Mid-Term Assessment of Maternal Care Assistance Program Implementation in Leyte Province, 2014-2017 in terms of Facility-Based Delivery, Maternal Mortality Ratio, and Infant Mortality Rate

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Abstract: *With extremely high maternal mortality rate (MMR) in Asia-Pacific, the Philippines started the MCAP (Maternal Care Assistance Program) on 2014. The main objective of this study is to assess at to what point does the program affect FBD (facility-based delivery), MMR (maternal mortality ratio) and IMR (infant mortality rate) specifically in Leyte which showed irregular figures in FBD, MMR and IMR. With a sample size of 37 RHUs (rural health unit), there was an increasing trend in FBD with year 2014 significantly different from years 2016 (U=476.5, Z=-2.256, p<0.05) and 2017 (U=435, Z=-2.714, p<0.05). For MMR, the trend is decreasing at some years but were statistically insignificant (X^2=1.010, df=3, p>0,05). For IMR, the trend is somehow increasing but is not statistically different across all years (X^2=6.723, df=3, p>0,05). MCAP components have insignificant relationship with FBD whereas MCAP component cash incentive given to health worker volunteers (HWVs) showed significant indirect relationship for MMR and IMR.*

Keywords: *maternal care assistance program; facility-based delivery; maternal mortality ratio; infant mortality rate*

1. Introduction

The complications encountered during pregnancy and even in childbirth are the leading cause of death and disability among women mainly in developing countries like the Philippines and this can occur without a warning. The international community acknowledged that the number of deaths in pregnancy and childbirth was unacceptably high which resulted to the continuous effort to achieve the target Millennium Goal 4: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate and Goal 5: Reduce the maternal mortality ratio by 75 percent and achieve universal access to reproductive health, studies were initiated and programs which provided assistance to both local government and individual families were established. Infant and child mortality rates are basic indicators of a country's health and socioeconomic situation and quality of life (UNDP 2007).

Maternal survival has significantly improved since the adoption of the Millennium Development Goals (MDG) across the world. Since 1990, the maternal mortality ratio has been cut nearly in half, and most of the reduction has occurred since 2000. Meanwhile, more than 71% of births were assisted by skilled health personnel globally in 2014, an increase from 59% in 1990. In the developing regions, only 56% of births in rural areas are attended by skilled health personnel,

compared with 87% in urban areas. And only half of pregnant women in the developing regions receive the recommended minimum of four antenatal care visits. Just 51% of countries have data on maternal cause of death (The Millennium Development Goals Report 2015).

Globally, Maternal Mortality Ratio (MMR) declined by 44% from 385 deaths to 216 deaths per 100,000 live births (LB). This translates into an average annual rate of reduction of 2.3%. Still, over 800 women are dying each year from complication in pregnancy and childbirth. The infant mortality rate was 21 deaths per 1,000 live births. In the Philippines, 78% of all deaths among children under age 5 take place before a child's first birthday, with 52% occurring during the first month of life. And most maternal deaths can be stopped if births are attended by skilled health personnel – licensed doctors, nurses or midwives – who are regularly supervised/trained, have the proper equipment and supplies, and can attend women in a timely manner to emergency obstetric care when complications are diagnosed (UNICEF Data, 2017).

Yearly, tens of thousands of women across Asia and the Pacific die needlessly. In 2015, around 85,000 women in the region died through causes related to pregnancy or childbirth. On average, over 200 families suffered the loss of a loved one. And what's worse is that up to 90 per cent of these deaths could have been prevented through quality antenatal, obstetric and perinatal care – including care given by midwives and skilled birth attendants. In the absence of such care, the average maternal mortality rate in Asia-Pacific is extremely high, at 127 per 100,000 live births, compared to the developed-country average of just 12 per 100,000. In 2015, almost 92 per cent of all maternal deaths in the region – around 78,000 – occurred in just 12 countries. Afghanistan, Bangladesh, Cambodia, India, Indonesia, Lao PDR, Myanmar, Nepal, Pakistan, Papua New Guinea, the Philippines and Timor-Leste all have particularly high maternal mortality rates, of over 100 deaths per 100,000 live births. In a number of these countries, conflict, poverty and weak infrastructure and health systems combine to make tackling the problem more difficult (United Nations Population Fund).

