Challenges in Aversion of Major Maternal Morbidity and Mortality In Low Resource Rural Women, Community Based Analysis

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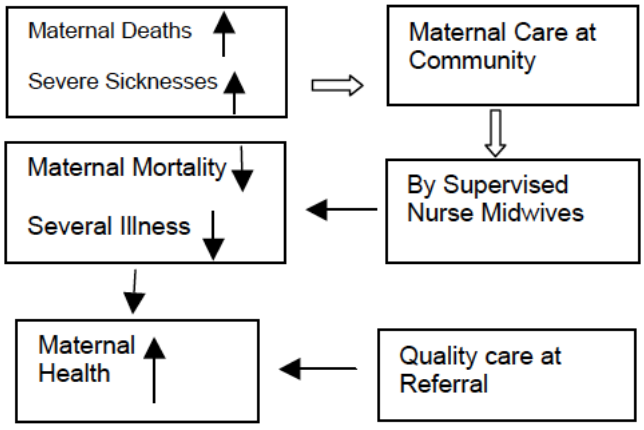
Abstract: Preventable maternal deaths continue to occur in resource poor countries due to pre-existing poor health, lack of access to safe abortion, safe birth, quality prenatal, intra-natal, postnatal care though with low resources also deaths can be prevented by providing community based services with linkage to health facilities equipped for appropriate, effective quality maternity care.

Objectives: were to know persisting challenges, share information about rural community based maternal care provided by nurse midwives in villages with low resources.

Analysis of records of community based services and outcome was done: Each pregnancy was followed, irrespective of place, type and outcome of pregnancy, morbidities, mortality. There was change in places of births with more hospital births, by 2018, home births eliminated in villages where services were initiated in 1986. 67.84% births at referral institute, 32.16% in other hospitals. In other villages, 47.36% births took place at home, 44.73% other hospitals, 7.98 at referral institute in 1995. In same villages in 2018 home births were 1.61%, 9.67% at referral study hospital and 88.70% other hospitals pregnancy related mortality, severe morbidities almost eliminated. Nurse midwives (NMs) based at teaching referral hospitals can do a lot with needed guidance and supervision for maternal care to rural women with low resources. Quality care at referral is essential.

Keywords: Maternal death, Community based care, Nurse midwives, Maternal morbidity, Antenatal care.

GRAPHICAL ABSTRACT



Impact Statement

- What is already known on this subject? - Nurse midwives can do a lot in maternal health
- What do the results of this study add? – Trainees in Medical institutes can become bridge. They can guide, monitor and develop linkage between women in villages and referral centres.
- What are the implications of these findings for clinical practice and / or further research? - Nurse Midwives can do a lot in communities but need Involvement of communities. Institute can do a lot by supervising, monitoring and providing affordable services Quality at referral centres and sustainability need to be taken care.

BACKGROUND

Globally many maternal deaths continue to occur in low resource settings due to complications during pregnancy, birth and post birth. While a lot of research still goes on about many disorders during pregnancy, obvious causes seem to be pre-existing poor health, lack of access to safe abortions, lack of timely quality prenatal, intra-natal and postnatal care. Almost each of the maternal death is preventable by community based maternal care to those who can not reach health facilities and linking of these women to health facilities which are ready for effective interventions as per the need, as and when needed. It is essential to have supervised and channelized system between the communities and the referral health facilities. The international and national organizational capacity and resources do exist for the system. What is needed is

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the understanding of precisely where to concentrate efforts. Maternal health scenario can be changed with timely identification of disorders, timely decision to transfer the women to referral and refer also, finally providing right and timely treatment at referral. These are the key factors in the reduction of maternal and neonatal morbidities and mortality. An estimated 300,000 women died as a result of pregnancy-related conditions in the world in 2015 [1]. From 1990 to 2015, global maternal deaths decreased by 29 percent and Maternal Mortality Rates **decreased** by 30 percent, based on estimates compiled from data sources from 186 of 195 **countries** [2]. In 2015, the MMR (maternal deaths per 100.000 live births) for the world was 216, which reflected a 2.3 percent annual decline [3]. In 2015, regional MMRs ranged between 12 for high-income regions to 546 for sub-Saharan Africa. Even for universal health coverage (UHC) maternal health care is a critical component because it directly affects women's lives as well as babies, families, communities and nations at large. As such indicators of reproductive, maternal, newborn and child health also include antenatal and intra-natal care [4].

OBJECTIVES

The objectives were to analyse records of community based services provided by NM to rural women of low resource communities to know the efficacy, challenges and share results.

