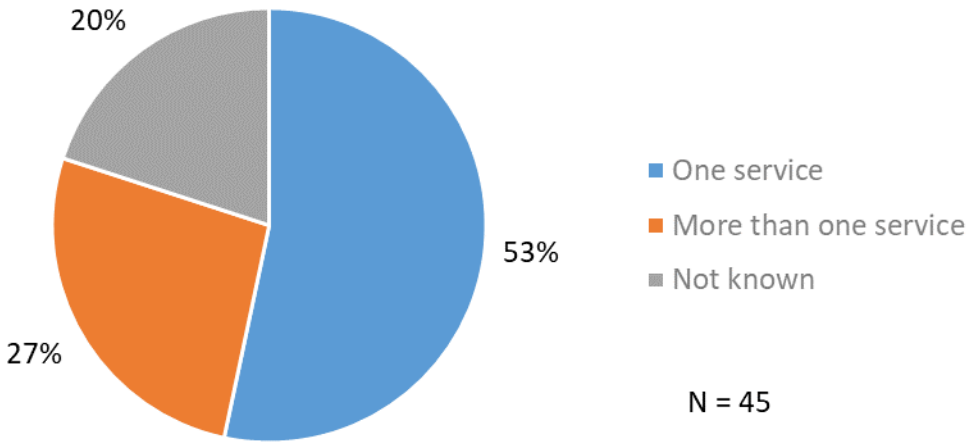
The utilization of healthcare in the case of emergencies and childhood acute illness is significantly higher in the control group.

Figure 45: Reported Use of HEF services



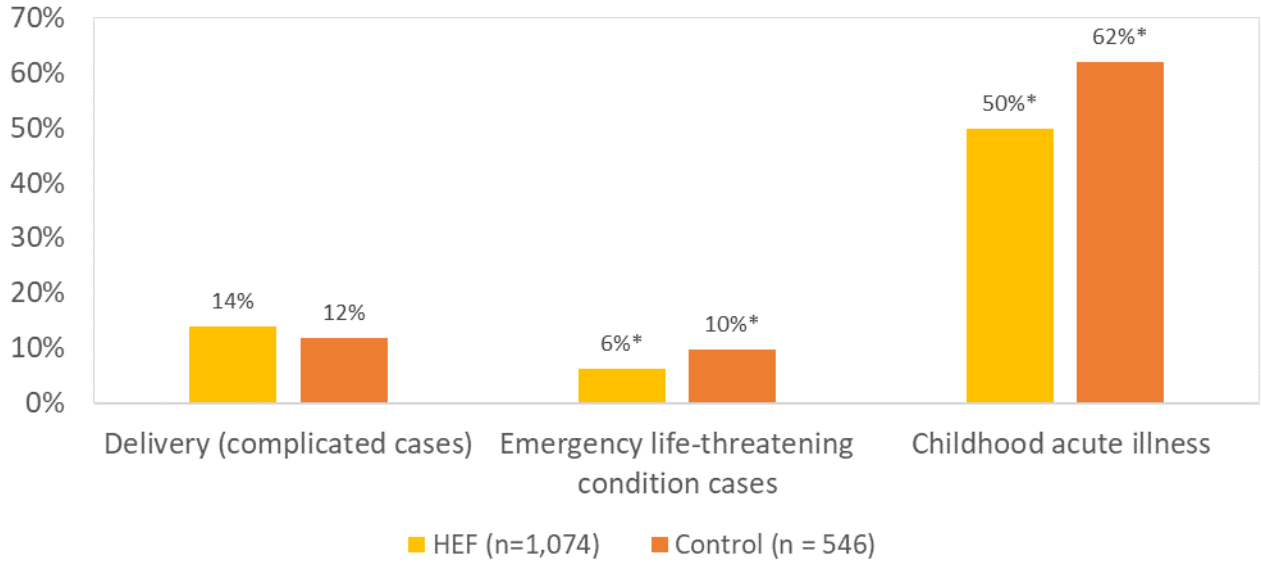
Source: Household survey

Figure 46: Reported use of one or more HEF services offered



Source: Household survey

Figure 47: Reported receiving Delivery (complicated cases), Emergency life-threatening condition cases and Childhood acute illness in HEF Townships



** Significant, P Value < 0.05*

Source: Household survey

In the case of MCHVS, the most frequent service utilized by respondents was the free immunization by SBAs (98%), followed by free ANC by SBAs (90%). The majority of the respondents reported receiving more than one service under the MCHVS (Figure 48). This contrasts with the results for HEF, where more than 80% of those who stated using HEF said that they only accessed one service (Figure 49). There is no significant difference in the use of ANC, deliveries and PNCs between MCHVS and control groups however, utilization of immunization services is higher in MCHVS townships compared to the control group (Figure 50).

Figure 48: Reported use of MCHVS services

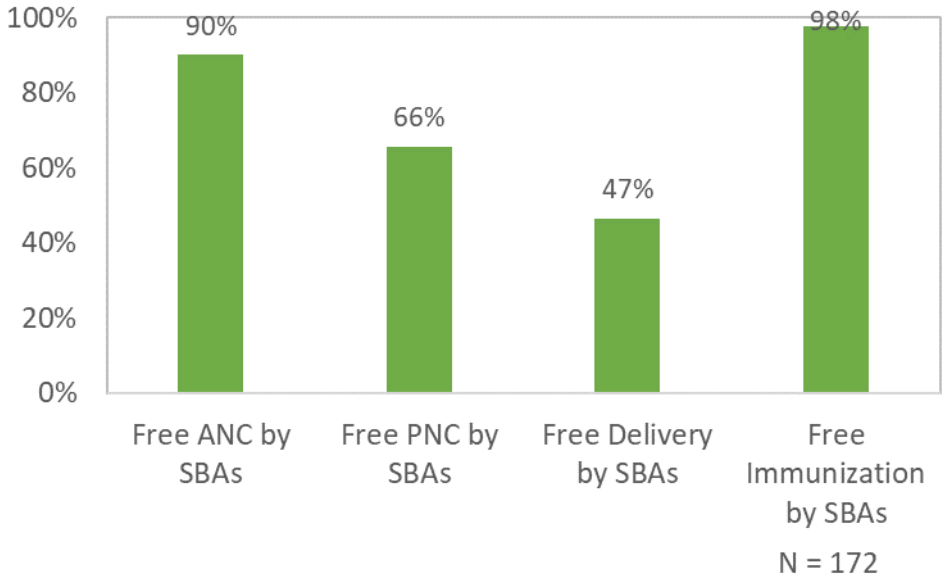


Figure 49: Reported use of one or more MCHVS services

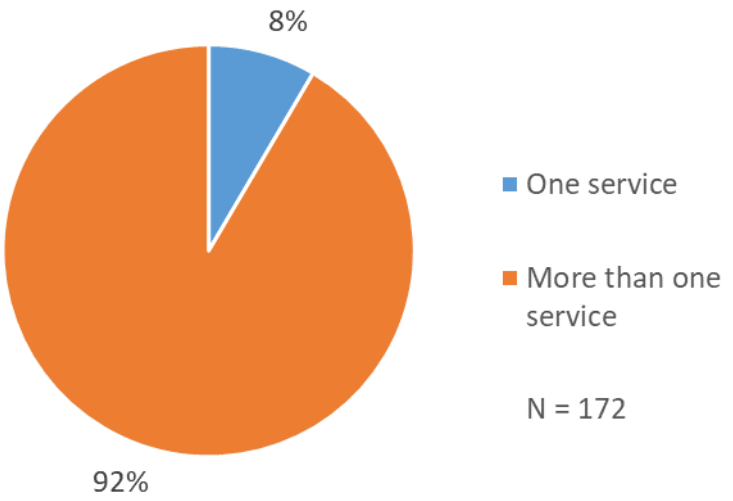
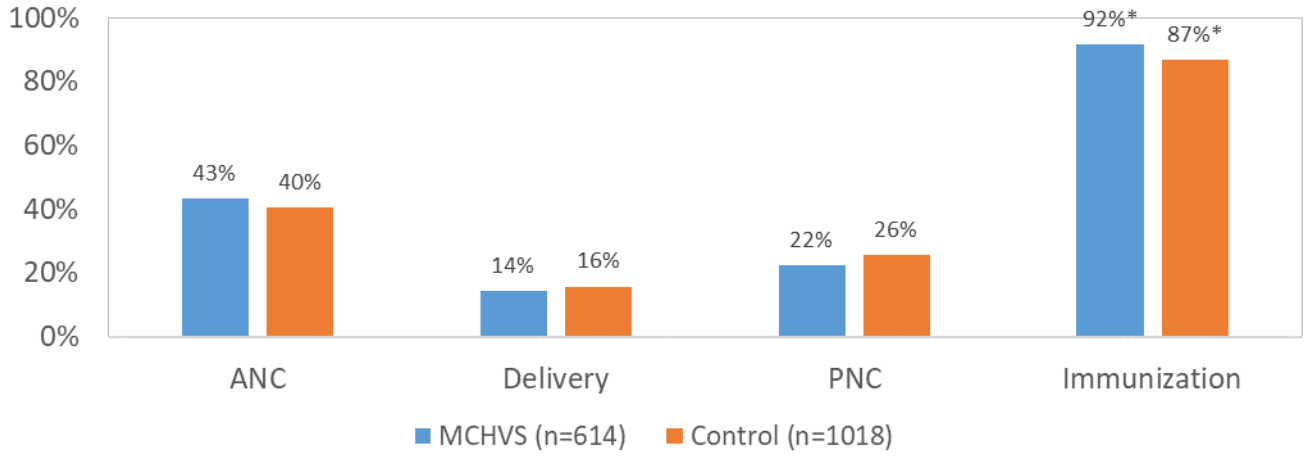


Figure 50: Reported receiving Antenatal Care, Deliveries and Postnatal Care in HEF Townships



* *Significant, P Value < 0.05*

Key Question 5: Financial protection

What is the impact of the HEF and MCHVS on Out-of-pocket (OOPE)/Catastrophic Health Expenditure (CHE) of households?

