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Obstetricians' Attitudes toward Epidural Analgesia for Labor in a Single University Hospital in Thailand

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ABSTRACT

Objectives: To elucidate obstetricians' attitudes toward epidural analgesia for labor regarding maternal outcomes and complications and to describe commentaries about the use of epidural analgesia.

Materials and Methods: This was a questionnaire paper-based, cross-sectional study. The questionnaire was made available over the period of February 2020 to August 2020. The questionnaire comprised 25 items and used a 5-point Likert scale for the responses. The respondents' attitudes stratified by their subspecialty, position (residents or graduate obstetricians), and work experience were also analyzed.

Results: Out of 124 obstetricians working in our institute, 75 completed and returned the questionnaire, for a response rate of 60.5%. Among the respondents, 44 (58.7%) agreed that patients with vaginal labor should receive epidural analgesia if there are no contraindications. Most the obstetricians agreed that epidural analgesia for labor prolonged the second stage of labor (71.2%) and led to an increased rate of instrumental delivery (67.1%). On the other hand, only 31.5% agreed that epidural analgesia increased the rate of cesarean delivery. Obstetricians in the maternal-fetal medicine subspecialty reported significantly more experience with epidural analgesia cases than the other specialties ($p < 0.001$). The mean overall satisfaction score regarding the epidural analgesia for labor in our institute (0-100) was 68.2±15.8.

Conclusion: This study revealed that a high proportion of obstetricians believed that epidural analgesia for labor mainly affects labor outcomes including the mode of delivery and side effects. There is also a need to ensure all staff involved in the labor suite have a greater understanding of various aspects regarding the use of epidural analgesia for labor.

Keywords: obstetrician, attitude, questionnaire, epidural analgesia, labor.

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ทัศนคติของสูติแพทย์ที่มีต่อการใส่สายทางช่องเหนือดูราเพื่อระงับปวดจากการเจ็บครรภ์คลอดบุตร ในโรงพยาบาลมหาวิทยาลัยแห่งหนึ่ง ประเทศไทย

พัชรียา นิวัฒน์ภูมินทร์, ตรีภพ เลิศบรรณพงษ์, สันติ บุญฟู

บทคัดย่อ

วัตถุประสงค์: *เพื่อศึกษาทัศนคติของสูติแพทย์ที่มีต่อการใส่สายทางช่องเหนือดูราเพื่อระงับปวดจากการเจ็บครรภ์คลอดบุตรในแง่ของผลต่อมารดาและภาวะแทรกซ้อน และรายงานความคิดเห็นที่มีต่อการใส่สายทางช่องเหนือดูรา*

วัสดุและวิธีการ: *การศึกษานี้เป็นในลักษณะการศึกษาภาคตัดโดยใช้แบบสอบถาม การศึกษาทำขึ้นในช่วงเดือนกุมภาพันธ์ถึงเดือนสิงหาคม พศ.2563 แบบสอบถามประกอบด้วย 25 ข้อ โดยแบ่งความคิดเห็นเป็น 5 ระดับ และวิเคราะห์ตามการแบ่งกลุ่มผู้เข้าร่วมตอบแบบสอบถามตามหน่วยเฉพาะทาง ตำแหน่ง (แพทย์ประจำบ้านหรือสูติแพทย์ผู้จบการศึกษาแล้ว) และแบ่งตามประสบการณ์การทำงาน*

ผลการศึกษา: *อัตราการตอบกลับแบบสอบถามคือ 75 รายใน 124 ราย คิดเป็นร้อยละ 60.5 สูติแพทย์ 44 ราย (ร้อยละ 58.7) เห็นด้วยเรื่องผู้ป่วยที่มาคลอดบุตรทางช่องคลอด ควรได้รับการใส่สายการระงับปวดทางช่องเหนือดูราถ้าไม่มีข้อห้าม สูติแพทย์เห็นด้วยเรื่องการใส่สายการระงับปวดทางช่องเหนือดูราเพิ่มระยะเวลาระยะที่สองของการคลอดร้อยละ 71.2 และเพิ่มอัตราการใช้เครื่องมือช่วยคลอดร้อยละ 67.1 มีสูติแพทย์ร้อยละ 31.5 เห็นด้วยเรื่องการใส่สายการระงับปวดทางช่องเหนือดูราเพิ่มอัตราการผ่าคลอด สูติแพทย์ในหน่วยเวชศาสตร์มารดาและทารกมีประสบการณ์ในการพบผู้ป่วยที่ได้รับการใส่สายทางช่องเหนือดูรามากกว่าสูติแพทย์อื่นๆ อย่างมีนัยสำคัญ ($p < 0.001$) คะแนนความพึงพอใจต่อการใส่สายทางช่องเหนือดูราเพื่อระงับปวดจากการเจ็บครรภ์คลอดบุตรโดยรวมคือ 68.2±15.8 คะแนน*

