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Estimating and comparing the trends of fertility pattern from various birth cohorts in rural hilly population of Uttarakhand

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ABSTRACT

Background: Nuptiality and fertility are often studied together because nuptiality affects fertility. If childbearing tends to be confined to married couples, as it is in many societies, higher proportion of women marrying will tend to higher fertility and vice versa. Population change may, therefore, be indirectly influenced by nuptiality.

Objective: The objective of this study was to estimate and compare the fertility status of women with age group of 17–86 years among seven different cohorts.

Materials and Methods: A community-based cross-sectional study conducted through predesigned questionnaire in the Dehradun district of Uttarakhand. The subjects of the study were the local residents of selected hilly rural areas of Dehradun. Women, who were ever married and unmarried, born in between 1931 and 2000. The study has been approved by the ethics committee of the university. Informed consent in the local language has been taken from subjects during filling predesigned questionnaire.

Results: The results of the study show trend in the home delivery have been observed to be declining with the respective birth cohorts. The trend in the data for the respective factors gravida and parity is observed to be decreasing at consecutive cohorts. The results also show differentials between gravida and parity according to religion. It shows that religion shows statistically significant between gravida and parity. The cohort 1931-1940 and 1971-1980 shows highly significant according to religion in gravida. In parity, cohort 1961-1970 and 1981-1990 also shows highly significant value according to religion.

Conclusion: The maternal health policies in developing countries such as India should be viewed as central goals together with achievement of MDG-5 targets. The enormous imbalances in maternity care underline the requirement for successful arrangement of administrations.

Key words: Fertility, gravidity, parity, rural population

INTRODUCTION

The decrease of fertility in the demographic progress has been a major theme in authentic demography for quite a while. A great part of the literature concentrating on the demographic aspects of the decline has looked to chart the procedure without really clarifying it.[1]

Although the decline was in accordance with a global decline in fertility in many developing countries, its higher speed should have been due to tremendous socioeconomic changes and would have important consequences in terms of socio, economic, and cultural factors. In this study, we assess the social, economic and cultural factors that decline fertility and also change the women'sposition in family as well as society.[2]

The dramatic fertility declines that accompany transitions from subsistence farming to a market economy are typified by two important large-scale patterns: (i) An apparent reversal or dampening of the broadly positive association between wealth, status, and fertility.[3-5] It is often reported that at least in developing countries "fertility strongly associated with sociodemographic and socioeconomic change." Recently, macroeconomists, in particular, have taken note of this stylized fact and positioned a relationship between this fertility gap and inequality.[6]

This presents the data for estimates of fertility, collected by the primary collection method based on the seven birth cohorts from 1931-40, 1941-50, 1951-60, 1961-70, 1971-80, 1981-90, and 1991-2000 in the age group of 17–86 years. The estimation included the variables of age of first pregnancy, place of delivery, gravidity, parity, living child, and the abortion under study.

The objectives of this paper focus on the estimation and comparison of fertility status of women from the birth cohorts

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within the age group of 17–86 years from the seven birth cohort systems. This study aims to review the fertility status and situations of female over the period 1931–2000. It has been performed on married females. This work attempts to examine the scenario of situations of fertility status in Uttarakhand state of India. The aim of the current work is to estimate the trend occurring maternal policy on the hospitals and home delivery as well as the stillbirth of women and also focuses on the situational analysis on the context of all the seven birth cohorts along with the context of religion and on the impact of government policies on the fertility situations of women in rural hilly population of Uttarakhand.

MATERIALS AND METHODS

Study Area

The study was conducted in the Dehradun district of Uttarakhand.

Study Participants

The subjects of the study were the local residents of selected hilly rural areas of Dehradun.

Inclusion Criteria for Subjects

Women, who were ever married and unmarried, born in between 1931 and 2000.

Exclusion Criteria for Subjects

The following category of women has been excluded from the study:

- Those who were born before 1931 and after 2000.
- Who were unable to give their history because of mental illness, physical disability?
- Who were not signing the informed consent?