Key messages

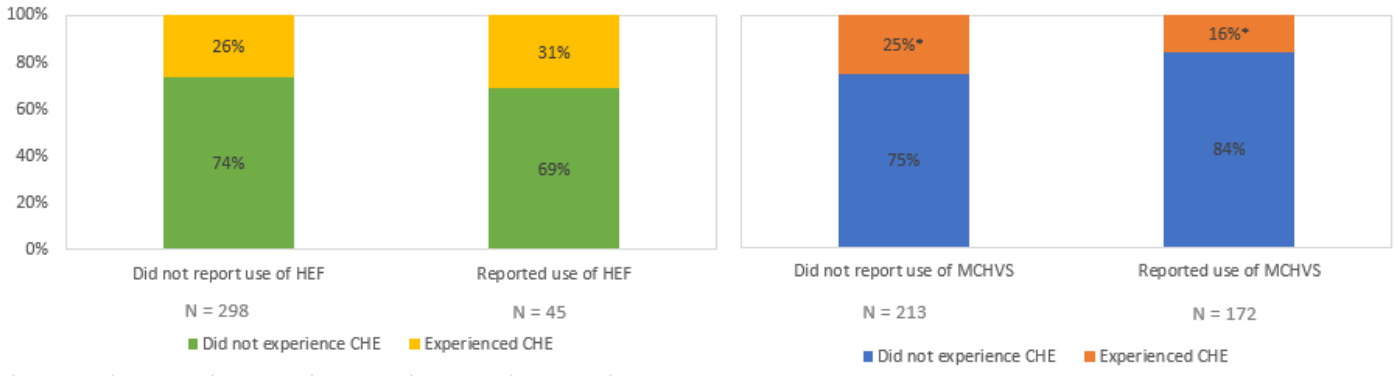
- There is a significant difference in healthcare expenditure between households reporting use and those not reporting use of MCHVS.
- Average payment per case decreasing over time.
- Expenditure on food is lower in HEF and MCHVS townships compared to control townships.
- Households rely on own income or savings to support health expenditure

The other key element of the two schemes was to provide financial protection to households. In this section, the extent to which use of HEF or MCHVS impacted CHE and the amount of expenditure paid to households using M&E data is analyzed. Household expenditure on food, non-food and health is also presented.

Analysis of the data shows that those reporting use of MCHVS were less likely to experience CHE compared to those who did not report use of HEF or MCHVS as shown in Figure 51. The difference in the proportion of households experiencing CHE among self-reported users and non-users of MCHVS was statistically significant indicating it was more effective. However, there is no association between the households with reported HEF users and those experiencing CHE. This finding is confirmed by a logistic regression analysis that found that MCHVS users were about 49% less likely to experience CHE (AOR 0.51, 95% CI 0.31, 0.82; p value= 0.01) as compared to non-users of MCHVS, also statistically significant (Table 11). On the other hand, households that reported having HEF users were 35% more likely to experience CHE (AOR 1.35, 95% CI 0.66,

2.74, p value = 0.41) compared with households that did not report the use of HEF, however, the association was not statistically significant.

Figure 51: Catastrophic health expenditure among households reporting use of HEF or MCHVS



* *Significant, P Value < 0.05*

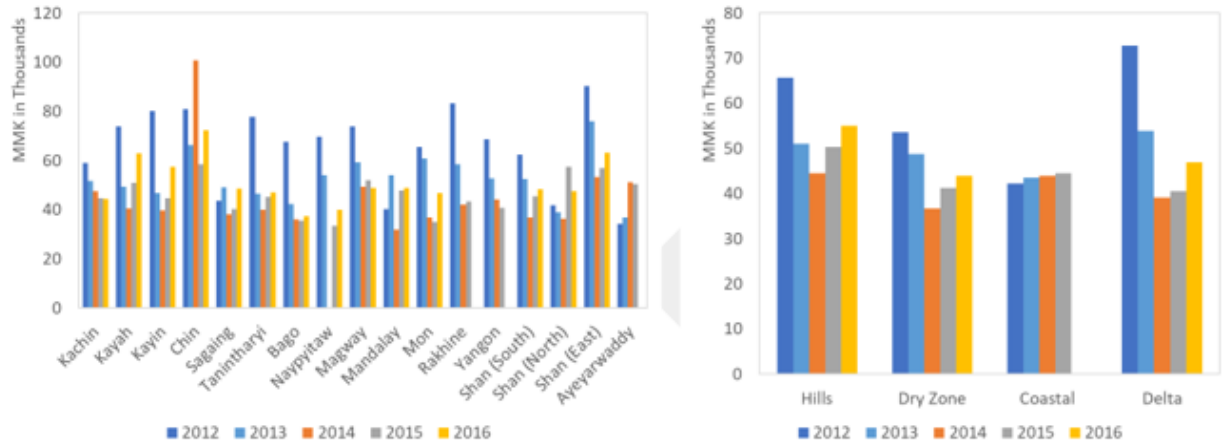
Note: Total number of households who were aware of the respective schemes

Table 11: Catastrophic health expenditure and use of HEF and MCHVS (Results from logistic regression)

	Unmatched sample		Matched sample	
	OR (95% CI)	**P Value**	**OR (95% CI)**	**P Value**
Use of MCHVS				
Did not report use of MCHVS	Ref	0.01	Ref	0.01
Reported use of MCHVS	0.49 (0.32, 0.75)		0.51 (0.31, 0.82)	
Use of HEF				
Did not report use of HEF	Ref	0.28	Ref	0.41
Reported use of HEF	1.38 (0.76, 2.51)		1.35(0.66, 2.74)	

The average payments to beneficiaries, as recorded in the M&E data, suggest that average payments per patient fell in the first three years and then climbed up although not to the level in 2012 (Figure 52). Although there is some variation across states and regions. The average payment per case in 2016 was about MMK 70,000 (USD 57) in Chin and was less than MMK 40,000 (USD 33) in Bago. The difference was less acute when viewed in terms of zones, where hilly areas had a higher cost per case of about MMK 55,000 (USD 45) and dry zones, about MMK 42,000 (USD 34). This difference may be a function of topography or other factors.

Figure 52: Average HEF payments by States and Regions and Zones (2012-16)



The Figure 53 presents expenditures for food, non-food consumption and health care in HEF and MCHVS townships and compared with control townships. Average expenditure on food per household was lower in MCHVS (median MMK 1,147,146 or USD 845) as compared to control townships (MMK 1,433,933 or USD 1,057) and this was statistically significant at 5% level of significant (ttest, p=0.001). While average expenditure on food per household was lower in HEF townships compared to control townships, the difference was not statistically significant (ttest, p=0.590. Similarly, HEF & MCHVS townships saw a lower level of average expenditures for non-food consumption and health care compared to control townships (Figures 54 and 5%); however, the association was not statistically significant. Most households paid for healthcare expenses from their own income or by borrowing as shown in Figure 56.

