DIMENSIONS OF WOMEN'S AUTONOMY AND THE INFLUENCE ON MATERNAL HEALTH CARE UTILIZATION IN A NORTH INDIAN CITY*

SHELAH S. BLOOM, DAVID WYPIJ, AND MONICA DAS GUPTA

The dimensions of women's autonomy and their relationship to maternal health care utilization were investigated in a probability sample of 300 women in Varanasi, India. We examined the determinants of women's autonomy in three areas: control over finances, decision-making power, and freedom of movement. After we control for age, education, household structure, and other factors, women with closer ties to natal kin were more likely to have greater autonomy in each of these three areas. Further analyses demonstrated that women with greater freedom of movement obtained higher levels of antenatal care and were more likely to use safe delivery care. The influence of women's autonomy on the use of health care appears to be as important as other known determinants such as education.

The female disadvantage in less-developed countries with regard to health and well-being has been documented abundantly (Santow 1995). The health status of both women and children, particularly female children, suffers in relation to that of males in areas where patriarchal kinship and economic systems limit women's autonomy (Caldwell 1986). One of the first studies to document this pattern with empirical data compared demographic outcomes between north and south India, where the respective kinship structures affect women's position differently. In the north, where women's status is generally lower, higher rates of fertility, greater infant and child mortality, and higher ratios of female to male infant mortality were observed (Dyson and Moore 1983).

Since that time, research conducted in South Asia and elsewhere has provided further evidence that women's status is correlated positively with the health status of women and children (Murthi, Guio, and Drèze 1995). Most of these stud-

ies have focused on fertility: lower family size or desired fertility was observed among women with higher levels of autonomy in Bangladesh (Balk 1994) and in various regions of India (Jejeebhoy 1984, 1991; Visaria 1993). This finding is attributed largely to the patterns of family planning use. Higher rates of contraceptive prevalence were documented among women with greater interpersonal control in Bangladesh (Khan 1997; Schuler and Hashemi 1994), India (Dharmalingam and Morgan 1996), and Nepal (Morgan and Niraula 1995). Lower rates of child mortality were observed among women who lived in household structures according them more independence in Mali (Castle 1993) and Jordan (Miles-Doan and Bisharat 1990), and among those with more decision-making power in India (Das Gupta 1990).

Much less research has focused on the relationship between women's status and the use of health services, a proximate determinant of maternal and child mortality (McCarthy and Maine 1992; Mosley and Chen 1984). A descriptive study in New Delhi, conducted among two groups of recent immigrants from Uttar Pradesh and Tamil Nadu, found that Tamil women scored higher in all areas of autonomy. Tamil women also used antenatal and facility-based delivery care for their last birth to a greater extent than women from Uttar Pradesh (Basu 1992). In south India, women's reproductive health-seeking behavior was correlated positively with freedom of movement and decision-making power, but these effects were attenuated when the investigators controlled confounding factors such as age and education (Bhatia and Cleland 1995b).

Several issues have emerged in the quantitative research that explores the relationship between women's autonomy and health outcomes. First, women's status is a general term with many connotations; its definition necessarily changes from one setting to another. Second, some aspects of women's status are far more significant than others with regard to specific outcomes. Finally, related to the more general problem of definition is the difficulty of capturing the construct of women's status using either a single quantitative measure or a group of such measures. Studies typically have relied on proxy indicators such as the level of women's education, sex ratios, or the proportion of women who own land.

Yet the relationship of these broad sociodemographic characteristics to actual behavior patterns and resulting health outcomes is not consistent across or within cultures. For example, greater selective discrimination against girls of higher birth order was observed among younger, more highly educated women in Punjab, India (Das Gupta 1987). Several studies in South Asia have observed variation in the effects

of these factors on direct measures of women's behavior, and have concluded that sociodemographic variables are not reliable indicators of women's position. Rather, investigations of the impact of women's position on demographic and health outcomes should use direct measures reflecting women's degree of control in their lives (Balk 1994, 1997; Basu 1992; Das Gupta 1996; Dharmalingam and Morgan 1996; Jejeebhoy 1991, 1995, 1997; Khan 1997; Morgan and Niraula 1995; Schuler and Hashemi 1994; Visaria 1993; Vlassoff 1991).

In this paper we explore dimensions of women's autonomy and their relationship to utilization of maternal health care in a probability sample of poor to middle-income women in urban Varanasi, Uttar Pradesh (UP), India. Issues pertaining to the definition of women's status and its context in north India are addressed. The sociodemographic characteristics associated with the nature of women's relationships to affinal and natal kin are investigated, because these factors are known to influence women's position in that region. Composite measures based on how women described their behavior for three distinct areas of autonomy are created: control over financial resources, decision-making power, and the extent of freedom of movement. The patterns and determinants of each of these three areas are examined in relation to sociodemographic and kinship structure effects. The influence of women's autonomy on the use of care during pregnancy and childbirth is then investigated.