For the past several years, countries like Nepal has prioritized family planning and maternal and child health at the national level since the mid-1960s. More recently, the government has focused on increasing access and use of health services among the most vulnerable populations. Key interventions include: (1) adoption of a community-based approach to service delivery, (2) provision of subsidized or free care for maternal and child health services, and (3) introduction of female community health volunteers. Improvements in socioeconomic status have also contributed to better health outcomes in Nepal – the country has reduced poverty by 2.5 percentage points yearly since 2004. (World Bank Organization)

Countries across the world are collectively work harder to be able to meet the global goals' maternal mortality reduction target to save up to 100,000 lives could be saved across Asia and the Pacific by 2030. To get there, we'll need more targeted and tailored interventions that respect the rights of women and girls to make decisions about their sexual and reproductive health which include building better and more inclusive health systems that everyone can access, especially vulnerable groups, and that put a strong focus on sexual and reproductive health, making family planning services, including a full range of quality contraceptive methods, readily available to

women, men and adolescents, and engaging in advocacy and policy development to meet the needs of vulnerable and marginalized groups and to tackle harmful practices such as child marriage and violence against women.

The Philippines aimed to reduce its MMR by 3 quarters between 1990 and 2015. MMR decreased from 209 per 100,000 LB in 1990 to 172 per 100,000 LB in 1998 and then to 162 per 100,000 LB in 2006. However, based on 2011 family health survey MMR increased to 221 per 100,000 LB (The Philippines 5th Progress Report-Millennial Development Goals. National Economic Development Authority and United Nation Development Program, 2014. Retrieved from www.neda .gov.ph/wp-content/uploads/2014/08/MDG/Progress-Report-Final.pdf). Philippine MMR data in 2015, recorded 114 deaths per 100,000 LB. Survey data showed 60% delivered in a health facility among all births in the 5 years preceding 2013. Moreover, the percentage of births delivered by health professionals increased from 62 % in 2008 to 73% in 2013 (Philippines National Demographic and Health Survey (NDHS), 2015. This shows that the Philippines is not on track in achieving its MDG target.

2. Methods

Research Design

A cross-sectional analytical survey was made used in this research to utilize the secondary data analysis particularly descriptive and quantitative method to evaluate the maternal care assistance program implementation status in Leyte Province for the period 2014- 2017 and its effects on FBD, MMR, and IMR.

Research Locale

The Province of Leyte is comprised by 40 municipalities composing 10 Inter-Local Health Zone (ILHZ) including Calesan, Golden Harvest, Goodwill, Kammao, Leyte Gulf, Leyte Plains, Leyte West Coast, Mabahinhil, Maharlika, and Mainbay. A total of 3 municipalities were excluded in this study due to the incompleteness of data and one which did not implement the MCAP. Thus, only thirty-seven (37) municipal LGUs in the province were included with a total population of 1,341,980 with Palo having the highest percentage of population and Tunga with the least percentage. Thirty-five per cent (35%) or thirteen (13) LGU classified as 4th class according to the average annual income.

All RHUs included in this study are PhilHealth accredited birthing centers. In addition to the main health centers, there are 189 Barangay Health Stations (BHS) distributed into catchment areas. Five (5) or 2.64% of their BHS are also PhilHealth accredited birthing centers located in the municipalities of Abuyog, Isabel and Palo.

The province's health manpower complement employed by the LGUs consists of forty-one (41) doctors serving as MHO or Medical Officer in the RHU with a ratio of 1:32, 731 population, seventy-five (75) Public Health Nurses (PHN) with a ratio of 1:17, 893 population, and two-

hundred forty-two (242) registered midwives serving as Rural Health Midwives having a ratio of 1:5, 545 population. There are also four thousand six hundred forty-six (4,646) Barangay Health Workers (BHWs) with a ratio of 1:70 households. These health manpower complement does not include the NDP nurses and RHMPP midwives. Such manpower complement meets the standard ratio by the DOH except for physicians which falls below the required standard of 1:20,000 population.

Sampling Design

Population of RHUs were all included in this study. However, 37 RHUs met the following inclusion criteria: a) Municipality with a PhilHealth birthing facility, b) currently implementing the MCAP, and c) availability and completeness of the data. Exclusion criteria were: a) cities regardless whether they were implementing MCAP or not, b) private birthing facilities that may have been likewise accredited by the PhilHealth as birthing centers, c) LGU birthing with incomplete data and d) municipal LGUs not implementing the MCAP.