Figure 53: Food expenditure in HEF and MCHVS

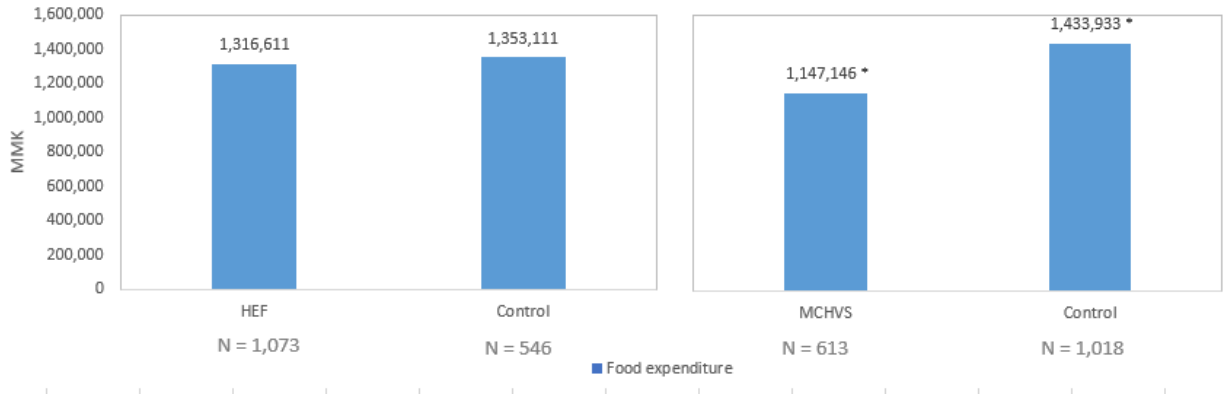


Figure 54:Non-food expenditure in HEF and MCHVS

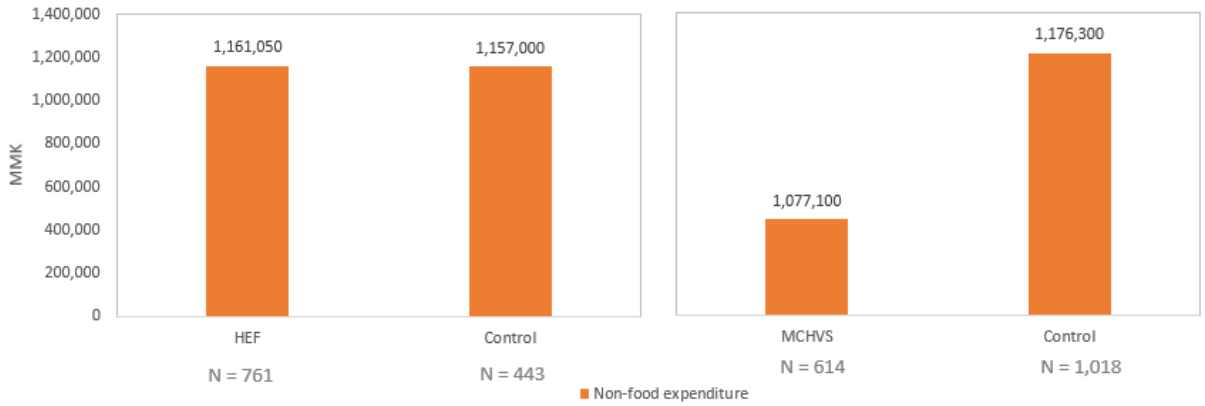


Figure 55: Health expenditure in HEF and MCHVS

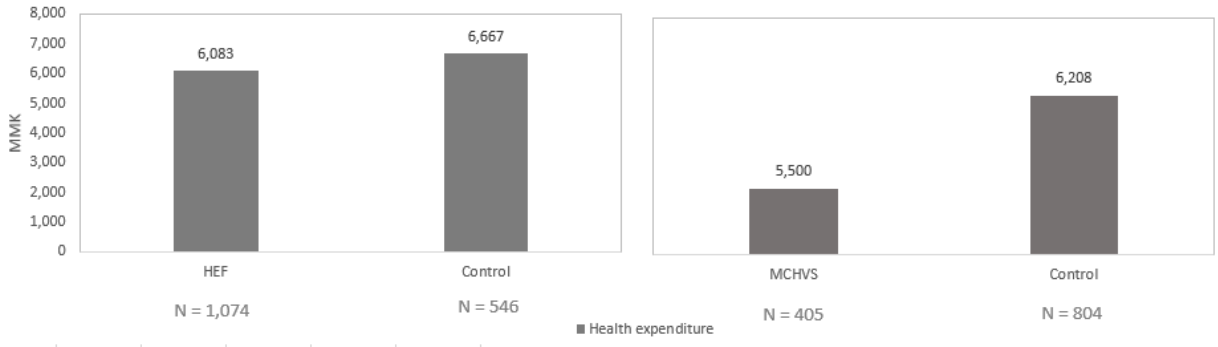
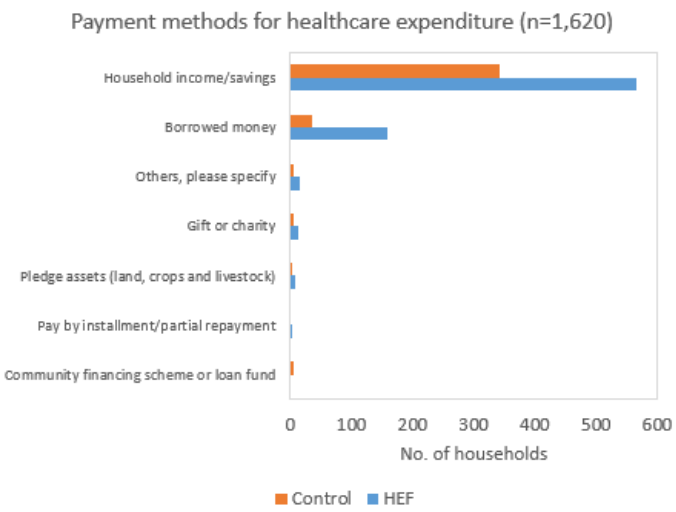
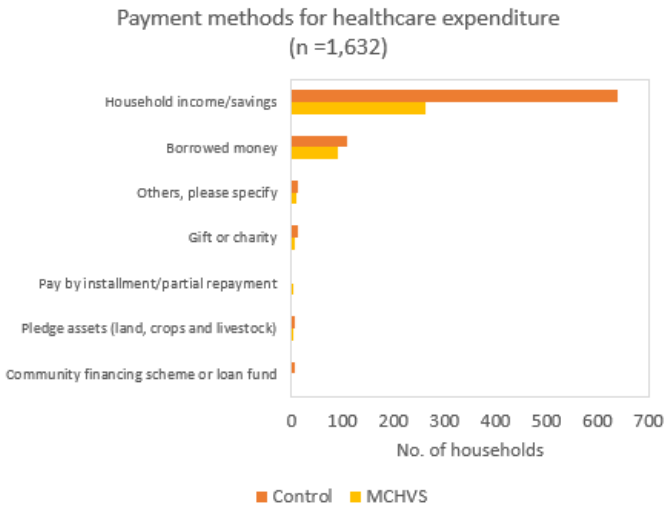


Figure 56: Payments methods for health expenditure





Key Question 6: Program implementation

What kind of incentives and disincentives do providers and administrators face when extending services to patients eligible for HEF/MCHVS?

Key messages:

- Guidelines may need to be revisited over the course of the program implementation in order to have a direct impact.
- The implementation of HEF highlighted the need for management of funds at the delivery level, regularity in the flow of funds to delivery points, inclusion of relevant health facilities and addressing supply-side issues such as incentives to staff.
- Staff and resources were mobilized for M&E of HEF; in the case of MCHVS, records appear to have been maintained on a regular basis as a data assistant was hired for M&E purposes.

In order to understand the implementation of the two schemes, information from the document review, self-assessment form, secondary data sources and consultations with stakeholders was synthesized. The processes and the management of the schemes, together with implications for sustainability are presented hereunder.

The differences between the schemes in terms of design and coverage of beneficiaries have been summarized in Table 9. Each scheme was governed by guidelines or protocols which specified how the schemes were to be implemented. In terms of process specifications, the HEF guideline covered the referral process, assigned fund holders, detailed the beneficiary assessment form as well as the financial reporting process (Figure 57). The MCHVS protocol described the process for voucher distribution, financial management, communications and M&E (Figure 58).

