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Socio-demographic factors affecting child mortality in slums of Amritsar city (Punjab), India

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Abstract
Introduction: Health of the urban poor is considerably worse off than the urban middle and high income groups. There are thousands of easily preventable child deaths each year. Hence, the current study was conducted to assess the socio-demographic factors associated with child mortality.
Materials and Method: The study was conducted in slums of Amritsar city. 50 pockets were randomly selected. Married women in the reproductive age were taken as study subjects. By adopting cluster sampling, 50 clusters of 7 units each were taken from each pocket making a total sample of 350. Multivariate logistic regression was applied to assess the significant factors associated with child death. Confidence limits were set at 95%. The data was collected, compiled and analyzed with the help of SPSS Evaluation Version 19.0.
Results: Univariate analysis proved nativity, socio-economic status, Education of mother, type of family and size of family as highly significant factors affecting the survival of a child. But, during multivariate regression analysis, education of the mother emerged as the single factor determining the child survival.
Conclusion: As education of the mother is the single significant factor affecting the child survival, efforts should be focused to raise the education standard of women.

Keywords: Child, mortality, socio-demographic, slums

Introduction
Health of the urban poor is considerably worse off than the urban middle and high income groups. There are thousands of easily preventable child deaths each year. Poverty drives a large number of women to work outside resulting in poor nutritional status of children. Slum dwellers inhabit the land belonging to other agencies and are therefore illegal and vulnerable to eviction, rapid migration and mobility which further affect the health delivery in slums. Various studies have shown that malnutrition and mortality rates of children living in urban or slums are higher than those of rural children or the overall population [1-2]. Though slums vary from one another, overcrowding and extremely poor sanitation, lack of civic amenities and deviant behaviour are their common features. Poor housing, choked drains, high density of insects and rodents, poor personal hygienic conditions are the hall marks of urban slums in India [3]. Apart from poverty that hinders the urban poor's capacity to fulfill basic survival needs, slum dwellers live in congested conditions which promote the spread of infectious diseases. Moreover, they are frequently excluded from basic government nutritional and health services as they often live in unauthorized settlements [4]. Use of solid fuel is the proxy indicator of indoor air pollution. It is associated with increased mortality from pneumonia and other lower respiratory diseases among children [5]. But the question remains unanswered whether these deaths are due to poor environment or there are some other socio-demographic factors associated with it. Hence, the current study was conducted to assess the socio-demographic factors associated with child mortality.

Materials and Method
The present study was a cross- sectional community based study conducted in slums of Amritsar city. According to records of Civil Surgeon Office Amritsar, there are 108 clusters of slums in the city, scattered over the urban and peri-urban areas. Out of these, 50 clusters were selected at random for the study. Married women in the reproductive age were taken as study subjects.

By adopting convenience sampling, a cluster of 7 study subjects from each pocket was taken making a total sample size of 350. The information was collected on predesigned and pretested proforma through personal interviews by house to house visits. Each individual was told about the purpose of the study and confidentiality of the information was assured. Written consent was taken. Socio-demographic characteristics were studied as per the proforma. Modified Udai Pareek Scale [6] was used to assess the socioeconomic status and groups were clubbed for the purpose of analysis. History of child death was asked from the mother. Multivariate logistic regression was applied to assess the significant factors associated with child death. Confidence limits were set at 95%. Pilot testing was done before conducting the study and required changes were made. The data was collected, compiled and analyzed with the help of SPSS Evaluation Version 19.0.

Results and Discussion

Socio-demographic characteristics of the study subjects were assessed (Table 1) and it was observed that in the slums of Amritsar, 42.8% of women were native while 57.2% were migrant. Socioeconomic status of women as expected was very poor. Only 22.3% of them belonged to upper socioeconomic status. Nearly two third (63%) of them were illiterate.

Table 1: Socio-demographic characteristics of study subjects

Parameter		No.	Percentage
Nativity	Native	150	42.8
	Migrant	200	57.2
*SES	Upper	78	22.3
	Lower	272	77.7
Education	Illiterate	221	63.1
	Literate	129	36.9
Type of family	Joint	173	49.4
	Nuclear	177	50.6
Size of family	≤2	261	74.6
	>2	89	25.4

As the modern urban population is marked by a trend towards nuclear families, this inclination has crept into slums also. In the present study, the nuclear families (50.6%) had a little edge over the joint families (49.4%). Family size was observed by asking number of children they have and it was revealed that three quarter of them (74.6%) had a family size of two or less than two whereas 25.4% of them had more than two children.