Data Collection Procedure

Pilot testing was done in Leyte Plains ILHZ and necessary improvements of the tool was made prior to actual data collection. Minor revisions were made in the way certain questions or lead statements were phrased. Data on total livebirths from 2014-2017 was also added in the data to be generated with the tool included for better understanding, analysis and interpretation. Using the records review tool, data was then gathered through a review of the FHSIS and MCAP reports in the RHUs. Copies of MCAP ordinances in all 37 LGUs was also obtained to validate the data gathered. Further, validation was conducted together with the MHO.

Instrumentation

The study utilized a researcher designed records review tool to guide the collection and recording of data gathered. The tool is a combination of checklist and tabular formats and quantitative data entries. It has 4 parts divided as Part I- LGU Demographic Data; Part II - Health Data which includes the number of health care workers, and number of health facilities of the LGU; Part III- Status of Maternal Deaths, Infant Deaths and FBD. Part IV - Maternal Care Assistance Program implementation status in terms of presence of executive order or LGU ordinance, duration of MCAP implementation, amount of cash assistance given to beneficiaries, and timing of payment of cash assistance to beneficiaries. All data were collected by the researcher. Data was validated with the MHO and against the provisions in the LGU ordinance.

Data Analysis and Statistical Treatment

Analysis of data was done both manually and electronically according to the nature of the responses required using frequency counts and percentages. Some of the data were coded to enable their analysis using IBM-SPSS version 23.

Due to data not normally distributed across all years, Spearman Rank Correlation was used to determine the correlation between FBD and MMR, FBD and IMR, FBD and MCAP components, MMR and MCAP components and finally IMR and MCAP components. To determine if the data is normally distributed, the researcher used Shapiro Wilk test and Kolmogorov Smirnov Test.

To test if there is a significant difference in FBD, MMR and IMR across 2014 to 2017, Kruskal-Wallis test was used. To see which pair of years is significantly different from each other, Mann-Whitney U test was used. All Hypotheses were tested at 5% or 0.05 level of significance.

3. Results

Status of Maternal and Child Health (MCH) by RHU in Leyte Province

An increasing FDB trend was observed from 2014 to 2017 however, it is still below the DOH target of 100%. Highest percentage increase can be seen in 2014 to 2015 (17.25%) just after the first-year MCAP implementation.

Figure 1. Facility-Based Delivery in Leyte Province, 2014-2017

FBD

	2014	2015	2016	2017
FBD	73.86	86.60	90.05	91.30
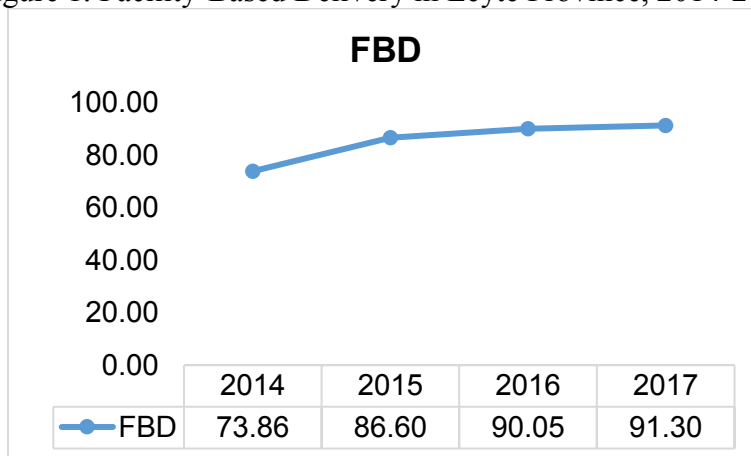
Meanwhile, there is a decrease in MMR from 2014 to 2015 and 2016 to 2017 and an increase in MMR from 2015 to 2016. Highest percentage change was between 2014 and 2015 (-35.96%) with the second-year implementation of MCAP. However, all MMR numbers were above the national target by 2016 of 50 per 100,000 LB with 2017 MMR being the closest (RMMCHRPI for ILHZ, 2013).

