Original Research Article

A Maternal and Child Health Programme Evaluation

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ABSTRACT

While the global maternal mortality ratio declined by 45% in 13 years from 1990 to 2013, Zimbabwe recorded marginal decline in the indicator. Zimbabwe recorded an increase in maternal mortality between 1990 and 2010 from 450 per 100 000 to 960 per 100 000. However, the figure dropped to 651 per 100 000 in 2015. This study sought to evaluate the maternal and neonatal child health programme in a rural province in Zimbabwe. The community study setting used a community care group approach in health care. A concurrent multi-method research design was used through a cross-sectional survey, record reviews and key informant interviews. Permission to carry out the study was obtained from Plan Zimbabwe and the Provincial Medical Director through the District Medical Officer, Chipinge District. Informed consent was obtained from participants before data collection. Data was collected through structured questionnaires from 75 participants. Qualitative data was obtained through key informant interviews of Maternal and neonatal health stakeholders. Among participants, 86% recalled having had malaria chemoprophylaxis and 67% recalled having had at least one blood pressure check during pregnancy. On the other hand 83.3% recalled at least 2 danger signs in pregnancy. While 85% had fulfilled 4 antenatal visits according to focused antenatal care, only 38% exclusively breastfed their babies for 6 months. The community care group approach is associated with increased knowledge and utilization of health resources.

Keywords: Community care group, maternal, neonatal and child health, programme evaluation, Zimbabwe

1.0 INTRODUCTION

Globally, maternal mortality is still a challenge, there were an estimated 289 000 maternal deaths in 2013 a decline of 45% from 1990 (WHO, UNICEF, UNFPA, World Bank and United Nations Populations Division, (2011),Trends in Maternal Mortality). The Zimbabwe Multiple Indicator Cluster Survey, 2014 defines maternal mortality as all deaths that occur to women during pregnancy, during birth and up to 2 months after birth. Neonatal mortality rate is the probability of dying within the first month of life and Child Mortality is the probability of dying between birth and the fifth birthday. Amongst the major causes of maternal mortality in Zimbabwe is the delay to decide to seek healthcare, the delay to get to the health facility and the delay to get medical care (Zimbabwe Maternal and Neonatal Health Road Map, 2015).

Maternal mortality ratio [MMR] is directly or indirectly related to the status given to women in a country. The higher the ratio the lower the status and the lower the ratio the higher the status. In this respect the United Nations countries set as one of its developmental goals to reduce maternal deaths by half by 2015. As a result governments and partners were compelled to prioritize reducing maternal mortality through policies, strategies and research.

Regionally, sub-Saharan Africa account for 62% (179 000) of global maternal deaths followed by Southern Asia

at 24 % (69 000). At country level the two countries that account for one third of global maternal deaths are India 17 % (179 000) followed by Nigeria 14 % (40 000), (WHO, UNICEF, UNFPA, World Bank and United Nations Populations Division, (2011), Trends in Maternal Mortality).

Despite the great efforts made by Zimbabwe in line with the United Nations Millennium Development Goals (UNMDGS) to reduce maternal, mortality by half by 2015, national reports still show a gap in maternal health. The Zimbabwe Multiple Indicator Cluster Survey (MICS), 2014 shows that the current MMR is at 581 deaths per 100,000 live births. Infant mortality rate is 55 deaths per 1000 live births and Neonatal mortality is 29 deaths per1000 live births (Zimbabwe Multiple Indicator Cluster Survey, 2014).

The study evaluated an MNCH programme and the sustainability of its approaches at outcome level.The programme was implemented by Plan Zimbabwe in collaboration with the Ministry of Health and Child Care with a broad objective of improving maternal, neonatal and child health for underserved populations in Chipinge district. Specific objectives were:
1) To increase the knowledge of basic MNCH issues in men and women of a child-bearing age, and their relevant family members
2) To increase men and women's utilization of responsive MNCH services along the Continuum of Care
3) To strengthen the health service delivery system to be more responsive and improve MNCH

2.0 MATERIALS AND METHODS

An outcome evaluation study was conducted. The methods used in this evaluation study are based on the concept of the logical frame work approach. The logical framework analyses different parts of a project which include the project inputs, project processes and project expected outcomes. This project was evaluated at outcome level that is the study assessed whether the project is achieving its expected outcomes. The study was conducted in Chipinge district of Manicaland Province. It covered villages under the catchment areas of the following 5 Clinics, Kopera, Mabee, Chinyamukwakwakwa, Mahenye and Chisuma.

