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Does utilization pattern of antenatal care & early neonatal practices improved by close supervision and support intervention among primigravidae in the tribal area? - Community based interventional study

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Abstract

Pregnancy related complications are among the leading causes of death and disability for women aged 15-49 in India. The National Rural Health Mission (NRHM) is contributing to the various health needs still the antenatal care utilization and neonatal practices are very poor especially in the tribal pockets of Maharashtra. Our aim was to assess the impact of close supervision and support intervention (CSSI) among primigravidae as compared to non-intervened primigravidae. Community based interventional study done in the tribal rural health training centre (RHTC) which is field practice area of tertiary health care institute. Total of 120 registered primigravidae mothers were enrolled in the study and were divided into two groups interventional group (N=30) and non-interventional group (N=90). The CSSI was given to interventional group. Only 57 (42.50%) & 59 (49.17%) women had taken two doses of TT immunization and ≥ 100 IFA tablets respectively. Regular CSSI helped to increase the ANC visits 25 (83.33%), helped to confine delivery either at the RHTC or private hospital 29 (96.70%). Maximum mothers i.e. 17 (90%) and 30 (100%) initiated breast feeding within 1 hour and fed colostrums to their baby respectively.

Keywords: Primigravidae mothers, Antenatal utilization, neonatal care practices, Close supervision & support intervention, Tribal area.

Introduction:

Motherhood is considered to be the most important position a woman can have in her life but it could be a life threatening event, as any woman can develop serious, life-threatening complications during her antenatal course. As per the global report of WHO, UNICEF and UNFPA in the last two decades the number of women dying due to complication has decreased by 34%. Despite this global decline in maternal deaths the maternal mortality was very high in the developing countries like Afghanistan, Bangladesh, India, Indonesia, Pakistan etc. which comprised of

about 65% of all maternal deaths in 2008. With an estimated 77,000 deaths per annum in all SEAR countries, India contributes to a majority of maternal mortality burden in the region. ^[1]

In India every year, roughly 30 million women experience pregnancy and 26 million have a live birth. Even though in last one decade maternal mortality ratio (MMR) in India has shown dramatic decline but due to the wide socio-geographic variation in each states it still remains major public health problem. The MMR has wide variation in each state which ranges from 95 in Kerala state to 480 in Assam state. ^[2] Because there is no reliable way to predict which woman will develop pregnancy-related complications, it is essential that all pregnant women should have access to high quality antenatal care throughout their pregnancies. Maternal complications and poor perinatal outcome are highly associated with poor socioeconomic conditions, non-utilisation of antenatal services and early neonatal care practices especially among the primigravidae. ^[3]

Pregnancy related complications are among the leading causes of death and disability for women aged 15-49 in India. Their inadequate knowledge about pregnancy care, breast feeding and immunisation leads to complications during pregnancy and ill health of the infants. This situation is more in case of primi mothers because they have not previous experience of pregnancy and lower educational status and other social factors limits there access to proper ANC care. Largely, women in rural and tribal India experience more episodes of illness than males and also are less likely to access health care facilities before the illness is well advanced. This situation can be experienced to the primi women as they less likely to utilize antenatal services and which causes adverse pregnancy outcome. This situation is directly linked to poverty, weak social fabric, less political commitment, less coordination between patients and health care systems and poor awareness regarding proper antenatal services. ^[4]

To a large extent, the National Rural Health Mission (NRHM) launched in April, 2005, is beginning to contribute toward addressing rural health needs still the maternal and neonatal care is very poor especially in the tribal pockets of Maharashtra. ^[5] The geographical spread, transport, communication, infrastructure and seasonal adversities contribute to difficulties in access to health care services.

Keeping in view above factors present study was done to evaluate the utilization of ANC services especially in tribal blocks. Also this study was an attempt to assess the impact of close supervision and support (CSSI) to primigravidae for better outcome of pregnancy.

Aims & Objectives: To assess the impact of close supervision and support intervention (CSSI) among primigravidae as compared to non-intervened primi gravidae in the tribal area.

Materials & methods:

The present longitudinal, interventional study was conducted at the ANC clinic of rural health training centre (RHTC) of a tertiary health care institute during May 2009 to December 2010. The filed practice area caters population around 31600, mostly tribal. This RHTC has 7 subcentres and each caters around 4000-4500 population.

Ethical clearance: The present study got complete ethical clearance from central ethical committee of tertiary health care institute.