Figure 2. Maternal Mortality Ratio in Leyte Province, 2014-2017

	2014	2015	2016	2017
MMR	95.35	61.06	66.18	54.72
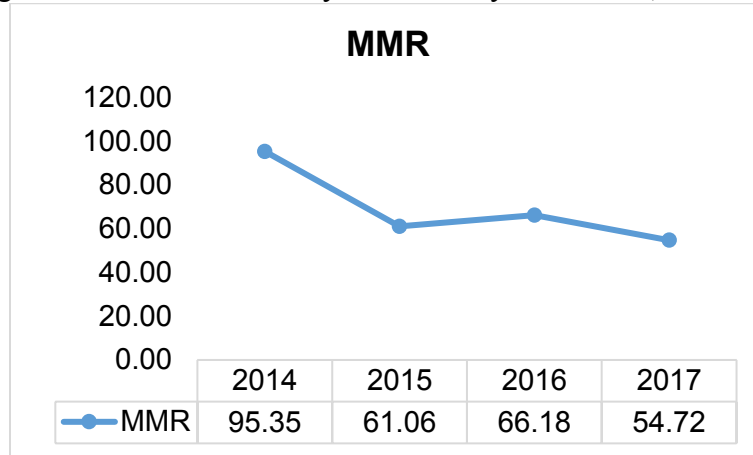
MMR = per 100,000 live births (LB)

For three (3) years, it was observed an increasing trend from 2014-2015 in IMR and a sudden decrease by 2017. All rates were below 2016 IMR national target of 17 per 1,000 LB (RMMCHRPI for ILHZ, 2013).

Figure 3. Infant Mortality Rate in Leyte Province, 2014-2017

	2014	2015	2016	2017
IMR	3.41	5.87	6.86	4.94
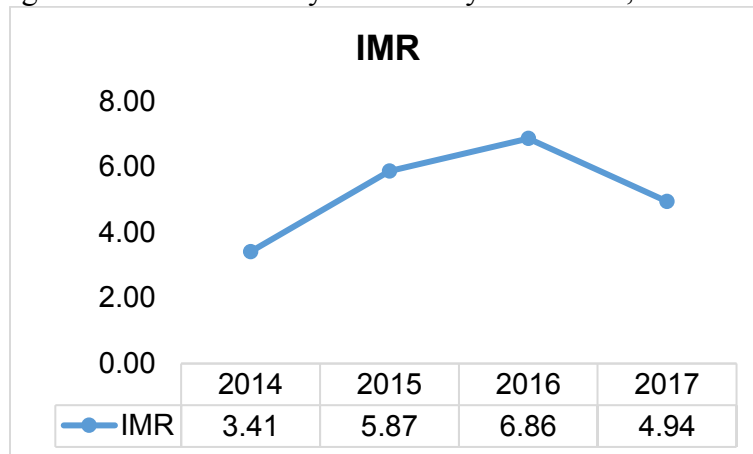
IMR = per 1,000 LB

Status of Maternal Care Assistance Program (MCAP) Implementation of the LGUs in Leyte Province, 2014-2017

The status of MCAP implementation in Leyte Province will be assessed in terms of its presence of MCAP Ordinance, duration of MCAP Implementation, amounts of Cash Incentive given to Pregnant Women and HWV, and timing of Payment of Cash Assistance to Beneficiaries.

All the LGUs in Leyte Province included in this study implement the MCAP and have an ordinance formulated relative to its implementation. An LGU ordinance is one among the requirements in the implementation of the MCAP.

Table 1. Distribution of LGUs by Presence of MCAP Ordinance in Leyte Province, 2014-2017

Presence of MCAP Ordinance	Frequency	Percentage
Yes	37	100
No	0	0
Total	37	100

PhilHealth implementation of MCAP started in 2014. However, only 38% of LGUs aligned with the target timeline. Whereas, more than half (54%) have implemented the program two (2) years to less than three (3) years.

Table 2. Distribution of LGUs by Duration of MCAP Implementation in Leyte Province, 2014-2017

Duration of MCIP	Frequency	Percentage
Less than 1 year	2	5.4
1 year to less than 2 years	1	2.7
2 years to less than 3 years	20	54.1
3 - 4 years	14	37.8
Total	37	100.0

The amount of cash assistance given to pregnant women varies from one LGU to another. This covers all pregnant related expenses such as transportation, communication, supply, and food during facility stay. Majority of LGUs (84%) give assistance amounting to 1,500 PhP that is specified in their ordinance and compliant with the MCAP guideline provided by PRO 8.

