

# Challenging the Challenger on Equity, Maternal and Child Healthcare Promotion: A Clinical - Based Description Study in the North Kivu Division of the Health System, Democratic Republic of Congo

Lévis Kahandukya Nyavanda , Jane Mumma , Kambale Karafuli Leopold , Jean-Bosco Kahindo Mbeva

## Abstract:-

### ➤ *Background*

In many circumstances mothers have confront healthcare difficulties during delivery and these have led to mortality. In North health division, about 104 children and 68 women died from a direct complication related to pregnancy out of 100000 Live Births, 15 women have a disability due to childbirth out of 100000 Live Births during that particular time of the survey.

### ➤ *Objectives*

To describe analysis of RDC-DHS 2014 that are related to maternal and child health promotion by the North Kivu Division of the health System in DR Congo; identify the profiles and level of interventions that have been made to prevent maternal-child death and equity promotion during nutritional crisis influenced by socio-political instabilities.

### ➤ *Design*

This is a clinical-based description cross-sectional study on data analysis (DHS2014) on maternal health service utilisation in the Health division system of North Kivu Province, DR Congo.

### ➤ *Results*

Chart 2. Of the study shows that maternal deaths occurred during neonatal period influenced by of nutrition crisis are caused directly by sexual violence (31%), followed by haemorrhage (27%), and hypertension (18%). And that child deaths of aged 0-59 months is caused by malaria (15), followed by pneumonia (14%) and Diarrhea (14%). In terms of coverage interventions for reproductive health, the contraceptive prevalence rate is 27%. Concerning preventing deaths and promoting equity during gestation, intrapartum and postpartum health interventions. Is that only a half of women had at least four antenatal care visits (50%), most of women were assisted by skilled birth attendants (75%) and only less than half women (49%) received early initiation for breast feeding.

### ➤ *Conclusion*

Since reproductive health services are limited and reproductive maternal epidemiology problems are increasingly complex in nutritional crisis periods, thus the North Kivu division system needs an urgent integration of community-based services linkage to hospital services that can contribute the process of providing maternity education to community members. It has been noticed that children births skills that influence infant's lives and mothers are ready reviewed but still in the North Kivu Division of the health system these information have not yet impacted on the clinicians experiences.

**Keywords:-** DR Congo, Clinic-Based Description, Nutrition Crisis, Maternal-Child Deaths Prevention, Equity In Health, Health Well-Being, Maternity Healthcare Services, Four Lacks, SMART Methodology, Socio-Demographic Survey.

## I. INTRODUCTION

North health division, about 104 children and 68 women died from a direct complication related to pregnancy out of 100000 Live Births, 15 women have a disability due to childbirth out of 100000 Live Births, that, there is lack of accurate information, reliable data because of lack of a specific surveillance system that can manage maternal issues in the processes of promoting maternal health services in both health facilities and households settings (DRC-DHS 2011)( HIS 2014) (Nyavanda 2014)[1][2][3][34][64][41][65][66][67] [2] [3] [4]. However, maternal death and disability can be prevented with appropriate health interventions. It has been known that also during pregnancy nutrition crisis some of the direct medical causes of maternal mortality include hemorrhage or bleeding, infection, unsafe abortion, hypertensive disorders, and obstructed labor influence intrapartum death. Other causes include ectopic pregnancy, embolism, and anesthesia related risks[4][5][6]. Conditions such as anemia, diabetes, malaria, sexually transmitted infections (STIs), and others can also increase a woman's risk for complications during pregnancy and childbirth, and, thus, are indirect causes of maternal mortality and morbidity (Sen, Govender & Cottingham, 2007) [7][8][9].

➤ *Description de l'analyse logique des défis sur la santé maternelle et infantile*

From different studies on the causes of maternal mortality, several facts are significant: there is a great variability by region. If postpartum hemorrhage comes to mind as cause of death worldwide, is in third position in developed countries or she is responsible for 13% of deaths. This figure rises to more than 30% for Africa and Asia, and more than 20% for Latin America. Of the 42 million abortions worldwide per year according to who estimates, 22 million are at risk, and take place in majority 21.6 million in developing countries (WHO, 2015) [10][11][12][53][54][50][49]. Clandestine abortion is responsible for 12% of all maternal deaths in Latin America and the Caribbean who have already reached 30% in some countries against 3.9% in Africa and 8.2% in developed countries (Khan et al,2006). The risk of maternal death in the developing countries is 1 in 220 abortions in poor conditions not equipped (WHO, 2015) [13][14][15][16][17][5]. Clandestine abortion is a very young population in the cities, more and more unmarried teenage girls to have recourse to abortion, that in some urban centres, most of the requests come from this category (WHO, 2010). In Africa, about 60 percent of abortions are in the Group of less than 25 years (WHO, 2004) [18][19][20][21] [72][73] [74][75][76]. Family planning could be one of the answers to this problem which is also complex, because many elements are involved as the factor social, cultural, acceptance of the proposed methods, legalization, access to services of health, quality of these.

➤ *La morbidité maternelle*

On mortality and maternal morbidity would certainly be even more revealing of the inequality of women in the developing countries vis - a-vis to those of developed countries. Unfortunately, data on morbidity include few, incomplete, and unreliable because a lack of internationally accepted definitions (Ronsmans, 2009) [26][27][28][22][23][24][25]. Only rough estimates based on studies of relatively small scale are available. In almost seven cities of West Africa or 20 326 pregnant women were followed, serious maternal morbidity was 6.17 (5.8 - 6.5) cases for every 100 women, is thirty times more common than mortality (Prual et al., 2000) ( Dujardin,2014). Australia, New South Wales, the study of 500 000 births showed an incidence of severe morbidity of 12.5% and a ration morbidity or maternal death of 283 (Roberts et al., 2009). In a way contrasted, a review of maternal morbidity acute severe in Europe including the Finland, United Kingdom, Netherlands and in North America it is to say the United States and Canada revealed affect ten times lower than in West Africa who between 3.8 (95% CI 3.3 - 4.4) and 12 (95% IC 11.2 - 13.2) per 1,000 births (Van Roosmalen et Zwart, 2009). The morbidity Ratio or either maternal deaths ranged from 50 to 110. Other authors speak of 100 cases or more maternal morbidity for 1 death (Okong et al., 2010). Worldwide, about 3000 million women suffering diseases or preventable sequelae due to pregnancy or childbirth

(Nyavanda, 2014) [29][30][31] [32][33][8][29][34][38][35][41][48].

