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The Status of Desired Maternal and Child Health Practices and Service Utilizations of Model Families of the Health Extension Program in SNNPR, Ethiopia

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Abstract

Background: Maternal and Child Health (MCH) is one of the main focus areas of the Health Extension Program (HEP). Therefore, assessing the status of MCH service utilization of families benefiting from the HEP is critical to inform progress of the program and future directions.

Objective: The purpose of this study is to assess the status of desired MCH practices and service utilization of families benefiting from the HEP in SNNPR state of Ethiopia.

Method: A cross-sectional comparative study was conducted from December 2010 to June 2011 in Wolayta and Kembata Tembaro Zones of Southern Nations, Nationalities and Peoples Regional State of Ethiopia. Comparison of selected variables that show MCH service utilization was made between a randomly selected 690 model families and 686 non-model families. Qualitative data were collected from the two selected zones to complement the findings of the quantitative data. The qualitative data was collected from a purposively selected group of women and men among model families.

Descriptive and analytics statistics were used to analyse the quantitative data using STATA version 10 while the qualitative data were analysed using Open Code version 3.6.2.0.

Results: The study showed that ITN ownership and utilization by model families was 66.9% and 58.4% as compared to 53.3% and 42.6% by non-model families respectively (p<0.01). Similarly, ever and current use of family planning was 45.4% and 32.3% as compared to 33.6% and 18.6% among model and non-model families respectively (p<0.001). Nearly half (47.3%) of the women in model families had ever tested for HIV while 35.2% of the women in non-model families did the same (P<0.01). Forty two point three Percent (42.3%) of husbands in model families also tested for HIV while only 35.8% of their counterparts in non-model families did the same (p<0.01). There was no significant difference in the proportion of households with child immunization and feeding practices between model and non-model families.

Conclusion: Generally, model families performed better than non-model families. The government's decision of making all households models through the implementation of the health development army is a timely decision. Regular follow up of model families after graduation help further improve outcome and sustain the gains.

Keywords: Maternal health; Child health; Health extension program; Model family

Background

Poor maternal, new-born and child health remains a significant problem in developing countries. Worldwide, 358,000 women die during pregnancy and childbirth every year and an estimated 7.6 million children die under the age of five [1]. The World Health Organization (WHO) estimates close to a 50% reduction of maternal deaths from 1990 to 2010 and more than 20% reduction in under-five mortality from 2000 to 2010. Most of these deaths occur in sub-Saharan Africa [2].

Evidences from population and hospital based Maternal Mortality Ratio (MMR) estimates done in Ethiopia show some decline in MMR overtime [3]. According to the Ethiopian Demographic and Health Survey (EDHS), Child mortality trends, particularly, under-five mortality rate and infant mortality rate are also on track to meet the Millennium Development Goals (MDGs). For instance, neonatal mortality rate decreased from 49 deaths per 1,000 live births in 2000 to 39 deaths per 1,000 live births in 2005 and remained stable at 37 per 1,000 live births in 2011. Infant mortality declined by 39 percent over the 15-year period, between 2000 and 2011, from 97 deaths per 1,000 live births to 59 deaths per 1,000 live births. Under-five mortality declined by 47 percent over the same period. It dropped from 166

deaths per 1,000 live births to 88 deaths per 1,000 live births. However, with only three years left to the end of the MDG, the trend of MMR from data representing 0 to 6 years prior to the 2000 and 2011 EDHS indicate only 23% reduction (871 deaths /100,000 live births to 676 deaths/100,000 live births in 15 years) which is far behind the MDG target of reducing maternal death by 75 percent [4,5].

In Ethiopia, 90% of the deliveries also take place at home settings, skilled birth attendance is very low (10%) and Contraceptive Prevalence Rate (CPR) stands at 29%, though there are recent encouraging results on CPR. Moreover, the coverage of basic emergency obstetric care,

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Ante Natal Care (ANC) and Post Natal Care (PNC) are limited. This is accompanied by inconsistent quality of care and limited transport facilities among other factors including traditional beliefs and customs that influence care seeking behavior [5,6].

The relative contributions of factors leading to maternal and child deaths in Ethiopia also vary from time to time. A recent reports show that obstructed labor (13%), uterine rupture (12%), hemorrhage (12%), hypertension (11%), abortion (6%), and sepsis (5%) are the major causes of maternal deaths while pneumonia (28%), newborn conditions (25%), diarrheal diseases (20%) and malaria (20%) were the major contributors of child mortality [7,8].

