RESEARCH ARTICLE

MORTALITY PROFILE AMONG SCHEDULE CASTE OF DISTRICT BANDA, UTTAR PRADESH

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Manuscript Info	Abstract
	The present cross sectional study was conducted among Schedule castes populations of District 'Banda' Uttar Pradesh. Here is an attempt to find out the mortality profile and its association with biosocial determinants. For present study data was collected from 1050 households of 35 villages of district Banda (UP). The villages were selected using stratified sampling and respondent were selected randomly. Demographic information was collected on a total of 5527 individuals. To understand embryonic mortality pregnancy enumeration of 998 mothers were recorded. These mothers were experienced 5922 numbers of pregnancies out of which 5026 were termed as live birth. Out of 5026 live births, 1120 children were died before achieving maturity or adulthood. The average foetal loss per mother was computed 0.90 ± 1.18, whereas the mean of child loss was found 1.12 ± 1.50. The mortality measure like CDR, IMR and CMR were higher among Chamar (respectively CDR=25.1, IMR= 186.4 and CMR= 57.81) than Kori, Dhobi and Domar. The Mortality measurements like CDR and IMR of present study is higher than district, state and national level estimation. The regression analysis indicate that there is significant correlation ($P<0.05$) between child mortality and demographic, socioeconomic, and health & nutritional determinants except BMI.

Introduction

Mortality or death of individuals are described by World health organization as "All live born infants should be registered and counted as such irrespective of the period of gestation and if they die at any time following birth they should also be register and counted as death" and is consider as Mortality.

Mortality rates show variation by age and sex. Mortality has a very unequal impact on the various age groups. It strikes hard at the very youngest and the oldest members of the population. Mortality is high in the first year of life, then declines, and it is very low till the mid thirties and then starts to increase in an accelerating rate until by age sixty, it becomes high and by age seventy extremely high. Age specific mortality rates form a distinct curve. Male generally have a higher age specific death rate than females, with some exceptions in developing countries. Various measures are employed in the analysis of mortality. The process of mortality can be measured by the Crude Death Rate (CDR), Infant Mortality Rate (IMR) and Child Mortality Rate (CMR) (Bhende and Kanitkar, 2003). The association of women's education with infant and child mortality has been highlighted in numerous studies (Caldwell, 1979; Cochrane et al., 1980; Martin et al., 1983; Hobcraft et al., 1984; Pebley and Stupp, 1987; Caldwell et al., 1990; Gupta, 1990; United Nations, 1985).

Area and People

The present cross sectional study was conducted in district Banda of Uttar Pradesh. The Scheduled caste populations are deprived group of society and live in very poor condition with many health and nutritional problems. In the

present study majority of population belong to Chamar followed by Kori, Dhobi and Domar, all are listed as Schedule castes. During survey, it was found that the condition of schedule caste females was poor and backward in respect of their health and nutritional status. In recent past, they were engaged in traditional works like: Leather worker and shoemaking (Chamar); washing clothes (Dhobi); weaving of cloths (Kori) and Domar were engaged as sweepers and scavengers, but now they are engaged in a variety of occupations from traditional work to blue collar jobs and even at top of the political positions. But, still majority of them are daily wage earners, followed by agriculture etc. except Domar. Majority of Domar are still engaged in their traditional work i.e. sweeper and scavengers; still they are landless and completely dependent on wages.

Material and Method
For present cross sectional study data was collected from 1050 households of 35 villages of district Banda (UP). The villages were selected using stratified sampling and respondent were selected randomly. Demographic information was collected on a total of 5527 individuals. To understand embryonic mortality pregnancy enumeration of 998 mothers were recorded. The present study is aimed to find out the mortality profile and its association with biosocial determinants. A semi-structured interview schedule was used for data collocation on demographical, socio-economic structure status, level of education and their health and nutritional status. The anthropological socio-demographical Details were collected on current age of mother, level of education, monthly income, age at first birth, total number of live birth, child death, foetal loss, number of abortion, still birth, premature delivery, active reproductive period, reproductive life span, biological characters like age at menarche, menopause and health and nutritional status viz. BMI, sitting height, level of blood glucose etc., by door to door survey, interview, anthropometric and physiological measurements. The collected data was analysed by using SPSS and MS-excel.

Result and Discussion
Broadly mortality can be categorized into pre-natal and post-natal mortality. Pre-natal mortality is also known as embryonic mortality. To understand the pre-natal or embryonic mortality, the information on foetal loss was collected. Out of 998 mothers, 518 were experienced embryonic mortality in the form of foetal loss or abortions. Demographic variables used for computation of mortality rate among Schedule caste of District Banda, Uttar Pradesh is displayed in Table 1.

