

Change in Maternal Death Pattern: A Record base Analysis

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Abstract— Maternal deaths have to reduce in India as per Millennium development goal number five. So to know the whether there is any change in maternal deaths pattern of current year from previous years in Rajasthan this study was conducted by analyzing the records of maternal deaths occurring in Mahila Chikitsalay Jaipur from 1st Jan 2005 to 31st December 2009. Maternal deaths pattern of current year (2009) was compared to average of previous 4 years (2005-2008). To analyse these data Chi-square test, un paired 't' test and ANOVA test of significances were used as and when required. It was observed that there was significant decrease in maternal deaths from 2005 to 2009. No seasonal trend was found in maternal deaths in both the groups. Although there was no significant difference in mean age of maternal death but proportion of deaths was more in extremes of age groups in both the groups. Significantly less maternal deaths were observed in primi-gravida and normal vaginal delivery in current years than the average of previous four years. Likewise, proportion of deaths in intra-natal and post natal periods were also significantly decrease in current year than previous years.

Keywords—Maternal deaths, Seasonal trend, Primigravida, Multigravida

1. Introduction

WHO defines maternal death as death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by pregnancy or its management" (ICD-10).¹ Almost half a million women die every year in world from complications during pregnancy and childbirth. About 99% of these women are from developing world with over 90% concentrated in Africa and Asia.² India contributes approximately 63,000 maternal deaths each year .National average of MMR is 212/100000 live births.(RGI 2007-2009)³

India contributes one-fifth of the global burden of absolute maternal deaths;¹ Within India, there is marked variation in MMR and healthcare access between regions and in socioeconomic factors.^{4,5}

But India is making progress in reducing maternal mortality in accordance with the goal of Millennium Development, where Goal number 5 addresses about maternal deaths.⁶

So, this present study was conducted to know change in maternal deaths pattern from previous years to current year in western Rajasthan.

2. Methodology

This descriptive analytic study was carried out on records of verbal autopsies of maternal deaths occurred in Mahila Chikitsalya Jaipur, which is a tertiary level hospital attached to SMS Medical College, Jaipur. For records of maternal deaths, death of a mother while pregnancy or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by pregnancy or its management (ICD-10)⁵, were considered. Then records of verbal autopsies of maternal deaths occurred in Mahila Chikitsalya Jaipur since 1st Jan. 2005 to 31st Dec. 2009 were selected and all the related information was collected in the form for master chart. For the

diagnosis of cause ICD-10 O-code (obstetric causes) of three-digit International Classification of Diseases and Related Health Problems, 10th revision (ICD-10)⁵ was taken.

Qualitative data thus collected was analyzed in percentage and proportions and quantitative data thus collected was analyzed in mean $\pm$ standard deviation. To find out significance of difference in proportions chi-square test and for means Unpaired 't' test/ANOVA was done with statistical software Primer version 6.

3. Results

Present study observed that maternal deaths were continuously on increase from year 2005 to year 2008 from 23 in year 2005 to 35 in year 2008 after that it had decreased to 21 in year 2009. (Fig.1)

When total maternal deaths in year 2009 were compared with average maternal deaths per year of previous 4 years then it was found in this study that in current year it has decreased. (Fig. 2)

Fig.1

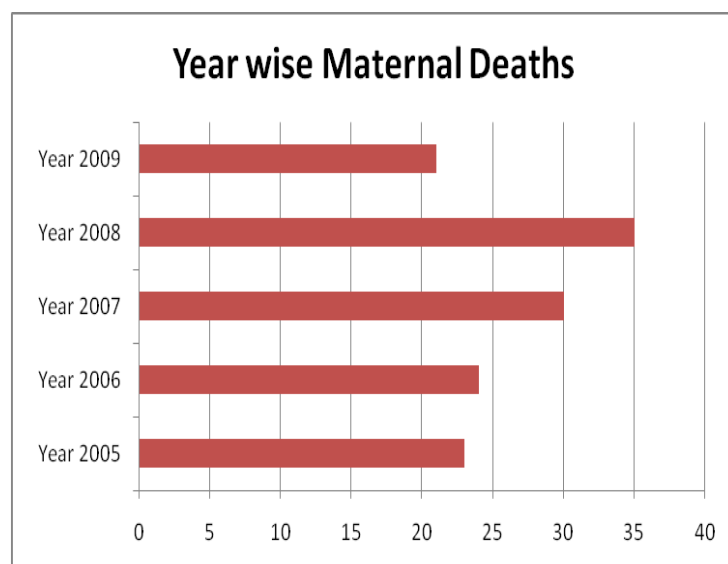
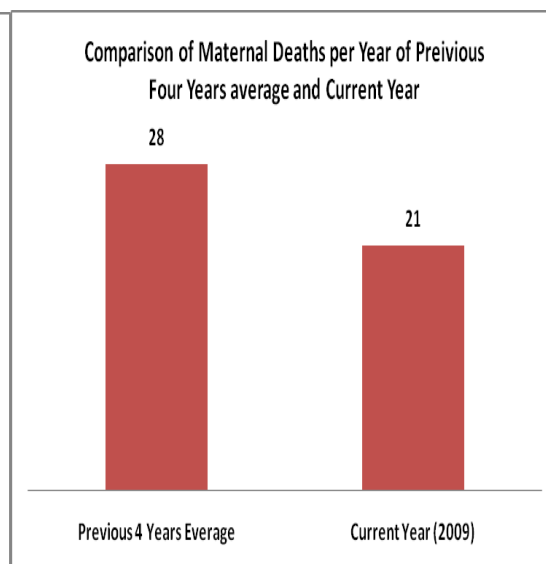