สรุป: *สูติแพทย์ในอัตราส่วนที่สูงมีความคิดเห็นว่าการใช้สายทางช่องเหนือดูราเพื่อระงับปวดจากการเจ็บครรภ์คลอดบุตรมีผลต่อมารดาในแง่วิธีการคลอดและภาวะแทรกซ้อน ควรให้ความเข้าใจต่อผลที่เกิดขึ้นในแง่ต่างๆ ของการใส่สายทางช่องเหนือดูราเพื่อระงับปวดจากการเจ็บครรภ์คลอดบุตรแก่บุคลากรทุกท่านที่มีความเกี่ยวข้องกับผู้ป่วยที่มารับการคลอดบุตรในห้องคลอด*

คำสำคัญ: *ทัศนคติ, การใส่สายทางช่องเหนือดูรา, เจ็บครรภ์คลอดบุตร, สูติแพทย์, แบบสอบถาม*

Introduction

Epidural analgesia with local anesthetic and opioids is a widely used intervention for relieving labor pain[1]. A recent systematic review revealed epidural analgesia for labor provided superior pain relief as well as decreased the requirement for supplemental pain relief compared to opioid analgesics administered by other routes[2]. However, the obstetrical outcomes after epidural analgesia for labor are a general concern. Numerous studies have reported side effects of epidural analgesia, including prolongation of the second stage of labor[3] and an increase in the rate of instrumental delivery[2-4]. Another debatable issue with epidural analgesia is the rate of cesarean delivery. Nevertheless, one systematic review concluded that the rate of cesarean delivery was not increased after epidural analgesia for labor[2].

Siriraj Hospital is the main referral tertiary level institute in Bangkok, the capital of Thailand. In total, there are approximately 7,500-8,000 deliveries per year in the hospital, with more than half of patients undergoing normal vaginal delivery. However, in our institute, the administration of epidural analgesia for labor is restricted to only for educational proposes. That is, the service of epidural analgesia has not been introduced in our hospital, mostly due to the fact that there is an inadequate number of anesthetic personnel in our hospital. Thus, the knowledge and experience of epidural analgesia for labor in our hospital is limited.

The attitudes of obstetricians toward epidural analgesia during labor have been widely studied in several countries[5-9]. Most of the studies concluded that obstetricians were mostly unfamiliar with the process and suggested there was a need to provide additional education to the involved personnel[5, 6, 8-10]. One recent study showed there were differences in the interprofessional attitudes among anesthesiologists, nurses, and obstetricians in terms of their familiarity with the management of epidural analgesia for labor[10]. The same report mentioned there was significant less familiarity of epidural management among obstetricians than among anesthesiologists or nurses[10].

The attitudes of the obstetricians in our institute toward epidural analgesia during labor have not been assessed. Consequently, the primary objective of this study was to describe the obstetricians' viewpoints toward epidural analgesia, particularly regarding the maternal outcomes and complications, together with their comments on the need for an epidural analgesia service in the present setting in our institute.

Materials and Methods

This study was a questionnaire-based, cross-sectional study. The study was approved by Siriraj Institutional Review Board (protocol number 778/2562(IRB2), approval number Si 854/2019, date of approval December 4, 2019). The need for individual informed consent was waived by the ethics committee in order to maintain the confidentiality of the respondents. The questionnaires were distributed from February 2020 to August 2020. We included all the obstetrics residents, fellows, and consultants in the Department of Obstetrics and Gynecology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand. Exclusion criteria were international obstetricians who did not understand Thai, as all the data were retrieved from a written questionnaire paper in the Thai language. After the obstetricians had completed the questionnaire, the questionnaire paper could be returned by putting it in a prearranged box or by direct return to the research assistant. The questionnaire was

designed by the principal investigator and included questions to probe the respondents' demographic data, including age, gender, working experience (years), subspecialty, and the past and present number of epidural analgesia cases they were involved with. The questions regarding epidural analgesia for labor contained 25 items. Each item could be rated using a 5-point Likert scale (1: strongly disagree; 2: disagree; 3: mediocre; 4: agree; 5: strongly agree). A rating score of 4 or 5 showed agreement with that item. The questionnaire probed the respondents' attitude toward the effect of epidural analgesia in a number of obstetric aspects, including the prolongation of labor, routes of delivery, maternal side effects, fetal/neonatal outcomes, when to initiate epidural analgesia, and the confidence of being able to resolve possible complications that might arise after epidural analgesia. The content validity of the questionnaire was determined using the Item-Objective Congruence Index (IOC). The IOC of each item was rated by three senior obstetric anesthesiologists of the Department of Anesthesia, Faculty of Medicine, Siriraj Hospital, revealing IOC > 0.66 for each item. Additionally, the questionnaire probed their satisfaction with the epidural analgesia service in our hospital. The open-ended question about this aspect was placed at the end of the questionnaire to generate qualitative suggestions regarding the use of epidural analgesia.