Enrollment of participants: At the RHTC, an Antenatal clinic (ANC) is conducted weekly. Around 25-30 pregnant women attend ANC weekly. All the primigravidae females were registered at clinic during the study period were enrolled. The primigravidae with high risk pregnancy, not willing to participate and not planning their confinement in the study area were excluded. Thus total 120 primi graviade females were included in the study. The data regarding

socioeconomic factors, antenatal history, physical examination, investigations were collected from all 120 women by doing house to house visit.

Randomization of participants: The study participants were divided into two groups interventional group (N=30) and non- interventional group (N= 90). For allocation of groups, every 4th registered primigravidae were included in the interventional group and rest into the non- interventional group. **Intervention (Close supervision & support/CSSI):**

Sites: the two most accessible subcentres in the study area were identified for conducting the CSSI session. Separate lists of beneficiary primi gravidae were made for each site.

Frequency and duration: A monthly session of 60 minutes was conducted at both sites. The attendance was monitored by ANM. It was ensured that each pregnant woman attends at least 3-4 CSSI sessions during their full confinement.

CSSI session: The antenatal education was conducted for 60 minutes in the local language. Following antenatal and early new borne care components were included in the sessions

1. Dietary advice during pregnancy
2. Warning signals during pregnancy
3. Personal care and hygiene
4. Importance of TT immunization & iron folic acid (IFA) tablet consumption
5. Proper planning of delivery
6. New borne feeding practices
7. Immunization of infants
8. Family planning advice

Any queries of the participants were carefully solved with evidence based personal counseling.

Follow-up: All the 120 women were followed up till their new borne was immunized with first dose of DPT and OPV (6th week). During the study period ANC utilization and neonatal practices were noted. Comparative analysis was done between the interventional and non- interventional group.

Statistical analysis: The collected data was numerically coded and entered in Microsoft Excel 2007 and then transferred to SPSS version 19.0. Added data was analyzed with appropriate test like Macnemar test, paired t-test to see the association between various parameters, with p value of less than 0.05 considered as significant.

Results:

The mean age of primigravidae was 20.39±2.15 years of which 76(63.33%) were following Hindu religion and 92(76.62%) were housewives. In the present study about 50 (41.67%) primigravidae became pregnant before 18 years of age. As seen from table no. 1 that about 66 (55%) mothers have completed their secondary level education and 62 (51.67%) were belonging to social class II. It was observed that majority of females 105(87.5%) had registered their pregnancy after completion of first trimester. The reasons for such delayed ANC registration could be unawareness and non availability of ANC clinics in the tribal area. Poor maternal health during pregnancy is the main risk factor for preterm birth and low birth weight. Delivery in a medical institution promotes better child survival and also reduces maternal & infant mortality. For proper Antenatal utilization of services, there should be regular ANC visits by the pregnant women. As seen from table no. 2 that only 57(42.50%) & 59(49.17%) women had taken TT immunization and ≥100 iron & folic acid (IFA) tablets respectively. Ignorance towards girl's education, lower socio economic class and even low educational status of the husband could be main reasons for non utilization of ANC services in the tribal region.

Table no. 3 shows that regular CSSI to the interventional participants helped not only to increase the ANC visits 25(83.33%) but also helped them to their confined their delivery either at the RHTC or private hospital 29(96.70%). Due to regular CSSI sessions, majority of women in the interventional group i.e. 26(86.67%) & 29(96.60%) had taken two doses of TT immunization and consumed more than 100 IFA tablets.

The nutritional status of the infants mainly depends on the feeding practices which are adopted by their mother during the first few hours of birth (72 hours). Also Colostrums, the first milk, is important to the newborn as it provides natural immunity and helps to fight against many respiratory and intestinal diseases Table no. 4 shows that from interventional group, maximum mothers i.e. 17(90%) and 30(100%) initiated breast feeding within one hour and fed colostrums to their baby respectively.

A Pre lacteal feed to new borne not only carry the risk of infection and but also delays the establishment of lactation in the mother. In this study, 17(18.90%) mothers of non-intervention group has given pre-lacteal feed to their babies as against only 1(3.30%) mother from interventional group had given pre-lacteal feed to their babies .During the post intervention visit, it was found that 15(50%) neonates from interventional group was immunized as per the national schedule as against 16(17.78%) from the non interventional group (p value<0.005). The mean number of ANC visits in intervention group was 5.70 ± 1.15 which are much more than non interventional group i.e. 4.64 ± 1.46 . Also the mean birth weight of baby (2.74 ± 0.17) also increased in the interventional group.