Table 3. Distribution of LGUs by Amount of Cash Assistance given to Pregnant Women in Leyte Province, 2014-2017

Cash Incentive Given to Pregnant Mother	Frequency	Percentage
None (Php 0)	1	2.7
PhP 500.00	1	2.7
PhP 1,000.00	3	8.1

PhP 1,500.00	31	83.8
PhP 2,100.00	1	2.7
Total	37	100.0

Three (3) out of four (4) LGUs provide cash assistance to HWVs above 500 PhP. Whereas, 25% provide cash assistance 500 PhP and below.

Table 4. Distribution of LGUs by Amount of Cash Assistance given to HWVs in Leyte Province, 2014-2017

Cash Incentive Given to Health Worker Volunteer	Frequency	Percentage
None (PhP 0)	1	2.7
PhP 200 - PhP 250	2	5.4
PhP 251 - PhP 500	6	16.2
Above PhP 500	28	75.7
Total	37	100.0

Results indicate that almost all (97.3%) of the LGUs release their cash assistance to pregnant women within their post-partum period.

Table 5. Distribution of LGUs by Timing of Payment of Cash Assistance given to Pregnant Women in Leyte Province, 2014-2017

Timing of Payment of Cash Assistance given to Pregnant Women	Frequency	Percentage
Every facility visit	1	2.7
Within post-partum period	36	97.3
Right after delivery	0	0.0
Total	37	100.0

Likewise, almost all (97.3%) of LGUs give their cash assistance to HWVs as single release within the postpartum period which does not comply in accordance with MCAP guideline.

Table 6. Distribution of LGUs by Timing of Payment of Cash Assistance given to HWVs in Leyte Province, 2014-2017

Timing of Payment of Cash incentive to HWVs	Frequency	Percentage
Every facility visits of referred pregnant woman	1	2.7
Within post-partum period of referred pregnant woman	36	97.3
Right after delivery of referred pregnant woman	0	0.0

Total			37	100.0

Test of Significant Difference between 2014 and 2017 on FBD, MMR, and IMR

The study tested if there is a significant difference from 2014 to 2017 in terms of FBD, MMR, and IMR. After testing the normality of data, we found out that FBD, MMR and IMR across all years were not normal. Thus, the researchers tested the hypotheses using Kruskal-Wallis test. The decision is to reject the null hypothesis if the p-value is less than or equal to the level of significance of 5% or 0.05. The researcher rejected the null hypothesis ($p < 0.05$, $\alpha=0.05$) and concluded that there is an evidence that there exists a significant difference in FBD. To see which years, differ, the researcher used Mann-Whitney U test. Year 2014 significantly differs from year 2016 and 2017.

Table 7. Test of Significant Difference from 2014 to 2017 on FBD

Year	Mean Rank	Chi-Square	P-value	Decision
2014	58.58			
2015	71.92	9.021	0.029	Reject Ho
2016	81.31			
2017	86.19			

On the contrary with the FBD, the researcher failed to reject the null hypothesis ($p > 0.05$, $\alpha=0.05$) and concluded that there is no evidence that there is a significant difference between the MMR from 2014 to 2017.

Table 8. Test of Significant Difference from 2014 to 2017 on MMR

Year	Mean Rank	Chi-Square	P-value	Decision
2014	79.19			
2015	74.30	1.010	0.799	Retain Ho
2016	73.16			
2017	71.35			

The test for significant difference between the IMR from 2014 to 2017 showed that the researcher retained the null hypothesis ($p > 0.05$, $\alpha=0.05$) and conclude that there is no evidence that there is a significant difference between IMR from 2014 to 2017.

Table 9. Test of Significant Difference from 2014 to 2017 on IMR

Year	Mean Rank	Chi-Square	P-value	Decision
2014	59.22			
2015	79.80	6.723	0.081	Retain Ho
2016	82.26			
2017	76.73			

Test of Correlation between MCAP components and FBD, MMR and IMR

The Spearman's rank correlation was used to test if there is a significant relationship between FBD, IMR and MMR.

Results showed that there is a very weak positive correlation between FBD and MMR and very weak negative correlation between FBD and IMR but both were statistically not significant with p-values all greater than the 5% level or 0.05.