The study sample comprised of men and women within the age range of 15 to 49 years and biological parents of children below 2years of age, as well as permanent residence of villages serviced by the 5 programme Clinics (Chisuma, Kopera, Mahenye, Mabee and Chinyamukwakwakwa). Purposeful sampling was used to select the 5 clinics; these are the total 5 programme clinics hence they have been strategically selected to give in-depth information about the Programme. At a household either the biological mother or biological father of under 2 years old children were interviewed. On the other hand VHWs who participate in the MNCH projects and report to the respective 5 Clinics were interviewed. Consequently, Nurses in charge of the 5 programme clinics and the District Medical Officer were also included in the study. In addition to the key informants, T5 and MNCH reports were reviewed.

A total of 75 men and women were selected from the targeted 5 sites, Consequently 5 nurses were selected, that is one nurse per Clinic. A total of 15 VHWs were selected, 3 VHWs per Clinic. The sample size was calculated using SPSS version 16, at 0.1 confidence level. The same sample size was used at the baseline survey of the same programme hence the same was used for the purpose of comparison and reference, (Plan-MNCH, baseline survey, 2011).

The evaluation consisted of a structured questionnaire and interview guides for key informant interviews. Questionnaires were targeted to 75 men and women of a reproductive age with specific focus on mothers with children below 2 years of age. The interviews were conducted

in villages within the catchment areas of the following Clinics, Kopera, Chinyamukwakwakwa, Mahenye, Mabee and Chisuma. These 5 clinics are all in Chipinge district and were all covered by the MNCH programme.

The independent variables were: Number of clinics covered, number of trained VHWs, trained health workers and number of community groups. The dependent variables were: Knowledge on MNCH, access to 4 ANC visits, number of Tetanus Toxoid doses, number who got PNC within 72 hours, number of institutional deliveries, number of home deliveries, maternal, neonatal and child deaths, perceptions on continuity of the CCGs and number of households covered.

Data on utilization of MNCH services from the 5 health centers was accessed through records review, going through the quarterly and monthly programme reports. Community based data track the MNCH indicators at community level and it is submitted monthly to the respective health centers by VHWs, Health centre data is extracted from the T5 forms by nurses monthly. Data entry was done on SPSS version 16.0: data was analysed using multivariate analysis, frequency tables, cross tabulation and regression analysis. Data from open ended questions was analysed using content analysis.

Permission to conduct the study was sought from the Provincial Medical Director through the District Medical Officer and Plan Zimbabwe though the Program unit Manager. For the interviews with men and women in the community the participants went through a written informed consent before going through the interview process, the same was done with interviews of the DHE (District Health Executives) members, nurses and VHWs. The informed consent entailed the purpose of the study and interviews, it also explained that no harm was to be inflicted in the process and the interviewee had a right to pull out in the progress whenever he or she saw it necessary to do so. Confidentiality was maintained at all levels, information concerning a respondent was not disclosed to anyone without consent. Interviewee names were not taken during the interviews but a numerical coding system was used to identify the questionnaires. Results of the study were only used for academic purposes and to improve the MNCH programme in Chipinge.

3.0 RESULTS
Socio-demographic data

The presentation of data followed the order of the research objectives; the first column was the socio-demographic characteristics of the respondents, Table 1.1. The sample size was 75 (n=75).