Statistical analysis

The authors estimated that around 60% of the obstetricians in our institute agree with using epidural analgesia for relieving labor pain based on their ratings of 4 or 5 on the Likert scale. According to a confidence level of 95% and an acceptable error of 0.12, the sample size calculation was performed using the formula $n = Z (1- \alpha)^2 p(1-p) / d^2$, and revealed the minimum sample size needed was 65 participants. As the number of obstetricians in our institute was 124 in the study period, it was considered that a response rate of approximately 50% would be sufficient for the study. PASW statistics (SPSS) version 18.0 (SPSS Inc., Chicago, IL, USA) for Window was used for all the statistical analyses. The categorical data were presented as the number and percentage and chi-square, linear-by-linear chi-square, and Fisher exact tests were used to compare the groups. Continuous data were reported as the mean and standard deviation. The student t-test was used to compare the mean of the average score of each item. We considered p values < 0.05 to be statistically significant. Cronbach's alpha was used to express the internal reliability of the questionnaire.

Results

Among the total 124 obstetricians in our institute, 75 returned the questionnaire, representing a response rate of 60.5%. The demographic data of the respondents are shown in Table 1. Approximately half the obstetrician respondents (39/75; 54.2%) reported experience with epidural analgesia in 1-10 patients, while 5 obstetricians (6.7%) had no experience with epidural analgesia for labor at all. Further, 20/75 obstetricians (26.7%) were currently not involved with patients with normal labor at the presenting day. The average age of the residents was 28.7 ± 2.5 years old, compared with an older age for the graduate obstetricians (43.8 ± 10.2 years old); p < 0.001. The obstetricians in the maternal-fetal medicine (MFM) subspecialty had significantly more experience with epidural analgesia cases than the other subspecialties (p < 0.001).

Table 1. Demographic data of the respondents, n = 75.

Parameter	Mean ± SD or number (%)
Age (years)	34.0 ± 10.1
Median (min, max)	30 (26, 67)
Gender	
Male	22 (29.3)
Female	52 (69.3)
No answer	1 (1.3)
Status, average age [mean ± SD]	
Resident	44 (58.7), 28.7 ± 2.5
Fellow	7 (9.3), 34.7 ± 4.6
Consultant	24 (32.0), 46.5 ± 9.9
Work experience	
0-3 years	29 (38.7)
> 3-5 years	11 (14.7)
> 5-10 years	11 (14.7)
> 10-20 years	9 (12.0)
> 20-30 years	10 (13.3)
> 30 years	5 (6.7)
Specialty*	
General OBGYN	49 (65.3)
Maternal-Fetal Medicine (MFM)	14 (18.7)
Reproductive medicine	5 (6.7)
Gynecologic Oncology	6 (8.0)
Urogynecology	1 (1.3)
Laparoscopic Surgery	5 (6.7)
Experience in epidural analgesia for labor patients (overall patient number)	
0	5 (6.7)
1-10	39 (52.0)
> 10-50	23 (30.7)
> 50-100	5 (6.7)
> 100-200	1 (1.3)
> 200-500	1 (1.3)
> 500-1,000	1 (1.3)
Currently work with normal labor cases	
(patient number/week)	
0	20 (26.7)
1-10	33 (44.0)
> 10-50	22 (29.3)

SD: standard deviation, OBGYN: Obstetrics and Gynecology, MFM: Maternal–Fetal Medicine

*Specialty: 5 obstetricians reported 2 specialties (2 obstetricians - MFM with laparoscopic surgery; 2 obstetricians - gynecologic oncology with laparoscopic surgery; 1 obstetrician - urogynecology with laparoscopic surgery)

Table 2. presents the scores from the questionnaire for items 1 to 25 [I1-I25]; the overall average score of each item was presented as the mean and standard deviation; median and range; and the percentage of obstetricians with an agree rating for each item (rating of 4-5 points).

Table 2. Overall mean score, median, and number of respondents who agreed with each questionnaire item (25 items), n = 75.

