Sociodemographic factors associated with request for labor epidural analgesia in a tertiary obstetric hospital in Vietnam

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Abstract

Background

Labor epidural pain relief remains underutilized in developing countries and may serve as a marker of health care access disparity. Here we examine the sociodemographic factors associated with the utilization of labor epidural analgesia at a large obstetrics and gynecology hospital in Vietnam.

Methods

This was a cross-sectional study of women who underwent vaginal delivery in September 2018 at the Hanoi Obstetrics and Gynecology Hospital. Utilization of epidural analgesia during labor was determined. Univariate and multivariate regression models were applied to evaluate the association between patient demographic and socioeconomic factors and request for labor epidural analgesia.

Results

A total of 417 women had vaginal deliveries during the study period. 207 women (49.6%) utilized epidural analgesia for pain relief during labor and 210 did not. Parturients more likely to utilize labor epidurals were older than 35 years of age (OR 2.84, 95% CI 1.11-8.17), multiparous (OR 2.8 95% CI 1.85-4.25), from an urban area, with higher income (OR 6.47, 95% CI 2.59-19.23), and with higher level of education.

Conclusions

Factors related to a parturient's request for epidural analgesia during labor at our tertiary obstetric hospital included include age greater than 35 years, multiparity, and high income and education levels. Educational outreach to women about the benefits of epidural analgesia can target women who do not share these demographics.

Background

Epidural analgesia is an effective and increasingly common treatment for pain relief during labor, with a secondary gain of maternal safety through avoidance of general anesthesia if surgical delivery is required. (1, 2) Epidural labor analgesia has become prevalent in developed countries, but its use in developing countries such as Vietnam is less common. The use of epidural analgesia for labor in the United States was 73.1% in 2015, and as high as 86% at an academic tertiary center. (3, 4) Epidural analgesia has been deployed in Vietnam in the past decade, but the technique is not uniformly covered by Vietnamese health insurance and many women remain unaware of this option. Determinants of current request and utilization of epidural analgesia among Vietnamese women during labor are unknown. This study aims to identify patient factors associated with request and utilization of labor epidural analgesia at a large urban obstetric hospital in Hanoi, Vietnam.

Methods

The study protocol was approved by the Scientific and Ethical Committee of Hanoi Obstetrics and Gynecology Hospital. Written informed consent was obtained from all participants prior to interview and data collection.

This was a retrospective cross-sectional evaluation of women who underwent vaginal delivery during the month of September 2018 at the Obstetrics and Gynecology Hospital in Hanoi, Vietnam. Patients were grouped based on use of epidural analgesia vs. no epidural analgesia during admission for labor and delivery. Demographic variables collected included maternal age (grouped by age less than 18 years, 18–34 years, 35–45 years and > 45 years); place of residence (urban or rural); ethnicity (Kinh, the largest ethnic group in Vietnam, or an alternate ethnic minority); education levels (primary; secondary; high school; graduate school); occupation; health insurance; health knowledge (high or low); and income (high or low). Data were collected in a standardized way by coinvestigators by in-person interview 24 hours after delivery.

Both descriptive and analytical statistics were performed using SPSS 20.0 software. Proportions of variables and corresponding 95% confidence interval (CI) were calculated. Multivariate logistic regression was performed to examine the probability of epidural analgesia use in relation to sociodemographic data obtained. A p-value < 0.05 was considered statistically significant.

Results

A total of 417 women who underwent vaginal delivery in September 2018 were identified. Two hundred seven (49.6%) patients utilized epidural analgesia during labor, and 210 did not. Sociodemographic and obstetric characteristics of study patients are shown in Table 1. With the exception of ethnicity, employment and health insurance status, all sociodemographic and obstetric variables were different between those who used epidural analgesia and those who did not.

Table 1
Sociodemographic and obstetric patient characteristics

Characteristics		Epidural (N = 207)		No epidural (N = 210)		P value
		n	%	n	%	
Age (years)	< 18	1	0.5	4	1.9	0.02
	18–35	199	96.1	187	89.0	
	36–45	7	3.4	19	9.0	
Parity	nulliparous	129	62.3	78	37.1	< 0.01
	multiparous	78	37.7	132	62.9	
Education	primary	11	5.3	37	17.6	< 0.01
	secondary	18	8.7	54	25.7	
	high school	35	16.9	44	21.0	
	graduate	143	69.1	75	35.7	
Ethnicity	minorities	11	5.3	20	9.5	0.101
	Kinh	196	96.7	190	90.5	
Residence	urban	178	86.0	130	61.9	< 0.01
	rural	29	14.0	80	38.1	
Income	low	6	2.9	34	16.2	< 0.01
	high	201	97.1	176	83.8	
Occupation	homemaker	43	20.8	13	6.2	< 0.01
	farmer	3	1.4	47	22.4	
	worker	17	8.2	82	39.0	
	white-collar workers	144	69.6	68	32.4	