Table 1.1: Demographics (n=75):

Sex of Respondent	Frequency	Percentage (%)
Male	7	9.3%
Female	68	90.7%
Sex Household Head		
Male	70	93%
Female	5	07%
Literacy level		
Primary school	33	44%
Secondary school	39	52%
Post-secondary	1	01%
Never attended	2	03%
Marital Status		
Single	5	06%
Married	66	88%
Divorced	0	00%
Widowed	4	06%

Knowledge levels of basic MNCH and danger signs

In this evaluation the research team asked the respondents whether they were attending community health sessions in their respective villages. Ninety four percent of the respondents said they attended sessions and 6% said they do not attend sessions. Knowledge levels were assessed basing on the ability to recall at least two danger signs along the continuum of care. The respondents demonstrated the highest level of knowledge on danger signs related to pregnancy and the knowledge levels on the danger signs in labour and delivery were at the same level. The percentage of women who could recall at least 2 danger signs in the three categories were 83.3%, 76% and
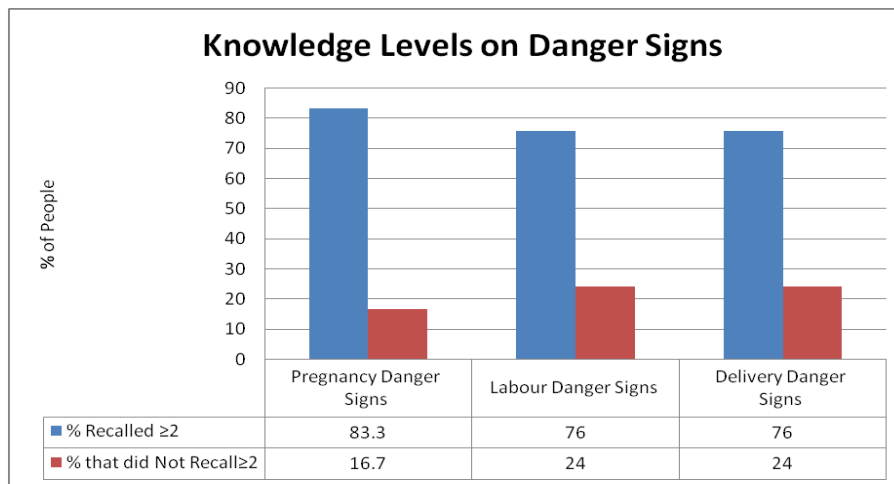
76% respectively, this is summarised in fig 1.0.

Fig 1.0: Knowledge levels on MNCH Danger Signs (n=75).

	Pregnancy Danger Signs	Labour Danger Signs	Delivery Danger Signs
% Recalled ≥2	83.3	76	76
% that did Not Recall≥2	16.7	24	24

Utilization of responsive MNCH services

The respondents were interviewed on the types of services that they received during ANC (Antenatal Care). The respondents pointed out that they received malaria prevention treatment, blood pressure check, assessment on the orientation and condition of the fetus, HIV tests and anemia prophylaxis. The findings are summarized in Table 1.2 and Fig 1.1.

Table 1.2: Services received during ANC (n=75):

	Type of Service Received	Frequency	Percentage of respondents who received ANC service by type
1	Malaria Prevention Treatment	65	86%
2	BP Check	50	67%
3	Check foetal condition and orientation	59	78%
4	HIV testing	62	82%
5	Received anaemia prophylaxis's	62	82%

The study also looked at the key indicators of MNCH practice, these include indicators such as mothers who delivered after 4ANC visits, the percentage of institutional deliveries, percentage of nursing mothers who accesses Post Natal Care (PNC) at 72 hours and percentage of women who exclusively breastfed their children. The findings are summarized in table 1.3.

Table 1.3: Utilization of ANC visits (n=75):

	Indicator	Frequency	Percentage
1	Deliveries with 4 ANC visits	64	85%
2	Institutional deliveries	60	80%
3	Those that got PNC at 72hrs	63	84%
4	Exclusive Breastfeeding	29	38%

An assessment of the association between having attained at least 4 ANC visits and exclusively breastfeeding the child was ascertained. The findings are summarized in table 1.3.1.

The Odds of a mother exclusively breastfeeding her child is 2.9514 higher given that the mother attained 4 ANC visits compared to not having attained at least 4ANC visits. Since the 95% confidence interval of 1.1227 and 7.7808 does not span 1.0 the increased Odds of 2.9514 exclusive breasting children by mothers who attained 4ANC visits is statistically significant.