Figure 57: Process-related components of HEF guideline

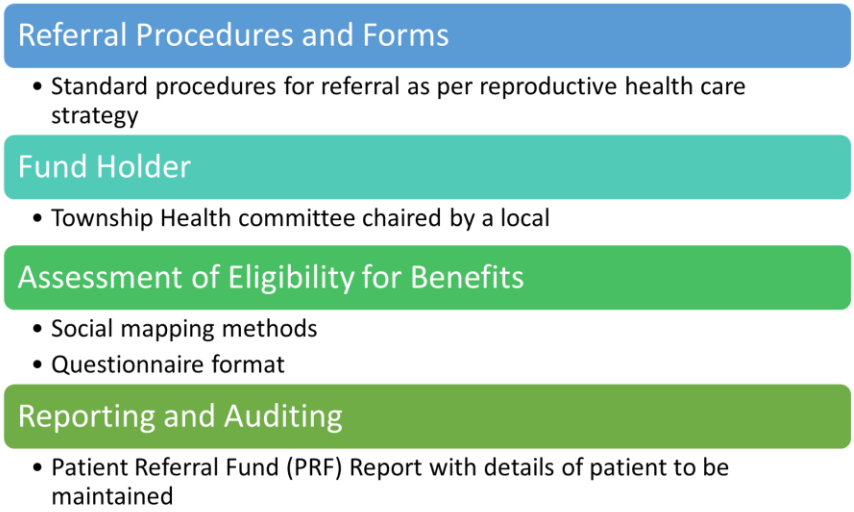
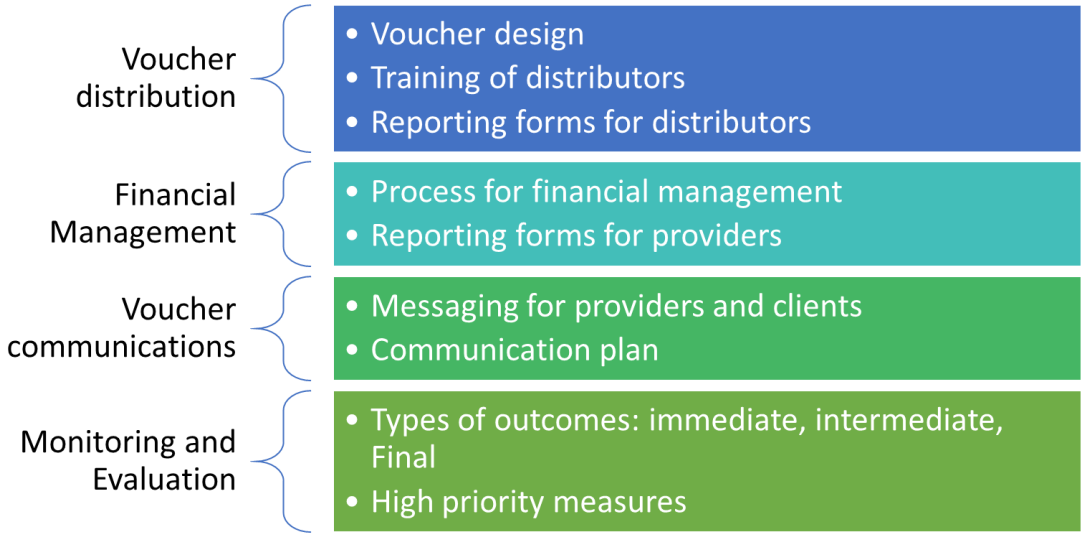


Figure 58: Process-related components of MCHVS protocol



In the case of HEF, guideline recommendations for identification of beneficiaries was found to be either tedious or ambiguous by respondents to the self-assessment form. The HEF card was discontinued after initial implementation. Financial reporting from the township level required more attention and over time the process was refined. The scope of the HEF in terms of which townships and facilities should be covered for implementation was not based on a consultative or analytical approach. Further, low implementation capacity was cited as a major challenge for HEF which did not provide any incentives to providers. Leadership and initiative shown by the TMO was noted as being key to the success. The HEF scheme was not widely advertised as program managers were not certain they would be able to provide the services.

There were several challenges encountered in the implementation of the HEF (Figure 59). Delays were encountered in receiving funds at the township level each year. This is reflected in the trend in payments made to beneficiaries which peaks only in August (Figure 60). At the township level, financial management of the funds was found to be an important task requiring full time attention. Different users noted different areas for improvement as shown in Figure 61.

Figure 59: Challenges encountered in implementing HEF

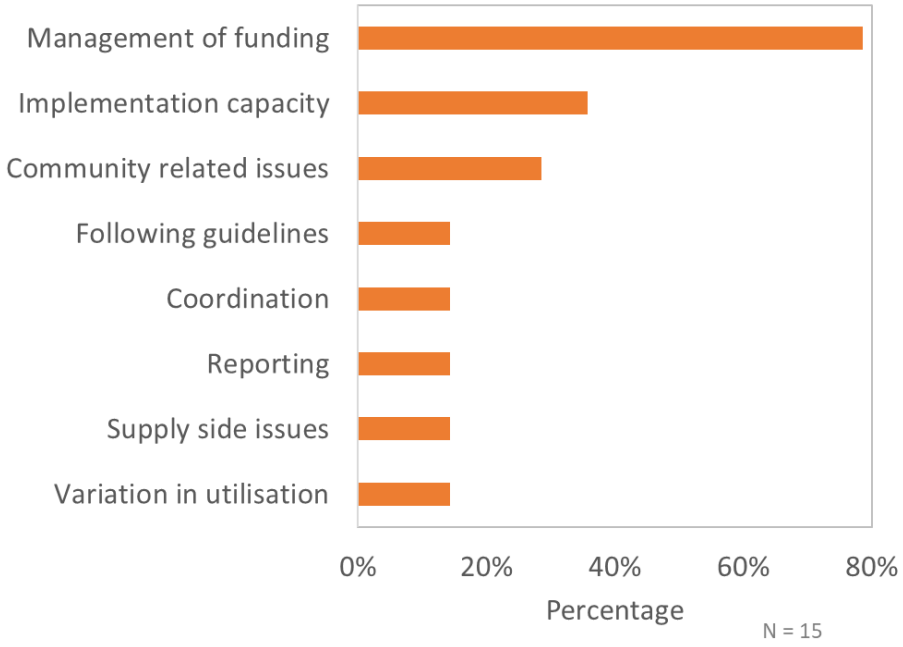
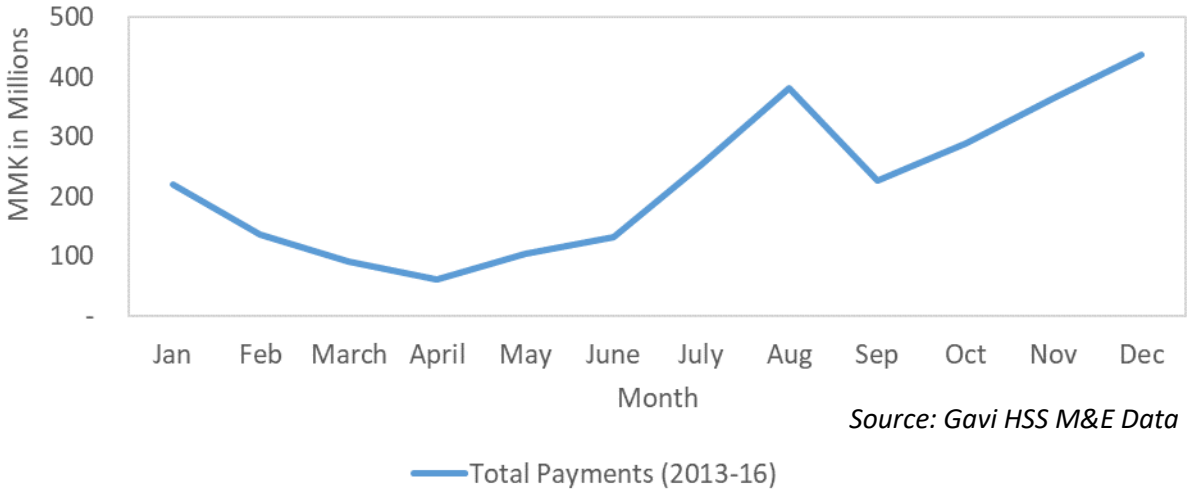
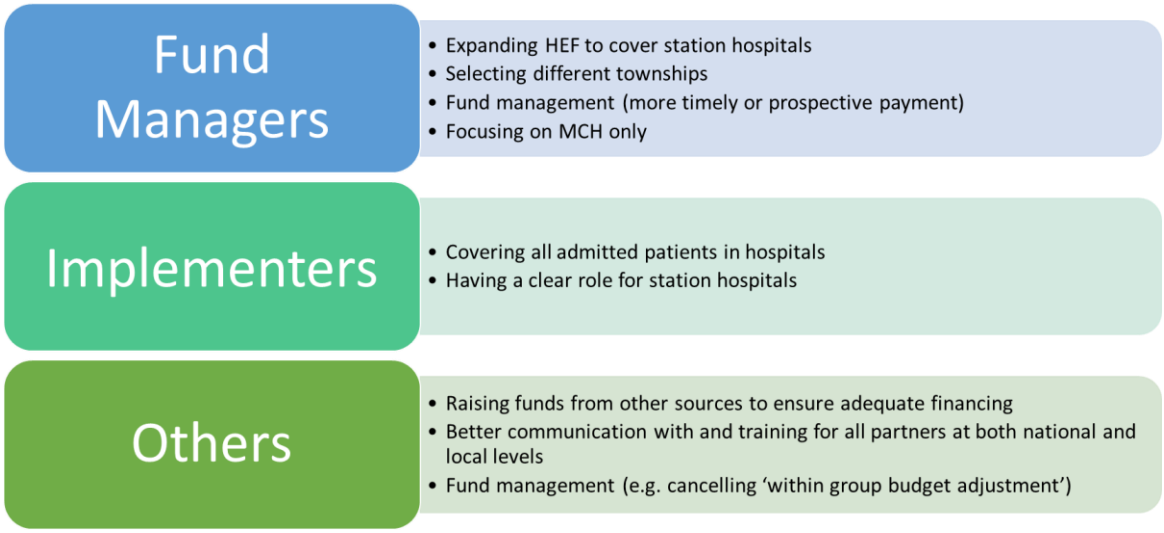


Figure 60: Flow of funds to beneficiaries over the years (2013-16)



Source: Gavi HSS M&E Data

Figure 61: Response to question "What would you do differently?"