➤ *Défis général*

Computer models as "REDUCE", developed by the program "Safe Motherhood" in Mouritania, Ethiopia, Uganda, Senegal and Burkina Faso have enabled to gather concrete and local data on the determinants of morbidity and mortality maternal and neonatal. This model allows an assessment of the demographic, economic and financial harm that the country will suffer if appropriate actions are not taken, and the benefits that the country will have when it has taken appropriate and effective actions in response to the questions raised ( WHO/AFRO, 2002,2010) [21][35][36][37][38] [43][44][45][46][47]. By this method, it has been estimated the loss of productivity due to morbidity and maternal mortality according to Maternal-newborn-ill Health (MNIH) annually in Ethiopia \$ 95 million and \$ 51 million in Senegal in this country, the loss due to mortality infant is known. Specifically, severe anemia after hemorrhage postpartum trained an average loss of productivity is estimated 40% for an average duration of two years and a half, and obstetric fistula on dystocia a loss of 70% for seventeen years (Kamrul Islam, 2006 ; WHO, 2014) [39][31][40][41][42] [49][13][27][50].

In the field of maternal health, there is some but slow progress. The multitude of programs entitle "Maternity without risk" would have created some confusion in successive under constantly different names, and would thus slow down the implementation of effective strategies. Much remains to be done, and it is essential for safe motherhood visibility at high level (AbouZahr, 2001). Faced with this complex and multifactorial problem, policy support is essential to ensure the sustainability of the actions, train a lasting change, and make real access to universal care, with financial protection mechanisms. Civil society, and above all the associations for the defense of women, should keep up the pressure on decision makers and have a role to play in all these processes (OMS, 2015) [51][32][52][57][50][58][59][60][61][62][63]. Our fight against the problem of maternal health is to insist because the health maternal and child cannot be completely and correctly supported if out of its context cultural, family, and community, if problems related to quality and to management services or providers are not identified and taken into account, or even if the necessary political support is not available. All these aspects must form a coherent whole in order to ensure a reduction in continuous and long-term mortality. There is no miracle solution to reduce maternal, neonatal and infant mortality. The vast majority of research in the field of maternal health are intended to produce the evidence on treatments or specific strategies. This evidence cannot be obtained more often than in trial. Without underestimating the importance of this evidence report, we must recognize that most cruelly missing from decision-makers, what are knowledge about the conditions to be

implemented to realize the potential of the defined strategies. Action research, research on the systems of health and on improving the quality of care and services occupy places of choice in the field of maternal health, the promotion of equity and forensic medicine are also priority.

In the DR Congo, according to the WHO that said: “using the health systems framework, the study provides a synthesis of the experiences of implementing of certain interventions in the province, including, achievements made, weaknesses and challenges met. Current opportunities are explored and proposals are made of interventions that would facilitate reform of health systems in DR Congo in line with the maternal child healthcare ideals for the attainment of the Sustainable Development Goals (SDGs) [4]. The analysis of health systems in the DR Congo shows that over the last 30 years of implementing the PHC strategy there have been a number of achievements[34][55][56]. Some provinces such as in the capital city, Kinshasa, through health division have largely embraced their stewardship roles, including developing national policies and strategic plans that highlight universal access to essential services, intersectoral collaboration and community involvement in health. Increased availability of information for planning and decision-making has facilitated the stewardship role. But a good number of other provinces have managed to substantially increase public funding for the delivery of health services. In the provinces of the district health workers are being trained across a range of cadres, and efforts are being made to ensure appropriate orientation and versatility of health personnel in the context of PHC”.

In addition to that WHO from passed experiences said: “The above achievements have led to some improvements in health systems objectives over the last 3 decades? There have been improvements in health status as demonstrated by the decline of under-five mortality rates from 188 to 165 per 1000 live births between 1970 and 2005. Deaths of children from vaccine preventable illnesses have markedly declined and in a few provinces the spread of HIV/AIDS has been reversed. However the trend of improvements in health status is unlikely to lead to attainment of most of the SDGs for the DR Congo. It is possible though for the East Region to achieve many if not all of the SDGs if specific actions are taken by the different stakeholders. There have been many challenges in implementing PHC since Alma Ata. The lack of common understanding of the PHC strategy and the advocacy of different models by partners has been a major hindrance for its translation into appropriate policies and plans. A second challenge has been to implement the notion of multi-sectoral determination of health at various levels since the need for a multi-sectoral approach is easy to appreciate but its implementation is not. A major challenge for appropriate implementation of the PHC strategy has been the very low levels of health funding and especially public health funding in the DR Congo because less budget located to health sector (less than 3% of the national budget)

[68][69][70] [50]. The health financing architecture in DR Congo is not favorable for a PHC strategy to health service delivery, with minimal contributions from governments, high Out-of-Pocket (OOP) contributions, and vertically programmed donor projects[69][71][57][14]. The structural adjustment programs reduced instead of increasing the fiscal space for sustained improvements in health systems [5]”.

## II. METHODS

The study methodology procedures is in form of critical interpretation of quantitative data analysis to mixed analysis and interpretation. The survey was carried out on the inputs and outcomes that can explain the 68 maternal deaths and 104 child deaths in North Kivu Province during the survey time period. The description was comparing the assumption synthesis and from a deductive perspective point of view, conclusion and necessary applicable recommendations were generated from the both comparison of the synthesis and grounded theoretical interpretation data. The study is retrospective because it is concerned with data review of DHS-DRC 2014 on identifying the influences factors that are associated to maternal and child deaths and hinder strategies in promoting equity and health promotion during nutrition crisis in North Kivu Province, DR Congo.

### ➤ Data collection

Data of the Demographic and Health Survey conducted by the DR Congo Ministry of Planning, the Ministry of Public Health, ICF international in collaboration with UNICEF and other international donors in 2014. The objective of the DHS is to produce representative results at the national and provincial as well as urban and rural levels. The use of these two-stage for selection probabilistic sample technic is to select clusters that is community settings and health facility settings (DRC-Ministère du Plan et al, 2014).