Table 2: Logistic regression analysis of child deaths as a function of various risk factors.

Parameter		H/o child death		Crude OR (CI)*	p value	Adj. OR (CI)	p value
		Yes n=38 No. (%)	No n=312 No. (%)				
Nativity	Native (150)	7 (4.7)	143 (95.3)	0.27 (0.12 -0.64)	<0.01	0.43 (0.18– 1.05)	0.06
	Migrant (200)	31(15.5)	169 (84.5)				
**SES	Upper (78)	03 (3.9)	75 (96.1)	0.26 (0.12 – 0.64)	<0.01	0.92 (0.24 -3.62)	0.91
	Lower (272)	35 (12.8)	237 (87.2)				
Education of mother	Illiterate (221)	35 (15.8)	186 (84.2)	7.90 (2.38 – 6.25)	<0.01	4.0 (1.03– 5.58)	0.04
	Literate (129)	03(1.3)	126 (98.7)				
Type of family	Joint (173)	10(5.8)	163 (94.2)	0.33 (0.15 – 0.70)	<0.01	0.53 (0.24– 1.19)	0.13
	Nuclear (177)	28(15.8)	149 (84.2)				
Size of family	≤2 (261)	21(8.0)	240 (92.0)	0.37 (0.18 – 0.74)	<0.01	0.58 (0.27-1.23)	0.16
	>2 (89)	17(19.1)	72 (80.9)				

* OR (CI) = Odds Ratio (Confidence Interval)
** Socioeconomic status

Table – 2 illustrates the logistic regression analysis of child deaths. Univariate analysis proved nativity, socio-economic status, education of mother, type of family and size of family as highly significant factors affecting the survival of a child. Migrant women were 73% more likely to lose the child in comparison to native women. Reason might be the lack of awareness about the health facilities and other services in the city among migrant women. Odds of losing the child were less among women belonging to upper socioeconomic status in comparison to those belonging to lower socioeconomic status and the difference was statistically significant. Studies have proved that higher socioeconomic status improves child health by improving affordability of the family for goods which are beneficial [7]. It might be true in the slums of Amritsar also. Literacy status of mother also has direct effect on the mortality of the child. Illiterate mother is found to be 8 times more likely to lose the child. Similar findings were observed in another study of socio-demographic factors in relation to infant mortality [8]. It might be because of the fact that higher level of education of mother can influence child survival through better health care practices [9]. Nuclear families were found to be negatively associated with child mortality in the current study. It might have happened because of social support in the joint families which provides better care for the child. Odds of losing the child were found to be higher among women who have family size of two or more than two. These findings are in consistent with other studies [10-11]. It has been proved that children from larger families are less likely to get treatment for their illness, they have poor vaccination status, hence contributing to morbidity and mortality. Better family planning services can play an important role in the survival of the child. Multivariate logistic regression analysis was done after adjusting other variables. During this analysis, education of the mother emerged as an only important factor to effect the child survival. It was observed that illiteracy had a negative effect on the survival of the child (OR= 4.0, CI= 1.03- 5.58, p= 0.04). An illiterate mother was found to be four times more likely to lose the child. This difference was found to be statistically significant. Similar findings were observed in a study of socio-demograohic factors affecting child outcome in Russia [12]. It has been rightly said that the sum of direct mortality effect of doubling the income, providing flush lavatory and piped water, turning every agricultural labourer into a professional would be less than the direct effect of

providing ten years of schooling for each women.[13] It has also been argued that education has contributed more to mortality decline than the provision of health services.[14] States with better literacy status of women have reduced infant mortality at fast pace [15]. These findings should encourage and motivate states with poor literacy status of women to reinforce their efforts.

Conclusion

Literacy status of the mother has been found to be the single factor affecting the survival of a child. Though there has been great increase in literacy status of women in India, more aggressive approach needs to be adopted by states to boost literacy among women which can help us to decrease the infant and child mortality.

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