The financial outlays of the schemes reflect the size and scope of the two schemes. Reviewing the amount disbursed to beneficiaries using M&E data, the HEF provided MMK 2.8 billion (USD 2.5 million) to 67,601 beneficiaries while the MCHVS provided MMK 0.2 billion (USD 0.2 million) to 9,938 beneficiaries, both clients and providers. This translates to an average payment of MMK 42,073 (USD 37) for HEF beneficiaries and MMK 21,678 (USD 20) for MCHVS beneficiaries. In the case of HEF, this suggests that not all beneficiaries used the requisite services or received the maximum amount allocated for each beneficiary (MMK 100,000 or USD 81 in 2016). On the other hand, MCHVS beneficiaries, including providers, received about half the average amount of payments made to HEF beneficiaries. As with the data on utilization, the financial data suggests that while HEF continued to expand in 2016, MCHVS appears to have wound down in the final year, possibly on account of limited availability of vouchers. Table 12 summarizes the amounts disbursed to beneficiaries of both schemes.

Table 12: Amount disbursed to beneficiaries of HEF and MCHVS (2012-2016)

Scheme	2012	2013	2014	2015	2016	Total
			Amount disbursed (MMK)			
HEF	58,301,171	135,946,665	323,009,083	953,963,388	1,372,936,836	2,844,157,143
MCHVS		19,948,000	64,704,000	78,919,500	51,868,500	215,440,000
Total	58,301,171	155,894,665	387,713,083	1,032,882,888	1,424,805,336	3,059,597,143
			Amount disbursed (USD)			
HEF	67,571	145,355	329,518	815,880	1,114,093	2,472,418
MCHVS	-	21,329	66,008	67,496	42,090	196,922
Total	67,571	166,684	395,526	883,377	1,156,183	2,669,340

Note: Total number of beneficiaries: HEF: 67,601 and MCHVS: 9,938

Systems for monitoring and evaluation (M&E) were put in place for both HEF and MCHVS. There are two, inter-linked processes by which the program was monitored: one, through the annual reporting to Gavi (APRs) and the other was by collecting data on the financial and usage of the schemes. The former provided a platform for reporting on progress and addressing high-level or systemic challenges: mid-course corrections were implemented in both schemes and bottlenecks such as underutilization of funds in some townships were rectified. Further, the non-availability of financial staff to manage funds at the township level was also addressed through this mechanism.

The second process entailed data collection by HSSOs, who collected information on utilization. Financial data was reported separately by the appointed clerks. While data has been collected over the period of implementation, there were some gaps and inconsistencies observed in the recording of data. The distribution of HSSOs across States and Regions is shown in Table 13.

Table 13: Distribution of HSSOs

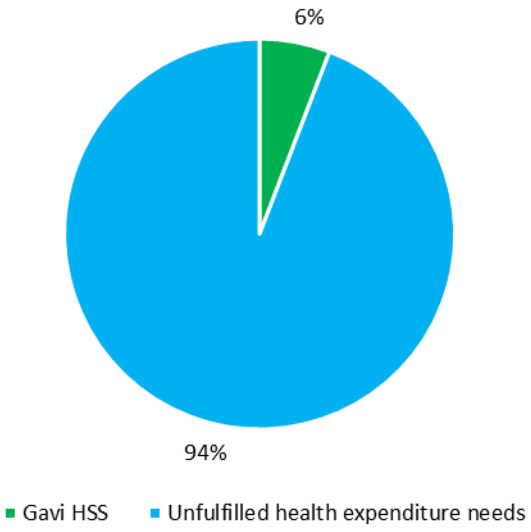
State/Region	2013	2014	2015	2016	2017
Ayeyarwaddy	1	1	1	1	0
Bago	1	1	1	1	0
Chin	1	2	2	2	2
Kachin	1	2	2	2	0
Kayah	1	1	1	1	1
Kayin	1	1	1	1	1
Magway	1	1	2	2	2
Mandalay	1	2	1	1	1
Mon	1	2	1	0	0
Naypyitaw	0	0	1	2	2
Rakhine	1	2	1	0	0
Sagaing	1	2	2	1	1
Shan	3	3	5	5	3
Tainntharyi	1	2	2	1	1
Yangon	1	1	1	1	0
Total	16	23	24	21	14

Note: 1) Shan is sub-divided into North, South and East for administrative purposes.

Notwithstanding the expansion in the schemes, the scale of the HEF remained “drops in the ocean” as mentioned in the HEF mid-term review, together accounting for only 6% of health expenditure in the six townships covered in the household survey (Figure 62). However, the MCHVS, which went “deeper” in the two townships, appeared to have fared better: based on the census data from 2014, 9% of the female population in Bago is of reproductive age and it is estimated that there are about 10,000 women of reproductive age (15-49 years) in Yedarshe and about 6,000 women of reproductive age (15-49 years) in Paukkaung [19]. As the number of MCHVS beneficiaries presented here is cumulative, it suggests that the scheme covered 70% and

53% of the eligible population in Yedashe and Paukkhaung, respectively. However, this underestimates the number of women covered as not all women of reproductive age were eligible for MCHVS based on the criteria for the scheme.

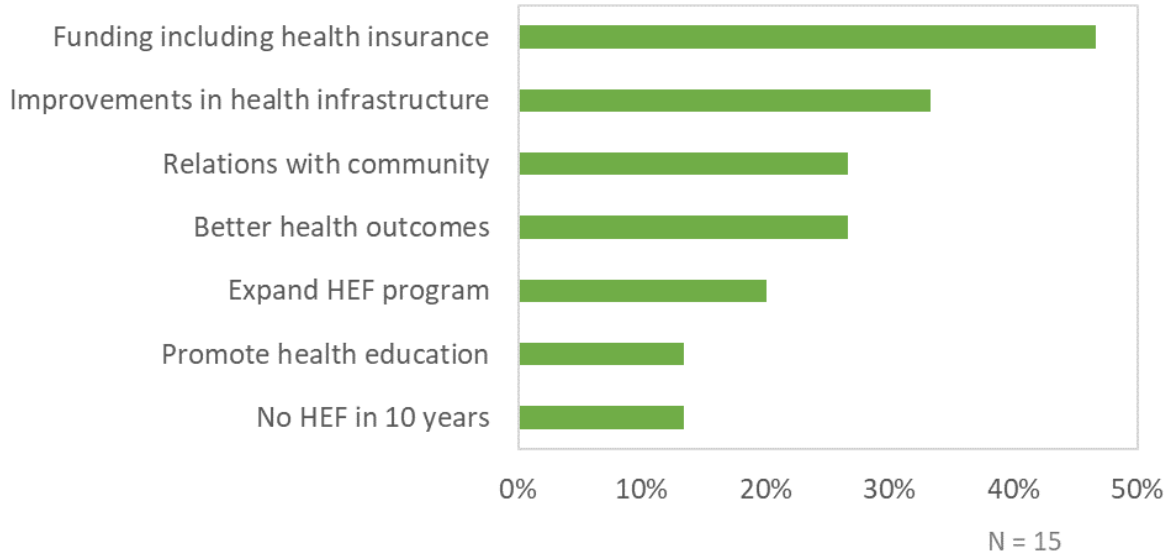
Figure 62: Coverage of health expenditure needs of households



Note: Estimated from household expenditure on health derived from survey and compared with township population in Census 2014 (adjusted for women in reproductive age). Calculated for six townships where Gavi HSS was implemented and survey was conducted.

The schemes were entirely donor dependent and will not be continued in their current form going forward. In part, this is because donor priorities changed during the period of implementation of HSS and these schemes using either government budget or other forms of financing. Respondents to the self-assessment form indicated that there are several dimensions to sustainability of the program as shown in Figure 63.

Figure 63: Perceptions on sustainability



Source: Self-assessment Form

Discussion

Gavi HSS Schemes

The HEF and MCHVS cover two sets of services and were administered differently in Myanmar. As two distinct models of health financing, they offer insights on the design and implementation of schemes in the country. In this section, the results of the two schemes are discussed to proffer lessons on health financing schemes in Myanmar.