Item		Average score Mean ± SD	Median (min, max)	Number of respondents agreed (rated 4–5) Number (valid percent)
I1	Patients with vaginal labor should receive epidural analgesia if no contraindications	3.69 ± 0.92	4 (1, 5)	44 (58.7)
I2	Patients with vaginal labor should receive epidural analgesia only in case of an expectation of instrumental delivery	3.39 ± 1.16	3 (1,5)	37 (50.0)
I3	Epidural analgesia for labor leads to prolonging the first stage of labor	2.68 ± 1.12	3 (1,5)	19 (25.7)
I4	Epidural analgesia for labor leads to prolonging the second stage of labor	3.71 ± 1.02	4 (1,5)	52 (71.2)
I5	Epidural analgesia for labor increases the instrumental delivery rate	3.63 ± 0.84	4 (1,5)	49 (67.1)
I6	Epidural analgesia for labor increases the cesarean delivery rate	2.89 ± 1.01	3 (1,5)	23 (31.5)
I7	Epidural analgesia for labor causes intrauterine fetal distress	2.16 ± 0.87	2 (1,4)	4 (5.3)
I8	Epidural analgesia for labor causes birth asphyxia	2.05 ± 0.85	2 (1,4)	3 (4.0)
I9	Epidural analgesia for labor causes maternal nausea and vomiting	2.85 ± 1.04	3 (1,5)	22 (29.3)
I10	Epidural analgesia for labor causes maternal itching	2.93 ± 0.95	3 (1,5)	19 (25.3)
I11	Epidural analgesia for labor causes leg muscle weakness	2.88 ± 0.92	3 (1,5)	19 (25.3)
I12	Epidural analgesia for labor causes maternal fever	2.13 ± 0.81	2 (1,4)	2 (2.7)
I13	Epidural analgesia for labor causes maternal urinary retention	3.15 ± 0.91	3 (1,5)	26 (34.7)
I14	Epidural analgesia for labor causes increasing the dosage of oxytocin for augmenting labor	2.84 ± 1.13	3 (1,5)	23 (30.7)
I15	Epidural analgesia for labor should be placed when the patient starts having labor pain although cervical dilatation is less than 4 cm	2.55 ± 1.14	2 (1,5)	19 (25.3)
I16	Epidural analgesia for labor should be placed after the patient has cervical dilatation equal or more than 4 cm	3.77 ± 0.88	4 (1,5)	55 (73.3)
I17	Epidural analgesia for labor should be placed before oxytocin administration	3.20 ± 0.93	3 (1,5)	29 (38.7)
I18	Epidural analgesia for labor should be placed before a ruptured membrane	2.88 ± 0.85	3 (1,4)	18 (24.0)
I19	I am familiar with attending patients with epidural analgesia for labor	2.84 ± 0.89	3 (1,5)	16 (21.3)
I20	I am confident I can resolve the possible complications arising from epidural analgesia for labor	2.52 ± 1.12	2 (1,5)	17 (22.7)
I21	I believe that epidural analgesia for labor gives the patient good relief from labor pain	4.27 ± 0.74	4 (1,5)	69 (92.0)
I22	There should be an epidural analgesia for labor service available during both office hours and out-of-office hours	4.11 ± 0.91	4 (1,5)	61 (81.3)
I23	There should be an anesthesiologist available to attend patients with epidural analgesia placed for labor both during office hours and out-of-office hours	4.19 ± 0.77	4 (1,5)	66 (88.0)
I24	Obstetricians are able to attend patients after epidural analgesia placed for labor during both office hours and out-of-office hours	3.15 ± 1.16	3 (1,5)	27 (36.0)
I25	Labor room nurses are able to attend patients after epidural analgesia placed for labor during both office hours and out-of-office hours	3.00 ± 1.16	3 (1,5)	26 (35.6)
I16	Epidural analgesia for labor should be placed after the patient has cervical dilatation equal or more than 4 cm	3.77 ± 0.88	4 (1,5)	55 (73.3)
I17	Epidural analgesia for labor should be placed before oxytocin administration	3.20 ± 0.93	3 (1,5)	29 (38.7)
I18	Epidural analgesia for labor should be placed before a ruptured membrane	2.88 ± 0.85	3 (1,4)	18 (24.0)
I19	I am familiar with attending patients with epidural analgesia for labor	2.84 ± 0.89	3 (1,5)	16 (21.3)
I20	I am confident I can resolve the possible complications arising from epidural analgesia for labor	2.52 ± 1.12	2 (1,5)	17 (22.7)
I21	I believe that epidural analgesia for labor gives the patient good relief from labor pain	4.27 ± 0.74	4 (1,5)	69 (92.0)
I22	There should be an epidural analgesia for labor service available during both office hours and out-of-office hours	4.11 ± 0.91	4 (1,5)	61 (81.3)
I23	There should be an anesthesiologist available to attend patients with epidural analgesia placed for labor both during office hours and out-of-office hours	4.19 ± 0.77	4 (1,5)	66 (88.0)
I24	Obstetricians are able to attend patients after epidural analgesia placed for labor during both office hours and out-of-office hours	3.15 ± 1.16	3 (1,5)	27 (36.0)
I25	Labor room nurses are able to attend patients after epidural analgesia placed for labor during both office hours and out-of-office hours	3.00 ± 1.16	3 (1,5)	26 (35.6)

The 5-point Likert scale comprised: 1: strongly disagree; 2: disagree; 3: mediocre; 4: agree; 5: strongly agree.

SD: standard deviation, cm: centimeter.

The number of respondents = 74 in items 2 and 3; the number of respondents = 73 in items 4, 5, 6, and 25.

The number of obstetricians (percent) stratified by the MFM subspecialty compared with the other subspecialties, the obstetricians' status (resident versus graduate obstetrician, including fellow and consultant), and working experience who gave an agree rating for each item are shown in Table 3.