Table 1.3.1: Attending at least 4ANC visits and practicing exclusive breastfeeding

	Exclusive Breastfeeding the Child		Total
	Yes	No	
At least 4 ANC visits	19	18	37
No or Less than 4 ANC	10	28	38
Total	29	46	75

	Lower	Upper
Odds ratio 2.9514 and 95% Confidence interval	1.1227	7.7808
Risk ratio 1.9514 and 95% Confidence interval	1.0522	3.6187

Immunization and Child Care

The same parents were also interviewed on access to immunization for their children. Interviewers also made use of the child health cards to verify the information. The key indicators covered were coverage of BCG, third pentavalent and measles vaccination. The findings are summarized in the Fig 1.2.
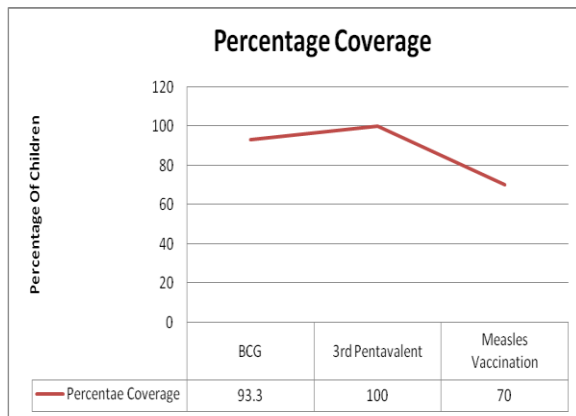

Fig 1.2: Immunization Coverage (n=16):

VHW's perceptions on continuity of the community health education program

To assess the sustainability of the community health education model from the Village Health Workers' perspectives, a sample size of 16 VHWs (n=16) were interviewed. These were from 13 villages of the programme area. In terms of demographics 15(93.8%) are married and 1(6.2%) is single. In terms of literacy level, of the 16 respondents, (4) 25% have acquired education up to primary level, (11) 68.8% acquired secondary education level,

and (1) 6.2% acquired post-secondary level education.

When the VHWs were asked whether they will continue facilitating community groups after the Plan-MNCH programme, (14) 87.5% said they will continue facilitating them, (1) 6.2% said no and the other (1) 6.2% had no idea on whether she will continue to support the groups or not. Consequently they were asked on their perceptions of health education groups 10 years from now, 11 (68.8%) said they perceived that the groups will be more powerful and bigger, 3 (18.8%) see the groups smaller and weaker and 2 (12.5%) perceived that the groups will be non-existent.

In addition the VHWs were asked on the nature of their working relationships with CCG volunteers (Lead Mother or Fathers). Of the sixteen, 4 (25%) said the relations are very good, 8 (50%) said they are good and 4 (25%) didn't have comments on the nature of the relationships. At the same time the VHWs were also assessed on the degree to which CCGs reduced their work load. Nine (56.2%) said they greatly reduced the burden, 4 (25%) said they reduced but not much, 1 (6.2%) said there was no change, consequently 1 (6.2%) said the workload was actually increased and another VHW did not commend. Some cross tabulation were made on literacy level and the VHWs' perceptions of the CCGs 10years from now. The findings were summarized in table 1.4.

Table 1.4: VHWs age and Perception on Community Care Group sustainability (n=16)

VHWs' highest level of Education		Where do you see the Community Care Groups 10yrs from Now?			
		Stronger and Bigger	Weaker and Smaller	No Existent	Total
Primary	Count	4	0	0	4
	Expected	2.8	0.8	0.5	4.0
Secondary	Count	6	3	2	11
	Expected	7.6	2.1	1.4	11.0
Post-Secondary	Count	1	0	0	1
	Expected	0.7	0.2	0.1	1.0
Total	Count	11	3	2	16
	Expected	11.0	3.0	2.0	16.0

Table 1.5: VHWs' age and households covered through the Community Care Groups (n=16):

X	29	32	33	38	39	39	40	41	42	42	45	45	48	49	50
Y	96	170	300	176	120	380	40	180	78	58	97	80	120	112	102

Age (X) is the independent variable and Number of Households (Y) is the dependent variable