Table 1: Demographic variables used for computation of mortality rates.

Demographical variable	Total
Midyear Population (Total population)	5527
Total death in last one year	130
Total number of mothers	998
Total number of pregnancy experienced	5922
Total number of live births (Children ever born)	5026
Number of children died (Child loss)	1120
Number of still births	100
Number of abortions	796
Total Number of Foetal loss	896
Total number of infant(0-1year) died in last one year	28
Total Number of child death under five years(<5 year) in last one year	33
Average of foetal loss per mother	0.90±1.18
Average of child loss per mother	1.12±1.50

It is apparent from the Table1 that 998 mothers were experienced 5922 numbers of pregnancies out of which 5026 were termed as live birth. Out of 5026 live births, 1120 children were died before achieving maturity or adulthood. Out of 5922 pregnancies 100 were resulted into still birth, 796 were termed into abortions and in this way a total of 896 total foetal losses were experienced by these mothers. Among them 28 infants and 33 children (0-4year) were died during last one year. The average foetal loss per mother was computed 0.90±1.18, whereas the mean of child loss was found 1.12±1.50.

Embryonic Mortality

It is generally defined as loss of the embryo which occurs during the first 42 days of pregnancy, which is the period from conception to completion of differentiation when organ systems develop. For the present study embryonic mortality was computed by foetal loss among studied population.

It is evident from Table 2 and Table 3 that out of 896 miscarriages, 246 were latest miscarriage and provided information about the age of fetus at the time of miscarriage. It is apparent that 41.9% fetuses were aborted at the age of 20-27 weeks. Further, 28.9% fetuses were aborted at age of 28-36 weeks, 26.4% fetuses were reported before reaching the age of 20 weeks and 2.8% fetuses were aborted on or after 36 weeks of age. These findings are also elucidated by Figure1.

Table 2: Distribution of mother according to number of foetal loss.

Occurrence of Foetal loss	Number of respondent wife	Total Foetal loss
Once	293	293
Twice- Four time	210	516
More than five time	15	87
Total	518	896

Table 3: Age wise distribution of last miscarriage (foetus loss) among Schedule caste women.

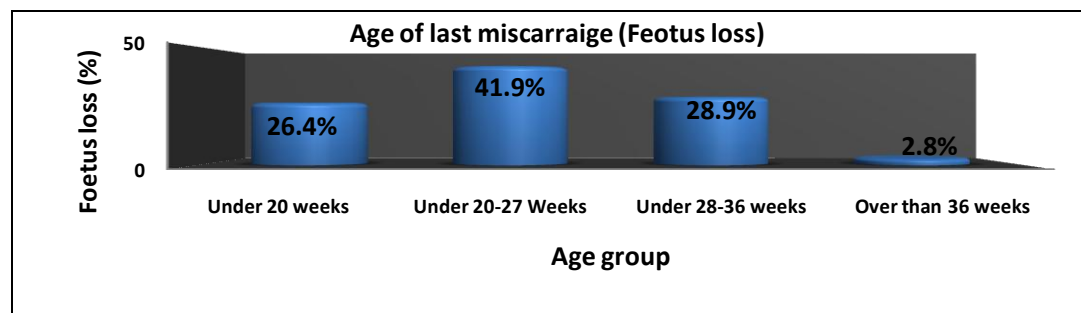| Age of last miscarriage	N	%
Under 20 weeks	65	26.4
20-27 Weeks	103	41.9
28-36 weeks	71	28.9
36+ weeks	7	2.8
Total	246	100.0
**** They are not known about age of Left (650) miscarriage.**		

 Figure 1. Age wise distribution of last miscarriage (foetal loss) among Schedule caste women district Banda (U.P.)

Post-natal mortality

Post-natal mortality can be further divided into infant mortality rate (IMR), child mortality rate (CMR), age specific mortality rate (ASMR) and crude death rate (CDR).

Infant Mortality Rate (IMR)

In most underdeveloped countries a high Infant Mortality Rate (IMR) exists, which reflects on poor medical care and poor sanitation; and in fact, IMR can be used as a sensitive development index ~~and~~ as various factors contribute to differential regional infant and child mortality (Dyson and Moore 1983). In the present study, the infant mortality rate among studied population was 158.1 which are higher than national and states level estimations. Among present studied population, it varies from 86.9 among Dhobi to 186.4 among Chamar, whereas the Kori are in between with an IMR of 121.2. The Infant mortality rate of present studied populations is higher than previously reported e.g. Saharia (123.28) (Biswas & Kapoor, 2003); Jaunsaria (82.0) (Kshatriya et al., 1997); Kinnaura (74.07) (Gautam 2006) but lower than Baiga (428.5) (Sharma and Dwivedi, 2006) and others. The infant mortality rate among present studied populations (SCs) is found higher than as reported by Basu (2007) for the schedule caste (66) and schedule tribe (62) population of India based on his analysis on the data of national family health survey (NFHS-3, 2005-06).