Table 10. Test of Correlation between FBD to MMR and IMR

	Facility-Based Delivery			
	Correlation Coefficient	P-value	Decision	Conclusion
Maternal Mortality Ratio	0.054	0.753	Retain Ho	Not Significant
Infant Mortality Rate	-0.010	0.953	Retain Ho	Not Significant

The study also showed that components duration of MCAP, timing of payment of cash incentive given to pregnant women and HWVs showed a negative relationship towards FBD. Whereas, cash incentive given to pregnant women and HWVs indicated a positive relationship towards FBD. However, all the components were statistically insignificant with p-values all greater than 0.05 level.

Table 11. Test of Correlation between MCAP Components and MMR

MCAP Components	Facility-Based Delivery			
	Correlation Coefficient	P-value	Decision	Conclusion
Duration of MCAP	-0.035	0.838	Retain Ho	Not Significant
Cash Incentive Given to Pregnant Mother	0.163	0.336	Retain Ho	Not Significant
Cash Incentive Given to Health Worker Volunteer	0.086	0.611	Retain Ho	Not Significant
Timing of Payment of Cash incentive to pregnant	-0.203	0.228	Retain Ho	Not Significant
Timing of Payment of Cash incentive to HWVs	-0.203	0.228	Retain Ho	Not Significant

Only the component cash incentive given to HWV showed evidence of a significant moderate negative relationship towards MMR at 5% level.

Table 12. Test of Correlation between MCAP Components and MMR

MCAP Components	Maternal Mortality Ratio			
	Correlation Coefficient	P-value	Decision	Conclusion
Duration of MCAP	-0.029	0.865	Retain Ho	Not Significant
Cash Incentive Given to Pregnant Mother	0.114	0.501	Retain Ho	Not Significant
Cash Incentive Given to Health Worker Volunteer	-.372*	0.024	Reject Ho	Significant
Timing of Payment of Cash incentive to pregnant	-0.016	0.926	Retain Ho	Not Significant
Timing of Payment of Cash incentive to HWVs	-0.016	0.926	Retain Ho	Not Significant

The test of significant relationship between MCAP components and IMR using Spearman rank correlation indicated with p-value (0.028) less than alpha of 0.05, the component cash incentive given to HWV showed a significant moderate negative relationship towards IMR.

Table 13. Test of Correlation between MCAP Components and IMR

MCAP Components	Infant Mortality Rate			
	Correlation Coefficient	P-value	Decision	Conclusion
Duration of MCAP	0.115	0.499	Retain Ho	Not Significant
Cash Incentive Given to Pregnant Mother	-0.103	0.544	Retain Ho	Not Significant
Cash Incentive Given to Health Worker Volunteer	-.361*	0.028	Reject Ho	Significant
Timing of Payment of Cash incentive to pregnant	-0.172	0.310	Retain Ho	Not Significant
Timing of Payment of Cash incentive to HWVs	-0.172	0.310	Retain Ho	Not Significant

4. Discussions

This was a cross sectional survey using secondary data analysis research design aimed to assess the MCAP implementation status of 37 LGU with the RHUs in the Province of Leyte and its effects on FBD, MMR and IMR. All 37 units are PhilHealth accredited birthing centers. In addition, there are also 5 BHS accredited by PhilHealth as birthing centers.

Data in this study were collected through records review of FHSIS data and MCAP implementation reports with the aid of a researcher designed records review tool. Data were processed both manually and electronically to describes the MCH status in Leyte Province. Correlation between variables were tested using Spearman Rank Correlation. The Kruskal-Wallis and Mann-Whitney U test were used to determine if there exist significant difference in years in terms of FDB, MMR and IMR

Findings of the study showed there was an increasing trend in FBD. 2014 was statistically difference comparing with years 2016 and 2017. There was decreasing trend in MMR from 95.35 per 100,000 LB in 2014 to 54.72 per 100,000 LB in 2017 but comparing MMR figures for the past 3 years, all differences were statistically insignificant. Increase in IMR from 2014 to 2016 and a sudden drop by 2017. None of the IMR differences per 1,000 LB were statistically significant.100% of the LGUs have implemented the MCAP. Majority of the LGUs (54%) have implemented MCAP 2 years to less than 3 years. 8 out of 10 LGUs give 1,500.00 PhP as a cash incentive to pregnant mother. 3 out of 4 LGUs give above 500.00 PhP as a cash incentive to HWVs. In terms of timing of cash assistance given to pregnant mother, almost all (97.3%) give the incentive within the post-partum period. Close to 100% (97.3%) give cash incentive to HWVs within the post-partum period of referred pregnant woman. There was no evidence of significant relationship between FBD, MMR and IMR. There was no evidence of significant relationship between FBD and MCAP components. Cash incentive given to HWVs has a significant moderate negative relationship with MMR and IMR.