### ➤ Data analysis

The empirical analysis starts from the fact that investment in health well-being is an important input in child growing health within a household and the two phenomena are correlated. On the other hand child life is interdependent on mother health status. Mean child life is correlated to mother life too. Thus healthcare services provided to pregnant woman at health facility are for purpose to promoting both mother and child health well-being. In reproductive maternal health epidemiology, mother-child well-being are simultaneously determined and can be evaluated in a particular context. This calls for an estimation approach that takes into account the endogeneity (Wooldridge, 2008). The estimation system to be used is calculated in the equations as follows:

$$w = \sigma wx + \varphi + \varepsilon 1 \quad (1)$$

$$w = \sigma hx + ywh + \varepsilon 2 \quad (2)$$

Where  $w$  is the maternal healthcare services towards well-being and  $h$  is the inputs to influence maternal-child health positively or negatively; the reproductive maternal and child well-being is endogenous in the mother-child health care services provision as a health production function. The maternal-child health well-being is captured by the indicator constructed from maternal health care services provided from conception up to postpartum and from newborn up to five years. In the context of this study our dependent variable is maternal-child health status during nutrition crisis time period. If the mother and the expected newborn are not fed, means that the demographic and health measured indicator underweight is susceptible to be determined and being associated with an interpretation of malnourished health status, thus predictable variable that influence maternal and child deaths and the socio-demographic and health inputs are represented our independents variables: ANC, PNC and FP, etc.

**III. DATA INTERPRETATION**

➤ *Quantitative data*

Mother-child health is measured by the interpretation of underweight or malnourished that is due to nutrition crisis. Therefore  $x$  is a vector of socio-demographic and health factor that is associated with the situation of crisis to determine the well-being. This implies that maternal healthcare services ( $W$ ) are supposed to influence the mother-child health well-being ( $h$ );  $z$  is a vector of instrumental variables that influence the outcomes without varying the status. Mean reproductive maternal healthcare services can be influenced without influencing the mother-child health status, thus the health status interpret the well-being positively or negatively.  $\sigma, \varphi, \text{ and } y$  are parameters to be estimated and,  $\varepsilon_1, \varepsilon_2$  are the errors terms. Given that (1) and (2) are simultaneously determined, and the error terms of these two equations are correlated and this leads to less bias and inconsistency in estimates. Therefore, the equations (1), (2) are estimated in a system in which the first step is to find valid instruments for the observable variables that affect on health well-being and health services ( $w$ ) without affecting mother and child health status. This is shown with percentage that is higher positively meaningful and this means health care services impacted positively. Whereas percentage is lower negatively meaningful, that means health services impacted negatively on mother and child health status in a negative way. The interpretation was interested in reanalyzing information in a systematic way in order to come up with useful conclusions and applicable recommendations.

➤ *Qualitative analysis*

Qualitative data analysis was not derived from computer package, but data was analysed manually following all the steps of the grounded theory. Borgati S. (sd):” the phrase grounded theory, refers to an ideology that is developing inductively from a corpus of data. If done well, this means that the resulting theory at least fits one dataset

perfectly. This contrasts with theory derived deductively from grand theory, without the help of data, and which could therefore turn out to fit no data at all”. The researcher followed all the steps mainly (1) open coding to find categories, (2) axial coding to find link between the themes or categories, (3) selective coding to find the core themes or categories (Strauss and Corbin, 1998).

**IV. RESULTS**

➤ *Demographic influences of nutrition crisis that affect maternal and child health*

The North Kivu province in the East of the DR Congo country, it’s length boundaries is about 59631Km<sup>2</sup> (Division of plan 2017, DSRP) with the Republic of Uganda and Rwanda at the East; at the North-west with Ituri province, and South-west with Maniema province and South Kivu province at the south part. The Province length’s boundaries is about 2.5% of the surface of the entire country. The population is surrounded by an exaggerated ecosystem that it natured by Semuliki and Rutshuru valley. The ecosystem provided ombrophyte mountainy forests. At hydrological point of view, we have also a number of lakes such as Edouerd, Kivu and Mukoto and 9 rivers: Rutshuru, Rwindi, Semuliki, Osso, Tuha and Lowa. The average of population life expectancy is 49 formen and 54 for females. The population is composed by four main sub-group population (Tab N0...):

- The children under five years (0 to 4years);
- The youths (5 to 24 years);
- The adults ( 25 to 64 years);
- The elders (65 years old and above).

Age group	Population by Sex		Total	Rates by age group		Pyramid Graph	
	M	F		M%0	F%0	M	F
0 - 1 Month	999049	997889	1996938	109.57	109.44	109.57	109.44
2 - 10 Months	988028	986973	1975001	108.36	108.24	108.36	108.24
11 -12 Months	841011	889772	1730783	92.24	97.58	92.24	97.58
1 - 4 years	657035	460811	1117846	72.06	50.54	18.01	12.63
5 - 14 years	351322	461201	812523	38.53	50.58	3.85	5.06
15 - 24 years	292403	180010	472413	32.07	19.74	3.21	1.97
25 - 34 years	112855	114872	227727	12.38	12.60	1.24	1.26
35 - 44 years	45867	65866	111733	5.03	7.22	0.50	0.72
45 - 54 years	187393	188686	376079	20.55	20.69	2.06	2.07
55 - 64 years	85296	77542	162838	9.35	8.50	0.94	0.85
65 - 74 years	51241	57524	108765	5.62	6.31	0.56	0.63
75 - 84 years	5333	9523	14856	0.58	1.04	0.06	0.10
85 - 94 years	3089	3342	6431	0.34	0.37	0.03	0.04
94 and above	1822	2341	4163	0.20	0.26	0.02	0.03
Total	4621744	4496352	9118096	506.88	493.12	50.69	49.31

Table 1:- Demographic representation of North Kivu Province, (From our survey in January 2017).

North Kivu province from the above statistics, we realise that they have been a big improvement in saving children lives against infant mortality comparing to the 1990s up 2010 (DRC-DHS, 2014). However the effects of repetitive wars and epidemic disasters, the infant mortality rate has not sensitively reduced. Because during our survey we realized that children interrupt the vaccine dose because looking for secured places. This implies that population insecurity in their respective places influence abandon of immunisation services thus persistence of infant morbidity and mortality. The statistics show that the represent a development process where at given stage death rate is control for 0 Months to 1years. The slope is not enlarged, but is large. The pyramid graph represent the second type of population pyramids (International Dictionary of Population Studies, IDPS 1964).