Regression Equation is y = - 0.341X + 126.7, The Coefficient of determination r = -0.0173

Interpretation: There is a weak negative relationship between the Village Health Worker's Age and the number of households that they cover. One unit increase in the VHWs age causes a 0.341 decrease in the number of households covered.
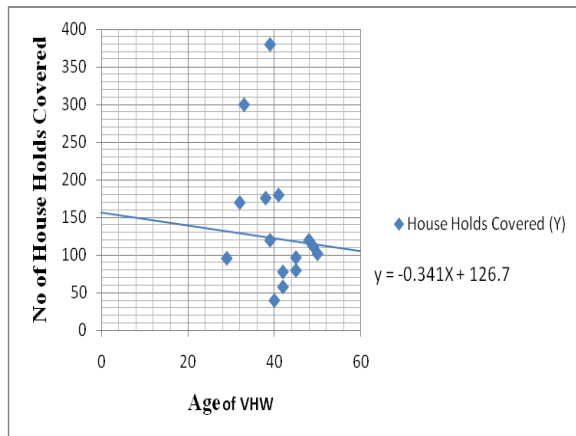
Figure

DISCUSSION
Demographics:

The sample size of 75 men and women was similar to the sample size that was used in the baseline study of the same programme in November 2011.The same sample size was used to create an even platform for comparison purposes. One of the main objectives of this evaluation study is to determine if the programme is achieving its objectives.

The study respondents were made up of more females (90.7%) than males (9.3%). This is attributed to the fact that the primary target for this programme is Women of Child Bearing age (WCBA) hence more women were interviewed. Secondly, the sampling criterion was adopted from the sampling criteria of the baseline survey which also had more females than males. Consequently, this is in line with the fact that the population structure of the district has more females than males, hence chances that females get selected were high (Chipinge district population breakdown, 2014).

Literacy levels of the study respondents, the majority were those who have acquired education to secondary level (52%), followed by those who had primary education as their highest (44%). The least are those that acquired post-secondary school education followed by those who never attended school at all (3%). However the findings are contradictory to the characteristics of respondents in the Zimbabwe Demographic Health survey (ZDHS), 2010/2011. The ZDHS findings had more females who had their highest level of education as primary education (87%).

On average a high literacy rate is also instrumental for a high consumption of health education. The likelihood of people to interpret information education and communication materials will also be high and so are chances of increased demand and use of modern MNCH services.

Knowledge on danger signs related to pregnancy and post delivery

The respondents demonstrated the highest level of knowledge on danger signs related to pregnancy (83.3%), second on the list were knowledge levels on the danger signs in labour and delivery, the two were both at (76%). These findings are different from the 2011 MNCH programme baseline study findings, at baseline level 46% of respondents could recall at least two danger signs related to pregnancy, 28% could not recall at least two danger signs related to labour, (Plan International MNCH baseline, 2011).

So in this case we can safely conclude that the knowledge levels on danger signs related to pregnancy increased from 46% to 83.3% between November 2011 and June 2015. Consequently, knowledge level on danger signs related to labour increased from 28% to 76% at in the same period.

I assume the knowledge increase is as a result of the introduction of the Community Care Group strategy in MNCH. The Community Care Groups are a social behaviour change innovation that gives continuous health education on basic MNCH at community level. Soon after the

baseline communities were organised into community care groups, a group of 10 to 15 people, the group meets twice a month for health education on MNCH. The lead mother or father facilitates the health discussion with the aid of a community care group guide. The guide carries topic on MNCH such include, birth preparedness, early booking for ANC, danger signs of pregnancy and delivery and many other topics. It is in the local Shona language and one Care Group takes 1 topic per session that is 2 topics per month, each session is less than an hour.

Utilisation of services received during ANC services

Amongst the services received during ANC, pointed out that they received malaria prevention treatment were the majority (86%) followed by those that received HIV testing and anaemia prophylaxis, the two groups were 82%. The least are those that said they received BP checks (67%).

