Research Article

Sociodemographic determinants of pregnancy outcome: a hospital based study

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Abstract

Background: Though pregnancy and child birth are natural processes, they are not by any means risk free. In spite of various efforts made to improve the maternal child health (MCH) services, the poor outcome of pregnancy continues to remain high because of complex web of causal factors that includes medical, obstetrics and socioeconomic factors.

Objective: To study the association between the sociodemographic factors in pregnant women and adverse pregnancy outcomes and to study certain socioeconomic profile of study group and their association with pregnancy outcome.

Materials and Methods: A cross-sectional study was conducted among the all pregnant women reporting in tertiary care hospital for delivery over a period of one calendar year and relevant data were recorded.

Result: Of the total 629 women, 288(38.32%) had experienced poor pregnancy outcome. After univariate analysis highly significant association of pregnancy outcome was observed within education, nature of work, socio-economic status, age at marriage, consanguineous marriage, significant association was observed with maternal age, residence and no significant association was observed with type of family, transport facilities.

Conclusion: Poor outcome of pregnancy was maximum in illiterate women, women who were doing moderate-to-heavy work during pregnancy, lower socioeconomic class, women who were married before the age of 18 years and women who gave history of consanguineous marriage.

KEY WORDS: Sociodemographic, consanguineous marriage, pregnancy outcome, teenage pregnancy, antenatal care

Introduction

There has been a significant decrease in the maternal mortality ratios (MMR) in developed countries during the twentieth century. However, developing countries still suffer from a large number of maternal deaths, and very often, pregnancy could be a risky event in a woman's life in these countries.[1]

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Pregnancy outcome is influenced by hereditary and environmental factors including those which affect stature in early life, current health and nutritional status, inter-pregnancy interval, maternal age, genitourinary or general diseases in women and socioeconomic and educational status.[2]

The burden of adverse pregnancy outcomes (APOs), which includes both preterm births, abortions and low birth weights is substantial in both developed and developing countries. More than 60% of preterm births take place in south Asia and sub-Saharan Africa. A recent study estimated that 12.8 million babies were born small for gestational age in India alone in the year 2010, a prevalence of 47% of all births.[3] Actual incidence of abortions is not known. It is estimated that 30–55 million abortions take place worldwide annually which translates into an abortion ratio of 260–450 per 1000 live births. In India, it has been computed that about 6 million abortions

take place every year, out of which 4 million are induced and 2 million are spontaneous. Still birth rate for developed countries is estimated to be much less, that is, 4.2–6.8 per 1000 births whereas for developing world, the estimate ranges from 20 to 32 per 1000 live births.[4]

Maternal child health (MCH) services have been recognized as important thrust area not only to rural population but also to urban slum dwellers by the Government under National Population Policy 2000, National Health Policy 2002 and the Five Year Plans. Many complications occur during the delivery of a child, which may relate to the place of delivery or person conducting the delivery. The decision about place of delivery is also mainly influenced by social and economic factors.[5] This study was, therefore, conducted to determine the impact of maternal sociodemographic parameters on pregnancy outcome in Indian pregnant women.

Materials and Methods

This study was part of project under department of community medicine G.M.C. Miraj Maharashtra. It was a descriptive cross-sectional, hospital-based study conducted in Government Medical College and Hospital in Western Maharashtra over period of one calendar year from January 2010 to December 2010. Pilot study was done for 1 month after analysis proforma was redesigned. All the pregnant women admitted in the hospital for delivery of product of conception (spontaneous abortion, missed abortion, preterm delivery, still birth, full term delivery, etc.) were interviewed and examined on the same or very next day. Simultaneous examination of neonate was also carried out. The available health records from hospital and antenatal records from women were also reviewed. Of the total 649 deliveries, only 629 (96.91%) could be covered, interviewed, and examined. The remaining 20(3.09%) could not be included in the study, due to immediate transfer of patients, non-response of the patients for examination and incomplete information. Scoring system was used, factors associated with good outcome were given score 1 and factors with poor were given score-0, respectively. Permission was obtained from the institutional ethical committee. The information regarding the study variables was recorded on predesigned, pretested, questionnaire. The collected data were entered in Microsoft excel sheet, numerically coded, and then transferred to the SPSS (version 21). All the qualitative data were analyzed using frequency, percentage, χ^2 test, univariate analysis, odds ratio.