Potential patient-related determinants such as health insurance coverage and specific epidural-related concerns are showed in Table 2. A higher percentage of women who requested epidural pain relief had health insurance coverage. Consistent with this finding, a greater number of women who went without epidural pain relief expressed concern about the expense of the epidural (48.1 vs 8.7%, respectively). Women who requested epidural pain relief had greater concern about labor pain in general (89.4 vs. 52.9%, respectively).

Table 2

Patient concerns about epidural analgesia during labor

Characteristics		Epidural (N = 207)		No epidural (N = 210)		P value
		n	%	n	%	
Health Insurance Status	no health insurance coverage	50	24.2	66	31.4	0.10
	health insurance coverage	157	75.8	144	68.6	
Epidural-Related Concerns	pain in labor	185	89.4	111	52.9	< 0.01
	side effects	134	64.7	138	65.7	0.83
	expense	18	8.7	101	48.1	< 0.01

Multiple logistic regression analysis of factors associated with receiving epidural analgesia during labor are shown in Table 3. Several socioeconomic factors were associated with labor epidural request, including age greater than 35 years, multiparity, high income, high education level, residing in an urban area, and the professions of homemaker or office worker.

Table 3
Factors associated with parturient choice of epidural analgesia during labor

Characteristics		OR	95%CI	P value
Age group (year)	≤ 35	Ref		
	> 35	2.84	1.11–8.17	0,02
Parity	nulliparous	Ref		
	multiparous	2.80	1.85–4.25	< 0,01
Education	primary	ref		
	secondary	0.28	0.15–0.50	< 0.01
	high school	0.77	0.45–1.29	0.29
	graduate	4.02	2.62–6.18	< 0.01
Ethnicity	minorities	Ref		
	Kinh	1.88	0.83–4.45	0.10
Residence	urban	Ref		
	rural	0.26	0.16–0.44	< 0.01
Income	low	Ref		
	high	6.47	2.59–19.23	< 0.01
Employment Status	unemployed	Ref		
	employed	0.78	0.51–1.21	0.25
Occupation	farmer	Ref		
	homemaker	3.97	2.01–8.31	< 0.01
	worker	0.14	0.07–0.25	< 0.01
	office worker	4.77	3.09–7.38	< 0.01
Health Insurance Status	no health insurance	Ref		
	health insurance	1.44	0.91–2.27	0.10

Conclusions

We have defined sociodemographic factors associated with the use of labor epidural pain relief at a tertiary center in Hanoi, Vietnam. Patients who predictably decline epidural analgesia in labor may benefit from increased educational outreach about risks and benefits.(5) Increased epidural utilization during

labor has correlated with lower rates of general anesthesia for cesarean delivery, and a reduction in litigation related to aspiration morbidity and mortality in obstetric patients. (6–8) Increasing epidural utilization in developing countries may enhance the safety of obstetric anesthesia care.

Our finding that women with health insurance and higher education levels are more likely to request epidural analgesia during labor are consistent with a previous United States study.(9) A study of sociodemographic and obstetric factors associated with labor epidural analgesia use among 5,350 women in Canada revealed higher rates of epidural analgesia use in women with higher income and higher education, and lower rates in those who were of ethnic minority group, unemployed, or living in rural areas. (10)

In the current study, parturients in both groups, irrespective of epidural use, expressed concern about side effects of epidural analgesia during labor (64.7% vs 65.7% respectively). In Vietnam, there are misconceptions and fear about the epidural technique and complications including neurological injury, back pain, and headache, and ineffective pain relief. Similar misconceptions were reported among a Canadian cohort; 15.9% of women reported concern that epidural analgesia can result in paraplegia. (10) In addition, a large proportion of women surveyed in Pakistan, Karachi and Hong Kong expressed concern that epidural analgesia may result in permanent backache or cause muscle weakness in the lower extremities during labor. (11–13) Access to health education on the availability and benefits of epidural analgesia in labor increases utilization rate. (14) The current study adds to this body of literature suggesting that a lack of knowledge about the safety and anticipated side effects of the epidural technique itself plays a role in discouraging use of labor epidural analgesia. Women may benefit from focused educational outreach as part of their prenatal care, so that they can make an informed choice with the most accurate information about risks and benefits.

