

## Effects of Utilization of Maternal Health Care Services on Child Spacing: A Study from Eastern Nepal

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### ABSTRACT

**Objective:** This study was conducted to explore the effect of utilization of Antenatal Care Service on subsequent birth interval. **Methods:** A cross-sectional study was conducted among 517 women giving birth during five years period preceding survey. The Cox proportional hazard model was used to analyze birth interval as a multivariate life table model. **Results:** ANC utilization was higher among mothers living in mountain, Indo-Aryan high caste and mothers having more than 10 years of schooling. Regression analysis showed that being Tibeto-Mongoloid caste, mothers with female index child and mother with dead index child had higher risk of having next birth. **Conclusion:** There is a strong positive relationship between the utilization of ANC service and less risk of child bearing. (RR=1.873,  $p = 0.008$ )

**Keywords:** ANC Services; Birth Interval; Proportional Hazard Model; Contraception; Health Institution; Nepal

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### INTRODUCTION

Family planning is regarded as an important component of the maternal and child health care. The provision of maternal and child health care services is said to be an important motivation force for couples to adopt family planning methods. Antenatal care services provide a bridge for the women to the health care delivery system.<sup>1</sup>

Despite the integration of the family planning in the ANC services, much is not known about ANC services playing role in the child spacing. Surprisingly, only limited research have been carried out to show the role of ANC services with family planning. The result seems mixed in various studies. And whether the ANC services will lead to family planning use or both of these are related to some other factors is not clear.

Kumar and Srinivasan<sup>2</sup> showed that the rate of

acceptance of permanent family planning method (sterilization) among those who received maternal and child health care remains high even among those couples who reside in a distant village from the health care centers.

The use of ANC services motivates pregnant women to have delivery in hospital or at home attended by health professionals. Utilization of ANC services helps in generating a salutary effect on the acceptance of the family planning methods<sup>3</sup>. Not only the contraceptive prevalence is found to be higher among the ANC users, but also they are more inclined towards using contraception in future and are more likely to adhere to small family norm. Promotion of spacing method among women who come for ANC at health facility is easier.

Similarly other studies<sup>4,5</sup> reported a strong usage of ANC use and subsequent family planning services.

Similarly in Morocco, Guatemala and Indonesia, use of MCH service provided the gateway to the family planning use.<sup>6</sup>

Nepal in the Eastern Development Region accommodates 23.1% of the total population of the country.<sup>7</sup> Total fertility rate (TFR) is 3.8 children per women which was slightly low as compared to country's TFR (4.1).<sup>8</sup>

The aim of this study is to explore the effect of the utilization of antenatal care services as an indicator of contraceptive use and fertility by taking the most recent birth interval as the outcome variable in Eastern Region of Nepal.

## MATERIALS AND METHODS

### Data

Topographically Nepal is divided into three different regions- Mountain, Hill and Terai. Data for the present study were taken from three Village Development Committees (VDCs), each of which were from three different regions namely Mountain, Hill and Terai. Information about the utilization of health care services was only taken to the last live born child (alive or dead at the time of survey) to minimize recall laps.

### Outcome

The main outcome study variable is the length of the most recent birth interval and the interval between last and next-to-last birth before the survey. Censored observations are taken as the interval between the date of birth of last child and the survey date for those women with one birth in the last five years prior to survey. Birth intervals more than 60 months are considered as 60 months and they are also kept in the category of censored observations.

### Independent

The main independent variable of interest is the use of ANC services relating to the last child birth within five years before the delivery. Socio-demographic variables taken for the study were age, sex of the index child, survival status of index child,

caste of the women, religion, gender and current age of the women. Variables related to the maternal health care services were ANC (for the index child), place of delivery and attendance of health workers during delivery.

### Statistical tool

The Cox proportional hazard model was used to analyze the birth interval as a multivariate life table model<sup>9</sup>.

## RESULTS

Table 1 shows the distribution of utilization of ANC service and use of family planning methods with background characteristics among mothers who had live births in the last five years preceding the survey. The utilization of ANC services was found to be higher in Mountain followed by Hills than in Terai, whereas use of family planning methods was almost same in Mountain and Terai.