MCAP showed positive effects on FBD and MMR. FBD has an increasing trend whereas MMR has a decreasing trend. There was an increase in IMR from 2014 to 2016 and a sudden decrease in 2017.

Using Kruskal-Wallis test for comparing 2014 to 2017 FBD, MMR and IMR data, only FBD showed significance at 5% level. Year 2014 was significantly different from 2016 and 2017 using Mann-Whitney U test.

For correlation using Spearman Rank test, there is no evidence that there exists a significant relationship between FBD, MMR and IMR. In relation with MCAP components, it does not have any significant relationship with FBD but for MMR and IMR, it showed a significant moderate relationship with cash incentive given to health worker volunteers. Meaning an increase in cash incentive give to HWVs is a decrease in MMR and IMR but take note that this result is not causational. Conducting a similar study with a larger sample size may show statistically significant

correlation. In general, MCAP components do not directly explain FBD, MMR and IMR figures. There are other factors that can really affect FBD, MMR and IMR.

This study indicated the need to do in-depth interviews thru IDIs and FGDs segmenting pregnant women and HWVs to give more meaning or understanding of the implementation of MCAP and possible, other factors that may affect FBD, MMR and IMR. Future studies may have to increase sample size by extending the limitation of the study to the whole Visayas Region and as well as extending the period of MCAP implementation to five (5) years instead. Extending the scope may have to be done to include other factors that may affect FBD, MMR and IMR.

Increase awareness of the implementation of the MCAP. This is to encourage pregnant women to deliver in the health facility considering possible modifications.

References

Bhattacharyya et al. 2016. Factors Influencing Women's Preference for Health Facility Deliveries in Jharkhand State, India: a cross sectional analysis. BMC Pregnancy and Childbirth.

Chimhutu, V. 2011. Pay for Performance in Maternal Health in Tanzania: Perceptions, Expectations and Experiences in Mvanmar district.

DOH/JICA/ IC Net Limited/HANDS. 2013. Reference Materials on Maternal and Child Health Related Policy Issues for Inter-local Health Zones (ILHZ) Version 1. Published by SMACHS-EV.

Department of Health (DOH), Biliran Provincial Government, Ifugao Provincial Government Japan International Cooperation Agency (JICA). 2007. Maternal and Child Health Project Annual Report 2007.

Dow W. and White J., (2013). Incentivizing Use of Health Care, United Nations Department of Economic and Social Affairs, United Nations New York. Expert Paper No.2013/13,2013.http://www.un.org/en/development/desa/population/publications/pdf/expert/2013-13_Dow-and-White_Expert-paper.pdf

Freiberg, J., and Berk, L. 2016. How to Improve Maternal and Neonatal Health in Malawi. Global Delivery Initiative.

Karki, A. 2012. Safe Delivery Incentive Program Under Maternal Health Financing Policy of Nepal: A Case of Kailali District in Nepal.

Klinger, A. 1985. The fight against infant mortality. In J.Vallin, & A. D. Lopez, (Eds.), Health policy, social policy and mortality prospects. IUSSP, Ordina Editions.

Kusneniwar et al. 2013. Determinants of Infant Mortality in a Developing Region in Rural Andhra Pradesh. Natl J Integr Res Med.4(4): 20–26.

Lim et al. 2010. India's Janani Suraksha Yojana, a conditional cash transfer programme to increase births in health facilities: an impact evaluation. Lancet375, 2009–2023.

Millennium Development Goals (MDGs). 2016. International Journal of Epidemiology, Vol. 45, No. 2.

Morgan, Lindsay et al (2013). Financial Incentives and Maternal Health: Where Do We Go from Here? Health Population Nutrition.

Musgrove P., (2011). Financial and other rewards for good performance or results: a guided tour of concepts and terms and a short glossary. Washington, DC: World Bank; p.12.