Through multiple logistic regression analysis, we have determined that patient factors associated with request for epidural pain relief were age greater than 35 years, multiparity, high income, high level of education, living in urban areas, and the profession of homemaker or office worker. These findings are consistent with previous reports; an analysis of labor epidural utilization among 8229 deliveries at five United States hospitals revealed an association with increased maternal age, Caucasian ethnicity and private insurance coverage. (15) Our finding that multiparity was also associated with epidural analgesia request may reflect prior delivery experience, with or without analgesia. We did not evaluate whether multiparous patients utilized epidural pain relief for previous deliveries.

Another factor associated with epidural analgesia use in our study was a graduate level of education. Women with higher levels of education requested epidural analgesia more frequently (odds ratio 4.02 for women with a college-level education compare to primary school only). This finding is consistent with prior reports. (9, 10, 15) A United States report on rate of labor epidural analgesia was 22.6% in women with < 8th -grade education compared to 48.1% among those who finished high school. (16) Furthermore, a study in Israel showed that the epidural request rate was only 4.9% in women with < 5 years of schooling, compared to w 84% of women who had higher levels of education. (17) Collectively, these data

suggest that pregnant women with higher education levels may have either better comprehension of physiological mechanisms of labor pain, more access to acquire health information about the methods of pain relief during labor and its risks and benefits, or both. Education about labor epidural analgesia may promote better patient decision-making. (17) In addition, the role of the partner or spouse has been reported as a key factor affecting epidural use. (9) While we did not evaluate this potential influence in our study, prenatal courses to inform both patient and spouse may be beneficial.

Parturients with low income and living in rural sites requested labor epidural pain relief less frequently than high-income women from urban regions. A potential barrier to epidural utilization is lack of insurance coverage for this procedure. In our cohort, 31.4% of women who did not receive epidural analgesia during labor lacked insurance coverage, while 24.2% of women who requested epidurals lacked insurance coverage. Socioeconomic inequality and its impact on in health care delivery has been described, (18–21) and is a concern in Vietnam. (22) Under-utilization of labor epidural pain relief may not only serve as a marker for health care disparity but may also provide an outcome metric for targeted efforts to lower disparity. Vietnamese women may have a cultural perception that labor pain is natural, and a mindset that pain in childbirth should be tolerated rather than eliminated. Satisfaction in childbirth in the Vietnamese population has not been reported, but a European report suggests that a perception of personal control from labor pain relief may increase satisfaction. (23) There may be added benefit for visiting health providers and prenatal health course instructors to focus on patients who may predictably have a low rate of epidural utilization, to be sure there is appropriate access to health information that is tailored for patient understanding and access to care.

Our study is not without limitations. First, the postpartum survey was performed 24 hours after delivery, and some parturients may not have recalled the details related to their birthing experience. Second, because the research was conducted only at the Hanoi Obstetrics and Gynecology Hospital, which is the leading obstetric hospital in Hanoi and a teaching facility, the external validity may be limited and not representative of parturients who live further from a resourced center in Vietnam. For example, as has been reported that many Vietnamese women who delivery in non-university public hospitals or small maternity units forego epidural analgesia because there is no available anesthesiologist.

In summary, we have defined factors associated with parturient request for labor epidural analgesia at a tertiary teaching hospital in Hanoi, Vietnam. Increasing the rate of labor epidural analgesia is a way to enhance maternal safety through avoidance of general anesthesia and associated aspiration risk. Resources applied for educational outreach to encourage health literacy can be directed toward patients who are multiparous, older, less educated, have lower income and education, and are from rural areas.

List Of Abbreviations

CI, confidence interval

Declarations

Ethics approval and consent to participate

The study protocol was approved by the Scientific and Ethical Committee of Hanoi Obstetrics and Gynecology Hospital.

Consent for publication

Written informed consent was obtained from all participants prior to interview and data collection.

Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

LDN designed and conceptualized the study, conducted and oversaw consents and data collection for the study, interpreted the study results, and was a major contributor in writing the manuscript. MKF provided input about the study design and interpretation and was a major contributor in writing the manuscript. CTP, LTK, HTN, and TMD were major contributors to writing the manuscript, providing critical revision for important intellectual content. AND designed and conceptualized the study, oversaw the consent process and data collection, and interpreted the results. All authors read and approved the final manuscript.

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Author's information

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