Table 3. Comparison of the number of respondents who agreed (gave a rating of 4-5) with each item between the maternal-fetal medicine subspecialty and others, as well as based on status and work experience; number (valid percent); n = 75.

Item	MFM sub-specialty (n = 14)	Others (n = 61)	p value	Resident (n = 44)	Fellow and consultant (n = 31)	p value	Work experience < 10 years (n = 51)	Work experience > 10 years (n = 24)	p value
I1	11 (78.6)	33 (54.1)	0.094	20 (45.5)	24 (77.4)	0.006	28 (54.9)	16 (66.7)	0.334
I2	6 (46.2)	31 (50.8)	0.760	20 (45.5)	17 (56.7)	0.334	24 (47.1)	13 (56.5)	0.451
I3	3 (21.4)	16 (26.7)	1.000	12 (27.9)	7 (22.6)	0.605	13 (26.0)	6 (25.0)	0.927
I4	10 (71.4)	42 (71.2)	1.000	32 (76.2)	20 (64.5)	0.276	36 (73.5)	16 (66.7)	0.546
I5	10 (71.4)	39 (66.1)	1.000	26 (61.9)	23 (74.2)	0.269	32 (65.3)	17 (70.8)	0.637
I6	3 (21.4)	20 (33.9)	0.526	14 (33.3)	9 (29.0)	0.696	15 (30.6)	8 (33.3)	0.814
I7	0	4 (6.6)	1.000	4 (9.1)	0	0.138	4 (7.8)	0	0.299
I8	0	3 (4.9)	1.000	3 (6.8)	0	0.263	3 (5.9)	0	0.547
I9	1 (7.1)	21 (34.4)	0.053	14 (31.8)	8 (25.8)	0.573	15 (29.4)	7 (29.2)	0.983
I10	3 (21.4)	16 (26.2)	1.000	10 (22.7)	9 (29.0)	0.536	10 (19.6)	9 (37.5)	0.097
I11	3 (21.4)	16 (26.2)	1.000	13 (29.5)	6 (19.4)	0.318	13 (25.5)	6 (25.0)	0.964
I12	1 (7.1)	1 (1.6)	0.341	1 (2.3)	1 (3.2)	1.000	1 (2.0)	1 (4.2)	0.541
I13	1 (7.1)	25 (41.0)	0.026	17 (38.6)	9 (29.0)	0.389	17 (33.3)	9 (37.5)	0.724
I14	3 (21.4)	20 (32.8)	0.529	11 (25.0)	12 (38.7)	0.205	15 (29.4)	8 (33.3)	0.731
I15	2 (14.3)	17 (27.9)	0.496	8 (18.2)	11 (35.5)	0.090	9 (17.6)	10 (41.7)	0.026
I16	9 (64.3)	46 (75.4)	0.504	34 (77.3)	21 (67.7)	0.358	37 (72.5)	18 (75.0)	0.823
I17	6 (42.9)	23 (37.7)	0.721	15 (34.1)	14 (45.2)	0.332	17 (33.3)	12 (50.0)	0.167
I18	2 (14.3)	16 (26.2)	0.496	10 (22.7)	8 (25.8)	0.758	10 (19.6)	8 (33.3)	0.194
I19	5 (35.7)	11 (18.0)	0.161	6 (13.6)	10 (32.3)	0.053	8 (15.7)	8 (33.3)	0.082
I20	6 (42.9)	11 (18.0)	0.073	5 (11.4)	12 (38.7)	0.005	7 (13.7)	10 (41.7)	0.007
I21	13 (92.9)	56 (91.8)	1.000	39 (88.6)	30 (96.8)	0.391	46 (90.2)	23 (95.8)	0.657
I22	12 (85.7)	49 (80.3)	1.000	34 (77.3)	27 (87.1)	0.282	42 (82.4)	19 (79.2)	0.758
I23	12 (85.7)	54 (88.5)	0.672	38 (86.4)	28 (90.3)	0.728	44 (86.3)	22 (91.7)	0.710
I24	8 (57.1)	19 (31.1)	0.068	13 (29.5)	14 (45.2)	0.165	18 (35.3)	9 (37.5)	0.853
I25	5 (35.7)	21 (35.6)	1.000	16 (38.1)	10 (32.3)	0.607	19 (38.8)	7 (29.2)	0.421

MFM: Maternal - Fetal Medicine.

Table 4 shows the comparison of the average scores for the obstetricians in the MFM subspecialty and the others regarding the respondents' status and working experience. The MFM obstetricians had higher confidence in resolving possible complications derived from epidural analgesia for labor than the obstetricians in the other subspecialties [I20] (p = 0.009). The average rating scores of the residents concerning the side effects of epidural analgesia for labor on intrauterine fetal distress [I7] (p = 0.006) and birth asphyxia [I8] (p = 0.003) were significantly higher than the average scores of the graduate obstetricians. The overall Cronbach's alpha of the questionnaire from all the participants was 0.603. More specifically, the individual Cronbach's alpha scores from the residents, fellows, and consultants groups were 0.691, 0.780, and 0.327, respectively.