Child Mortality Rate (CMR)

Child mortality rate takes consideration of child deaths from one year to less than five years of age. It can be also defined as the probability of dying between the first and fifth birth day. In the present study, the CMR varies from 36.3 among Dhobi to 57.81 among the Chamar; whereas the Kori (49.38) are in between. The finding of present study is lower than district and state level estimations; whereas it is close to the National level estimation for child mortality rate. It is comparatively higher than Marcha (28.57 by Chachra and Bhasin, 1998); Khasi (15.9 by Adak, 2001) and Garo (27.1 by Adak, 2001).

Crude Death Rate (CDR):-

The Crude Death Rate (CDR) is the most simple and the most commonly used measure of mortality, which can be calculated as a ratio of the total deaths of a specified year to the total midyear population. An important use of the crude death rate is that it tells about the natural decrease in the population. On the basis of present findings, it can be stated that CDR of present studied population is double than district, state and national level estimations. The CDR computed for present study was 23.5 per 1000 of schedule caste population. It varies between Dhobi (CDR=18.73) to Chamar (CDR=25.1) with Kori (CDR=20.9) in between. In compression, it was found that the CDR of theses populations are higher than Bhil (CDR=15.53 by Parsuram and Rajan, 1990), Gond (CDR=23.19 by by Parsuram and Rajan, 1990) and others, except Saharia of Madhy Pradesh (CDR=25.77, by Biswas and Kapoor).

Table 4: Various measures of mortality among schedule caste and National level.

Mortality Measure	Chamar	Kori	Dhobi	Domar	Total	District Level AHSB 2011-12	State level AHSB 2011-12	National Level (NFHS-3 & SRS 2011)
IMR	186.4	121.2	**86.9**	_	158.1	**55**	**60**	**44**
CMR	57.81	49.38	36.3	_	52.8	91	**92**	**26.5**
CDR	25.1	20.9	**18.73**	**11.23**	23.5	9.3	7.9	7.1

Age Specific Mortality Rate (ASMR)

Age specific mortality rate is another method of finding out death rates. It is helpful to find out death rate correctly, the people should be classified under different categories of their age groups (Biswas and Kapoor, 2003).

The mortality rates show variation by age and sex. Mortality has a very unequal impact on the various age groups. It strikes very hard at the very youngest and the oldest members of the population. Age specific mortality rates form a distinct curve. Male generally have a higher age specific death rate than females, with some exceptions in developing countries (Bhende and Kanitkar, 2003). The Table 5 is showing age and sex specific death rate among the studied population. It is apparent that male has higher mortality as compared to females in all age groups. The age specific death rate is the broad "U" pattern with the mortality high among the young and old age group. The mortality is high for the 0-4 year age group, after that it decreases for the following age group with few exceptions and again pick up at around age 60 onwards. The Mortality rate among children is usually high (ASMR=54.1). Here, it should be noticed that the male mortality (ASMR=74.4) in early childhood (0-4 years) is more than double as compared to female mortality (ASMR=31.8) of same age cohort. Similarly, the rate of mortality has declined from 5-14 years of age (ASMR=2.8) as well as for 15-59 years of age group (ASMR=11.1). Again it increased with increasing age, after 60 years, it was found 167.6 per 1000 of population.

Table 5: Age Specific mortality rate among schedule caste peoples last one year.