Discussion:

The present longitudinal interventional study was done in the one of the tribal RHTC of Maharashtra. In this study 41.67% mothers married before 18 years of age. The study done by A Singh et al ^[6] in rural part of north India revealed that 31.6% women were married before 18 years, 48.1% of women became pregnant within 12 months of marriage. Such early marriage is likely to cause adverse physical consequences for adolescent girls as they are prematurely exposed to the risk of pregnancy. The main reasons for such early marriage might be due very low educational status of women. As seen from the table no. 1 that even though families of many of the women were economically capable of educating the child but about 35% of women were either illiterate or had education up to primary level. Our finding can be confirmed by the survey of UNICEF in which about 34.3% were illiterate in tribal part of Maharashtra ^[7]. Other reasons for such early marriages especially in tribal area could be due to insecurity of young daughter among parents or very low socio cultural value of women in society.

In spite of availability of basic ANC services such as IFA tablets, TT immunization, trained birth attendant and hospital delivery, through PHC & sub centres, inadequate or underutilization still persists especially in the tribal parts.

For better pregnancy outcome, ideally ANC registration should be done in first trimester only. This helps mother to engage in various components of antenatal care. Iron deficiency among pregnant women is the one of main factor for low birth weight and infant mortality in India. But in the present study it was found that majority i.e. 87.50%, 42.50% and 49.70% of women of non interventional group hadn't registered in the first trimester, not taken two TT doses and ≥ 100 IFA tablets respectively. Our finding could be confirmed by the study done by Sachin mumbare et al ^[8] in tribal part of Nashik.

Such finding could be attributed to unique problems of this tribal area such as difficult terrain, no transport facility, inadequate mobilization of NGOs, and lack of appropriate human resource policy, less integration of national health programs, less involvement of local self help groups and weak monitoring & supervision system. So to improve this utilization among primi gravidae there was a need for continuous motivation through CSSI. From the table no. 2 it could be seen that there were marked improvement in the ANC utilization by primigravidae after CSSI sessions (p

value <0.005). The study done by Partha pratim Pal et al^[9] in which it was found 82.41% had consumed IFA tablets after proper education by the health volunteers. Also our finding can be confirmed by the controlled trial done by Anil Bilimale et al^[10] in which after 100 IFA tablets consumption the mean haemoglobin level was high among direct observer's group(8.99%) than the non observer's group(8.44%).

Even though many initiatives were taken under the National Rural Health Mission (NRHM) for increasing the institutional deliveries, still in the present study 14.40% of tribal women in the non-intervention group delivered baby at home. Such home deliveries are generally regarded as unsafe delivery which is the main factor for maternal mortality especially in tribal area. Our finding can be confirmed by the cross sectional study which was done by rajesh garg et al^[11] in the rural Punjab where out 100 ANC mothers, the proportions of home delivery was found out to be 66.10% & out of which 52.6% were unsafe deliveries. In the present study among the non interventional group about 64.44% babies were low birth weight. Similar study done by Dr Manjula et al^[12] in the Dharwad city of Andhra Pradesh in which the incidence of low birth weight and preterm delivery were found out to be 25% and 75% respectively. After CSSI session there was a significant decline in the proportions of home delivery and pre term delivery among the interventional group (p value <0.005).

Appropriate feeding is very crucial for the growth and development of infant. In the present study many faulty feeding practices such as late initiation of breast feeding after birth (38.90%), not feeding colostrums (32.20 %) and prelacteal feed (18.90%) were there. A study done by Vyas shaili et al^[13] at rural part of Dehradun among 500 post natal mothers confirmed that 21.8% initiated breast feeding within one hour, 28.26% mothers had not given colostrums & around 19% were given prelacteal feed in the form of sugar water, honey and ghee etc. Similar cross sectional study done by Syed E Mahmood et al^[14] in the bhojipura block of bareilly district of Uttar Pradesh also found that 23.8% of infants received ghutti (water mixed with honey & herbs) as a prelacteal feed. So there is need to improve the infant feeding practice among tribal part. The present study confirmed that with CSSI the early neonatal feeding practices can be improved (<0.005). Such improvement in the feeding practices can be attributed to the more ANC visits, high proportions of hospital delivery, among mothers in the interventional groups.

Immunization against common childhood diseases has been an integral component of mother and child health services. During the post intervention visit, immunisation status of the neonate (till DPT1&OPV1 doses) was recorded and matched with their age. The study done by S. Trivedi et al^[15] in urban part of Surat found that about 91% of neonate has received DPT1 and OPV 1 till 6th week. (501). It can see that 16(17.78%) neonates were immunized as per schedule in the non interventional group. Such contrasting findings between tribal and urban area could be attributed to the typical problems of tribal areas.