Case Definitions

Pregnancy outcome: Results of conception and pregnancy includes live births, stillbirths, spontaneous abortion, and induced abortion.[6]

1. Normal pregnancy outcome: Normal period of gestation, that is, 259–280, delivered a live baby without any assistance, baby is weighting 2.5 kg or more and the born baby is without any congenital anomalies.
2. Poor pregnancy outcome: Low birth weight baby, preterm delivery, abortion, still birth, congenital malformation, assisted delivery, fetal asphyxia, infection, etc.

Result

Of the 649 deliveries only 629 (96.91%) could be covered, interviewed, and examined. The remaining 20(3.09%) could not be included in the study, due to immediate transfer of patients, non-response of the patients for examination and incomplete information. Of the total 629 women, 288(38.32%) had experienced poor pregnancy outcome. Sociodemograph of study subjects is reflected in Table 1. It also shows that there was statistically significant association observed between the maternal age, residence, literacy level, socioeconomic status, age at marriage, type of work, consanguineous marriage, and no significant association was observed with type of family, transport facilities, and pregnancy outcome. Of the 629 cases studied, 474(75.5%) women were within >19–35 years of age. Majority of subjects (57.71%) were coming from urban area and majority of women, 419 (66.66%), were Hindu. Poor outcome of pregnancy was more than 50% in <19 years age group, maximum (54%) in illiterate women, mostly engaged in doing heavy and moderate work during pregnancy. Low socioeconomic class, rural women, women married before 18 years, H/o consanguineous marriage were experiencing poor pregnancy outcome mostly.

After univariate analysis, highly significant association of pregnancy outcome was observed within education, nature of work, socioeconomic status, age at marriage, consanguineous marriage; significant association was observed with maternal age, residence; and no significant association was observed with type of family and transport facilities. Since the pregnancy outcome was adversely affected by multiple factors affecting pregnancy and many of these factors are interrelated, so multiple logistic regression analysis was used to assess their independent effect [Table 2].

Discussion

In this prospective study, we examined the relationship between sociodemographic factors and APOs. Of the total 629 women, 288(38.32%) had experienced poor pregnancy outcome. Study shows that there was statistically significant association observed between the maternal age, residence, literacy level, socioeconomic status, age at marriage, type of work, consanguineous marriage; and no significant association was observed with type of family, transport facilities, and pregnancy outcome.

The age of mother was statistically significant. Similar findings seen by Chahande et al.,[7] Pasquale et al.,[8] and Stephanson et al.[9] in their studies. Advance maternal age is associated with increased risk of miscarriage, which is a function of age-related risk of chromosomal abnormalities.

Table 1: Association of sociodemographic factors with pregnancy outcome

Sociodemographic factors		Normal outcome		Poor outcome		Total		*P*-value
		No	%	*No*	%	*No*	%	
Maternal age (in years)	<19	35	47.25	39	52.75	74	100	<0.01
	>19–35	309	65.20	165	34.80	474	100	
	>35	44	54.35	37	45.65	81	100	
Residence	Urban	238	65.56	125	34.44	363	100	<0.02
	Rural	150	56.40	116	43.60	266	100	
Education	Illiterate	58	46	67	54	125	100	<0.001
	Primary school	44	54.32	37	45.68	81	100	
	Middle school	91	68.40	42	31.60	133	100	
	Secondary	124	63.27	72	36.73	196	100	
	Higher secondary	52	73.20	19	26.80	71	100	
	Graduate	19	82.60	4	17.40	23	100	
	Post graduate	00	00	00	00	00	00	
Socioeconomic class	I-U	0	00	0	00	0	00	<0.001
	II-UM	10	66.66	5	33.34	15	100	
	III-LM	150	77	45	23	195	100	
	IV-UL	156	55	127	45	283	100	
	V-L	72	52	64	48	136	100	
Type of family	Nuclear	139	59.40	95	41.60	234	100	>0.50
	Joint	192	63.40	111	36.64	303	100	
	Three generation	57	62.0	35	38.0	92	100	
Age at marriage (years)	<18	115	49	120	51	235	37.35	<0.001
	>18	273	69.20	121	30.8	394	62.65	
	Total	388	61.68	241	38.32	629	100	
Nature of work	Light	315	70	135	30	450	100	0.001
	Moderate	50	40	75	60	125	100	
	Heavy	23	42.50	31	57.50	54	100	
Consanguineous marriage	Yes	16	47	18	53	34	37.35	<0.001
	No	372	62.50	223	37.50	595	62.65	
Transport facilities	Hospital reached < 1 h	264	62	161	38	425	67.5	>0.05
	Hospital reached < 1 h	124	60	80	40	204	32.5	
Diet	Regular	12	41.30	17	58.70	29	4.70	<0.05
	Modified	376	62.60	224	37.40	600	95.30	
	Total	**388**	**61.68**	**241**	**38.32**	**629**	**100**	