MATERIAL AND METHODS

The analysis of records of community based maternal services provided by NM, retrained for the job expected was done. NM stationed at the institute where study was planned and executed, provided services to rural pregnant women with low resources. NM were advised to provide antenatal care, do advocacy for intranatal and postnatal care, ensure linkage to health facilities and track outcome of each pregnancy. Women used private or public health system or study institute for births and emergencies. NMs visited the villages early in the morning. Basic prenatal care was provided with advocacy for referral to those who needed specialised care. Usually women from three villages were provided care by 3 NMs in one visit, one each covering one village. They were supervised by the health personnel of the study institute, mainly residents. High risk cases were identified and risk prediction was done at community level by NM. However pregnant women, families and local health workers, volunteers were made aware of possibilities of emergencies during pregnancy, labour and postpartum even in low risk cases and importance of timely transfer to appropriate places for essential services .NM visited each village 5 times in a year because of resource crunch, trying to make it a cost effective venture .So some women were available during pregnancy only 3 times and some only twice. Volunteers, health workers from the villagers not only helped the NM in getting the information about likely pregnant women and births in each village, but provided support also. Each pregnancy was followed, irrespective of the place, type of birth and final out come. A supervising system was made. The residents under the guidance of the author at the referral institute, (study site), monitored the information of each visit of NM with a checklist for the outcome of each visit to villages. Families of nearby villages were covered under special assurance schemes of the institution [5, 6]. They knew that essential emergency obstetric care was available, either free or at subsidized rates at the institution. Other villages little away, where services were initiated later, were not directly covered by the schemes of the institute. But these communities were aware of schemes which could be used to get subsidized services. It was also ensured that villagers either had their own system or were aware of public health system for timely transfer and linkage to appropriate health facilities. Economical delivery kits made in obstetrics and gynaecology of the institute were provided to the families in case of home birth in emergency, like preterm labour or because of the difficulties of transfer or if they wanted home birth, if everything was normal because the mission was to go with awakened communities. Although the women and the families were advised health facility delivery, some still delivered at home. As per the need women were also helped to get economical short stay waiting home which was within 2 minutes walk from maternity wards of the institute. Base data was collected in 1986 and maternal services were initiated in 1987 in a group of 25 villages within 25-35 kms, which were covered under the rural health assurance scheme of the institute. In other group of 28 villages, 80-90 kms away from the institute, not covered under assurance schemes, base information was collected in 1994 and services were initiated in 1995.The population of the 25 villages was around 27700 and of 28 villages22500, as some villages were small, others little bigger and each village had only 3-7 deliveries in a year.

RESULTS

There has been change in places of births, with more health facilities births home births almost eliminated in villages where services were initiated in 1986. In the year 1987 there were 36.23% home births, 14.49% at referral institute study centre and 49.27 % at other health facilities. In the same set of villages in 2018, there were no home births, 67.84% at referral institute and 32.16% at other hospitals. In villages, little away from the study institute where services were initiated later in 1995, 47.36% births took place at home, 44.74% at other health facilities and 7.98% at referral study institute. In 2018 there were 1.61% home births, 9.67% at referral hospital and 88.70% at other health facilities.

At the community level maternal deaths were 1620/one lac live births between 1986-88, base data. It was not really maternal mortality ratio (MMR) as it included all deaths during pregnancy, births and post birth, irrespective of the cause .It was difficult to know the causes of maternal deaths in base data. As services were initiated maternal deaths occurred one

Table 1: Place of Deliveries In Villages (IN%)

Years	Deliveries	Home		Referral Hospital		Others PHC/District Hospital	
		No	%	No	%	No	%
1987	138	050	36.23	020	14.49	068	49.27
1988	187	040	21.39	040	21.39	107	57.21
1989	155	040	25.80	060	38.70	055	35.48
1990	279	080	28.67	120	43.01	079	28.31
1991	200	060	30.00	040	20.00	*100*	*50.00*
1992	242	082	33.88	062	25.61	098	40.49
1993	329	082	24.92	087	26.44	160	48.63
1994	246	080	32.52	070	28.45	096	39.02
1995	205	060	29.26	065	31.70	080	32.52
1996	414	114	27.53	200	48.30	100	24.15
1997	339	039	11.50	150	44.24	150	44.24
1998	216	040	18.51	096	44.44	080	37.03
1999	211	030	14.21	071	33.64	110	52.13
2001	301	107	35.54	150	49.83	044	14.61
2002	217	030	13.82	107	49.30	080	36.86
2003	245	041	16.73	142	57.95	062	25.30
2004	251	043	17.13	142	56.57	066	26.29
2005	186	016	08.60	130	69.89	040	21.50
2006	186	016	08.60	100	53.76	070	37.63
2007	167	010	5.98	090	53.89	067	40.11
2008	201	030	14.92	071	35.32	100	49.75
2009	245	041	16.73	142	57.95	062	25.30
2010	301	100	33.22	150	49.83	051	16.94
2011	186	016	8.06	130	69.89	040	21.50
2012	258	080	31.00	070	27.13	096	37.20
2013	199	001	0.50	126	63.31	072	36.18
2014	207	001	0.48	138	66.66	068	32.85
2015	182	000	0.00	113	62.08	069	37.91
2016	112	000	0.00	082	73.21	030	26.78
2017	158	000	0.00	098	62.02	060	37.97
2018	199	000	0.00	135	67.83	064	32.16