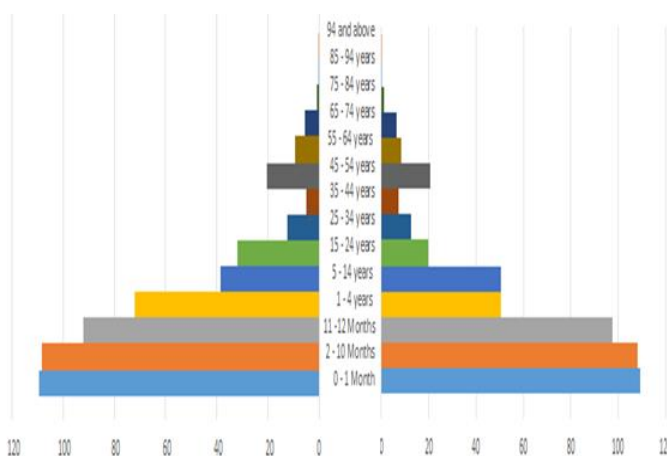
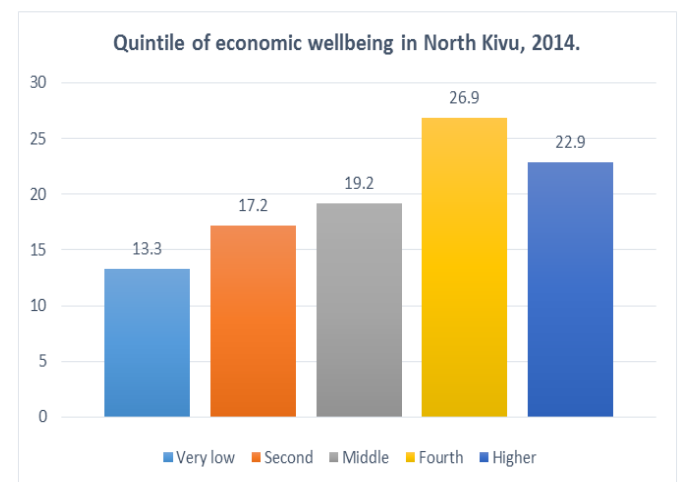


Fig. 1:- Illustration of the North Kivu population trends, by Nyavanda, 2018.

According to the slop, the ascendant and descendant way, the pyramid reflect the situation of the following demographic characteristics: (i) Population that is transitional types of phases; (ii) Health conditions being controlled and eradicated; (iii) Population social behaviour being addressed; (iv) Health education on hygiene and proper sanitation is being addressed; (v) External movement is reduced for the moving population. A part from the war and other sudden catastrophe, North Kivu population is among the DR Congo that practice business, agriculture, animal keeping activities therefore it needs to stay without any migration. The population is sedentary rather than being nomadic. North Kivu is one of the 26 operational provinces of the DR Congo and Goma city is the provincial capital city. North Kivu province has 33 Health Zones whereby Karisimbi Health Zone is one of them. North Kivu health division was one of the 11 divisions of the country before 2015. Today is one of the 26 health divisions that did not get change in terms restructuring according to health principles of the decentralization process. This implies that the former system that was implemented in DR Congo still inculcated in this region as far as services providers are concerned. In general the system is one of the fragile ones in sub-Saharan region

because of repetitive war and other natural disasters such epidemics, famine, economic crises, mass migrations, etc. because of its population size and severity of the health situation, North Kivu represents an enormous concentration of morbidity, mortality, migration and wars as human made disasters. It remains one of the most populous province in the country. The repetition of wars has accentuated disparities, although most of the population is affected the poor health state. Household survey data on child death and malnutrition show that the western part of the country, not directly affected by the wars. Generally has better outcomes than the rest of the country. Similarly health indicators are better in urban areas than in rural areas. Nevertheless, even these better –off areas experienced declines since the health budget is centralised and is low than 2% of national budget and it should be noted that their health and nutrition situation is poor compared to overall average in other countries. For example, estimated under-five mortality rate in 2007 in urban areas was 316 per 1000, which is comparable to estimates for Ethiopia or Kenya as a whole, and exceeds the overall rate of Kenya and Tanzania. The poor experience higher malnutrition and death. From community and household of survey data, it is estimated that under-five death among the poorest quintile of households was 512 per 1000 in 2017-2014, compared to 256 per 1000 among the highest quintile.

➤ *Socio-economic influences of nutrition crisis that affect maternal and child health*



Graph1. Quintile of economic well-being in North Kivu, 2014.

The very low (23.3%) quintile is half of the fourth quintile (26.9%) gradually. This implies that the majority of people would have fulfill the requirement of basic health needs at certain level.

Important household-level determinants of health and nutrition outcomes are mothers’ education, and behaviors such as breastfeeding, sexual practices and contraceptive use. Expect for fever incidence and prevalence which largely

depends on the epidemiological pattern of malaria, most of the various multivariate models of the determinants of a number of health outcomes such as child mortality, malnutrition, diarrhea and respiratory infection, show that children of mothers with any education are at lower risk, even after controlling for socio-economic status. This explains that better-educated mothers having better knowledge for preventive health practices and being more likely to take a sick child to a trained health provider. In north kivu, a majority of mothers (75%) have received at least some education, but the proportion is considerably lower in rural areas (65%) than in urban areas (94%).

#### ➤ *Child breastfeeding*

Exclusive breastfeeding is a crucial determinant of infant and child health and nutrition as well as child development. While almost all children are breastfed to an extent, only around a quarter are exclusively breastfed during their first six months of life, and this rate has been decreasing overtime. Among other practices with an important impact on health are modern contraceptive use, which is low 5.4%, and risky sexual behaviour.

#### ➤ *Poverty impact*

Poverty, affecting the mass of the population, clearly undermines health and nutrition outcomes analyzed expect fever incidence, there are clear and large differences between the poorest and the best-off. The various regression models show socio-economic status as a consistent determinant of health outcomes. For example, controlling for a variety of other factors, children from households in the highest quintile are around 1.4 times less likely to have diseases such as respiratory infections or diarrhea. However, such associations are not as evident. Over the lower ranges of household economic status, indicating that the mass of the population, is at a similar level of poverty and suffers similarly from poor health and nutrition. However, it is evident that increasing inequality is a large risk as the country's economy grows in the coming years that will not be affected by wars.

Empirical analysis has shown evidence that explains the challenges in terms of mother and child health promotion. These analyses are based on the following areas as our research is concerned. The illustration of the DR Congo situation in general and North Kivu in particular (DRC-DHS, 2010-2014); the main indicators are: nutrition and health indicators, numbers of people affected annually in DRC as a whole, application of the Standardised Monitoring and Assessment of Relief and Transitions (SMART) methodology in estimating nutrition status of children under-five years and mortality rate of the specific population, the innovation of new strategies and interventions for health equity.