At baseline, those that received malaria prevention treatment during ANC were 39%, those that received HIV testing was at 43%, those that received anaemia prophylaxis were at 40% and those that received HIV testing were 43%. So generally access and utilization of ANC services increased from baseline to this period. In summary access to malaria prevention treatment during ANC increased from 39% to 86% from year 2011 to year 2015, HIV testing during ANC increased from 43% to 82% in the same period. Similarly the number of those that received BP checks rose from 16% to 67%. These findings and the changes are in line with the objective of the Zimbabwe Maternal Neonatal Road Map 2010-2015, the road map seeks to intensify access to focused ANC.

The major objective of the MNCH programme was to increase uptake and utilization of modern MNCH services through social and behaviour change communication. The researchers assumed that the high knowledge levels on importance of early booking for ANC also led to a high or increased uptake and utilization of ANC services. This increased knowledge can again be attributed to the Community Care Groups innovation that is fast spreading MNCH health education.

Antenatal Care is key to identifying and reducing possible health risk to the pregnant mother or to the newborn child. Low ANC booking is also an indicator of a high likelihood of unsafe deliveries. The Zimbabwe, Maternal and Neonatal Health Roadmap, 2007-2015 suggests that most complications leading to deaths occur during delivery (25%) or immediately thereafter (60%). So in this regard it is critical to scale up access to ANC for access to skilled and equipped attendants present at the time of birth to attend to both the mother and the baby.

Community Care Groups create a multiplying effect to equitably reach every household with behaviour change communication. They also provide the structure for a community health information system that reports on new pregnancies, births and deaths detected during home visits. Care groups also encourage joint action, ownership and accountability in communities enabling mothers to learn new skills in child feeding and caring practices, food preparation as well as sanitation and hygiene practices.

Health Education and Practice

Generally, all the four indicators increased from baseline level to this evaluation period. The greatest change was recorded on the population that delivered with at least 4 ANC (Antenatal-Care) visits followed by those that got PNC (Post Natal Care) within 72hours after delivery. Such a remarkable increase can probably be attributed to the intensive social behaviour change communication innovation strategy that has been explained previously.

Care groups are engaging fathers and mothers in cohorts of 10 -15 households to explain the importance of early booking

and subsequent routine ANC visits and institutional deliveries. The social mobilisation through the care model has been strengthened by the traditional leadership who has passed by-laws to mobilise men and women to access MNCH services and to deliver at health institutions. An example is a case in one of the communities was if one delivers at home they pay a goat as a penalty fee to the village headman.

The mean knowledge change of the 4 indicators is 14%. However, research findings showed that increase in knowledge only does not necessarily translate to behaviour change. For instance discussions with women on the recommended feeding practices for children below six months revealed that most women are knowledgeable on exclusive breastfeeding, however, this knowledge did not translate into the same level of practice only 38% of the women were exclusively breastfeeding.

Exclusive breastfeeding, increased by 6% but the increase is relatively marginal compared to the other 3 indicators. These findings are also within the same range with the findings in the Zimbabwe Multiple Indicator Cluster Survey of 2014. The Multiple indicator Cluster Survey also reviewed that the percentage of infants who are exclusively breastfed within their first 6 months of life is 41.4%. Although the figure is slightly higher than the findings of this evaluation generally it is still a low coverage.

The assessment of the relationship between a mother having attained at least 4ANC visits and exclusively breastfeeding shows that the two are related. The researchers assumed that since one of the objectives of ANC are teaching on exclusive breastfeeding and infant feeding the information transmitted into practice.

However following group discussions with women of a child bearing age, we discovered that exclusive breastfeeding is affected by many socio-cultural factors. Amongst them are religious and traditional beliefs that affect the practice of exclusive breastfeeding and child feeding. In some traditional African cultures in Chipinge, alternating breast milk and other solid feeds is believed to make the child stronger. Hence the exclusive breastfeeding is hampered in the context of trying to make the children stronger.

These cultural beliefs do not comply with goals and principles of exclusive breastfeeding. The beliefs are contradictory to research findings that were done in South Africa; the findings discovered that babies born to HIV positive women who are fed on solids as well as their mothers' milk are 11 times more likely to contract HIV than those who are exclusively breastfed.