Table 4. Comparison of the average score of each item between the maternal-fetal medicine sub-specialty and others, as well as based on status and work experience; mean ± SD; n = 75.

Item	MFM sub-specialty (n = 14)	Others (n = 61)	p value	Resident (n = 44)	Fellow and consultant (n = 31)	p value	Work experience < 10 years (n = 51)	Work experience > 10 years (n = 24)	p value
I1	4.0 ± 1.0	3.6 ± 0.9	0.166	3.6 ± 0.9	3.9 ± 0.9	0.096	3.7 ± 0.9	3.8 ± 1.0	0.716
I2	3.5 ± 1.4	3.4 ± 1.1	0.813	3.3 ± 1.0	3.5 ± 1.3	0.389	3.4 ± 1.1	3.4 ± 1.3	0.832
I3	2.1 ± 1.2	2.8 ± 1.8	0.048	2.9 ± 1.0	2.4 ± 1.2	0.096	2.8 ± 1.1	2.4 ± 1.3	0.171
I4	3.6 ± 1.3	3.7 ± 1.0	0.779	3.8 ± 0.8	3.5 ± 1.2	0.184	3.7 ± 1.0	3.7 ± 1.0	0.982
I5	3.6 ± 1.2	3.6 ± 0.7	0.774	3.6 ± 0.8	3.7 ± 0.9	0.897	3.6 ± 0.9	3.7 ± 0.8	0.582
I6	2.3 ± 1.3	3.0 ± 0.9	0.011	3.1 ± 0.8	2.7 ± 1.2	0.090	2.9 ± 1.0	2.9 ± 1.1	0.877
I7	1.9 ± 0.9	2.2 ± 0.9	0.150	2.4 ± 0.9	1.8 ± 0.8	0.006	2.3 ± 0.9	1.8 ± 0.8	0.025
I8	1.7 ± 0.8	2.1 ± 0.8	0.099	2.3 ± 0.9	1.7 ± 0.7	0.003	2.2 ± 0.9	1.8 ± 0.8	0.068
I9	2.3 ± 1.0	3.0 ± 1.0	0.022	2.9 ± 1.0	2.8 ± 1.1	0.582	2.9 ± 1.0	2.8 ± 1.2	0.557
I10	2.8 ± 1.1	3.0 ± 0.9	0.522	2.8 ± 0.9	3.1 ± 1.1	0.318	2.8 ± 0.9	3.1 ± 1.1	0.233
I11	2.6 ± 1.1	3.0 ± 0.9	0.163	3.1 ± 0.8	2.7 ± 1.1	0.077	2.9 ± 0.9	2.8 ± 1.0	0.402
I12	2.2 ± 1.0	2.1 ± 0.8	0.682	2.2 ± 0.8	2.0 ± 0.8	0.368	2.2 ± 0.8	2.1 ± 0.8	0.717
I13	2.6 ± 0.9	3.3 ± 0.9	0.008	3.2 ± 0.9	3.0 ± 0.9	0.365	3.2 ± 1.0	3.1 ± 0.8	0.889
I14	2.4 ± 1.2	3.0 ± 1.1	0.075	2.8 ± 1.0	2.9 ± 1.3	0.843	2.9 ± 1.1	2.8 ± 1.2	0.801
I15	2.2 ± 1.1	2.6 ± 1.1	0.230	2.4 ± 1.0	2.8 ± 1.3	0.167	2.5 ± 1.1	2.8 ± 1.3	0.293
I16	3.6 ± 1.1	3.8 ± 0.8	0.542	3.8 ± 0.8	3.7 ± 1.0	0.797	3.7 ± 0.8	3.9 ± 1.0	0.336
I17	2.8 ± 1.3	3.3 ± 0.8	0.166	3.3 ± 0.8	3.1 ± 1.1	0.609	3.2 ± 0.8	3.2 ± 1.2	0.963
I18	2.6 ± 0.9	3.0 ± 0.8	0.135	2.9 ± 0.8	2.9 ± 0.9	0.845	2.9 ± 0.8	2.9 ± 1.0	0.975
I19	3.1 ± 0.9	2.8 ± 0.9	0.157	2.8 ± 0.7	2.9 ± 1.1	0.437	2.8 ± 0.8	3.0 ± 1.0	0.178
I20	3.2 ± 1.0	2.4 ± 1.1	0.009	2.2 ± 0.9	2.9 ± 1.3	0.010	2.3 ± 0.9	2.9 ± 1.4	0.069
I21	4.5 ± 0.7	4.2 ± 0.8	0.194	4.1 ± 0.8	4.6 ± 0.6	0.005	4.1 ± 0.8	4.6 ± 0.6	0.010
I22	4.4 ± 1.0	4.0 ± 0.9	0.143	3.9 ± 0.9	4.4 ± 0.9	0.024	4.0 ± 0.9	4.3 ± 1.0	0.352
I23	4.4 ± 1.0	4.2 ± 0.7	0.359	4.0 ± 0.7	4.4 ± 0.8	0.026	4.1 ± 0.8	4.3 ± 0.8	0.258
I24	3.7 ± 1.2	3.0 ± 1.1	0.041	3.0 ± 1.1	3.4 ± 1.3	0.132	3.1 ± 1.1	3.2 ± 1.2	0.919
I25	3.2 ± 1.3	3.0 ± 1.1	0.444	3.1 ± 1.1	2.9 ± 1.3	0.685	3.2 ± 1.1	2.7 ± 1.2	0.084