#### ➤ *Evidence study analysis*

The contextual and factor, conflicts among communities since 1997 up to date has caused severe increases in death and deterioration in other health and nutrition outcomes. Data show that most deaths were not directly due to violence but related to the disruption of the economy and society and deterioration of household coping mechanisms. The direct and indirect effects of the conflict on health and nutrition worked through many mechanisms, including its impact on household resources, on the health system, on other sectors, and on government action and finances including the health system. Empirical evidence for the effects of the wars on nutrition or food insecurity and health outcomes can be readily seen in time trends and geographic patterns at both national and regional levels. A regression model found that, controlling for a variety of other factors including socio-economic status, children in the centre and of east of DR Congo were far more likely to be chronically malnourished than children in the western provinces (DRC-DHS, 2007). Surveys among particular war-affected populations revealed sometimes extreme levels of death, while a regression model indicates that other important factors held equal, the risk of child death from 2007-2014 was significantly greater in the centre and east than in the west. A retrospective study on mortality showed increased death coinciding with the most intense periods of the conflict, with the largest increases concentrated in the centre and eastern parts of the country, most directly affected by the repetitive wars and epidemics.

#### ➤ *Evidence illustration point of view*

Evidence is that conflict has decreased the importance to health in terms of socio-economic impact factors. But for good illustration is that education and household economic status, increased that the importance of access to health services. A regression model of child death information analysis from household study in 2010 indicates that prospective effectiveness of mothers' education and household economic status lessened overtime suggesting that the conflict affected wide swathes of the population regardless of their socio-economic status. However, the analyses suggest that the positive effects of access to health services may be accentuated overtime, particularly in the regions most affected by the respective wars. This is motivating evidence that health services make a difference in such situations.

#### ➤ *Health service utilisation and SMART analysis*

At the household level, utilisation of basic child and mother health services is low overall. In general, utilisation of preventive health interventions for mother and child is low. Only around 45% of mother and children received vaccination during pregnancy and infancy period. To get more analysis on this the SMART methodology emphasises on the issue. The Standardised Monitoring and Assessment of Relief and Transitions is usually applied in conflict and post-conflict monitoring, food insecurity interventions impact evaluation, emergency and natural disaster assessments, and

during socio-economic crisis. SMART analysis is an interagency initiative launched in 2002 by a network of organisations and humanitarian practitioners. The methodology is “an improved survey method for the assessment of severity of a humanitarian crisis based on the two most vital public health indicators mainly nutrition status of children under-five, and mortality rate of specific population.

➤ *Causes of maternal and child deaths during nutrition crisis*

The health problem are complex according to their causes malnutrition influence occurrence of other diseases like anemia, loss of weight and fixed growing especially for children. This in short and run or long terms lead to deaths during delivery or neonatal period.

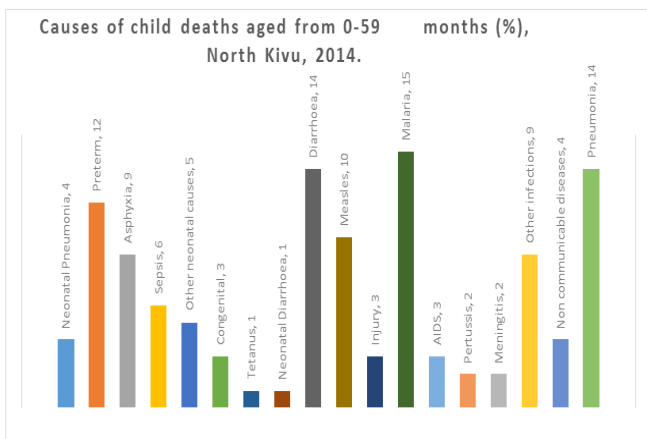


Chart2. Deaths occurred during the neonatal period: under nutrition causes of child aged 0 to 59 months, 2014.

According to the findings child deaths show that malaria (15%), diarrhea and Pneumonia (28%) remain at the second range among the highest causes of child deaths, together accounting for 117 out of 1000 of deaths. More than 11.7% of child deaths occur in the neonatal.

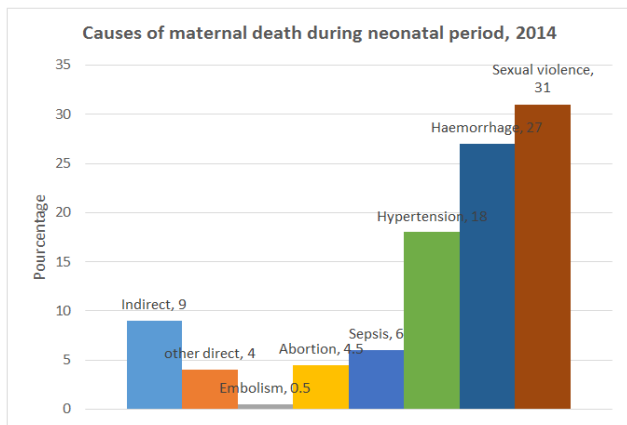
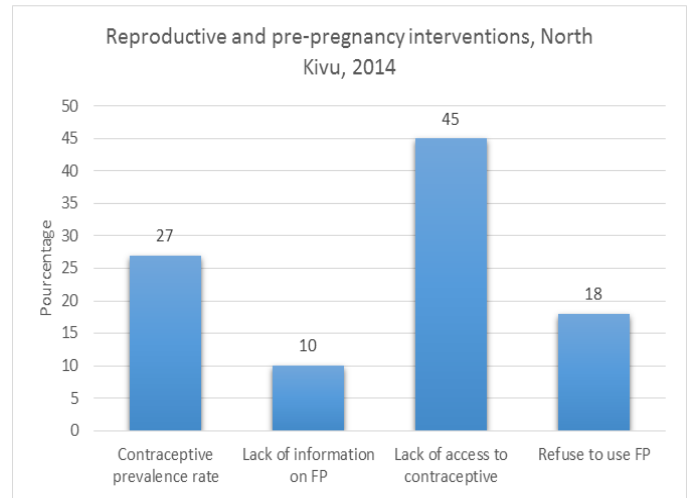


Chart 3. Maternal deaths occurred during neonatal period, 2014

The analysis show that sexual violence (31%), haemorrhage (27%), and hypertension account for more than half of maternal deaths during neonatal period.

➤ *Analysis of the coverage of interventions*

The coverage interventions analysis varies across the continuum of care. The reproductive and pre-pregnancy health remain an issue during interventions implementation. The following results have been shown by the maternal clinical surveys.