Immunization and Child Care

All the three indicators of immunization and child care recorded an increase in coverage from baseline to the evaluation level. The coverage of third pentavalent vaccine was at 100%, followed by BCG at 93.3% and measles vaccination has the least coverage of the 3, at 70%. At baseline, third pentavalent was at 80%, BCG was at 90% and measles immunization coverage was at 53%.

The findings on BCG coverage are also in line with the findings of the Zimbabwe Multiple indicator Cluster Survey of 2014, the survey showed results that 92% of children during the time of the survey had received BCG vaccine. However the coverage of measles vaccination according to the MICS, 2014 is slightly higher (82.6%) than the findings of this MNCH survey (70%).

The variations in the findings may be attributed to a number of factors which include difference in sample size. The MICS was conducted at national level with a bigger sample size whilst the MNCH survey is only based at district level on a sample size of only 75 participants.

The Zimbabwe demographic health survey, 2010/2011 reviewed that the coverage of measles vaccination was at 79%. The coverage is generally higher than that of the MICS, 2014 and the MNCH

survey. The difference may also be attributed to the difference in time in which the 3 surveys were done. Different time period also means different economic trends, budgetary allocations and difference in availability of resources. The ZDHS survey was conducted within the period 2010 and 2011, the MICS was conducted in 2014, and the MNCH survey is the current study of 2015. Generally all the 3 surveys were conducted in different time frames hence the different results.

VHW's perceptions on continuity of Community educative groups:

The evaluation study reviewed that the majority of the Village Health Workers (87.5%) perceive that the Community Groups will continue to thrive even without external assistance. Consequently, at least 75% of the Village Health Workers (VHWs) said that their working relationships with the Lead Mothers and Lead Fathers are good.

Knowledge of working with the VHWs and Lead mothers or fathers shows that a good relationship between the two groups produces more sustainable results. This also leads to timely submission of reports by VHWs; this is so because the lead mother or Father assists the VHWs in gathering community data for reports.

A cross tabulation was made on the VHWs' level of education and their perception of the Community Groups 10 years from the time of this study. The findings reviewed that those that had attained secondary education perceived that the community care groups will be stronger and bigger.

Apart from the VHWs perception on the sustainability of the groups, an association of the relationship between the VHWs' age and the number of households they cover through care groups was also ascertained. There was a weak negative relationship between the age of the VHWs and the number of the households they cover. As the VHWs age increases the number of households covered slightly decreased.

The findings of this study on VHWs and their vow to continue to support community groups are similar to those of a study by Meera Viswanath et al, 2009. The study discovered that Community Health Workers greatly serve as a means of improving health outcomes for underserved populations for some health conditions.

Another descriptive exploratory study conducted in Kenya shares the same idea with the findings of this study on the VHWs and primary health care. The study was by Merlyn et al, 2014, and the findings were that Community Health Workers were appreciated by the health workers and the communities had adopted healthy practices.

The main target respondents of this study were biological mothers of children below 2 years of age, however in the absence of the biological mother the biological father was interviewed. Although fathers made up less than 25% of the respondents, they are likely to have carried in information bias. The bias is in the sense that a mother is likely to give more accurate details of services that she received in ANC as compared to the father being asked to recall on behalf of his wife.

CONCLUSION

Generally the MNCH programme in Chipinge was successful; it achieved its objectives and surpassed its targets. Consequently, this evaluation study also has achieved its objectives of ascertaining whether the MNCH programme is on course. The knowledge levels on basic MNCH issues for men and women of a reproductive age was raised, utilization of modern MNCH services was also increased, and the health system was strengthened to meet the increased demand of services.

The social behaviour change communication strategy that made use of the community care group model proved to be having many strengths and benefits. Amongst them is its ability to reduce burnout from the Village Health Workers (VHWs). The VHWs used to travel long

distances to cover all households with health education but now they are getting support.

The fact that community care groups are structures at household levels implies that they can be used for health education on any health event apart from MNCH. Information conveyed from the clinic to the VHWs and Lead mothers or fathers reaches households in a shorter space of time than it used to do.

The community participation at all level in the establishment of the community groups ensures ownership and sustainability of the structure. In addition involvement of men in the structures increases chances of acceptability and effectiveness of the programme.

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