Ethical Approval

The study has been approved by the Ethics Committee of Swami Rama Himalayan University, Jolly Grant, Dehradun. Informed consent in the local language has been taken from subjects during filling predesigned questionnaire.

Data and Methodology

The data for the study were collected by conducting field survey in the hilly rural areas of Uttarakhand on key demographic characteristics of women and their households and detailed information on fertility and maternity situation. In this paper, we use the data for studying the variation in the situation of fertility status. The data have been analyzed through the proportion technique by simply applying descriptive statistics to all the factors related to the study. The factors analyzed under study are the place of delivery, gravida, and parity on the basis of religion.

RESULTS

Table 1 summarizes the fertility status of women in different birth cohorts indicating the decline in the trend in the fertility situations at home instead of hospital. The data have been observed under per 1000 population for all the seven birth cohorts, and the trend in the home delivery has been observed to be declining with the respective birth cohorts.

Table 2 summarizes the average of gravida and parity of seven birth cohorts. The trend in the data for the respective factors gravida and parity is observed to be decreasing at consecutive cohorts. Table 2 also represents the trend in the gravida and parity changes as per the religion of hilly rural population of Uttarakhand. The trend in the changes in the fertility status due to gravida and parity is found to be decreasing for all the even birth cohorts under study.

Table 3 summarizes that differential between gravida and parity according to religion. It shows that religion shows statistically significant between gravida and parity. The cohort 1931–1940 and 1971–1980 shows highly significant according to religion in gravida. In parity, cohort 1961–1970 and 1981–1990 also shows highly significant value according to religion.

DISCUSSION

According to Montagu *et al*., in developing countries, most poor women deliver at home. Thus, it was observed that at least in the near term, efforts to reduce maternal deaths should prioritize community-based interventions aimed at making home births safer.[7] The study by Ronsmans C showed that the women who were unattended by a formally trained professional are near about 80%. The important barrier to the large number of unattended home births was reducing maternal mortality worldwide, particularly for the poor.[8]

Garg *et al*. suggested that the major reasons for giving birth at home are the traditional views. In a study conducted in rural Punjab showed that the most common reasons for home delivery are traditional attitude.[9] According to the Shah *et al*., in Pakistan, the most frequent reason for preferring home delivery is family tradition.[10] The study by Sychareun *et al*. showed that the widely held religious view that if pregnant women physically reveal themselves to male doctors, it is considered a religious Sin as it is a gross violation of veil.[11]

The study by Singh focused on past, present, and future maternal and child health-care services in India and is stated that Madras was the first state who established a separate maternal welfare section in the Office of Director of Health Services in 1931.[12] The policy named ICDS (Integrated Child Development Services) implemented by Ministry of Women and Child Development, world's largest program aimed at enhancing the health, nutrition, and learning opportunities of infants and their mothers.[13]

The National Maternity Benefit Scheme (NMBS). The NMBS came into effect in August 1995 as one of the components of the National

Table 1: Average place of delivery in different birth cohorts

Birth cohort	Place of delivery	
	Home	Hospital
1931–1940	87.2	12.8
1941–1950	77.4	22.6
1951–1960	74.2	25.8
1961–1970	79.5	40.5
1971–1980	57.6	42.4
1981–1990	34.0	66.0
1991–2000	31.8	68.2

Table 2: Average gravida and parity on the context of religion in different birth cohorts

Birth cohort	Gravida				Parity			
	Hindu	Muslim	Other	Total	Hindu	Muslim	Other	Total
1931–1940	4.83	5.5	6	4.76	4.31	4.95	5	4.3
1941–1950	4.64	4.96	5.6	4.83	4.19	4.45	4.8	4.34
1951–1960	3.95	4.81	4.5	4.09	3.64	4.42	3.74	3.71
1961–1970	3.59	4.73	3.57	3.68	3.32	4.39	3.25	3.42
1971–1980	3.37	4.59	2.5	3.57	3.17	4.24	2.25	3.34
1981–1990	2.94	3.34	1.8	2.96	2.78	3.03	1.56	2.71
1991–2000	1.64	2.88	1.5	1.73	1.48	2.64	1.31	1.51
P	0	0	0.052	0	0	0	0.01	0