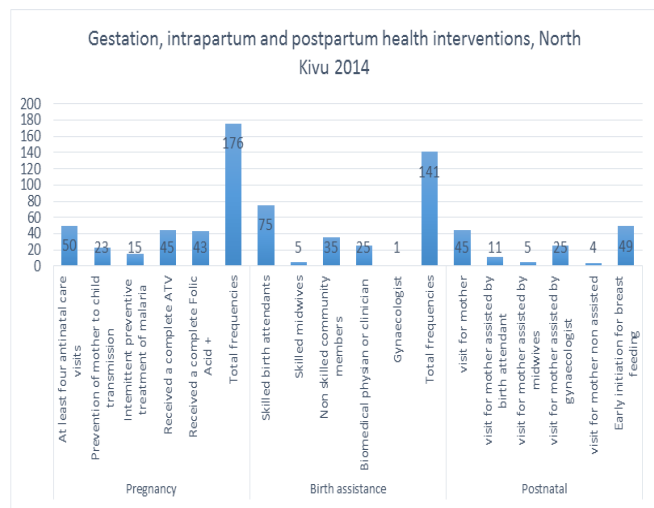


Graph 4. Reproductive and Pre-pregnancy health.

The graph. 3. Shows that the coverage interventions still very low whereby women and men lack access to essential types of contraceptive (45%) that is why the contraceptive prevalence rate is 27%. However women and men who lack information about FP (10%) were also found. In important number of the population (18%) refuse to use FP. This is a challenge for community health providers. Maternal deaths can be reduced and prevented by as much as 68 women for 100000LB, by limiting the number of pregnancies and increasing birth intervals. However, women’s access to modern contraceptives is compromised by social and political factors. As such, the contraceptive prevalence rate for modern methods among currently married women is just 27%, a quarter of desirable level while only one out two women of reproductive age (15-49) use modern methods of contraceptive methods in North Kivu. Comparing to individual use in 2015, more than half (70%) where 65% were women and only 5% were men. And in 2016 contraceptive among the entire population were (75%), women (60%) and men (15%). In 2017, according the study survey, contraceptive intervention among population who are satisfied with the service were 78%, where men (18%) and women were (60%). It implies that family planning program is progressing gradually with effectiveness.

➤ *Pregnancy (Gestation), birth (intrapartum) and postnatal (postpartum) health interventions*

Coverage estimates for service delivery contacts such as antenatal care, skilled and appropriate maternity healthcare giver at birth and postnatal visits for the mother. The interventions during gestation, birth and postnatal do not increase. This translates that Congolese women still vulnerable during their reproductive cycle. Official estimates reveal that vast majority of maternal deaths can be prevented by having skilled care givers, appropriate medicines and providing care at the right time, right place, and right information about antenatal healthcare to the needed woman.



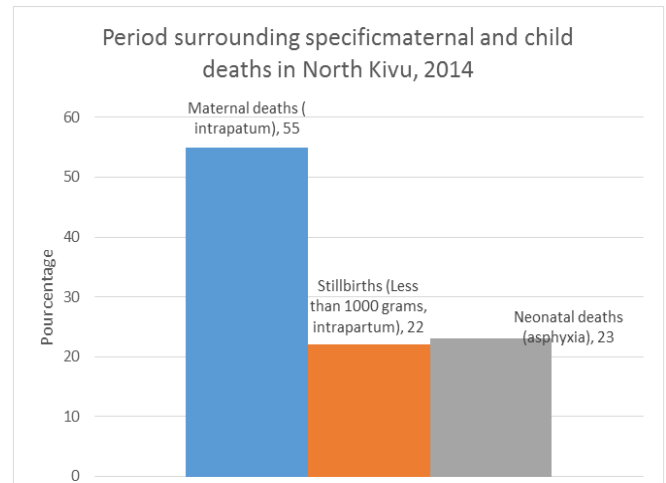
Graph 5. From pregnancy to postpartum health interventions continuum.

At gestation women who were assisted for at least four antenatal care visits (50%), followed by 75% of assistance by skilled birth attendants during birth assistance period, and 49% of women were assisted for early initiation breast feeding at postnatal care period. A challenge for clinicians. The care during pregnancy seems to be higher than the care provided during delivery and after delivery. This explains the complexity circumstance that ends up with complications during the two last phases of pregnancy management. Pregnancy active management recommends intensive care whereby specialists on the matter should be permanent and assist the needed woman. But we noticed that on 1% of gynaecologist assisted during delivery and 25% visits after delivery. Why this happens in such way?

➤ *Quality and equity in health care services*

Quality care emerges because it remains a problem in our health facilities. Cohort observational study on obstetric practices in hospitals had revealed that current practices in most of health facilities were still not aligned with best practice standards. The majority (85%) of hospitals were lacking oxytocin to control haemorrhage. For anaesthesia none of the hospital visited uses regional, spinal, and inhalational general anaesthesia. Most of the hospital uses

sedation anaesthesia and only ketamine was available. The majority lack midazolam, propofol, etc. The major issue was the lack of anesthesiologist in all the visited hospitals. Because of the above issues, the study shows that the period surrounding birth accounts for a high proportion of deaths. According to analysis of information provided in the DHS, 2014. Analysis has estimated that maternal, stillbirths and neonatal deaths have a number of important causes.



Graph 6. Period surrounding birth accounts of specific maternal and child deaths.

The crucial period when mothers die while giving life is at intrapartum (55%) followed by stillbirths (22%) means maternal death should be prevented before labour, and delivery at that moment all care givers have to be involved in management of the pregnancy.

**V. DISCUSSION**

➤ *Effluences of nutrition crisis on maternal and child deaths*

According to EDS-DRC 2014 that said: “Health, nutrition, and population outcomes, including the main sector-related MDG indicators, are extremely poor in DRC and have deteriorated over the past decade. DRC is emerging from a long and destructive conflict, which followed years of economic crisis, so that it is among the poorest countries in the world. Over one third of under-five children are chronically malnourished (stunting), and 16% suffer from acute malnutrition (wasting), reflecting wide vulnerability to short-term crises. Retrospective mortality surveys have revealed extreme levels of mortality among conflict-affected populations, so that it is estimated that 3.8 million deaths can be attributed to the war since 1997 up to date. Under-five mortality, estimated from the 2002 Multiple Indicator Cluster Survey (MICS2, EDS 2014), is in the range of 104 to 220 per 1,000 or greater, one of the highest in the world. Maternal mortality is similarly among the highest anywhere, estimated at 1,289 per 100,000 live births. The total fertility rate remains very high at 7.1[77][78][79][80]”. From the perspective of PRONUT (2015) and others nutritionist and



dietitians the North Kivu health Division have suggested that efforts to reduce maternal mortality and morbidity must also address societal and cultural factors that impact women's health and their access to services (EDS-DRC, 2014). Women's low status in society, lack of access to and control over resources, limited educational opportunities, poor nutrition, and lack of decision-making power contribute significantly to adverse pregnancy outcomes. Laws and policies, such as those that require a woman to first obtain permission from her husband or parents, may also discourage women and girls from seeking needed health care services. Particularly if they are of a sensitive nature, sensitization of population in many reproductive activities and programs such as family planning, abortion services, or treatment of STIs may aware individuals to have self-responsibilities to promote mother-child health and prevent death in communities during nutrition crisis[81][82][83][84].