Fig.2



It was revealed from this study that there was significant ($p < 0.001$) decrease in maternal mortality rate (MMR) from previous 4 years average to current year i.e. 212 per lakh and 133 per lakh MMR respectively. (Table 1)

Table No.1

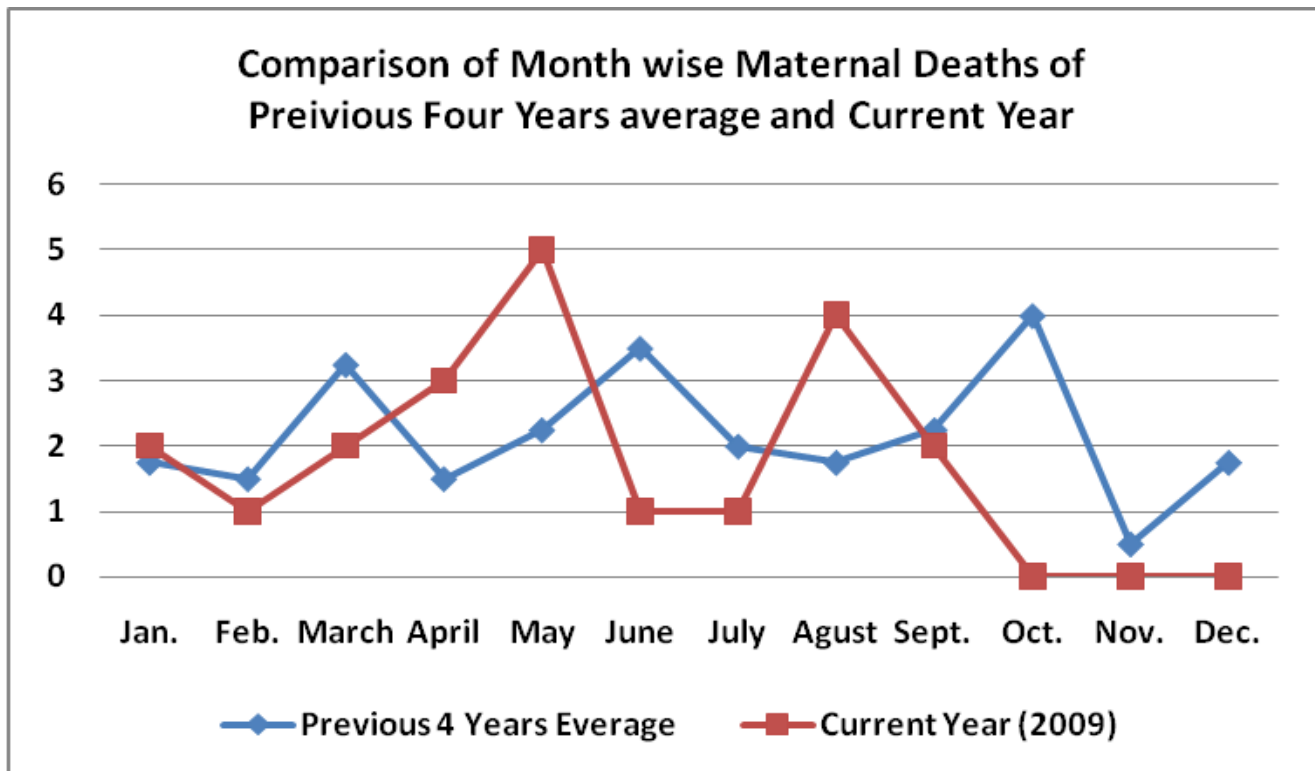
Comparison of Maternal Mortality Rates (MMR) of Current and previous years

S. No.	Variables	Current Year (2009) N=21	Previous Year (2005-8) N=112
1	Total Live Births	15814	53056
2	Total Maternal Deaths	21	112
3	MMR	133/100000	212/100000

Chi-square test= 73.126 at 1 DF P<0.001 S

It was also observed from this study that although there was no as such seasonal trend was found in distribution of average maternal deaths per year of previous four years but there were no maternal deaths in months of October to Dec.2009. But this difference in monthly distribution of maternal deaths in both the group was not found significant ($p>0.05$). (Fig. 3)