WOMEN'S STATUS AND AUTONOMY

Women's "status" refers to both the respect accorded to individuals and the personal power available to them (Mason 1993). While women value prestige, it is the level of personal autonomy that appears to influence demographic behavior and resulting outcomes (Basu 1992; Jejeebhoy 1991). Autonomy has been defined as the capacity to manipulate one's personal environment through control over resources and information in order to make decisions about one's own concerns or about close family members (Basu 1992; Dyson and Moore 1983; Miles-Done and Bisharat 1990). Women's autonomy thus can be conceptualized as their ability to determine events in their lives, even though men and other women may be opposed to their wishes (Mason 1984; Safilios-Rothschild 1982). In the present study we use the term autonomy—or interpersonal control—as defined by these authors.

The Meaning of Women's Autonomy in North India

Because women's lives in North India are rooted in the domestic sphere, family and kinship are the key factors defining the parameters of their autonomy (Das Gupta 1996; Dyson and Moore 1983; Jeffery and Jeffery 1993; Sharma 1980). In particular, individual women's roles, rights, and responsibilities are defined largely by household structure and by their relationships with affinal and natal kin. The kinship system in this part of India is patrilineal and, with very few exceptions, patrilocal: women are transferred between patrilines at the time of marriage and live with affinal kin. Daughters are not considered permanent members of their natal homes because they become part of their husband's family after marriage. Women's place in society pivots around their reproductive capabilities, especially their ability to produce male kin, because sons continue the patriline and provide old-age security. A woman's progeny belongs to the patriline into which she marries. In addition, any material good that is given to a daughter belongs, in effect, to her affinal kin after marriage. This organization of the kinship structure around property, ownership, and rights ultimately marginalizes daughters in north Indian society (Das Gupta 1987).

Marriage acts as a definitive demarcation in women's life cycle, when daughters leave their homes and become members of a different family. Among Hindus, the transition from daughter to bride is particularly intense because a woman arrives as a stranger to her groom's family. Marriage arrangements among Hindus are clan-exogamous and generally take place between families previously unknown to each other, who live at some distance apart. A Muslim daughter usually is married closer to home and to a family that has known her for years; consanguineous arrangements between maternal cousins are not uncommon.

These practices have several ramifications for married women. Muslim women tend to maintain closer ties to their natal kin. Because relations between affinal and natal kin had a basis before marriage, the hierarchy over the bride that exists in the groom's family is less pronounced. Also, the young woman's welfare is probably a higher priority to her in-laws than in situations where she arrives as a total stranger to the household. For both Muslim and Hindu women, however, the nature of the change in women's status upon marriage is the same: young married women gain social stature as they enter their major life role, but they lose the freedom they enjoyed as daughters. Their relationships with their natal kin—the people with whom they lived until that point—are now limited and mediated by their affines' decisions.

Overall the hierarchy of authority in the household is governed by age and sex, with the older over the younger, and men over women (Malhotra, Vanneman, and Kishor 1995; Sharma 1980). Both the overall household structure and a woman's particular place in it affect how much autonomy she enjoys; thus it is difficult to generalize about the power of a daughter-in-law or younger sister-in-law. The nature of women's relationships, both with each other and with men living in the household, is related directly to the husband's position in the family hierarchy. All married women are subject to the mother-in-law's authority, but the oldest daughter-in-law usually enjoys far greater autonomy than the youngest. Women living without older female affines, particularly the mother-in-law, have more interpersonal control simply because they are beholden to fewer individuals.

Anthropologists in this part of India have observed that the frequency of contact with natal kin after marriage is a powerful mediator of the extent of women's autonomy: women with close ties to their parents and brothers have greater ability to realize their needs and desires. After marriage, natal kin provide both material and emotional support

to their daughters. Women frequently receive gifts of money and other items from their families, which provide them with extra income. Also, if women are in close touch with their natal kin, they tend to be treated better by in-laws, whose behavior is being scrutinized by outsiders; families may intervene if they know the woman is being mistreated (Jeffery, Jeffery, and Lyon 1988, 1989; Vlassoff 1991). The relationship with natal kin also has direct consequences for women's health and that of their children: the concern that natal families extend to their daughters includes direct support such as accompaniment to visit a doctor (Das Gupta 1990; Goodburn, Gazi, and Chowdhury 1995).

The nature of women's relationships with both affinal and natal kin is an essential consideration in an investigation of women's autonomy in north India, as several studies have noted. Given the findings of the many studies in the region, we expect that closer ties to natal kin will enhance women's autonomy. On the other hand, living in the same household with mothers-in-law will diminish women's autonomy in two ways. First, because women are subject to the authority of mothers-in-law, their interpersonal control within the household will be limited directly. Second, because mothers-in-law mediate women's contact with natal kin, these women will have less opportunity to enjoy the support from parents and siblings.