Ethiopia is one of the first countries in Africa that accepted and endorsed the MDGs in to its national development strategy of which goal 4 and 5 are related to reducing child mortality and improving maternal health respectively. Particularly, MDG 4A and 5A request countries to reduce MMR and Under-Five Mortality Rate by three quarters and two third respectively in the period between 1990 to 2015 [9,10].

Since Ethiopia accepted the MDGs in 2000, various initiatives, programs, strategies, and laws were adopted and developed by the government as part of its commitment to reducing the death of mothers and children. These include; Making Pregnancy Safer (MPS) Initiative in 2000, the launching of the Health Extension Program (HEP) in 2003, the development of strategies on; Child Survival in 2005, on Reproductive Health in 2006, on Adolescent and Youth Reproductive Health in 2006 and on Nutrition in 2008. The country also revised the abortion law in 2005 loosening some of the restrictions on the indications of safe abortion services.

The HEP, particularly, aims at achieving universal coverage of primary health care to make sure that all Ethiopians have equitable access to health services. The program seeks to improve the health status of families by creating access to packages of basic, preventive and selected high impact curative health services to households. The main components of the HEP are disease prevention and control, hygiene and environmental sanitation, family health, and health education and communication. Expanding physical health infrastructures and recruiting, training and deploying Health Extension Workers (HEWs), who are the primary implementers of the HEP, in every community, are the cornerstones of the program [11,12].

Of the various activities of HEWs, training families to be models is one of the widely publicized aspects. The HEWs select and train prospective model families on the various packages of the HEP. The training runs for about four months during which trainee families are expected to attend 96 hours of theoretical and practical training sessions. After the training, HEWs conduct follow-up visits to identify households that have implemented the packages that are applicable to the family and have, therefore, met the requirements for graduation and certification as a model family. Model families that fulfill the requirements are recommended for graduation and certification to the Woreda health office, which oversees the model family program [11,12].

The key program activities in which model families are trained among others include: Ownership of insecticide treated net, Immunization (for infants and children as well as mothers), use of family planning service, HIV Counselling and Testing services and exclusive breastfeeding of children less than six months [11]. Therefore, it is very important to document and evaluate the status of these desired MCH by families of the HEP in Ethiopia.

The purpose of this study is to assess the status of desired Maternal and Child Health (MCH) practices and service utilization of model families of the HEP in southern nations, nationalities and People's Region (SNNPR) of Ethiopia. The findings are believed to inform policy makers and programs on how to capitalize on existing successes and strengthen the implementation of the program for better outcomes.

Methods

Study area, study design and study population

The study was conducted in wolayta and kembata tembaro zones of Southern Nations Nationalities and Peoples Region (SNNPR) of Ethiopia from December 2010 to June 2011 by employing a comparative cross sectional study design. The study involved both quantitative and qualitative methods sequentially. The quantitative data were collected from model and non-model households.

The qualitative data were collected from model families to complement the findings of the quantitative study. The qualitative study focused only on model families in order to gain in-depth understanding of the MCH service utilization among these groups of families.

Sample size and sampling technique

The sample size for the study was calculated using the standard formula for two population proportions (taking p=50% with 8 percentage point difference between model and non-model families). After considering for non-response, the final sample size yielded 1400 households (700 models & 700 non-models). The zones that implemented the HEP in accordance with the standards set by the Ministry of Health and those that implemented the HEP since 2007 were selected purposively in consultation with the health officials at different levels in SNNPR for the quantitative and qualitative studies. Four Woredas, two from each zone, were also selected purposively using the same criteria. From each woreda, five kebeles were selected using Probability Proportional to Size (PPS). From the twenty kebeles selected in such a way, list of households was prepared based on their model family status (model vs. non-model) and their year of graduation. Then, from each kebele, 35 model and 35 non-model families were chosen by systematic random sampling technique from the list to ensure the selection of 700 model and 700 non-model families as per the calculated sample size. The model families were also selected proportional to the size of the graduation year. Respondents from each household were any knowledgeable adult family member. Twelve trained health professionals collected data from the selected model and non-model households using interviewer administered structured and pretested questionnaire.

For the qualitative study, three different groups of FGD participants were selected based on the following criteria: Women who graduated before July 2009, women who graduated between July-Dec 2009 and all men in model families regardless of their year of graduation. Recent graduates of model families (2010 graduates) were excluded from the study due to the inadequate time to see the adoption of the desired MCH practices. The list of model families, including their year of graduation, which was prepared for the quantitative study, was used to select FGD participants. Ten FGD participants were selected purposively from the list from each group. A total of 12 separate FGDs (10 participants per focus group) were conducted in three groups (4 FDG per group) of model families using a discussion guide. The number of FGDs was equally divided between the selected woredas. A total of 21 In-depth interviews were also conducted with various actors including the HEWs using in-depth interview guides.