| Age group	Male			Female			Total		
	Total Population	**Total Death**	**Age Specific Death Rate**	**Total Population**	**Total Death**	**Age Specific Death Rate**	**Total Population**	**Total Death**	**Age Specific Death Rate**
0-4	309	23	74.4	283	9	31.8	591	32	54.1
5-14	747	3	4.0	685	1	1.5	1432	4	2.8
15-59	1502	21	14.0	1295	10	7.7	2797	31	11.1
60+ above	223	38	170.4	145	24	165.5	370	62	167.6
Total	2959	85	28.7	2568	44	17.1	5527	129	23.3
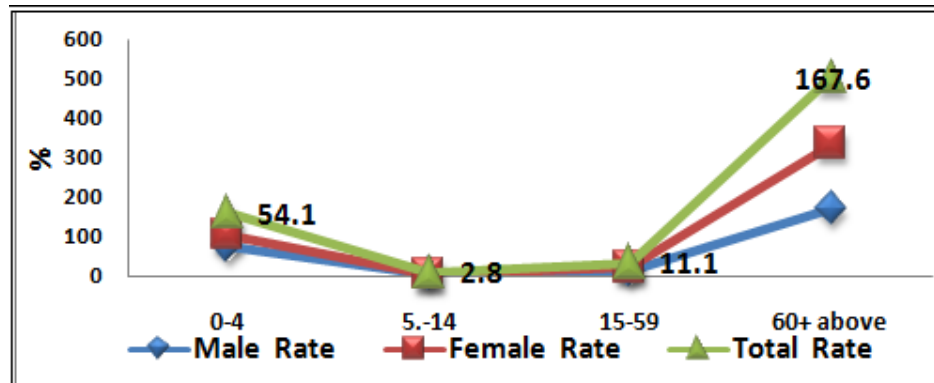
Figure: 2:- Age specific mortality rate among schedule caste

Mortality affects and influences fertility as well as birth rates. There are many factor which influencing the rate of mortality. All the deaths, prior to live birth is not considered as death. Thus abortion and still birth are not referring as death but as foetal death.

An inverse association exists between socioeconomic status and infant mortality (Woodbury, 1925; Adamchak and Flint, 1980; Eberstein and Parker, 1984; Stockwell et al., 1988). Further, Stockwell and Wicks (1984) conducting a study in Ohio found a similar pronounced inverse relationship existing between infant mortality and a wide variety of socioeconomic variables.

A number of biological factors also influence infant mortality (Martin et al, 1983). To understand the relationship between child mortality and Demographic, fertility indicators like current age, age at marriage, age at first birth, total number of surviving children, active reproductive life span, total number of pregnancy, foetal loss, and level of education, reproductive life span; biological characteristics (age at menarche); practice of family planning; health and nutrition indicators like sitting height, BMI, level of blood pressure regression analysis were computed and presented in Table 6.

It is apparent from regression analysis that age at menarche, age at marriage, and sitting height has inverse correlation with child mortality. It is apparent from the Table 6 that there is low degree of correlation between child mortality and these variables. Among studied population the regression coefficient r^2 varies from 0.02 to 0.49. The child mortality is determined by demographic feature, fertility indicators, biological characteristics and health and nutritional status as correlation with these variables except, BMI are statistically significant (P<0.05).

Table 6: Regression coefficient and F- statistics of total number of children died as dependent variable.

Independent variable	Coefficient of regression					F- statistics		
	R	R²	β	SE	t valve	F change	df	P value
Current age of mothers	0.4933	0.193	0.051	0.003	15.33	235.12	987	0.001
Age at marriage	0.23	0.053	-0.09	0.013	-7.41	55.00	985	0.001
Age at menarche	0.095	0.009	-0.082	0.027	-2.99	8.96	995	0.003
Total number of surviving children	0.18	0.036	0.14	0.024	6.05	36.69	997	0.001
Age at first Birth	0.064	0.004	-0.03	0.019	-2.02	4.11	997	0.043
Active reproductive period	0.13	0.018	0.047	0.020	2.355	5.54	304	0.019
Reproductive life span	0.132	0.017	0.052	0.023	2.309	5.33	304	0.022
Age at contraceptive use	0.362	0.131	0.06	0.008	7.40	54.8	364	0.001
Foetal loss	0.14	0.20	0.17	0.04	4.45	19.86	997	0.001
Total number of pregnancy	0.66	0.44	0.33	0.012	28.2	795.9	996	0.001
BMI	0.02	0.00	0.009	0.014	0.682	0.466	969	**0.495**
Sitting Height	0.11	0.012	-0.041	0.012	-3.46	12.02	969	0.001
Level of Blood glucose	0.079	0.006	0.003	0.001	2.43	5.914	950	0.015
Education level	0.20	0.042	-0.35	0.053	-6.6	43.7	987	0.001
								Significant at p<0.05

From many previous studies, conducted in developed countries, it was indicated that trends and patterns of morbidity influence the mortality rates (Ghosh and Arokiasamy, 2009).

The Table 7 reveals that among present studied population 123 individuals were died due to specific morbid causes. It is evident that 82.1% males and 26.2% female were died due to natural causes. Similarly 19.75% male and 21.5% female were died due to communicable disease such as typhoid, dysentery/diarrhoea, tuberculosis etc. Further 20.4% of populations were died due to non-communicable disease like diabetes, anaemia, heart disease and hypertension; out of which 20.99% male and 19% were female. It should be noticed that out of 20.4% death due non-communicable diseases 3.3% death were caused by diabetes mellitus. Remaining 30.1% death were occurred due to multiple cause and disease. The cause specific death rate was elucidated by bar diagramme (Figure 3).