Maternal and Child Health in Uttar Pradesh

Varanasi, with a population of 1.1 million, is the third largest city in UP, the most populous state in India (Government of India 1992). Along with the neighboring state of Bihar, this area of India accounts for the poorest demographic and health outcomes relative to the rest of the country. The total fertility rate in UP is 4.8, compared with 3.4 for all of India. Similarly, among all states in India, UP has the second highest infant mortality rate (99.9 per 1,000 live births), the third highest child mortality rate (46.0 per 1,000 live births), and some of the lowest levels of maternal health care utilization (IIPS and PRC 1994). Maternal mortality in UP has been estimated at 599 deaths per 100,000 live births (Tsui et al. 1996), compared with 437 per 100,000 live births for India (IIPS 1995). Sociodemographic factors influencing utilization of maternal health care in less-developed countries, including residence or distance to health services (Abbas and Walker 1986; Becker et al. 1993), age (Gertler et al. 1993), parity (McCaw-Bins, La Grenade, and Ashley 1995), economic status (Obermeyer and Potter 1991; Pebley, Goldman, and Rodríguez 1996), and problems during pregnancy and birth (McCaw-Binns et al. 1995), have also been observed in India (Bhatia and Cleland 1995a). In the present study the influence of women's autonomy on the use of care during pregnancy and birth is investigated after we control for these effects.

DATA AND METHODS

Data were collected from November 1995 to April 1996 as part of a larger study on maternal health care utilization among poor to middle-income women living in Varanasi. A probability sample of 336 poor to middle-income households was drawn using a two-phase cluster design that covered urban Varanasi. An exclusively urban environment was chosen to control for the distance to health services. Households in the sampling area were within 15 minutes' walking distance to a government or charity facility, where care is free of charge.

Households were the primary sampling units for the survey. Women were eligible for the study if they had delivered a child within three years of the date of interview and were either Hindu or Muslim; these two religious groups make up 97% of the urban population of Uttar Pradesh (IIPS and PRC 1994). The youngest eligible woman in the household was interviewed. The sampling design was based on a modification of the design developed to evaluate the World Health Organization's Expanded Programme of Immunization (Henderson and Sudaresan 1982), as recommended by Bennett et al. (1991), and is explained in detail elsewhere (Bloom, Lippeveld, and Wypij 1999). The refusal rate was 10.4%. One household had to be excluded at the end of data collection because the woman's antenatal care status had been misclassified during interview, leaving a final sample size of 300 women.

All interviews were conducted in Hindi by the first author and the female research assistant from Varanasi. A two-phase pilot study was conducted to test the wording of the questionnaire. Basic sociodemographic data were collected on all individuals living in the household. A maternity history, details about maternal health care utilization, and views of pregnancy care needs were recorded for eligible women. The section on women's autonomy was a combination of open- and closed-ended questions pertaining to access and control over finances, decision-making power, freedom of movement, and ties to natal kin.

Construction of Variables

Two factors indicated the nature of women's relationships with affinal and natal kin. With regard to affines, women were classified by whether or not they lived with their mother-in-law. Closeness of ties to natal kin was measured by women's frequency of contact with parents or siblings; it was categorized as very frequent (weekly or biweekly), regular (monthly or bimonthly), or infrequent (twice a year or less).

The degree of women's autonomy was assessed in three different areas: control over finances, decision-making power, and extent of freedom of movement. A composite measure for each area was created using the sums of equally weighted binary input variables. Women were scored 1 for answers to each factor that contributed to a higher degree of autonomy; otherwise they were scored 0.

The index of control over finances was composed of two items: whether the woman had regular access to a source of money (including both wages earned and gifts or support from family) and whether she stated that she could spend this money without consulting anyone. Respondents were scored on a scale from 0 to 2.

The index of decision-making power contained three factors: whether the woman made decisions ordinarily accorded to this population of women, such as what to cook; whether she participated in larger decisions such as schooling for children; and whether she needed to secure permission before leaving the house for any reason. Respondents were scored from 0 to 3.

The index of freedom of movement consisted of four items. Three pertained to the woman's ability to leave the house without the company of another adult: whether she could go out in general, such as to the market, take a child to the doctor, and go to a doctor for her own health care. The last factor pertained to whether women could leave their affinal residence to visit natal kin when they wished, which usually implied a longer absence from the house than the other three types. Respondents were scored from 0 to 4.

We used Cronbach's alpha coefficients to assess the internal reliability of the indices: the closer the value of this coefficient to 1.0, the more reliable the composite. Values of 0.8 and higher are considered very high (Aiken 1991). The results of a score test indicated violations of regression model assumptions when the full scale of the indices for control over finances and freedom of movement were used as dependent variables. Therefore, we divided the indices into two levels and modeled them as binary response variables reflecting a high versus low degree of interpersonal control. The three indices were modeled as continuous predictors in the analyses focusing on health care utilization.

We used two dependent variables to investigate the relationship between women's autonomy and the use of maternal health care for the most recent birth occurring within the past three years. A continuous measure indicated the amount of antenatal care obtained during pregnancy. This was a weighted composite consisting of 20 input components covering the content of care and the frequency of visits. The weights for each component (based on possible scores ranging from 0 to 4) reflect the average opinion of nine international reproductive health experts on the importance of each item for better maternal and child health in north India, relative to the other 19 components included. The antenatal scores generated from this process ranged from 0 (no care obtained) to 57 (the sum of all 20 components). The procedure used to construct this variable and its distribution across the study sample is described further elsewhere (Bloom et al. 1999). For the present analyses, we scaled this variable from 0 to 100 to reflect the percentage of care that women received from the total. A score of 100 indicates that the individual received the best possible care available to this population of women, in the opinion of the panel of experts. A score of 50 means that a woman only received half the ideal care.