Data management and analysis

The data from the completed questionnaires were entered and analysed using STATA 10. Data were also cleaned by running frequencies before analysis. The qualitative data were also analysed using open code software package version 3.6.2.0. Descriptive and analytics statistics were used to analyse the quantitative data and the results are displayed using tables. The qualitative data were transcribed and summarized under different thematic areas and are presented textually.

Ethical considerations

The study obtained ethical clearance from the SNNPR Health Bureau Ethical Clearance Review Board. Permissions were also obtained from local officials at the data collection sites. The objectives of the study were explained to study participants and oral consents were obtained prior to data collection. Only those who were willing to participate were included in the study. There were no unique identifiers of respondents in the questionnaire and all the data collected were handled confidentially.

Result

Socio-demographic characteristics

A total of 1376 (690 model and 686 non-model) families were included in the study with a response rate of 98.3%. Of the model families, 90(13.0%), 190(27.5%), 208 (30.1%), and 197(28.6%) graduated in 2007, 2008, 2009 and 2010 respectively. Five households of model families did not report the year of their graduation.

The sex composition of family members in both model and non-model households was more or less similar. Majority of the respondents in both families were between 25-54 years of age groups, were married and illiterate or educated up to sixth grade. There was no significant difference in the proportion of women of reproductive age group and under five children between model and non-model families. Overall, females had lower levels of education as compared to their husbands. The husbands of women in non-model families were also less educated than the husbands of women in model families (Table 1).

Average family size and proportions of married respondents were found to be significantly higher in model families than non-model families (p<0.01). The proportion of respondents who can read and write in model families was very low but significantly higher than non-model families (p<0.05). Similarly, the proportion of respondents' husbands who were at least 7 graders was significantly higher in model families than non-model families (p<0.05) (Table 1).

Comparison of model and non-model families

Comparisons were made between model and non-model families on selected preventive maternal and child health seeking behaviours such as ITN ownership and use, family planning use (ever and current), child immunization and feeding practices and HIV Counselling and Testing (HCT) service uptakes.

ITN ownership and utilization: Overall, model families were significantly more likely than non-model families to own and utilize ITN (P<0.01). Higher percentage of model families (66.9%) possessed at least one ITN as compared to non-model families (53.3%). The majority of the ITNs had been used from 1 month to one year in both types of households, 96.3% of model families as compared to 88.2% of non-model families had long lasting nets (Table 2).

	Model Family n=690	Non-model family n=686	p-Value
Families with women 15-49 years (%)	23.2	22.6	0.793
Families with under-five children (%)	10.9	12.9	0.269
Sex composition of family members			
Male (%)	49.5	47.4	
Female (%)	50.5	52.6	0.417
Age of respondent			
15-24 (%)	8.8	12.4	0.001
25-34 (%)	30.0	28.2	
35-44 (%)	27.9	12.2	
45-54 (%)	32.3	16.1	
55+ (%)	18.4	15.0	
Missing age	14.9	32.2	
Median Age		38	38
Education			
Cannot read/write (%)	68.0	72.3	
Read/write only (%)	2.2	1.6	0.042
1-6 grader (%)	23.8	20.5	
7+ (%)	6.0	5.6	
Marital status			
Currently married (%)	85.8	70.7	
Not currently married (%)	14.2	30.2	0.001
Number of children ever born			
0 (%)	4.3	4.9	
1-2 (%)	13.7	17.5	
3-5 (%)	32.7	32.1	
6-9 (%)	41.8	38.6	
10+ (%)	7.5	6.9	
Mean CEB (SD)	5.4 (0.1)	5.1(0.1)	
Family Size: Mean (SD)	6.75 (0.025)	5.8 (0.05)	0.001
Husband's education			
Cannot read/write (%)	32.6	37.6	
Read/write only (%)	1.1	1.3	
1-6 grader (%)	34.2	22.7	
7+ (%)	17.9	8.1	0.042
NA (%)	14.2	30.2	

Table 1: Selected background characteristics of respondents by type of family, SNNPR, December 2010.

	Model families n=690	Non-model families n=686	p-Value
Households with ITN	66.9	53.3	0.01
Any one slept under ITN last night			
Yes	58.4	42.6	0.01
No	41.6	57.4	
Number of ITN			
0	33.1	47.7	
1	25.5	26.0	
2	33.2	23.6	
3+	8.0	2.9	
When was the ITN acquired			
<1 months	1.2	0.1	
1-6 months	43.0	26.7	
7-12 months	46.1	54.1	
13-36 months	3.3	9.0	
Over 36 months	2.9	6.1	
unknown	3.5	4.0	

Table 2: Distribution of model and non-model family households according to ITN ownership and use, SNNPR, December 2010.