The two schemes identify finance as one of the main barriers for accessing care and while HEF covers emergency care for pregnant women and children from the eligible population, MCHVS focuses on providing a package of services to pregnant women and children and also includes immunization. The findings of this study suggest that users of MCHVS were less likely to experience CHE compared to non-users of MCHVS and while users of HEF were also less likely to experience CHE, the result is not significant. However, as the findings also show, the services covered by HEF were more like to lead to CHE. It is possible that HEF users did not experience lower levels of CHE compared to non-users of the scheme due to the relatively low monetary compensation disbursed per beneficiary as compared to the need, and also because of the limited package of services covered by the scheme.

While there were guidelines on who was eligible for both schemes, application of these criteria was not straightforward. For example, the HEF card which given based on a social mapping exercise was discontinued after a period of time and while township hospitals had an objective set of criteria to select beneficiaries, these turned out to be rather stringent and practitioners had to use their judgement to provide benefits to those in need. The expansion of

the scheme to cover emergency cases also suggests that the type of services initially covered by the scheme were not adequate. The MCHVS, however, appeared to have followed a more targeted approach. This may be because mid-wives were likely to have knowledge about the income levels, asset ownership and household characteristics of their clients. The effect of limited efforts to target households was that self-reported users of HEF and MCHVS in the household survey were spread across the wealth quintiles, even as the latter was relatively more effective in targeting its beneficiaries. A study on the HEF recommended using consumption based scoring to identify the target population for HEF and should be explored further [20].

The study sheds light on the design of the two schemes. In the case of the HEF, the effectiveness of the scheme may have been limited as the services covered by the scheme were provided at other facilities as well. It may therefore be worth considering an expansion of the scheme to other types of facilities where similar services are provided such as at station hospitals. There is no set referral pathway for accessing health services: patients can directly go to higher levels of hospitals in any township. This may have an impact on the workload of township hospitals with implications for the financing available to beneficiaries. It was reported, for example, that patients came from other townships and the TMO would try to use the HEF to ensure that the needy could access the services. Further, the HEF and MCHVS were designed to complement each other; MCHVS was a community level intervention linked with the RHCs and SRHCs whereas the HEF was targeted at the township hospital level where inpatient services were provided. The household survey revealed that there is little to no perceptible linkage between MCHVS and HEF through the referral system, which may be taken into account when designing tertiary and community level schemes. The linkages between the two schemes need to be explored further.

The findings from the self-assessment form underscore the importance of addressing supply-side factors. Under the HEF, there was no incentive for staff who, with higher utilization of healthcare and increased administrative requirements, faced increased work pressure without compensation. The MCHVS scheme, on the other hand, provided incentives to users as well as providers. Analysis of the MCHVS M&E data suggests that incentives to providers for home-based deliveries can also play a role in increasing utilization of healthcare services in the context for a revealed preference for home-based services.

The coverage of the HEF scheme was expanded in a phased manner over three years based on SBA and DTP3 coverage rates. However, not all selected townships may have been suitable for uptake of the schemes given the implementation capacity or needs on-the-ground. It has been suggested that consultations with relevant authorities in townships may be conducted in order to identify those areas that should be included in the next phase.

There are other factors that impede progress and uptake of the schemes such as distance to a health facility. The M&E data shows that there is substantial variation in the indirect costs across states and regions.

Finally, while the HEF scheme was implemented broadly and expanded to 120 townships, the MCHVS scheme was only introduced in two townships. The MCHVS involved several administrative processes such as production of vouchers, management of reimbursements using forms and development of communications materials among others. One may say that the MCHVS had higher fixed costs compared to the HEF, due to which one observed tapering off in utilization in the non-cost extension year as compared to HEF, where there continued to be an increase in utilization. The different levels of administrative and resource intensiveness of the two schemes may have an impact on the scaling up of the schemes. The two health financing models exemplified by the schemes need to be assessed for their appropriateness going forward.

Implementation Capacity

The success of the HEF scheme, in particular, depends on the initiative and leadership qualities of the TMO. TMOs may make a judgement on eligibility of the patients as well as defend decisions to the township committee among others. Given the critical role that TMOs play in implementation of schemes such as HEF, it would be useful to systematically identify and strengthen the leadership skills of these staff. Financing interventions such as HEF and MCHVS do not operate in isolation and in order for their impact to be continued, it is important to look at other types of interventions that would need to be implemented in order to make healthcare more accessible. This may include improvements in infrastructure, supply chain management, etc. The correlation between TMOs and utilization of the scheme may be explored further.

The implementation of the schemes has shown that it is important for staff to have skills such as financial management and data management at the health facility level. Over time, incentives for financial clerks were introduced to attract interest in this function.

Funding

The implementation of the HEF program, in particular shows that the smooth flow of funds is critical to the acceptance and success of the program. Gavi HSS funds are transferred to WHO which transfers funds to the MoHS based on an approved proposal. Funds are then transferred to “other accounts” at the township level and are used to pay or reimburse patients and caregivers. This process can take long, with funds becoming available for use in the middle of the year. This delay undermined the faith in the schemes with some at the township level reporting that they would not advertise the scheme to avoid not being able to deliver on their promises. Thus, ensuring availability of funds at the township level or the point of delivery for use is of utmost importance.

The delay in availability of funds and limited capacity for financial management put a strain on the capacity of township hospitals to absorb the funds and implement the program. Some hospitals were able to use the funds, while others were not. The flexibility in program management allowed for funds to be reallocated from low-utilization to high-utilization townships, based on certain groups that had been formed. However, utilization of funds remained an issue and there was no-cost extension for one and a half years for hospitals to use

unspent funds from the previous year. Thus, it is important to identify and resolve issues related to funding, while maintaining flexibility in order to respond to the changes on the ground.

Communications

The awareness and uptake of the scheme by users varies by scheme. In the case of MCHVS, using multiple channels of communication such as radio programs, helped raise the profile of the scheme. It is also important to clarify the message that needs to be communicated to both, users and providers. For example, effective communication should ensure that there is no stigma attached with availing the benefits from the scheme. In the case of the HEF program, due to lack of funds being available for utilization, township level staff did not advertise the scheme as they could not have delivered the services. Other studies also points to the critical role of a communications strategy. The mid-term evaluation of the MCHVS had highlighted the need for raising awareness of the scheme among men given their influence in the communities as well as placing communications materials in areas where people gather such as market places [18]. Raising awareness is important as the study on HEF found that there was low level of awareness of the program in the target population [20]. Thus, it is important to develop a communications strategy to ensure uptake of schemes such as MCHVS and HEF and it is imperative that budget is made available for these types of activities.

Awareness of schemes was not found to have been associated with greater utilization of services covered by either HEF or MCHVS. This may point to the importance of other factors affecting utilization and is an area that ought to be researched further. It is possible that investing in a communications strategy may sustain demand for the schemes.

M&E

M&E is an integral part of a program as it allows program managers, donors and others to assess the impact of the schemes. The experience of collecting and analyzing data for M&E suggests that there are many lessons to be learned.

The quality of the data is important while assessing the impact of the scheme. Data on HEF and MCHVS has been available over the course of the program, although there is room for improvement. There was no pre-program data collected, making comparison with the post-implementation incomplete. In addition, recording information on variables, ensuring consistency and finally using this information on a regular basis would ensure better maintenance of the M&E system. Investments in hospital management information systems (HMIS) may be made to ensure routine and long-term use of the data. In the case of HEF, HSSOs were a critical component of monitoring the progress of the schemes. There were data gaps in townships where there HSSO positions were vacant. Having dedicated staff in the form of HSSOs to collect and monitor data with quality assurance by the central team was useful and this may be strengthened. For the two townships where MCHVS was implemented, a data assistant with a distinct role from the HSSOs, was employed, which appears to have aided the data monitoring

and reporting process. This may be considered by setting up M&E systems in the future. These lessons learned for maintaining data are summarized in Table 14.

Table 14: Lessons learned on recording M&E data

Sr. No.	Lessons
1	Collect baseline data for comparison at the end of program implementation.
2	Record patient level data in an electronic format to ease reporting and use of the data.
3	Identify and record at least one set of core variables across the years for comparability.
4	Ensure the quality of the data collected in terms of completeness, consistency and accuracy. For example, the amount of money received as travel allowance or daily allowance.
5	Include key characteristics of the beneficiary, the year that the service is provided, the type of condition, among others.
6	Hire and train staff on M&E

Impact

The two principle outcomes of the schemes analyzed in this study were utilization of covered healthcare services and reduction in OOPE and CHE. While the schemes grew each year, there was no significant improvement in the utilization of the health services covered except in the case of immunization services in the case of MCHVS. This suggests that having a holistic approach to maternal and child health care, where a bundle of services is offered to beneficiaries, with incentives for beneficiaries and providers, yields higher returns on immunization. Even though utilization was not linked with awareness of schemes, MCHVS users had a high level of awareness of what was offered by the program which, building on the findings of the mid-term review, ought to be leveraged to improve awareness of health, rather than only the monetary, outcomes of the schemes [18].