Education was significantly associated with pregnancy outcome which corroborates with finding of previous studies by Joshi et al.[10] and Kiran et al.[11] This is quite understandable as educational attainment has been established as a social variable that often displays the largest socioeconomic influence because it affects both income and occupation. Educated women are also more likely to understand public-health message. Physical exertion has been suggested as a risk factor for adverse pregnancy outcome in this study similar to previous one by Kiran et al.[11] and Mohammad et al.[12] Nair et al.[13] and Kiran et al.[11] found that low socioeconomic status had significant association with adverse pregnancy outcome supporting the findings of this study.

Due to the fact that low socioeconomic classes are overburdened with work and concombinant malnutrition, contributes to poor pregnancy outcome. As opposed to this study, Balderrama et al.[14] reported that pregnancy wastage was more in urban area. In rural areas early marriage, illiteracy, lack of family planning, all these factors contribute for high incidence of poor pregnancy outcome among women coming from rural area. Early marriage (<18 years) leading to teenage pregnancy, and large no of pregnancies with inadequate

Table 2: Evaluation of degree of association of sociodemographic factors with pregnancy outcome (multivariate analysis)

Factors		Normal	Poor	OR	95% CI
Nature of work	Light	315	135	1	–
	Moderate	50	75	3.5	2.32–5.28
	Heavy	23	31	3.14	1.77–5.59
Education	Illiterate	58	67	5.48	0.98–2.53
	Primary school	44	37	3.99	1.76–17.06
	Middle school	91	42	2.9	1.25–1.78
	Secondary	124	72	2.75	0.9–8.42
	Higher secondary	52	19	2.82	2.65–25.47
	Graduate	19	4	1	–
	Post graduate	0	0	0	0
Diet	Regular	12	17	2.38	1.12–5.07
	Modified	376	214	1	–
Age at marriage (years)	<18	115	120	2.35	1.68–3.29
	>18	273	121	1	–
Age of mother (years)	<19	35	39	2.09	1.27–3.42
	>19–35	309	165	1	–
	>35	44	37	1.57	0.98–2.53
Consanguineous marriage	No	372	223	1	–
	Yes	16	18	1.87	.924–3.75
Socioeconomic class	IU	0	0	0	0
	II-UM	10	5	1	–
	III-LM	150	45	0.6	0.19–1.85
	IV-UL	156	127	1.63	0.54–4.88
	V-L	72	64	1.78	0.58–5.47
Residence	Urban	238	125	1	–
	Rural	150	116	1.47	1.06–2.04
Type of family	Nuclear	139	95	1.18	0.83–1.68
	Joint	192	111	1	–
	3 generations	57	35	1.06	0.66–1.72
Transport facilities	<1 h	264	161	1	–
	>1 h	124	80	1.03	0.75–1.49

spacing had adverse outcome on pregnancy with significant association between them similar to previous study by Chahande[7] and Joshi et al.[10] Poor outcome like congenital malformation in newborns leading to fetal loss had significant association with consanguineous marriage in this study and well documented in previous study by Khan et al.[15] and Mosayebi et al.[16] This study reveals that poor pregnancy outcome was little more in those who reached hospital after an hour but difference was not statistically significant also. Pokharel et al.[17] observed that the utilization of antenatal services associated with distance from hospital had effect on pregnancy outcome as women living distantly do not routinely come for regular antenatal care.

Strength and Limitation

The study highlighted the above mentioned risk factors are important determinants of pregnancy wastage either alone or in combination with each other. This study was a hospital based study. All pregnant women, who were admitted to the hospital could not be covered as few of them were transferred to other hospitals and later on they could not be followed up also. Again all sections of the community could not be covered as all of them do not avail government facilities. The term “pregnancy outcome” included only outcome of fetus immediately after termination of pregnancy. Outcome of pregnancy in terms of health status of mothers after termination of pregnancy was not considered.

Conclusion

The purpose of this study was to establish the nexus of interaction between the various sociodemographic factors and pregnancy outcomes in the study area. Based on the interpretation of our findings, it has been discovered that, there is significant relationship between pregnancy outcomes and sociodemographic factors ranging from economic status of pregnant women and their spouses, the year at marriage, level of education, place of residence, etc. Sociodemographic factors, most of which are preventable, seem to play role in pregnancy wastage. Improvement in socioeconomic condition will ensure healthy mother and healthy baby at the end of each pregnancy.

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