➤ *The daily lives of the parturient in health facilities.*

In the same perceptive of Dujardin and other authors, it is very necessary to say that the behavior of the providers according to Olivier de Sardan (2004) reveal the parturients violence, and more generally, all of dysfunctions of the services of health also affects the behavior of newborns in the future life. Women whose pregnancy is normal priority will be more sensitized to attend the prenatal consultation according to the reputation of the services, the quality of care given and if these services are available from a financial and geographical point of view. As a general rule, the level of confidence depends primarily on personal experience. Many other authors like Akin et al, 1985, have already confirmed that past experience determines the future use. If the woman is satisfied of the service uses previously whether traditional or non-traditional, she'll use it again in the future, and vice versa. This level of satisfaction mainly depends on the quality and efficiency of care, but also the acceptability of the services of health it is to say the quality of hospitality, for example, and the quality of information and explanations received. In many maternity urban but also rural, the parturients are returned as long as the expansion is not very advanced, this decreases the footprint of services and particularly the workload, but is probably not the best decision for improve the quality of the relationship between patients and midwives. According to experience, many of such cases of maternal deaths and stillbirths have already occurred in most of the hospitals in the Provincial Division of the health system in North Kivu in the Democratic Republic of the Congo.

➤ *The experience of the members of the family of the parturient*

Experience can also have an influence on the individual confidence, especially when the patient has not itself sufficient experience especially if she is primigravida. The experience of others will be even more convincing that the bond is between two people and improving the State of health is compelling. In this sense, a critical incident at the

centre of health as dystocia well taken care in hospital can have a very positive influence. On the other hand, the failure of management to the hospital it is - to - death of a newborn for example can have a negative impact on confidence. Furthermore, if all pregnant women from the neighborhood who were referees at the hospital were giving birth without problems, there is little of each patient is convinced of the merits of a current reference. The influence of older women can also discredit the services of health not traditional compared to traditional services.

➤ *Profiles of the pregnancy and expected newborns indexes*

It's a certain intensity of perception - to-say recognition of the gravity of the situation is necessary for it to be motivating. As we experienced, the intensity of this perception can vary depending on local cultures, this is the case for the bleeding including. The perception of problems of health does not necessarily lead a motivation of patients. In a survey in the area of health of Karisimbi, in the city of Goma, North Kivu, on 450 women living 11 peri-urban neighborhoods filled d health centres, 69% complained of gynecological problems, but only 5% had used the integrated yet easy health services may be available for some (PNSR, 2012) (UNFPA, 2015). In some cases, there may be a sense of shame or even cultural prohibitions. As we have seen in an area of health urban in Goma, adolescent girls in rural areas, came to study in the city, will feel completely lost in the event of unwanted pregnancy. They are in a desperate situation that can lead them to a suicide attempt, because they are afraid of losing the support of their families, who may reject them; indeed, they have become a subject of shame for their parents. As well, these teenage girls do not know where to turn and especially due to the lack of correct information, fear of the home and lack of confidence in the staff of health care facilities.

➤ *Weaknesses of mobile resources*

The direct and indirect costs related to the use of modern health care are still very high for the poorest in most cases even these treatments are not available or accessible in some health facilities. Even when treatment is free, the costs associated with moving can be prohibitive for people living with less than \$1 per day per capita, population who sometimes represents more than 50% of the total population of the province and 10% of the country Hence the importance of the transparency of pricing, price display, of the removal of informal payments, supply of obstetric care ambulance. etc[85][17][86][79].

The current study has introduced the top four barriers to accessing maternal delivery services which are:

- 1) Lacking appropriate maternity information,
- 2) Lacking money for delivery;
- 3) Lacking appropriate mean for transportation to the health facility;
- 4) Lacking the appropriate person to assist to go to the health facility.

The first lack is concerning limited access to get health personnel that can provide or deliver to people the right and save reproductive maternity information. This communication provided by the appropriate health personnel can lead the woman or a man to get a responsible behaviour towards maternal and child health prevention. The second lack is explained by not having access to the money due to the possession ownership, the decision to utilize the money. This is especially to women are married. The low income of the woman or lack to the value of the money in cash needed. The third lack is explained in the sense that a woman may use public transport mean which can't help her up to the health facility [87][17][88]. These means are such as the bike, motorcycle that are not appropriate because they increase pregnancy complication risks during labour. The fourth lack that concern the first person to assist. A pregnant woman can't go alone at the health facility for delivery. This process of selecting, waiting, taking the decision about whom to take the pregnant woman to the maternity healthcare has been a problem and this is concerned as lack of appropriate person to look after the pregnant women during and after labour for many families.

According to Dujardin, the above factors oriented WHO to classify maternal deaths and provides some specific definitions [6] :

- 1) Maternal death, fortuitous or accidental: are deaths during pregnancy or postpartum but whose causes have nothing to do with it;
- 2) Pregnancy-related maternal deaths: are deaths during pregnancy or within 42 days after its termination, regardless of the cause of death;
- 3) Late maternal deaths: are deaths resulting from direct or indirect obstetric causes more than 42 days but which was aggravated by the physiologic effects of pregnancy;
- 4) Deaths from indirect obstetric cause: are deaths resulting from a pre-existing disease or condition occurred during pregnancy unless it is due to direct obstetric causes, but which was aggravated by the physiological effects pregnancy;
- 5) Deaths from direct obstetric cause: are deaths resulting from obstetric complications (pregnancy, childbirth and postpartum), interventions, omissions, incorrect treatment or a chain of events resulting from one of factors known to be driving death.