In terms of financial protection, the findings make a case for targeting in the context of limited resources given the financial burden on poorer households. Regarding the schemes, the findings show that users of MCHVS were less likely to experience CHE compared to non-users. As we learned from the earlier analysis on appropriateness of the benefits package, the services covered by MCHVS are less likely to push households in the eligible population into CHE, unlike the services covered by HEF which can lead to households experiencing CHE. It is possible that this difference in the observed effect is due to targeting, which was not included in the analysis on financial protection.

Sustainability

The final research question on whether these interventions are sustainable and do they serve as the first step in achieving UHC, relates to sustainability. The sustainability of the schemes

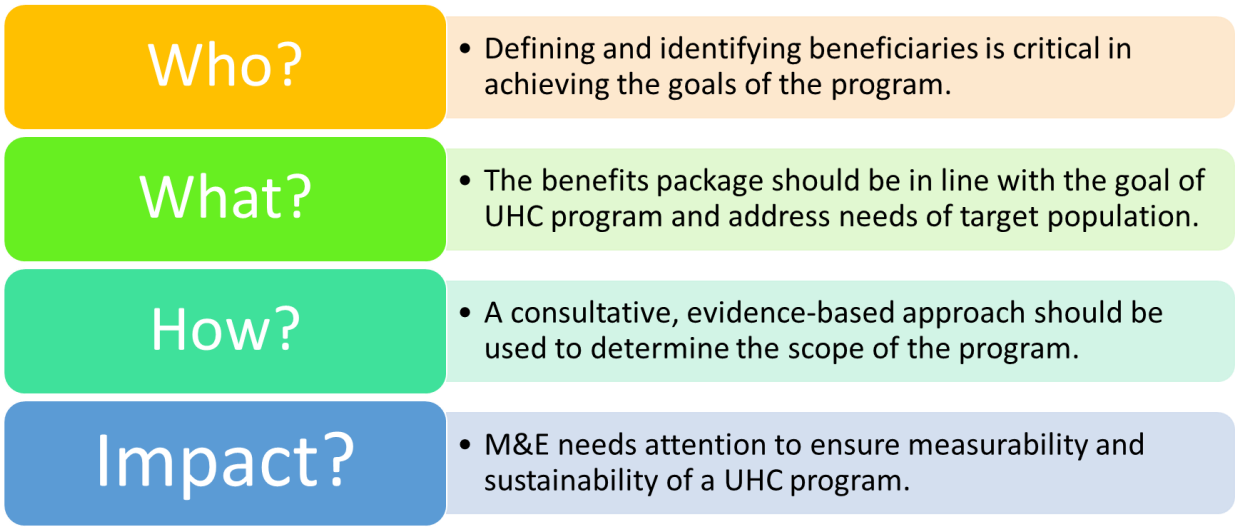
is an important consideration as the Gavi HSS support for these schemes comes to a close and is instructive to think about these issues in the context of achieving UHC.

In terms of program implementation and expansion of the schemes, sustainability may be thought of at multiple levels. One, the schemes can be expanded to all, 330, townships in the country. Two, the HEF scheme in particular, may be expanded to other types of facilities where similar services are provided. Three, the scheme may be expanded to cover a broader group of clients who may be in need of the support. Another avenue for the HEF would be for it to be transformed into a national insurance scheme and become institutionalized.

The sustainability of schemes such as HEF and MCHVS depend on the funding allocated. As the Gavi HSS support to Myanmar will no longer be supporting these schemes, alternative sources of finance would need to be sought. The government or other donors may consider supporting these schemes or these may be maintained at the township level, building on the institutional infrastructure of the HEF and MCHVS and having a "multiplier effect", as was intended by the original designers of the scheme.

In conclusion, the two schemes offer important lessons for achieving UHC in the country. For one, in case of limited resources, targeting of beneficiaries or services may be required. As the poor are more likely to face the burden of CHE, it is important to devise an appropriate measure and a practical method to identify the beneficiaries. The package of services covered by the insurance scheme needs to be appropriately designed so that it is in line with the objective of the scheme, for example, reduction in CHE. The financial data for MCHVS and household survey data demonstrates a preference for home-based services for child birth and this should be taken into account in the design of the scheme. This may also be related to the distance in household services. For the program to have a discernable impact at the population level, the scheme should be implemented on a large scale and a robust M&E system should be put in place to regularly monitor the progress. These points are summarized in the Figure 64.

Figure 64: Lessons for UHC in Myanmar



Lessons from conducting study

The study benefited from regular contact and consultations between the team members from the MoHS, WHO and HITAP. This allowed for the team to clarify points as well as come to an agreement on outstanding issues. Further, the self-assessment form, which was fielded at an early stage of the study, provided rich information on the HEF scheme and served as an input into the rest of the process. It was agreed early on that a proposal would be submitted to the Ethics' Committee to ensure its legitimacy. This process allowed the team to develop and structure the approach for the study, including sampling for the household survey; further, this provided a platform to present the proposal for study to a broader audience in the Ministry and get their feedback. Finally, the agility and preparedness of the team helped hit the ground running when there were delays due to various factors that were beyond the control of the study.

The household survey was the largest component of the study and was a good learning experience for the team. In terms of manpower, it was decided that HSSOs, who had been involved from the beginning of the study, would serve as supervisors. Selection of enumerators required more effort: a protocol was developed and responses of potential enumerators were solicited for the purpose. During the workshop to reflect on the survey, participants noted that it would be helpful to have more experienced enumerators. Training was conducted for supervisors and enumerators on 13-19 February 2017. However, due to delays in starting the data collection, the momentum built by the training was lost and another meeting had to be convened once the survey was confirmed. The teams in the various townships held advocacy meetings with relevant staff which helped smoothen the process of collecting data. Pre-listing was done using format developed using data from mid-wives. This was found to be effective. Applying the systematic sampling approach discussed during the training was also found to be useful.

A workshop was held on 24-25 April, 2017 to reflect on the lessons learned from conducting the survey. During this workshop, HSSOs and coordinators said that a team approach was used to collect data i.e. supervisors and enumerators went to villages or wards in teams rather than splitting up and going to different villages or wards. This was helpful for safety as well as for troubleshooting. The survey was the first experience of using electronic based data collection which presented its own set of challenges in terms of recording interviews, errors in how the data was recorded and synchronizing the data collected with the server. Due to delays and issues with functionality, it was difficult to monitor data collected in a timely manner.

Discussion of Methods, Limitations and Constraints

In terms of methods used for analyzing the results used for the household survey, the study uses the measure of CHE to determine impact of the schemes which is widely used. A threshold value of 10% of non-subsistence household expenditure, instead of 40% of non-subsistence expenditure which is commonly used, was applied as it was found to be sensitive to the level of expenditure of households in the survey group. The application of CEM did not change the direction of the results and only impacted the level of significance.

There are some limitations to this study. In terms of the study design, the focus was more on program design and demand-side factors affecting the schemes. The supply-side factors have been covered by a qualitative study conducted by Save the Children on out-of-pocket expenditure. With regards to the results of the household survey, the study cannot comment on the change in indicators over time as there was no baseline survey conducted with which the results of this study could be compared. The analysis of the impact of the two schemes relies on the self-reported usage of the schemes which could not be verified.

There were other challenges encountered while conducting this study. The study was conducted in a short time period due to availability of both, financial and human resources. These constraints coupled with delays impacted carrying out the household survey which was a major investment. The data collection had to be completed within one month and the team had to decide to exclude households in hard-to-reach areas, which may bias the results, even as the replacement households were randomly selected. One of the major innovations in the survey was to collect data for the survey electronically using PDAs. However, as this was the first time that the team was using electronic data, there were several challenges encountered in recording data, transmitting the data for quality assurance and setting up the data for analysis.