Parkhurst J., Kahman S.,and Ssengooba F. 2006. Overcoming Access Barriers for Facility Based Delivery in Low – Income Setting: Insight from Bangladesh and Uganda. Journal of Health Population and Nutrition, pp. 438-445.

Philippines National Demographic and Health Survey. 2017. Key Indicators Quezon City, Philippines, and Rockville, Maryland, USA: PSA and ICF.

Powell-Jacksona, T., Mazumdarb, S, and Mills, A. 2015. Financial Incentives in Health: New evidence from India's Janani Suraksha Yojana. Journal of Health Economics 43 154–169.

Regional Office Order No. PC 095 s. 2014. Maternal Care Incentive Program (MCIP) in Eastern Visayas.

Sidney et al. 2016. Out-Of-Pocket Expenditures for Childbirth in the Context of The Janani Suraksha Yojana (JSY) Cash Transfer Program to Promote Facility Births: Who Pays and How Much? Studies from Madhya Pradesh, India. International Journal for Equity in Health, 15:71 DOI 10.1186/s12939-016-0362-4.

The Philippines 5th Progress Report-Millennial Development Goals. National Economic Development Authority and United Nation Development Program, 2014. Retrieved from www.neda .gov.ph/wp-content/uploads/2014/08/MDG/Progress-Report-Final.pdf).

Thongkong et al. 2017. How Equitable Is the Uptake of Conditional Cash Transfers for Maternity Care in India? Evidence from the Janani Suraksha Yojana Scheme in Odisha and Jharkhand. International Journal for Equity in Health, 16:48 DOI 10.1186/s12939-017-0539-5.

UNICEF DATA., (2017) Maternal Health: Maternal Mortality Ratio. https://data.unicef.org>maternal-heath

Yangon et al., (2014) Mid-term review of Maternal and Child Health Voucher Scheme. Ministry of Health, World Health Organisation, Country Officer for Myanmar, Health Interventions and Technology Assessment Program, Thailand.

https://www.doh.gov.ph/national-safe-motherhood-program

A systems approach to improving maternal health in the Philippines Huntington D, Banzon E & Dy Recidoro Z. (2011). Bulletin of the World Health Organization 2012;90:104-110.
United Nations. 2005. Millennium Development Goal

Loaiza E, Wardlaw T, Salama P. 2008. Child 1. mortality 30 years after the Alma-Ata Declaration

Hill K et al. 2007. Estimates of Maternal 2. Mortality Worldwide Between 1990 and 2005: an Assessment of Available Data. Lancet and UNICEF. 2008. State of the World's Children 2009

Lule E, Singh S, Chowdhury S. 2007. Fertility 4. Regulation Behaviour and their Costs: Contraception and Unintended Pregnancies in Africa and Eastern Europe and Central Asia
https://www.who.int/gho/child_health/mortality/neonatal_infant_text/en/

Can vouchers deliver? An evaluation of subsidies for maternal health care in Cambodia Van de Poel E, Flores G, Ir P, O'Donnell O & Van Doorslaer E. (2013). Bulletin of the World Health Organization 2014;92:331-339.

Using targeted vouchers and health equity funds to improve access to skilled birth attendants for poor women: a case study in three rural health districts in Cambodia Ir P, Horemans D, Souk N, Van Damme W. (2010). BMC Pregnancy Childbirth 10 (1).

Using vouchers to increase access to maternal healthcare in Bangladesh
Rob U, Rahman M, Bellows B. (2009-10). Int Q Community Health Educ. 2009-2010;30(4):293-309.

A conditional cash assistance programme for promoting institutional deliveries among the poor in India: process evaluation results Devadasan N, Elias MA, John D, Grahacharya S & Ralte L. (2008). Studies in HSO&P, 24.

Effect of Chiranjeevi Yojana on institutional deliveries and neonatal and maternal outcomes in Gujarat, India: a difference-in-differences analysis Mohanan M, Bauhoff S, La Forgia G, Babiarz KS, Singh K & Miller G. (2013). Bulletin of the World Health Organization

UNICEF Data: Monitoring the situation of children and women, https://data.unicef.org/topic/maternal-health/maternal-mortality/

The Millennium Development Goals Report for 2015

SAMEH EL-SAHARTY, South Asia's Quest for Reduced Maternal Mortality: What the Data Show, January 2015