ITN ownership and use was frequently mentioned by model families. The reduction in the incidence of malaria was mentioned time after time by most model families as an important benefit of using ITNs properly and regularly. Continuous and regular use, even years after graduation, was reported by most model families participating in the qualitative study.

One female FGD participant from the recent model families' graduates said "during peak malaria seasons we asked for additional bed nets and we got what we asked for". Another male participant also said "....my family used bed nets strictly and was protected from malaria".

Family planning use: Family planning use (ever and current) was significantly higher among model families than non-model families (p<0.001). The proportion of model families that use injectables was also significantly higher among model families than non-model families (P<0.01). Relatively better educated women (those with 7 or more years of schooling) reported higher levels of contraceptive use in both types of households. For both model and non-model families, the most common source of the current method was the health post followed by health centre (Table 3).

Child feeding practices: With regard to child feeding practices, about two-thirds of children under 5 months in both model and non-model families were exclusively breastfed. However, only 26% of children aged 6-8 months in both families were given solid or semi-solid food in the previous 24 hours. Bottle feeding was less common in the study area irrespective of which category the family belongs to. In general, there was no difference between the two types of families in their child feeding practices (Table 4).

Child immunization and vitamin A supplementation: The quantitative study didn't show any evidence of better immunization coverage among model families as compared to non-model families. BCG and the three doses of Pentavalent Vaccine uptakes seem higher in model families than non-model families. While almost equal percentages of children from model and non-model families received measles vaccine. The prevalence of vitamin A supplements in the previous 6 months among children aged 6-23 months seems less in model families than non-model families (Table 5).

	Model family n=459	Non-Model family n=379	P-value
Ever used any method	45.4	33.6	0.001
Currently using any method	32.3	18.5	0.001
Education-Current users			
Cannot read/write	29.8	16.1	
Read/write only	30.0	20.0	
1-6 grader	33.6	24.8	
7+	50.0	38.1	
Type of current method			
Injectables	25.9	10.7	
Implanon	2.7	2.2	0.01
Pills	1.3	2.5	
Other modern method	1.0	2.5	
Method not specified	1.4	0.6	
Source of current method			
Health post	68.4	62.6	
Health centre	22.7	23.1	
Government Hospital	0.5	0.0	
Others (not specified)	8.7	14.3	

Table 3: The proportion of married women age 15-49 that ever used and were currently using a family planning method and the type and source of the current method; according to type of family, SNNPR, December 2010.

	Model Family n (%)	Non-model family n (%)
Exclusive breastfeeding (0-5 months old)	70 (67.6)	62 (66.1)
Complimentary feeding (6-8 months)	23 (26.1)	35 (25.7)
Bottle feeding among children, by age of child		
0-5 months old	71 (18.3)	62 (13.3)
6-23 months old	115 (16.0)	124 (25.50)
0-23 months old	186 (16.9)	186 (22.0)

Table 4: Prevalence of key breastfeeding and bottle feeding practices by child age and type of family among households with children, SNNPR, December 2010.

	Model family n=66	Non-Model family n=58
% With vaccination card	37.8	27.6
BCG	84.8	79.3
Polio Vaccine		
POLIO-0	22.7	22.4
POLIO-1	86.4	86.2
POLIO-2	80.3	74.4
POLIO-3	69.7	56.9
Pentavalent Vaccine		
DPT1/PENTA-1	81.8	81.0
DPT2/PENTA-2	80.3	69.0
DPT3/PENTA-3	62.1	58.6
Measles	72.7	74.1
Fully immunized	50.0	48.3
Vitamin A sup. among 6-23 months children in the last 6 months	51	57

Table 5: Proportion of children age 12-23 months that received different vaccines by type of family, SNNPR, December 2010.

	Model family n=690	Non-Model family n=686	p-value
Ever tested for HIV	47.3	35.2	0.01
How many months ago was the most recent HIV test			
Less than11 months ago	30.2	25.0	
More than 11 months ago	17.1	10.2	
Not tested for HIV	52.7	64.8	
Husband tested for HIV (among currently married)	n=605	n=504	
Yes	42.3	35.8	
No	41.7	47.7	0.01
Do not know	16.0	16.5	

Table 6: Proportion of women who reported having had HIV Counselling and Testing (HCT), their educational status and their husbands HCT uptake; by type of family, SNNPR, December 2010.