Fig.3



Chi-square = 4.464 at 8 DF

P = 0.873

LS=NS

As far as the pattern of distribution of maternal deaths as per variables related to it is concerned, it was found from this study that although there was no significant ($p>0.05$) difference in mean age of mother at the time of death in current year with average of previous 4 years but there was significant ($p<0.05$) difference as per residence of mother, gravid of mother and mode of delivery. (Table 2)

It was depicted from study that proportional of deaths of rural mothers was significantly ($p<0.05$) more in current years than in previous years whereas in previous years it was distributed more or less same both in urban and rural mothers. Likewise deaths of primigravida were significantly ($p<0.05$) more in current years than in previous years. (Table 2)

If the modes of delivery is concerned it was observed proportional of deaths of mothers who had delivered normal vaginal was significantly ($p<0.05$) less in current years than in previous years. (Table 2)

It was depicted from study that although there was no significant difference in proportional of deaths of mothers as per booking status but there was a shift of maternal death from intra-natal and post natal deaths to antenatal death. Intra-natal and post natal deaths were significantly ($p<0.05$) decrease in current years than in previous years. (Table 2)

Table No. 2

Comparison of Variables related to maternal deaths of Current and previous years

Variable		Current Year (2009) N=21	Previous Year (2005-8) N=112	Test of Significance P Value LS
Age	Mean	27	25.88	0.783 Student's 't' test at 131 DF P=0.435 NS
	SD	5.81	6.05	
Residence	Urban	4	85	23.309 Chi-square test at 1 DF P<0.001 S
	Rural	17	27	
Gravida	Primi	16	49	6.206 Chi-square test at 1 DF P=0.013 S
	Multi	5	63	
Mode of Delivery	Normal Vaginal	2	42	9.177 Chi-square test at 2 DF P=0.010 S
	LSCS	18	56	
	Forceps	1	14	
Booking Status	Booked	2	11	0.128 Chi-square test at 1 DF P=0.720 NS
	Emmergency	19	101	
Timing of Maternal Death	Abortion	1	1	23.019 Chi-square test at 3 DF P<0.001 S
	Antenatal	16	28	
	Intra-natal	1	17	
	Postnatal	3	63	

4. Discussion:

Present study observed significant ($p<0.001$) decrease in maternal mortality rate (MMR) from previous 4 years average (2005-2008) to current year i.e. 212 and 133 maternal deaths per lakh total live births (MMR) respectively. This MMR is in accordance to Millennium development goal () for India i.e. less than 209 maternal deaths per lakh total live births. Studies of other authors^{7,8,9,10,11,12} also support this fact that there is decrease in maternal mortality rate (MMR) from previous years. Previous studies^{7,8,9,10,11} reported MMR in range of 230 to 454/lakh TLBs whereas newer studies like Chawala et al¹³ and SRS 2011 of India,³ reported much less MMR than the previous studies. Chawala et al¹³ reported MMR only 85.42/lakh TLBs and SRS 2011 of India³ reported 81, 97 and 104 MMR in Kerala, Tamil Nadu and Maharashtra respectively. This decrease in MMR may be explained with the fact better MCH services with the time.

In the present study significantly more maternal deaths were reported in extremes of reproductive ages i.e. in <20 years and >30 years. These findings are similar to findings of Jadhav et al¹¹ who reported maximum of maternal deaths (75.1%) in <20 years and >30 years. Although few of authors^{7,8,12} reported maximum mothers die between the age 20 and 30 years.

There were significantly decrease in maternal deaths urban mothers in current year than the previous years. Findings were of Murthy et al¹ were in well resonance with the present study.

In the present study there was significant shift in death of primigravida from previous years to current year, in current year deaths of primigravida were significantly less than previous years. Although many authors^{8,11,12} reported more deaths in multiparas than nulliparas but when the change in proportion of maternal deaths in primigravida is concerned from previous years to recent year it was found significantly decrease.¹

If the modes of delivery is concerned it was observed proportional of deaths of mothers who had delivered normal vaginal was significantly ($p < 0.05$) less in current years than in previous years. Almost similar was observed by Murthy et al⁷ which can be explained with better intranatal services in current years from previous years.

In the present study no significant change was observed in proportion of maternal deaths in current years from previous years as far as the booking status of delivery was concerned. Almost similar observations were made by other authors^{7,11,12} who observed in more maternal deaths in un-booked than booked cases but no significant change in proportion of maternal deaths as per booking status with time.

It was also depicted from study that there was a shift of maternal death from intra-natal and post natal deaths to antenatal death. Intra-natal and post natal deaths were significantly ($p < 0.05$) decrease in current years than in previous years. Well comparable findings were of Murthy et al.⁷

CONCLUSIONS

There was no seasonal trend was found in maternal deaths from previous to current years. Although there was no significant difference in mean age of maternal death and maternal death as per booking status was found from previous to current years. But there was significantly less maternal deaths were observed in primi-gravida and normal vaginal delivery from previous to current years. Likewise proportion of intra-natal and post natal deaths were also significantly decrease in current year than previous years.

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