each, case of Preterm birth with postpartum Tubercular Meningitis, Cerebral Malaria, Poisoning, Suicidal Burns, and Sub Acute Intestinal Obstruction with Aspiration making 1290 maternal deaths / lac live births between 1989-1991. Later there was one death due to cerebral malaria in 1995 and one suicide during pregnancy in 1998.There was no other death during pregnancy, labour or post partum in the 25 villages (Table **1**).

In the other villages (28) where services were initiated in 1995, there was one maternal death due to postpartum haemorrhage on the way to the hospital in 1996 and after that there was no pregnancy or birth related death. However one woman died at a referral health facility after caesarean section (CS) due to complications of Sickle Cell Disease in 2005. There was no significant change in the number of obstetric emergencies over the years. However no woman reported in moribund condition due to septic abortion, retained placenta or rupture uterus. Some cases of obstructed labour did occur due to delay in getting transport at night. However after years again in the year 2012-2013, a woman died at the referral hospital due to secondary post partum haemorrhage post caesarean section, some thing to worry. (Table **2**).

DISCUSSION

The world seemed to be ignorant of the risks associated with pregnancy and birth until the first global estimates of maternal mortality were made by WHO in 1987. After it was known that half a million women died each year following pregnancy, abortion and birth related causes the International Safe Motherhood Initiative was launched in Nairobi in 1987 [7, 8]. One of the objectives of the initiative was to reduce maternal mortality by 50% by the year 2000 [9]. Unfortunately records revealed that there was an increase in maternal deaths. Probably the scale of the problem

Table 2: Place of Deliveries in New Villages

Years	Home		Referral hospital		Other /PHC/District hosp.		Total Deliveries
	No	%	No	%	No	%	
1995	090	47.36	015	7.89	085	44.73	190
1996	050	20.4	082	33.5	110	44.90	242
1997	050	25.4	015	7.61	130	65.99	195
1998	070	33.5	030	14.4	106	50.72	206
1999	050	34.7	011	7.64	080	55.56	141
2001	070	33.98	030	14.56	106	51.45	206
2002	041	19.9	006	2.91	094	45.63	141
2003	113	47.3	011	04.6	114	47.7	238
2004	109	44.1	008	3.24	130	52.63	247
2005	018	10.11	016	8.98	144	8089	178
2006	044	16.4	116	43.3	108	40.3	268
2007	044	22.2	086	43.4	068	34.34	198
2008	050	34.7	013	9.03	080	55.56	143
2009	113	47.3	011	04.6	114	47.7	238
2010	104	38.95	009	3.37	154	57.67	267
2011	041	29.7	006	4.2	094	66.66	141
2012	018	10.11	016	8.98	144	80.89	178
2013	001	0.43	012	5.24	216	94.32	229
2014	001	0.44	013	05.7	212	93.80	226
2015	002	1.18	019	11.24	148	87.57	169
2016	002	0.93	018	8.33	170	78.7	216
2017	003	1.89	014	8.86	141	89.24	158
2018	003	1.61	018	9.67	165	88.70	186