MFM: Maternal-Fetal Medicine, SD: standard deviation

Overall, 69/75 obstetricians gave a rating regarding the satisfaction with the epidural analgesia for labor provided by the anesthesiologist in our hospital. The overall satisfaction is demonstrated in Fig. 1. Approximately half the obstetricians (52%) reported good to very good satisfaction. In terms of the satisfaction score ranging between 0-100, approximately one-third of the obstetricians (21/69; 30.4%) rated their satisfaction score as > 80. The mean satisfaction score was 68.2±15.8, and the median score (interquartile range) was 70 (65-80).

The free responses revealed a range of opinions regarding the use of epidural analgesia. Six obstetricians proposed there should be an epidural analgesia service in our institute for both in and out-of-office hours. Five obstetricians demanded that epidural analgesia should be used in the case of it being the patient's preference or in the private labor suite. Two obstetricians explained that epidural analgesia should be performed in patients with heart disease and who require a shortened second stage of labor. Lastly, two obstetricians described that the anesthesiologist should be present all the time after epidural analgesia has been administered.

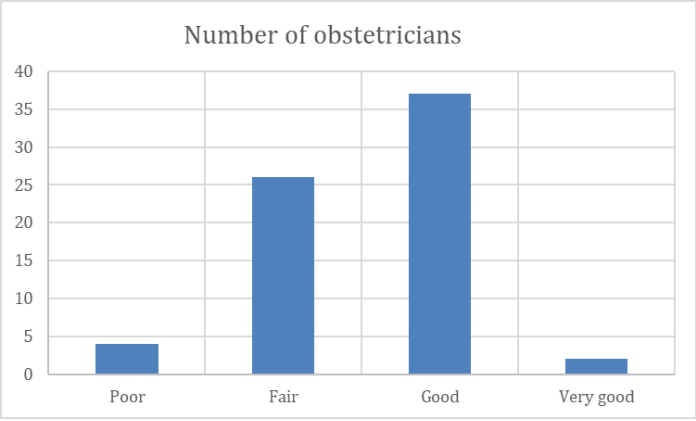

Fig. 1. Obstetricians' satisfaction with the use of epidural analgesia for labor (n = 69).

Discussion

Our study had a moderate response rate for the questionnaire (60.5%) compared with much higher response rates for Vandendriesen et al (68%)[5] and Pirdubak et al (94.7%)[9]. We postulated that the unfamiliarity of the obstetricians in our institute regarding epidural analgesia might have made them reluctant to reply to the questionnaire. As we can see from the data, a considerable number of the obstetricians (44/75; 58.7%) reported experience with epidural analgesia cases for only 10 or fewer patients. The gynecologic subspecialties, such as laparoscopic or oncology specialty, also included some obstetricians who were not currently involved with laboring parturients. Another reason is that there is limited epidural analgesia service in our institute, in which it is almost exclusively only applied for academic purposes in training anesthesia residents. Consequently, only a small number of patients receive epidural analgesia in our institute, equating to approximately 0-2 cases per day and with the service only available in limited working hours (roughly 100-120 cases per year out of approximately 3,500-4,000 labor cases, thus accounting for only 2.5-3.4% of cases).

There exist a large number of conflicting data regarding the obstetric outcomes after epidural analgesia[2-4, 11-13]. The Cochrane database systematic review concluded that epidural analgesia for labor led to a prolongation of the second stage of labor and increased the rate of instrumental delivery, including vacuum and forceps-assisted extraction[2]. The rate of cesarean delivery after epidural analgesia has also been extensively studied[13-16]. Bannister-Tyrrell et al conducted a large population-based cohort study and reported an increase in the rate of cesarean delivery in patients receiving epidural analgesia for labor (risk ratio [RR] 2.5; 95% confidence interval [95% CI] 2.5-2.6)[16]. This may be due to the fact that local anesthetic drugs given in the epidural space can cause motor weakness and may affect the rotation and flexion of the fetal head when initiating the epidural analgesia in the early labor phase[14]. On the other hand, the systematic review reported that there was no difference between the rate of cesarean delivery in laboring women with and without epidural analgesia (RR 1.07; 95%CI 0.96-1.18)[2]. Controversy about the labor outcomes has led to a difference in the viewpoints of obstetricians regarding epidural analgesia. Kamakshi et al revealed that more than half of obstetricians tend to consider that epidural analgesia increases the rate of cesarean delivery[6]; however, our study showed that 71.2%, 67.1% and 31.5% of the obstetricians in our hospital agreed that epidural analgesia leads to a prolongation of the second stage of labor, increases the instrumental delivery rate, and increases the cesarean delivery rate [I4-I6, Table 2], respectively.