Table 3: Distribution of average gravida and parity on the context of religion in different birth cohorts

Birth cohort	Gravida-parity				*P*-value
	Hindu	Muslim	Other	Total	
1931–1940	0.52	0.55	1	0.46	0.001
1941–1950	0.45	0.51	0.8	0.49	0.001
1951–1960	0.31	0.39	0.76	0.38	0.001
1961–1970	0.27	0.34	0.32	0.26	0.024
1971–1980	0.2	0.35	0.25	0.23	0.012
1981–1990	0.16	0.31	0.24	0.25	0.00
1991–2000	0.16	0.24	0.19	0.22	0.018
P	0.00	0.00	0.00	0.00	

Social Assistance Programme. The scheme was transferred from the Ministry of Rural Development to the Department of Health and Family Welfare during the year 2001-2002. The NMBS provides for financial assistance of Rs. 500/- per birth up to two live births to the pregnant women who have attained 19 years of age and belonged to the below poverty line households.[14]

The empirical results from this study indicates that tax policyincludes in the form of the personal exemption, has an impact on aggregate family birth decisions. The policy ramifications for this particular tax feature are potentially important.[15,17] The study by Dribe and Scalone has shown that social class clearly mattered for the course of the fertility transition and that it continued to matter in the post-transition period. These religion differences cannot fully be explained by differences in female fertility status.[16] The paper by Goni and Saito has attempted to show how NGO activities changed fertility and women's status. It is not unlikely that this was because NGOs helped women to raise their status in society.[17]

In a published article, the pattern of fertility differentials in periods of rising and falling fertility was contrasted. It seems to be entering a period of permanently low fertility (in many Western countries below replacement) with only minor waves of rising and falling fertility (though we cannot wholly discountthe possibility of a major rise in fertility for above replacement levelsin the future, as demographic forecasts are notoriously unreliable).[18]

In societies where women's status is low, child deliveries are often considered a woman's concern and neither transportation to a hospital or clinic nor the money to pay for such services is provided. In some countries, even if hospitals and clinics provide specialist care and emergency operative and blood transfusion facilities, they cannot ensure the delivery of such benefits to all women.[19] The length of the interval between marriage and first pregnancy plays a significant role in the process of demographic change. The relationship between the subsequent events is sharpest because the interval between the age at marriage and first pregnancy age is shortened over the time.[20] Policy and programs must also be responsive to the marked inequalities in reproductive health outcomes that are endemic in most of these countries. The demand for children is generally higher among the poor, as noted in the literature review above. Unmet need is a more complicated matter because it is a function of both the demand for children and contraceptive behavior. Hence, equity considerations become another important rationale for investment in such services.[4]

The need for accelerated action is emphasized in the United Nations Secretary - General's Global Strategy for Women's and Children's Health and by the Every Women Every Child initiative,6 which build on the Campaign on Accelerated Reduction of Maternal Mortality in Africa and other initiatives, and aim to mobilize resources and intensify global efforts for RMNCH. It is essential to strengthen RMNCH programmes to ensure that the most vulnerable women and children have improved access to high-quality services. Health-specific policies and multisectoral policies are central to this effort because they establish: An environment conducive to health promotion; the legal and technical basis for which RMNCH interventions are delivered; how they are delivered; and who is eligible to receive them.[21]

In our study, the changes in the trend are rapidly increasing the hospital system of delivery in Hindus as compared to Muslims in all seven distinct birth cohorts.

CONCLUSION

The maternal health policies in developing countries such as India should be viewed as central goals together with achievement of MDG-5 targets. The enormous imbalances in maternity care underline the requirement for successful arrangement of administrations. During the previous decades, the nations have acquainted different methodologies with increment the interest for and enhance the accessibility, affordability, and moderateness of professional delivery attendants. In this study, it has been concluded that there is a huge impact of government policies on Hindus and a gradual increasing impact in Muslims as well as other religions on the context of place of delivery of the women in different birth cohorts in the hilly rural population of Uttarakhand.