was significantly greater, than was originally suspected and that closer to 600,000 maternal deaths occurred each year with the overwhelming majority in the developing countries. The target made was 75% reduction in deaths by 2015 from 1990 levels. How to reach the target continued to be a question for governments, policy makers, programme managers and others. Targets were not achieved in most of the countries though there was a change globally. It was realized that every pregnancy, birth anywhere in the world, faced risk because an estimated 10-15% of pregnant women developed life threatening complications [10]. Researchers also estimated that more than 40 percent of pregnant women experienced obstetric disorders that were not immediately fatal [11]. It was concluded that vital managerial change, including formulation of therapeutic protocols for primary obstetric health services were required to have impact on saving women's lives [12]. Deaths could be prevented if women had access to basic and emergency medical care during pregnancy, birth and the post-birth period. In Indian cultural milieu child birth has always been considered second birth, however maternal deaths have also continued to occur. The major problem has been lack of appropriate, timely care to those who needed it. Major factors responsible for this included delay in recognizing that there was a problem, making the decision to seek care, reaching care and in receiving appropriate treatment at the health facility [13]. If the situation has to change, action at all levels is essential. In India only 34% of deliveries took place in health facilities in rural areas and in some regions three out of four births took place at home [14]. Need was of identifying and use interventions that were shown to achieve the best outcomes with available resources and services. The same was being attempted in the villages near the referral rural institution. Attempts were made for linkage of communities to health system in emergencies, public health system or referral institute. From pooled temple funds three wheelers were arranged by villagers to be used for livelihood of unemployed youths as well as helping women in emergencies. For averting deaths, disorders, hundred percent pregnancies needed to be supervised and taken care. Unwanted pregnancies needed to be timely and safely taken out; others needed to be given appropriate timely advice/care with the system for essential emergency obstetric care. The same was tried and there was change. Basic antenatal care was provided and advocacy was done for intra-natal and post-natal care for prevention and treatment of disorders. Women were supervised, advised and helped for safe abortion at safe places for unwanted pregnancy. Traditional birth attendants, village health workers and NMs did advocacy to women, families, communities especially about emergencies during pregnancy and postpartum, (bleeding, convulsions, fever, foul smelling vaginal discharge and so on) and the need of referral. Also awareness of timely transfer to appropriate places was done. Change has been observed, in places of births with more of health facilities births and less home births, which was also because of better roads and availability of transport. The villages helped were small, but the results do encourage to do big. In the era of rising costs and limited budgets, if more high tech assistance is given to some and basic health services are not given to others, desired equilibrium will not be achieved which is imperative for healthy communities. Present analysis revealed that system does exist to help. It needed strengthening. Given social, economic limitations, to raise a replicable model, using cost effective expertise of the medical institutions to govern and supervise health care, utilize the expenditure on medical education for improving primary health care services and bridge health and education, seemed a feasible option for equity. Governments ask doctors to work in villages and doctors do not wish to work. Even if they go to villages, there is retention problem .So there is no sustainable system. A study revealed that early detection of pregnancy complications by skilled professionals and timely referral to a facility was beneficial in saving the babies as well as mothers lives in resource-poor tea gardens with a considerable access barrier to health facilities [15, 16]. NM who have linkage to educational referral institute can provide, services and do bridging.

In India in the public health system NMs who live in villages, one each posted at sub centre has the responsibility for five villages, around 5000 population (3000 in hilly areas) with difficulties of travel, supervision, retraining, and linkages. So they face limitations and results are evident. In spite of the huge health network maternal mortality ratios have been high. When nationwide rural public health care seems choked for numbers [17], any successful program is welcome. Linkage of community to referrals, proper supervision with space for change in the system as per the need can do a lot. Maternal deaths have implications to the whole family, an impact that rebounds across generations, so must be averted by feasible and sustainable means. However there are challenges of dangerous disorders like Sickle cell Disease and, Post-partum haemorrhage (PPH). Also quality care is becoming an issue. Maternal death

because of PPH on 4thday after caesarean section at referral health facility in recent past was a sad reminder of quality issues at referral. So everyone has to be always ready to do the best. Recently maternal health task force also reported that midwifery care has to be part of the conversation whenever we are looking at maternal and new-born health outcomes anywhere in the world. By applying the International Confederation of Midwives' standards on a country-by-country basis, along with the MISS scoring system, to understand better utilize midwives to address, some of the most challenging problems in maternal and new-born health, can be understood [18]. Medical colleges or referral health facilities can become backbone of maternal care with supervised channel to avert maternal deaths, severe sicknesses till the time, the needed services will be available in villages too.

CONCLUSION

With involvement of communities, medical institutes can do a lot by supervising, monitoring and providing affordable services. Nurse midwives based at teaching referral hospitals have the capacity with some guidance and supervision for maternal care to rural women with low resources. Quality care at referral is essential and sustainability need to be taken care.

CONFLICT OF INTEREST STATEMENT

There was no conflict of interest and no special funding for study. It was analysis of services provided for elimination of maternal mortality and severe morbidities.

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