We used a binary variable to model safe delivery care, reflecting whether the last birth was attended by a trained attendant versus any other person, regardless of delivery site (home or facility). A trained attendant referred to an individual with formal medical training—either a doctor, a midwife, or a nurse—and did not include traditional birth attendants, conforming to the standard of safe delivery defined by the World Health Organization (WHO 1999).

Covariates examined included household economic status, the woman's age, number of surviving children at the time of the last birth (to indicate parity), years completed in school, religion, whether or not she was employed, distance from the natal home in hours, and self-reported problems experienced during the most current pregnancy and birth. Household economic status was indicated by whether dwelling walls were made of cement (high) or some other material (low); this variable demarcated the poorest one-third of the study sample from the others.

Statistical Methods

We conducted three separate analyses to explore the patterns and determinants of women's relationships with affinal and natal kin, their extent of interpersonal control in the three areas described above, and the effects of autonomy on the use of maternal health care. For all three investigations, preliminary analyses examined the marginal associations between the response variables and the covariates. We conducted multivariate analyses with three types of response variables. A series of nested logistic regression models was fitted to investigate factors predicting the likelihood of living in the same household with a mother-in-law, high control over finances, high freedom of movement, and delivering the last child with a trained birth attendant. We conducted goodness-of-fit tests to assess the appropriateness of final models (Hosmer and Lemeshow 1989).

We fitted proportional-odds regression models to investigate the likelihood of more frequent contact with natal kin and greater decision-making power. The proportional odds model is used to predict the probability of an event where the events are classified into more than two categories (1, 2, …, *J*). This multicategory logit model accounts for the ordering in the categories of the response variable, and is based on cumulative probabilities. For a single covariate *x*, the cumulative probability that the response Y falls into category j or below, for each possible j, is given by

$$P(Y \le j) = \exp(\alpha_j + \beta x) / [1 + \exp(\alpha_j + \beta x)].$$

Thus the beta estimate corresponds to the log-odds ratio of being above versus below any specific level of the response variable chosen. The model assumes that this ratio is constant across all such comparisons (Agresti 1996). We conducted a score test of this assumption for the models presented (SAS Institute 1997).

Linear regression models were fit to investigate the effect of women's autonomy on use of antenatal care. Residual analyses verified that the assumptions of homoscedasticity and normality were not violated. Sensitivity analyses evaluated whether any particular observations exerted an inordinate influence on inferences.

For multivariate analyses, previous research has demonstrated the importance of controlling for economic and educational status, age, employment, and household structure factors while examining the determinants of women's au-

tonomy. Important factors in investigating utilization of maternal health care are economic and educational status, age, parity, and problems experienced during pregnancy or birth. We retained other variables if they were statistically significant at the .05 level via Wald chi-square or *F*-tests, depending on the model in question, or when their removal caused an appreciable change in the remaining regression coefficient estimates. We conducted tests for relevant interactions. All confidence intervals and *p* values are based on robust variance estimates (Zeger and Liang 1986) to accommodate the effects of possible intracluster correlation in the sample. For proportional odds models, we obtained robust estimates with a SAS macro (Lipsitz, Kim, and Zhao 1994).

RESULTS

Table 1 depicts the sociodemographic and maternal health characteristics of the sample. Women with antenatal care indexes falling in the top 25% of the sample were classified as "high," those with indexes in the bottom 25% as "low," and those in the middle 50% as "moderate." Most of the difference in maternal health care use and sociodemographic factors (results not shown) was observed among women in the high and low groups. Levels of antenatal care tended to be high among women with higher economic status, those who were Hindu, and those who lived with their mothers-in-law. There was very little difference in the level of antenatal care between women with more or less frequent contact with their natal kin. Levels of antenatal care were low among more women who had experienced the death of one or more of their children, but we found no difference in the high category. Women with high levels of antenatal care also tended to be younger, to be better educated, and to have fewer children than those with lower levels of care.

Similar patterns for economic status, religion, living with a mother-in-law, child death, age, education, and parity were observed for use of safe delivery care. In this aspect of maternity care, we found some differences based on employment and contact with natal kin. Women who were employed outside the home were less likely to use a trained attendant for delivery (64%) than women who did not work (72%); women who had more frequent contact with natal kin tended to use safe delivery care more than those with less frequent contact. Because only seven women in the study were not currently married, we did not examine this factor in the analyses.