REFERENCES

1. Demographic Research: Volume 30, Article 15 Research Article. Social class and net fertility before, during, and after the demographic transition: A micro-level analysis of Sweden 1880–1970 Martin Dribe, Francesco Scalone. Available from: http://www.demographic-research.org429. [Last accessed on 2017 Dec 12].
2. Fertility Decline and Change in Women's Status in Iran Hossein Mahmoudian, International Population Conference, Tours, France; 2005. p. 18-23.
3. Perusse D. Cultural and reproductive success in industrial societies: Testing the relationship at the proximate and ultimate levels. Behav Brain Sci 1993;16:267-322.
4. Vining DR. Social versus reproductive success: The central theoretical problem of human sociobiology. Behav Brain Sci 1986;9:167-87.
5. Skirbekk V. Fertility trends by social status. Demogr Res 2008;18:145-80.
6. Pandey S, Singh A, Awasthi S, Kaur S. Construction of nuptiality tables for the hilly rural population of Uttarakhand: 1931-2000. Int J Community Med Public Health 2018;5:1054-9.
7. Montagu D, Yamey G, Visconti A, Harding A, Yoong J. Where Do Poor Women in Developing Countries Give Birth? A Multi-Country Analysis of Demographic and Health Survey Data; 2011.
8. Ronsmans C, Graham WJ. Maternal mortality: Who, when, where, and why. Lancet 2006;386:1189-200.
9. Garg R, Shyamsunder D, Singh T, Singh PA. Study on delivery practices among women in rural Punjab. Role Med Pers Promot Appropriate Infant Young Child Feed 2010;33:23-33.
10. Shah N, Rohra DK, Shams H, Khan NH. Home deliveries: Reasons and adverse outcomes in women presenting to a tertiary care hospital. J Pak Med Assoc 2010;60:555-8.
11. Sychareun V, Hansana V, Somphet V, Xayavong S, Phengsavanh A, Popenoe R, *et al.* Reasons rural laotians choose home deliveries over delivery at health facilities: A qualitative study. BMC Pregnancy Childbirth 2012;12:86.
12. Singh S. Maternal and child health services in India -- past, present and future. Indian J Matern Child Health 1997;8:1-4.
13. Available from: https://www.slideshare.net/geethareddyn/national-health-programmes-related-to-child-health-and-welfare. [Last accessed on 2017 Dec 12].
14. Available from: http://www.nhm.gov.in/nrhm-components/rmnch-a/maternal-health/janani-suraksha-yojana/background.html. [Last accessed on 2017 Dec 12].
15. Available from: http://www.vikaspedia.in/health/nrhm/national-health-programmes-1/janani-suraksha-yojana. [Last accessed on 2017 Dec 12].
16. Available from: http://www.vikaspedia.in/health/nrhm/national-health-programmes-1/janani-shishu-suraksha-karyakram. [Last accessed on 2017 Dec 12].
17. Whittington LA, Alm J, Peters HE. Fertility and the personal exemption: Implicit pronatalist policy in the United States. Am Econ Rev 1990;80:545-56.
18. Dribe M, Scalone F. Social class and net fertility net fertility before, during, and after the demographic transition: A micro-level analysis of Sweden 1880–1970. Demographic Res 2014;30:429-64.
19. Goni A, Saito O. Fertility decline and women's status-the role of nongovernment organizations (NGOs) in Bangladesh: A micro data analysis. Int NGO J 2009;5:88-101.
20. Pandey A, Singh A. A statistical study to evaluate the closed time interval between marriage and first pregnancy age in hilly rural population of Uttarakhand - A cohort based approach. Int J Recent Sci Res 2017;8:21969-72.
21. Available from: http://www.who.int/pmnch/knowledge/publications/policy_compendium.pdf. [Last accessed on 2017 Dec 12].

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