Recommendations

This study offers recommendations for the implementation of the program:

1) Ministry of Health and Sports (MoHS) and World Health Organization
    - Actively engage with the community to raise awareness of the schemes and the associated health benefits
    - Clearly define and develop easy-to-apply criteria for identification of beneficiaries
    - Design health benefit package in a systematic, evidence-based manner
    - Ensure timely flow of funds to the service delivery points
    - Invest in an M&E system to ensure timely feedback on progress of the program
    - Provide training on financial management to health facility staff to administer schemes and deliver services
    - Allocate more financial resources to improve maternal and child health
    - Scale up schemes to have an impact on health outcomes and out-of-pocket expenditure at the population level
2) Gavi
    - Implement a holistic approach to immunization programs to cover maternal and child health

Specifically, for programs modelled on:

1) HEF:
    - Clearly articulate a theory of change and expected outcomes
    - Clarify processes for beneficiary identification, benefits package, financial reporting
    - Cover all facilities that provide relevant services to ensure impact
    - Explore provision of incentives to patients and providers
    - Consult with relevant stakeholders while implementing and expanding the scheme
2) MCHVS:
    - Provide a comprehensive package of services
    - Train relevant staff
    - Invest in communications of the health program
    - Streamline administrative processes to allow scaling up of schemes
    - Develop a link with programs at higher levels of health facilities to ensure a well-functioning health system

Annex

1. Links to methods and resources

1.1 Self-assessment form: https://drive.google.com/open?id=1HkjvoSQdL3R-jkJfLn6OLgy1-TVVtrvN

1.2 Household survey questionnaire: https://drive.google.com/open?id=1AT02NrmeZyUL06OdR6FkPkj8CS9Uk7ot

1.3 Household survey handbook: https://drive.google.com/open?id=1IkLb1FhLZ_Jzw-KdjEeZnhxAPywtSsJC

1.4 Sampling and pre-listing forms: https://drive.google.com/open?id=1ZnXVRkQezMr3tcAVvxiavpkmnF2Y3txV

1.5 Manual and forms for supervisors: https://drive.google.com/open?id=1GjlGX2UViTUL_yzOYmrQZ0DhYxvYfjEC

1.6 Protocol for enumerators: https://drive.google.com/open?id=1Qq-ymY15BssRoIZoiM0CV5_WaS7pldrG

1.7 Review comments and responses: https://drive.google.com/open?id=14M7iQJA5MTHo4EcKqlwCYTtwyIkJ3pTN

2. Indices for analysis of households

(a) Comparison of indices for household comparison

Particular	Wealth Index	National Quintile	Income Quintile	Targeted beneficiaries*
Description	• Index derived from number of household members and asset ownership • Variables similar to Demographic Health Survey (DHS)	• Index derived from data in line with Census 2014 • Benchmarked against national quintiles using code provided	Index derived from income calculated from survey	Set of criteria with scores initially used to identify beneficiaries for HEF
Variables used	• Number of household members + • 20 questions in Section 4 of questionnaire on source of lighting, source of drinking water, type of toilet, floor/roof/wall construction materials, cooking fuel, asset ownership (radio, television, mobile phone, land line telephone, computer, cable, car/pick-up truck/van, motorcycle/ motor	• Urban/Rural + • 13 questions in Section 4 of questionnaire on: home ownership, lighting, drinking/non-drinking water source, cooking fuel, toilet, roof/wall/floor construction materials, asset ownership (television, motorcycle/moped/tuk tuk, bicycle) • Note: no question on internet access in questionnaire (missing values)	• 14 questions in Section 3 of questionnaire on: wages, income from agriculture, income from other agriculture, income from non-agricultural and income from remittances or windfall gains	• Household characteristics: • Number of household members • Number of working household members • Construction materials used for house • Electricity • Asset ownership (land ownership, cows/buffaloes, tractor, motorcycle, bicycle, boat, TV, radio, telephone/cell phone) • Debt • Income

Particular	Wealth Index	National Quintile	Income Quintile	Targeted beneficiaries*
	bicycle/tuk tuk, bicycle, four wheel tractor, canoe/boat, motor boat, bullock cark			
Method	Principle Component Analysis (PCA)	Using EquityTool instructions: • Variable values recoded • Stata code used to derive national quintiles	• Calculated as sum of output, own consumption and subsidies less costs • Annualised and quantiles derived	• Scores assigned to each variable, totaling 110. • Household eligible if score is greater than 50

**These criteria were used initially for determining HEF beneficiaries. However, these were discontinued later.*

(b) Poverty assessment quantitative score, applied for HEF beneficiaries

Multiple criteria	Score
1. Family member > 5	10
2. One or less than one member who is earner	10
3. Household characteristics and ownership of durables	
• Bamboo wall and thatch roof	5
• Not owning a bike	3
• No TV	3
• No radio	4
4. Indebtedness from illnesses or food	25
5. Household income <1000 Kyat per day, or 30,000 Kyat per month	50
Total score	110

3. Description and analysis of Myanmar Demographic Health Survey (DHS)

For this study, analysis of secondary data from the Myanmar Demographic and Health Survey 2015-16 was conducted. The study population comprised a nationally representative sample of women (Age: 15 to 49 Sample Size: 12885). The detailed methodology and data collection procedure of MDHS 2015-16 has been described previously (Ministry of Health and Sports, 2017). Based on the inclusion criteria for this study, the sample was divided into two groups i.e., birth before 2012 HEF and birth after 2012 HEF (n=4,946). Using the GPS datasets, the township area was identified and based on our study townships, the intervention and control townships were classified to see if there any change of service utilization due to use of HEF & MCHVS use.

Table 1: Summary

	Treatment Townships	Control Townships	Birth before 2012	Birth after 2012
Proportion	0.36	0.64	0.63	0.37
Standard Error	0.03	0.03	0.01	0.01
P value	0.00	0.00	0.00	0.00

Using the probit regression analysis to assess the effect of HEF/MCHVS on the utilization of health facility-based delivery and use of skill birth attendant rate, the effects were reported as a coefficient (β) and Standard error (SE). A positive coefficient means that an increase in the predictor leads to an increase in the predicted probability. A negative coefficient means that an increase in the predictor leads to a decrease in the predicted probability.

The table below represents that based on the MDHS (2015-16) data, more than 50% households are identified into a poor group (in below 40%) based on the wealth index, which indicates both HEF and MCHVS townships were selected poor households. Similarly, the control group townships also selected around 50% household in the poorer group.

Table 2: Distribution of sample

	Treatment Townships		Control Townships	
	Prop.	CI	Prop.	CI
Poorest	0.3252	(0.277, 0.3774)	0.2771	(0.2419, 0.3152)
Poorer	0.2243	(0.2015, 0.249)	0.2322	(0.2088, 0.2573)
Middle	0.1612	(0.1372, 0.1884)	0.1847	(0.1628, 0.2089)
Richer	0.1678	(0.1408, 0.1987)	0.1579	(0.1381, 0.1799)
Richest	0.1215	(0.0934, 0.1567)	0.1482	(0.1212, 0.18)

In Table 3, the effect of HEF/MCHVS schemes on the utilization of health facility-based delivery and use of skill birth attendant rate is presented. The findings demonstrate that women in intervention townships who reported given birth after 2012 has 0.5% less chance to deliver in a health facility (SE 0.02) compared with women in control townships who reported given birth after 2012. Similarly, being in control of treatment townships, the probability that the delivery attended by skill birth attendant takes the value one rises by 2% chance; however, both associations were not statistically significant.

Table 3: Utilization of services

Variables	Health Facility Delivery* Coefficient (SE)	Delivered by Skill Birth Attendant* Coefficient (SE)
Control townships	Constant	Constant
Treatment townships	-0.00551 (0.0212)	0.0260 (0.0319)
Observations	4,946	4,946

*not statistically significant

4. Foreign exchange rates used in report

Average exchange rates	
Program years:	
2012	862.8145
2013	935.2705
2014	980.247
2015	1169.244
2016	1232.336
Data collection for household survey	
April 2016-March 2017	1356.524

Source: Central Bank of Myanmar

5. Results of logistic regression

	Unmatched (n=1981)		Matched* (n=1242)	
	AOR (95% CI)	**P Value**	**AOR (95% CI)**	**P Value**
Identified as poor based on Wealth Index				
Not poor	Ref		Ref	
Poor	1.11 (0.87, 1.39)	0.39	1.32 (0.99, 1.75)	0.06***
Use of MCHVS				
Did not report use of MCHVS	Ref		Ref	
Reported use of MCHVS	0.49 (0.32, 0.75)	0.01**	0.51 (0.31, 0.82)	0.01**
Use of HEF				
Did not report use of HEF	Ref		Ref	
Reported use of HEF	1.38 (0.76, 2.51)	0.28	1.35 (0.66, 2.74)	0.41
Education status of head of household				
No education	Ref		Ref	
Primary school	1.27 (0.94, 1.71)	0.12	1.26 (0.87, 1.84)	0.22
Secondary school or equivalent	1.24 (0.88, 1.74)	0.22	1.25 (0.82, 1.92)	0.31
Higher school and above	1.82 (1.18, 2.82)	0.01**	1.67 (0.94, 2.95)	0.08
Occupation status of head of household				
Dependent or housewife	Ref		Ref	
Employee	1.04 (0.66, 1.63)	0.86	0.81 (0.42, 1.56)	0.53
Employer	0.68 (0.45, 1.02)	0.07***	0.73 (0.41, 1.30)	0.29
Farming	0.71 (0.52, 0.96)	0.03**	0.65 (0.41, 1.02)	0.06***
Manual worker	0.77 (0.56, 1.07)	0.13	0.69 (0.44, 1.09)	0.11
Other (seller, contributing to family etc.)	0.73 (0.47, 1.13)	0.16	0.75 (0.43, 1.30)	0.31
Age of head of household	0.99 (0.98, 1.01)	0.06***	0.99 (0.97, 1.01)	0.23
Number of household member	1.05 (0.99, 1.11)	0.40	1.05 (0.98, 1.13)	0.15

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