Impeders and Enhancers of Women's Autonomy: Relations With Affinal and Natal Kin

As expected, the distance women lived from their natal home was highly correlated with frequency of contact with their families. Among the 37% of women with natal kin outside Varanasi (traveling times ranged from one to 36 hours), none saw their families more than once a month; 95% (*n* = 105) saw them twice a year or less. In contrast, 41% (*n* = 78) of the 190 women with natal homes in Varanasi saw their natal families every two weeks or more, and only 25% (*n* = 47) saw their families less than two times a year.

TABLE 1. SOCIODEMOGRAPHIC AND MATERNAL HEALTH CHARACTERISTICS OF WOMEN, VARANASI STUDY, INDIA, 1996 (*n* = 300 WOMEN)

Characteristics	Number of Women	Percentage
Economic Status		
High	197	66
Low	103	34
Religion		
Muslim	86	29
Hindu	214	71
Employment Status		
Not working	261	87
Working	39	13
Lives With Mother-in-Law		
No	120	40
Yes	180	60
Location of Natal Home		
In Varanasi	190	63
Outside Varanasi	110	37
Contact With Natal Kin		
Very frequent	78	26
Regular	70	23
Infrequent	152	51
One or More Children Dead		
No	228	76
Yes	72	24
Last Birth Attended by Health Professional		
No	86	29
Yes	214	71

	Mean (*SD*)	Range
Age (Years at Last Birth)	25.2 (5.5)	16–42
Education (Years)	5.3 (4.8)	0–16
Parity (Surviving Children)	2.3 (1.9)	0–9
Level of Antenatal Care Use		
Low (*n* = 97)	11.8 (9.0)	0–32.2
Moderate (*n* = 105)	51.6 (8.5)	34.3–66.1
High (*n* = 98)	80.4 (9.3)	66.3–100.0

Table 2 shows the results of the logistic regression models of the factors influencing the likelihood of living with a mother-in-law and having more frequent contact with natal kin. To examine effects of factors that influence women's frequency of contact with natal kin when traveling distance was not a barrier, we fit the model for only the 190 women with families in Varanasi. When both age and parity were included in the multivariate regressions, age reached statistical significance in both models, although parity did

TABLE 2.   DETERMINANTS OF LIVING WITH THE MOTHER-IN-LAW AND FREQUENT CONTACT WITH NATAL KIN (ODDS RATIOS FROM LOGISTIC REGRESSION MODELS), VARANASI STUDY, INDIA, 1996

	Dependent Variables			
	Living With Mother-in-Law (*n* = 300)		Frequent Contact With Natal Kin[a] (*n* = 190)	
Determinants	Odds Ratio	95% CI	Odds Ratio	95% CI
Economic Status				
High	2.15	1.19, 3.93	1.85	1.10, 3.08
Low	1.00		1.00	
Age (Years at Last Birth)	0.90	0.85, 0.97	0.92	0.86, 0.99
Parity (Surviving Children)	1.07	0.89, 1.29	0.94	0.77, 1.15
Education (Years)	1.04	0.99, 1.10	1.09	1.01, 1.17
Religion				
Muslim	1.27	0.73, 2.24	3.21	1.77, 5.83
Hindu	1.00		1.00	
Employment Status				
Not working	3.07	1.34, 7.06	0.54	0.21, 1.37
Working	1.00		1.00	
Lives With Mother-in-Law				
No	NA		2.17	1.21, 3.88
Yes			1.00	

[a]The proportional odds model was used to model the probability of more frequent contact with natal kin for the 190 women with families in Varanasi.

not. These two variables were highly correlated (Pearson's *r* = 0.68) because, in this region of India, women begin bearing children soon after marriage and continue to do so through their reproductive years.

As shown in the first model in Table 2, women of higher economic status, younger age, and higher parity, as well as those not employed, were much more likely to be living with their mothers-in-law when educational status was controlled. Years of education did not demonstrate a statistically significant association after we controlled for the other factors in the model.

The results for the likelihood of women maintaining greater contact with their natal kin were similar. Age showed a negative association with more frequent contact. Education demonstrated a strong positive effect after we controlled for other factors. The odds ratio shown represents only a one-year difference in formal educational levels between women; on the basis of a 10-year difference, for more highly educated women, the estimated odds of more frequent contact with natal kin are more than twice as high as for less-educated women (OR = 2.29, 95% CI = 1.10, 4.79). Even after we controlled for age and education, Muslims (OR = 3.21, 95% CI = 1.77, 5.83) and women not living with their mothers-in-law (OR = 2.17, 95% CI = 1.21, 3.88) were much more likely to maintain closer ties with

natal kin. Death of one or more children did not reach statistical significance in either of these models.