**Table 1:** Table 1: Distribution of utilization of ANC and current use of family planning methods in mothers with live birth baby with various background variables

Characteristics		No. of Women	ANC Received (%)	Current use (%)
Residence	Terai	296	76.9	60.3
	Hill	161	82.6	37.3
	Mountain	60	91.7	62.0
Religion	Hindu	376	80.2	58.5
	Others	141	81.4	38.9
Caste	Indo-Aryan High	137	88.1	62.5
	Indo-Aryan Low	156	80.8	52.9
	Tibeto-Mongoloid	149	83.3	39.6
	Terai Indigenous	75	58.6	62.7
Education	No. of Schooling	349	75.8	54.9
	1-5 Years	58	89.8	38.1
	6-10 Years	51	81.3	47.5
	> 10 Years	59	95.0	58.4
Total		517	80.6	52.1

As shown in table 1, Hindus were more in the study sample, non-Hindu mothers appear to be utilizing ANC services slightly more. But the use of family planning methods was found to be low in non-Hindu group as compared to Hindu group. Utilization of ANC services was quite low in Terai

Indigenous caste group but the figure was almost same in other three caste group. Use of family planning method was very low in Tibeto-Mongoloid followed by Indo-Aryan-low and Indo-Aryan-high and Terai Indigenous caste group.

**Table 2:** Estimated regression coefficient from proportional hazard model based on last birth interval

Characteristics		Coefficient	Relative risk	Remark
Caste	Indo-Aryan High	0.053	1.055	NS
	Indo-Aryan Low	0.276	1.318	NS
	Tibeto-Mongoloid	-0.122	0.885	NS
	Terai Indigenous			
Current Age	Continuous Variable	-0.105	0.90	P=0.000
Gender of the Index Child	Female	0.597	1.818	0.005
	Male (RC0)			
Survival Status of the Index Child	Dead	1.363	3.906	0.000
	Alive (RC)			
ANC for the Index Child	No	0.627	1.873	0.008
	Yes (RC)			
Delivery Place of Index Child	Home	0.626	1.869	0.107
	Health Institution (RC)			
Delivery Attended by	Traditional	1.078	2.938	0.001
	Health Personnel (RC)			

The utilization of ANC service and the use of family planning methods were higher among literate especially with those who completed 10 years of schooling as compared to less educated women.

Table 2 represents estimated regression coefficient and relative risk to experience next birth by selected socio-demographic factors and health care service indicators. Only those variables significant at 0.20 levels were included in the final multivariate analysis. Tibeto-Mongoloid caste group have relatively lower risk of experiencing next birth and Indo-Aryan-High and Indian- Aryan –Low caste group have higher risk of experiencing next birth as compared to Terai – Indigenous caste group. Despite this, they were not found to be statistically significant.

Mothers with a female index child had more risk of giving birth than the mothers with male index child. Mothers whose index child was dead would almost invariably give birth to a child than those mothers whose index child was alive. Women who utilized ANC services had significantly less risk of childbearing as compared to those who did not utilize ANC services. The utilization of antenatal care service was found to be an important factor in determining the timing of next birth, which confirmed the interrelationship of the utilization of ANC service and the use of contraception.

## DISCUSSION

This study reveals that the effect of positive attitude and behavioral change in health care services to the length of birth interval. It showed that there is a strong positive relationship between the utilization of antenatal service and the length of the birth interval. The use of ANC service motivates pregnant women to have delivery in hospital/ health institution or at the home attended by health professionals.<sup>10</sup> Treating ANC utilization as a bridge for contraceptive environment, we found that the difference in the length of birth interval. It is possibly due to the confounding effect of the place of delivery and attendance by health professionals during the

delivery. It may be due to that majority of the users are using contraceptives for limiting births rather than for spacing especially in their open birth interval. Counseling and follow up activities should be undertaken to promote the use of spacing method in addition to the permanent method. ANC utilization provides an atmosphere and level of motivation to women toward meeting their health needs. This further reinforces to go for institution deliveries and antenatal care services, where they are motivated to use contraceptives for spacing at younger ages.<sup>11</sup> In Nepal, most of the contraceptive users have been found to be older in age (crossed 35 years) and higher parity having four/five children.<sup>8</sup> Hence, there is a need to motivate to utilize health facilities which helps to create favorable condition to space between births and limit the number of children. and the use of contraception.

## CONCLUSION

This study showed that there is a strong positive relationship between the utilization of antenatal service and the length of the birth interval. The use of ANC service motivates pregnant women to have delivery in hospital/ health institution or at the home attended by health professionals create contraceptive environment and increase the length of birth interval. ANC utilization provides an atmosphere and level of motivation which further reinforces to go for institution deliveries and antenatal care services, where they are motivated to use contraceptives for spacing at younger ages. Further, health care utilization should be emphasized in the educational program and enhance community involvement as well to persuade women to use health facilities which helps to create favorable contraceptive environment.

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