Conclusion:

There was very less utilization of ANC services in the tribal area. The continuous education to the primigravidae through CSSI sessions helps to improve the ANC service utilization and early neonatal practices in the tribal area. Thus CSSI could be novel approach to reduce maternal and neonatal mortality.

Recommendations:

The CSSI should be implemented at the difficult and hard to teach area for better antenatal utilization among pregnant women.

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Table no.1: Socio demographic characteristics of Primigravidae.

Variable		No.	%
Age	< 15 yrs	2	1.67
	15-25 yrs	99	82.50
	>25 yrs	19	15.83
Age at marriage	<18 yrs	50	41.67
	18-24	62	51.67
	>25 yrs	8	6.67
Religion	Hindu	76	63.33
	Muslim	44	36.67
Education	Illiterate & primary education	42	35.00
	secondary education	66	55.00
	H. Secondary	11	9.17
	Graduate	1	0.83
Socioeconomic class	Class I	22	18.33
	Class II	62	51.67
	Class III	27	22.50
	Class Iv	9	7.50
occupation of mother	Housewife	92	76.67
	Manual Labourer	17	14.17
	Tailor	3	2.50
	Farmer	4	3.33
	Govt. Job	2	1.67
	Maid	2	1.67
Total		120	100

Table no. 2: Utilization pattern of ANC services among primigravidae.

Antenatal services		No	%
ANC registration	Within 3 months	10	8.33
	3-6 months	105	87.50
	More than 6 months	5	4.17
Total ANC visit	≤ 4 visits	76	63.33
	≥ 4 visits	44	36.67
Total TT immunization	0	12	10.00
	1	57	47.50
	2	51	42.50
IFA tablets consumption	< 100 tablets	61	50.83
	≥ 100 tablets	59	49.17
Total		120	100%

Table no.3: Impact of CSSI on place of delivery, consumption of IFA tablets& gestation period of baby

Variable	Intervention		Total	p value
	Yes	No		
	N (%)	N (%)	N (%)	
Place of delivery				
PHC/Sub centre	20(66.70%)	60(66.70%)	80(66.66%)	>0.005
Private Hospital	9(30.00%)	17(18.90%)	26(21.67%)	
Home	1(3.30%)	13(14.40%)	14(11.67%)	
Antenatal visits				
≤ 4 visits	5(16.67%)	71(78.89%)	76(63.33%)	<0.005
≥ 4 visits	25(83.33%)	19(21.11%)	44(36.67%)	
Mean ANC visits in the interventional group = 5.70 ± 1.15				
TT immunization				
0	1(3.33%)	9(10.00%)	10(10.00%)	>0.005
1	3(10.00%)	54(60.00%)	57(47.50%)	
2	26(86.67%)	25(20.00%)	51(42.50%)	
IFA tablets consumption				
<100	1(3.30%)	60(66.70%)	61(50.83%)	<0.005
≥ 100	29(96.60%)	30(33.30%)	59(49.17%)	
Total	30(100%)	90(100%)	120(100%)	

Table no. 4: Impact of CSSI on feeding history and immunization status of neonate

Variable	Intervention		Total	p value
	Yes	No		
	N (%)	N (%)	N (%)	
Birth weight of new borne				
< 2.5 kg	8(26.67%)	58(64.44%)	66(55.00%)	<0.005
≥ 2.5 kg	22(73.33%)	32(35.56%)	54(45.00%)	
Mean birth weight in interventional group = 2.74±0.17				
When was breast feeding started?				
Within 1 hour	27(90.00%)	55(61.10%)	82(68.30%)	<0.005
3 or more hours	3(10.00%)	32(35.60%)	35(29.20%)	
On 2nd day	0(0%)	3(3.30%)	3(2.50%)	
Colostrums given or not?				
Given	30(100%)	61(67.80%)	91(75.80%)	<0.005
Not given	0(0%)	29(32.20%)	29(24.20%)	
Pre lacteal feeding given or not?				
Given	1(3.30%)	17(18.90%)	18(15.00%)	<0.005
Not given	29(96.70%)	73(81.10%)	102(85.00%)	
Immunization status till 4 week				
As per schedule	15(50%)	16(17.78%)	31(25.83%)	<0.005
Delayed	9(30%)	54(60%)	63(52.50%)	
Not given	6(20%)	20(22.22%)	26(21.67%)	
Total	30(100%)	90(100%)	120(100%)	