Determinants of Women's Autonomy

The distribution of women across the nine items used to create the three indices of autonomy are shown in Table 3. Almost 60% of the women had unrestricted access to money via earnings or continual support from family members; a somewhat smaller proportion were able to spend money independently. We observed much more variation for the items constituting the decision-making index: the majority of women (81%) made smaller decisions within the household, but only one-quarter stated that they did not ask permission before leaving the house. We included this item in decision-making power because seeking permission does not reflect a woman's ability to leave the house; rather, it indicates her decision about wishing to do so. The freedom of movement index is composed of items related to women's actual behavior with regard to outside mobility. This issue becomes clear when the permission item is compared with the first item in the freedom of movement index: almost all women (92%) stated that they left their house on their own to do errands. About half of the women (58%) stated that they could go to their natal homes when they wished, an excursion that most likely would involve longer absences from home than the other three rea-

TABLE 3. THE PERCENTAGE OF WOMEN WHO ANSWERED AFFIRMATIVELY TO ITEMS USED FOR EACH OF THE AUTONOMY INDICES, VARANASI STUDY, INDIA, 1996 (*n* = 300 WOMEN)

Items Constituting Autonomy Indices	Respondents (%)
Control Over Finances	
Unrestricted access to money	59
Spends money on own	55
Decision-Making Power	
Makes small decisions	81
Participates in larger decisions	53
Does not need to ask permission to go out	26
Extent of Freedom of Movement	
Goes out alone on errands	92
Takes her child to the doctor alone	84
Goes to the doctor alone	87
Goes to natal home as desires	58

all composite combining them. The estimated internal reliabilities for both the control over finances and the freedom of movement measures were fairly high (0.90 and 0.67 respectively); the reliability for decision-making power was lower (0.53). The questions contributing to the indices for finance and freedom of movement were more context-oriented, which probably led to more reliable measures. The Cronbach's alpha coefficient for the three measures combined into a general index for "autonomy" was 0.61, lower than the separate coefficients for both the finance and the freedom of movement composites. This result indicated that greater internal reliability for the measures resulted when the three areas were separated.

Table 4 shows the results of the multivariate analyses investigating the determinants of women's autonomy when the three indices are used. The score test for the proportional odds assumption conducted for the final models indicated that it was inappropriate to use the raw indices for control over finances and freedom of movement as response variables. Therefore we created two binary measures from these indices to indicate women with high versus low interpersonal control in both contexts. In both cases, the high-low categories were created by dividing the sample frequency distribution in the indices into approximately half.

sons for leaving; 74% of these women had natal homes in Varanasi, and 26% outside the city (data not shown).

Cronbach's alpha coefficients were estimated for each of the three autonomy measures separately and for an over-

Economic status did not show a significant relationship with any of the three autonomy indices. Age retained mar-

TABLE 4. DETERMINANTS OF WOMEN'S AUTONOMY IN THREE DIFFERENT CONTEXTS (ODDS RATIOS FROM LOGISTIC REGRESSION MODELS), VARANASI STUDY, INDIA, 1996 (*n* = 300 WOMEN)

	Dependent Variables					
	High Control Over Finances		Index of Decision-Making Power[a]		High Freedom of Movement	
Determinants	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
Economic Status						
High	1.73	0.92, 3.29	1.39	0.88, 2.17	1.34	0.74, 2.43
Low	1.00		1.00		1.00	
Age (Years at Last Birth)	1.04	0.98, 1.10	1.05	0.99, 1.12	1.08	1.02, 1.16
Parity (Surviving Children)	1.00	0.82, 1.24	1.06	0.91, 1.24	1.05	0.87, 1.29
Education (Years)	1.05	0.98, 1.12	1.04	0.98, 1.09	1.09	1.02, 1.17
Employment Status						
Working	3.04	1.63, 5.68	4.06	2.24, 7.37	1.95	0.88, 4.34
Not working	1.00		1.00		1.00	
Lives With Mother-in-Law						
No	0.71	0.40, 1.28	1.88	1.14, 3.08	1.45	0.78, 2.71
Yes	1.00		1.00		1.00	
Contact With Natal Kin						
Very frequent	2.70	1.67, 4.37	1.98	1.15, 3.39	3.13	1.67, 5.85
Regular	1.79	1.00, 3.20	1.10	0.67, 1.79	4.93	3.06, 7.95
Infrequent	1.00		1.00		1.00	

[a]The proportional odds model was used to model the probability of a higher score in the index of decision-making power.

ginal significance in the models for high control over finances and greater decision-making power, but exhibited a stronger, significant effect on high freedom of movement. Parity demonstrated an effect in the univariate models, but had no statistically significant association with any of the autonomy indicators when age was included. Religion, not included in the models shown, has an effect on women's autonomy in models that exclude contact with natal kin. This effect was attenuated when we added the factor for contact with natal kin, an indication that the association between religion and women's autonomy is mediated by frequency of contact with natal kin. Education was positively associated with all the factors, but reached statistical significance only for high freedom of movement. On the basis of a 10-year difference in schooling, highly educated women were more likely to have high freedom of movement (OR = 2.44, 95% CI = 1.22, 4.88) than those less educated.

Employed women were much more likely to have high control over finances (OR = 3.04, 95% CI = 1.63, 5.68), high decision-making power (OR = 4.06, 95% CI = 2.24, 7.37), and a tendency toward high freedom of movement (OR = 1.95, 95% CI = 0.88, 4.34). Women who did not live with their mothers-in-law showed a higher odds of greater decision-making power (OR = 1.88, 95% CI = 1.14, 3.08), but we observed no association with the other two factors. The importance of women's ties with their natal kin is apparent, and consistent across all three dimensions of autonomy: women who had frequent contact with their families showed a much higher probability of greater interpersonal control in each of the three areas examined than did women with infrequent contact when we controlled for all other factors.