Table 7: Distribution of population according to cause

| Causes of death	Male		Female		Total	
	N	**Death rate**	**N**	**Death Rate**	**N**	**Death Rate**
Natural Death	**26**	**32.1**	**11**	**26.2**	**37**	**30.1**
Typhoid	2	2.47		0	2	1.6
Dysentery/ Diarrhoea	1	1.23	2	4.8	3	2.4
Tuberculosis	8	9.88	5	11.9	13	10.6
Streptococcal sore		0	1	2.4	1	0.8
Small Pox		0	1	2.4	1	0.8
Measles	3	3.7		0	3	2.4
Asthma	2	2.47		0	2	1.6
Communicable	**16**	**19.75**	**9**	**21.5**	**25**	**20.2**
Diabetes mellitus	4	4.94		0	4	3.3
Anaemia	2	2.47	3	7.1	5	4.1
Meningitis	4	4.94	1	2.4	5	4.1
Heart Disease	2	2.47		0	2	1.6
Hypertensive		0	1	2.4	1	0.8
Pneumonia	5	6.17	3	7.1	8	6.5
Non communicable	**17**	**20.99**	**8**	**19**	**25**	**20.4**
Abortion		0	1	2.4	1	0.8
Any Other Disease	24	29.63	13	31	37	30.1
Total	81	100	42	100	123	100

specific death rate.
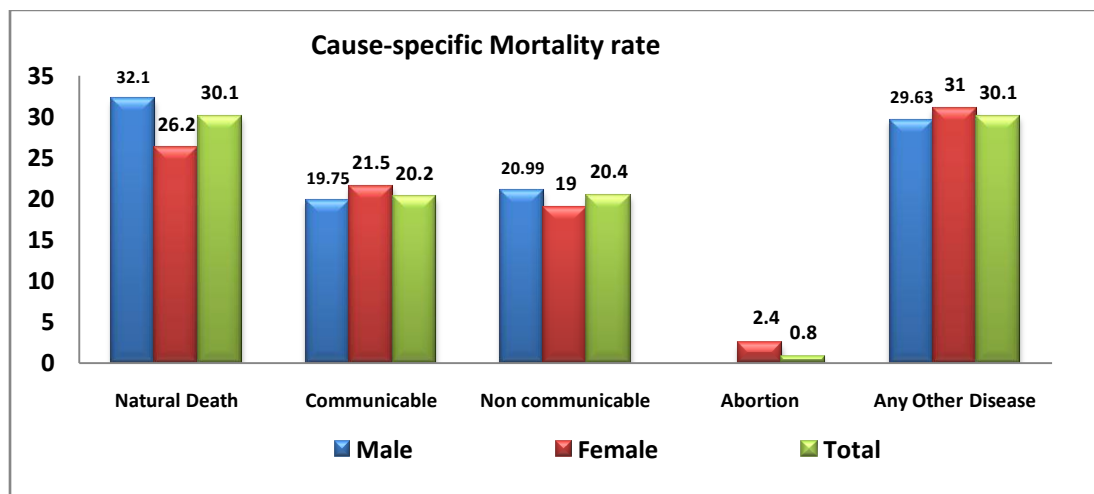
Figure 3: The Cause-specific Mortality rate.

Conclusion:-

On the basis of present findings, it can be concluded that Schedule caste populations are socio-politically backward and deprived group of society. The present findings clearly indicate that mortality rates are very high among them. The embryonic mortality was estimated by foetal loss. A total of 998 mothers have experienced 896 miscarriages from 5027 pregnancies experienced by them. The mortality measure like CDR, IMR and CMR were higher among Chamar (respectively CDR=25.1, IMR= 186.4 and CMR= 57.81) than Kori , Dhobi and Domar. The Mortality measurements like CDR and IMR of present study is higher than district, state and national level estimation and other population such Sharia, Gond, Bhil, Jaunsari Kinnaura etc. whereas, the Child mortality rate is lower than district and state level but higher than national level estimations, it is due to better attainment of ICDS, Aganwadi, mid day meal programme etc. It was found that the ASMR among children is usually high i.e., (54.1) following people of 60 onwards years of age. ASMR was also higher in old aged people. In the present studied population maximum death occurred due to natural causes, following by communicable and non communicable disease. The child mortality was found to have statistically significant correlation with demographic, socioeconomic, and health & nutritional determinants except BMI.

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