HIV Counselling and Testing (HCT): Female and male FGD participants appeared to be well aware of HIV and the associated preventive methods. Women and husbands (currently married) from model families were significantly more likely than those from non-model families to have used HCT services (p<0.01). Likewise, 42.3% of the husbands of women from model and 35.8% of those from non-model families had received HCT (p<0.01). HCT uptake among model families increased with the women's level of education and less than one third of the women tested for HIV in the last 11 months before the survey (Table 6).

Fear of receiving positive results and the long standing stigma surrounding HIV were reported as barriers to testing. "When I went for HIV testing, people were gossiping that I was HIV positive" said a female FGD participant. She explained that she was not happy about this and

others might also opt not to go for HCT to avoid similar perceptions from others.

Discussion

The HEP gives special focus on maternal and child health to ensure the continuity of care with wide implications to the achievements of the Millennium Development Goals (MDGs) [13]. In this study, selected variables indicating maternal and child health service utilization patterns were compared between model families and non- model families of the health extension program. Even though attribution of results to specific interventions is always difficult due to a multiplicity of factors and actors influencing the social environment, tangible improvements have been observed since the commencement of the HEP implementation [14,15].

Generally, the results of this study showed that model families perform better than non-model families in many aspects. However, there are also areas with little or no difference between the two groups of families. The HEP has the goal of improving the health of families following their training on the HEP packages [11]. Therefore, better performance among model families is in line with the objective of the program. A study in South-West Ethiopia also indicated similar improvements in maternal and child health service uptakes after the implementation of the HEP [12]. However, in areas where no significant changes were observed between the two groups of families, more time may be required to see changes as some changes may require more time than others to take place.

Looking at specific variables, significantly higher utilization and ownership of ITNs were observed among model families than non-model families. This is in line with a case study that reported increased ownership of nets in villages that implemented the HEP as compared to villages where the implementation did not take place in a more or less similar coverage at baseline [16]. Nevertheless, the study also indicates that some model households that own ITNs were not using it at the time of the study indicating the need to encourage families that own ITNs to start utilizing it.

Similarly, ever and current users of family planning were also significantly higher among model families than non-model families which is in agreement with the findings of two studies on the subject. According to the results of these studies, an increase has been seen in the use of contraceptives methods after the implementation of the HEP [16,17]. The 2011 Ethiopian Demographic and Health Survey (EDHS 2011) also indicated a doubling in contraceptive prevalence from 2005 to 2011. This time coincides with the HEP implementation period in the country [4]. However, this study found no significant difference in child feeding practices or in the receipt of child immunization and vitamin A supplementation between model and non-model families. This may be due to the fact that access is nearly universal and some vaccines are also provided through well-coordinated national campaigns that create access to all children, be it in model or non-model families. But in another study, contrary to our findings, improvements have been seen in the proportion of children that are vaccinated against diphtheria, polio and tetanus (DPT), measles and tuberculosis in villages where the HEWs were deployed as compared to villages where such did not happen [18]. The 2011 EDHS also indicates a 19% increment in the proportion of fully immunized children as compared to the 2005 report. In addition, the proportion of children who took the various antigens also increased in the same period. The same document also indicates improvements in the nutritional status of children in Ethiopia [4]. This seems contrary to the findings of this study in that only 26% of children

aged 6-8 months in both families were given solid or semi-solid food (complementary food) in the previous 24 hours prior to the survey. But, our sample of children aged 12-23 months was too small to get a reliable estimate for each group. In addition, the difference between this study and the other studies could be because certain changes may take time to take place as the HEP is a work in progress. Therefore, further study on child feeding and immunization may be required. With regard to HIV counseling and Testing uptake, this study showed a statistically significant difference in the proportion of women and husbands who tested for HIV between model and non-model families. Model families generally performed better than non-model families in HCT uptake. Similarly, another study showed improvements in HIV/AIDs knowledge and practices because of the HEP [17,19].

Conclusion and Recommendation

To conclude, this study showed that the performance of model families of the HEP is generally better than non-model families. To reap more results and achieve success after success, the government's new direction of making all households models through the implementation of the health development army is an important measure.

In addition, the study team recommends the conduct of another study to see the impacts of the model family training program on maternal and child morbidity and mortality. Fostering the sharing of best practices within and between communities enhances the utilization of MCH services by households. It is also timely to sustain the overall gains of the HEP by providing a comprehensive and institutional support to the HEP particularly to the model families.

Disclaimer

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