Women's Autonomy and Maternal Health-Seeking Behavior

Initially we explored the relationship between the three areas of women's autonomy and antenatal care utilization by fitting univariate regression models for each of the indices on the antenatal care score. All three indices had a positive relationship with antenatal care use, but freedom of movement was the only measure that demonstrated a statistically significant relationship. The first model in Table 5 includes all three indices together, without controls for sociodemographic effects. Freedom of movement retained a strong, positive association with the level of antenatal care obtained, but the other two indices demonstrated no such relationship.

The full model in Table 5 includes several determinants of antenatal care use along with the autonomy indices. High economic status, education, and perceived problems during pregnancy all have a positive relationship to the antenatal care score. In this model, age lost its effect when parity was added, but parity retained a strong negative association with use of antenatal care: among women with more surviving children at the time of their pregnancy, predicted antenatal care scores were lower than among others. Although the freedom of movement index demonstrated a strong, positive association with use of antenatal care, the other two indices demonstrated no relationship. The slope coefficient of 4.81 means that after controlling for all other factors in the model, a one-point increase in the freedom of movement index (with a possible score of 0 to 4) results in an increase of almost five percentage points in the predicted antenatal care score. This difference can be appreciated more fully if one considers that the predicted antenatal care score for a woman with high freedom of movement (score = 4) is 19 percentage

TABLE 5. **DETERMINANTS OF ANTENATAL CARE UTILIZATION (SLOPE ESTIMATES FROM LINEAR REGRESSION MODELS), VARANASI STUDY, INDIA, 1996 (*n* = 300 WOMEN)**

	Antenatal Care Score			
Determinants	Model With Autonomy Only		Full Model	
Intercept	26.91	($p < .001$)	25.69	($p = .001$)
Autonomy Indices				
Freedom of movement	6.54	($p = .001$)	4.81	($p = .002$)
Control over finances	0.55	($p = .83$)	–0.64	($p = .76$)
Decision-making power	–0.29	($p = .89$)	1.62	($p = .41$)
Sociodemographic factors				
High economic status			7.37	($p = .047$)
Education (years)			1.55	($p < .001$)
Problems during pregnancy			11.69	($p < .001$)
Age (years at last birth)			–0.24	($p = .44$)
Parity (surviving children)			–3.42	($p = .001$)
Adjusted R^2	0.050		0.305	

points greater than for a woman with low freedom of movement (score = 0), about one-fifth of the total range in antenatal care scores. The full model predicted 30.5% of the variability in the antenatal care score.

Other factors that we observed to be associated with freedom of movement—employment and contact with natal kin—showed no significant association with the antenatal care index when tested in this model, and therefore were not included in the model shown in Table 5. Similarly, religion, living with a mother-in-law, and the experience of a child's death did not demonstrate a significant relationship with antenatal care use in this model. Women's freedom of movement is clearly important to the utilization of care during pregnancy: the effect of low versus high freedom of movement on the predicted antenatal care score is equivalent to that of about 12 years of schooling.

We obtained similar results for analyses pertaining to care at delivery, shown in Table 6. In the uncontrolled model with the three indices of women's autonomy, freedom of movement was the only index showing a significant association with the likelihood of using a health professional at birth (OR = 1.36, 95% CI = 1.05, 1.76). In the full model, higher economic and educational status as well as problems experienced during delivery were associated positively with the likelihood of using safe delivery care; parity had a negative relationship. Covariates indicating employment status, living with a mother-in-law, contact with natal kin, and the experience of a child's death showed no significant association with use of delivery care. The effect of freedom of movement in the full model was still highly significant: once again, the odds ratio refers to a one-point difference in the index. Among women with high freedom of movement (score = 4), the estimated odds of using trained assistance at birth was three times higher (OR = 3.07, 95% CI = 1.04, 9.00) than among those

with low freedom of movement (score = 0) after controlling for all other factors in the model. As in the antenatal care model, the effect of low versus high freedom of movement on the predicted probability of using a trained attendant at delivery is equivalent to that of about 12 years of schooling.

DISCUSSION

Women's autonomy, as measured by the extent of a woman's freedom of movement, appears to be a major determinant of maternal health care utilization among poor to middle-income women in a large urban area of Uttar Pradesh. This effect is largely independent of sociodemographic factors. In this region, women's autonomy is related primarily to household structure and kinship relationships. In particular, living with a mother-in-law and close ties with natal kin have a strong impact on women's interpersonal control, but these are obviously not the only factors. Further, "autonomy" is not a homogeneous construct that is represented accurately by a single measure; in the three contexts explored, there are important differences in the sociodemographic determinants of both the mediating kinship factors and the degree of women's interpersonal control. These findings agree with those of recent studies focusing on the influence of women's autonomy on various demographic outcomes in South Asia (Balk 1994, 1997; Basu 1996; Dharmalingam and Morgan 1996; Jejeebhoy 1997; Vlassoff 1991; Vlassoff and Kumar 1997).