According to WHO, maternal death can be expressed in the form of different indicators that Duffy has summarized as follows [6] :

Maternal mortality rate: strictly speaking, should be considered for the calculation of this rate the number of maternal deaths per 100 000 pregnancies. However, usage today defines the maternal mortality rate as the number of maternal deaths per 100,000 women of reproductive age

(sometimes expressed per 1,000 women). It is the frequency to which women are exposed to the risk, each year during their period of fertility. Ratio or report of maternal death: number of maternal deaths per 100,000 live births. It reflects the risk of maternal death when a woman is pregnant. Risk of maternal death on the life adult (Lifetime risk): it takes into account the probability of pregnancy and death as a result of this pregnancy, accumulated during the breeding period (35 years by convention). ). The proportion of maternal deaths among deaths of women of reproductive age: this flag is used by who pour estimating maternal mortality in countries that use specific surveys (method of the sisters).

During nutrition crisis due socio-political influences in North Kivu province in particular and DR Congo in general, obstetric complications has been associated with all pregnancy historical indexes and this has regenerate unmanaged consequences of mother, couples, and families at community and health facilities levels. This is because there are a complex factors that stringed health services such as limited resources, rigid and fragile health policies in terms of implementation and follow up. Most of qualified health personnel are concentrated in hospital infrastructures and especially in urban areas, whereas some specific clinical services are needed outside the infrastructures such as reproductive maternity education and counselling and family planning. This implies that some specific maternity services are community –based provision. Therefore there is a pressing need to integrate community birth attendants, midwives and gynaecologists in the DR Congo health system to provide care from the community basis. Although Community Health Workers work for some of these services, but with limited knowledge. Our hypothesis is that community linked to hospital specific maternity services can contribute on preventing both home and clinic maternal and child deaths in North Kivu province, DR Congo.

## VI. CONCLUSION

Since most maternal and stillbirths deaths occur due to a number of determinants packed in the degree of service rendered, this determinant is closely bound to the development of countries and communities and the ability of the health services to be accessible to the lowest cost. In some situations, we can provide a survey followed health socio of an observation of a cohort of the parturient in semi-directed interview or in-depth, focus groups to better understand a possible lack of confidence. This is for instance the case when the usage rate does not improve despite a better functioning of the services and the refusal of the reference continue to occur despite the improvement of exchanges between providers and patients. These services are often particularly limited in community and hospital settings. To integrate community health focal services such mobile maternity health by community birth attendants, midwives, gynaecologists and other community health providers and

these being affiliated to certain referrals, then maternal and child deaths will be prevented at all levels.

### RECOMMENDATIONS

In short - medium and long term, as the most vulnerable determinant is the degree of satisfaction of the use of the service in particular in the previous appeal, the track is the logical strategy that will improve the quality of care and also the quality communication between patients and health personnel. The other major factor is the ability of women and their families to finance direct and indirect costs and the intangible costs. This strategy should be considered by the North Kivu Health Division System in order to prevent maternal and stillbirths deaths and promote all Maternal and neonatal community and clinical based activities.

- **Maternal and child food security promotion activities and collective projects that can provide raw staff items.** Pregnant women need to take appropriate diet before conception, during gestation, during and labour. This secures the newborn health during his/her infancies. A balanced diet during pregnancy is very crucial for the mother and child live 'sake. Therefore activities, and projects to generate sources of food provision should be initiated in families and communities with the community health personnel assistance.
- **Increase access to high quality antenatal care and promote health equity.** At some extent pregnant women need a given special care during reproductive life span. This because of the complexity of pregnancy outcomes and the wellbeing of the expected newborn. At this particular time when the service is needed, right of mother and baby should be the priority in terms of maternity care services.
- **Provide prompt postpartum care, counseling, and access to family planning.** It is important to detect and immediately manage problems that may occur after delivery, such as hemorrhage, which is responsible for about 25 percent of maternal deaths worldwide. Postpartum care and counseling will help ensure the proper care and health of the newborn. Counseling should include information on breastfeeding, immunization, and family planning.
- **Avoid adolescent pregnancies and improve post abortion care.** About 13 percent of maternal deaths worldwide are due to unsafe abortion especially for adolescent. Women who have complications resulting from abortion need access to prompt and high quality treatment for infection, hemorrhage, and injuries to the cervix and uterus.
- **Strengthen health promotion activities.** Mass media should be used to educate the public about pregnancy and delivery, and community-level organizations should assist

this through systematic programs. An important step for health promotion, in order to prevent negative maternal health outcomes, is to have the Ministry of Health supply adequate educational materials regarding safe practices.

- **Increase access to reproductive health, sexual health, and family planning services sensitisation.** Due to the lack of access to care and reproductive maternity education in health community and clinical services, maternal and child death rates are higher at the same level in rural areas as well as in urban areas. In addition, many men and women in rural as well as urban areas lack access to information and services related reproductive health epidemiology especially mobilisation motive related to HIV/AIDS and other STIs.
- **Strengthen reproductive health and family planning policies and improve planning and resource allocation and deployment.** While the Community Health Focal Person scores demonstrate that Karisimbi health zone facilities having strong maternal health activists, implementation of the strategy activities may be inadequate. Often, available resources are not used in North Kivu Province, if recruitment and integration of appropriate resources is done then health services impact can be realised. In North Kivu volunteerism has worsened perfection in services deliveries because of NGOs but we hope for preventing maternal and child death, advocacy can strengthen activities, policies and increase the amount of resources devoted to reproductive health and family planning. In other cases, operational policy barriers. Barriers to implementation and full financing of reproductive maternal health and family planning policies must be removed such as paying ANC services.
- **Increase access to and education about family Planning, equity and reproductive maternity education.** Another feature that relates closely to preventing maternal and child deaths is the provision of family planning counseling to individuals, couples, family members, and community members. Individual/Family/couple/community planning helps women prevent unintended pregnancies and space the births of their children. It thus reduces their exposure to risks of pregnancy, abortion, and childbirth within the community. Reliable provision of a range of contraceptive methods can help prevent maternal deaths associated with unwanted pregnancies. Community health personnel should be recruited, trained, and integrated in order to reach service to the needy as far as is community based provision.
- **Increase access to skilled delivery care and appropriate maternal services at the right time, by the right health personnel and at the right place.** Delivery is a critical time in which decisions about unexpected, serious complications must be made. Community and clinical

skilled birth attendants, midwives and gynaecologists are the right health personnel to deal with pregnant women and can recognise these complications, and either treat them or refer women to health centers or hospitals immediately if more advanced care is needed. Women in rural areas live far distances from quality obstetric care, so improvements depend greatly on early recognition of complications, better provisions for emergency treatment, and improved logistics for rapid movement of complicated cases to district hospitals. Increased medical coverage of deliveries, through additional skilled staff and service points, are basic requirements for improving delivery care. Reliable supply lines and staff retraining programs are also critical.

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