The importance of kinship relationships to women's interpersonal control after marriage is evident from the persistent effect of these factors in the multivariate analyses. The diminished effect of religion on women's autonomy in all three areas, after controlling for contact with natal kin, adds credence to the argument that women's position is demarcated largely by kinship norms and patterns in this area. The

TABLE 6.   DETERMINANTS OF SAFE DELIVERY CARE (ODDS RATIOS FROM LOGISTIC REGRESSION MODELS), VARANASI STUDY, INDIA, 1996 ($n = 300$)

Determinants	Used Trained Attendant at Delivery			
	Model With Autonomy Only		Full Model	
	Odds Ratio	95% CI	Odds Ratio	95% CI
Autonomy Index				
Freedom of movement	1.36	1.05, 1.76	1.32	1.01, 1.73
Control over finances	1.14	0.86, 1.52	1.02	0.73, 1.43
Decision-making power	0.89	0.63, 1.25	1.01	0.66, 1.55
Sociodemographic Factors				
High economic status			2.87	1.70, 4.84
Education (years)			1.10	1.03, 1.18
Problems during delivery			2.97	1.35, 6.55
Age (years at last birth)			0.97	0.92, 1.03
Parity (surviving children)			0.86	0.73, 1.02

differences observed between religious groups can be explained by the variation in their kinship practices. Women's autonomy is diminished by the proximity of affines; it is enhanced by closer relationships with natal kin. Both types of relationships are especially relevant to younger women's interpersonal control.

In general, women become more autonomous as they age. As a mediating factor, household structure intensifies the direction of this effect: as women grow older, they move out of extended-family situations that impede their authority. Older women tend to have less contact with natal kin, but this contact is not so essential to them because they can rely on ties established over time in their affinal residences—their husbands, older children, and friends—as direct sources of power and security in the household. At the beginning of married life, however, women need the external support of natal kin in order to realize their needs and desires.

The relationship between higher levels of schooling and more frequent contact with natal kin, regardless of distance, age, religion, and household structure, suggests that highly educated families in urban areas maintain closer ties with their daughters after marriage than do less-educated families. This trend holds promise for women's position in north India because levels of education are increasing there. Although the negative impact of living with a mother-in-law showed a statistically significant association with decision-making power, we found no observable effect on the other two measures after controlling for other factors. Closer ties with natal kin exerted a very strong positive influence on all the autonomy measures, even after we controlled for age, education, employment, and living with a mother-in-law. Anthropologists in India have emphasized the importance of women's relationships with natal kin to their level of interpersonal control (Jeffery et al. 1988; Visaria 1996). The data from this study offer empirical evidence supporting that observation.

The theoretical explanation for this relationship may lie in the paradigm of the north Indian kinship system. In this system, particularly among Hindus, women are considered to literally begin a new life after marriage when they arrive at their affinal household. During the early period of their marriage, they have the lowest social status of any household member. A woman's position in society until marriage is based on her relationships with natal family members; retaining these ties helps preserve the continuity of her life. Although she still may be disadvantaged in relation to her husband, who remains in his own environment, her ongoing social ties enable her to begin marriage as an individual changing life stages, rather than as a nonperson entering a new existence. On a practical level, parents and brothers provide their daughters and sisters with emotional, material, and logistical support, which surely mediates how the young wives are treated by affines.

Many women who reported more frequent contact with natal kin indicated that they turned to their mothers when they wanted go somewhere, such as to a clinic. In regard to health care utilization, the most important issue to consider is the fact that women can leave their homes when they feel the need to do so, whether or not in the company of others. This point indicates a need to rethink the concept of freedom of movement for women in this region: rather than reflecting women's ability to move about alone, measures should reflect their ability to go where they wish, when they wish. One way to do this would be to probe more deeply into how women are able to realize their desires to go outside the household.

The analyses on health-seeking behavior during pregnancy and childbirth suggest that certain dimensions of women's autonomy may be more important to these outcomes than others. Freedom of movement had a strong effect on utilization of maternal health care, even after we controlled for sociodemographic factors. These findings underscore the importance of examining the different dimensions of women's autonomy separately in order to understand which factors affect health outcomes. These results also provide further basis for the argument against using sociodemographic proxies for women's autonomy: important explanatory factors may be missed, as other have noted (Balk 1994; Jeejeebhoy 1997). In this population of women, the impact of women's education on the use of maternal health care was roughly equal to that of their interpersonal control, as measured by their freedom of movement. Therefore policy directed toward improving the health status of women and their families in this area must go beyond merely enhancing women's educational opportunities.

Because most of the determinants of women's autonomy examined here are unlikely to change very much, a concerted effort must be made to examine the effects of different types of empowerment programs. The success of some credit and loan programs in changing the dynamics of women's social position has been documented (Schuler and Hashemi 1994), but more work is needed to examine how the negative effects of strong gender stratification can be ameliorated.

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