The different obstetrician subspecialties presented variations in their attitudes toward the use of epidural analgesia for labor. The average score from the other subspecialty obstetricians about whether epidural analgesia for labor increases the cesarean delivery rate [I6, Table 4] was higher than the average score from the MFM specialty obstetricians ($p = 0.011$). Besides, the MFM obstetricians had higher confidence in their ability to resolve possible complications derived from epidural analgesia for labor more than the obstetricians in the other subspecialties, which is not surprising as the MFM specialty obstetricians had significantly more experience with parturients receiving epidural analgesia.

Opinions about the timing of placing epidural analgesia varied broadly, as can be seen in Table 2 (I15–I18). The American Society of Anesthesiologist Task Force on Obstetric Anesthesia and the Society for Obstetric Anesthesia and Perinatology regarding the most appropriate time to initiate epidural analgesia recommended that the epidural should be provided to patients in early labor (cervical dilatation less than 5 cm) if the service is available and that epidural analgesia should be offered on an individualized basis[17]. Wang et al conducted a study of almost 13,000 deliveries, which revealed that the initiation of epidural analgesia in the latent phase of labor compared to initiating it at 4 cm cervical dilatation was neither associated with a prolonged progression of labor nor an increase in the cesarean delivery rate[18]. However, our survey showed that most our obstetricians (55/75; 73.3%) agreed with the initiation of epidural analgesia after cervical dilatation of 4 cm [I16, Table 2].

Regarding the fetal and neonatal outcome after epidural analgesia, the average rating scores of the residents about the side effects of epidural analgesia leading to intrauterine fetal distress and birth asphyxia (I7–I8, Table 4) were significantly higher than those of the graduate obstetricians. The systematic review showed no difference between the epidural analgesia group compared with the parenteral opioid group in neonatal outcomes, including admission to the neonatal intensive care unit and an Apgar score less than 7 at 5 minutes[2].

In addition, there was a disparity in the average rating score concerning epidural analgesia giving patients good relief from labor pain [I21, Table 4] between obstetricians with working experience of less than or equal to 10 years and those with working experience of more than 10 years. Working experience and age differences may partly explain the different attitudes as the mean age of the residents was significantly lower than that of the graduate obstetricians. Similarly, Klein et al described dissimilar attitudes between young obstetricians (≤ 40 years old) and older obstetricians (> 40 years old) regarding the use of epidural analgesia for labor[19]. Younger obstetricians tend to be more comfortable with the routine use of epidural analgesia and fewer consider that epidural analgesia interferes with the progression of labor[19].

In the free responses, some obstetricians suggested the establishment of an epidural analgesia service in our institute in order to provide epidural analgesia in both normal and private labor suites. Besides, the availability of anesthesiologists to attend patients with epidural analgesia both in and out-of-office hours was a significant suggestion considering the results from I19, I20, and I24 in Table 2, which showed that most the obstetricians were not comfortable in attending patients after they have undergone epidural analgesia for labor. Similarly, several surveys in various countries have reported that many obstetricians are unfamiliar with epidural management and have suggested there is a need for further interprofessional education and greater collaboration[5, 7, 9, 10].

There were several limitations of this study to note. First, there was a relatively low response rate from obstetricians. Second, we did not provide the questionnaire to the labor ward nurses, despite their more regular encounters with laboring patients or to the anesthesiologists involved with those patients. Furthermore, details behind the reasons for each item were not explored, such as the reason why some obstetricians consider that there will be intrauterine fetal and neonatal effects after laboring patients have

received epidural analgesia. Future research should be performed utilizing the questionnaire format together with focus group discussions to investigate the attitudes of labor ward nurses and anesthesiologists. A multicenter or national survey regarding epidural analgesia for labor in Thailand should be conducted as currently there are dissimilarities in epidural analgesia practices in individual institutions. The single center data in our study may not reflect the practice in the entire country regarding the use of epidural analgesia for labor. Besides the aforementioned, the authors suggest it is essential to promote the understanding of maternal clinical outcomes and possible complications regarding the use of epidural analgesia for labor to all staff involved in the labor suite.

Conclusion

Our study revealed that 58.7% of the obstetricians in our institute agreed that if there are no contraindications, patients with labor pain should receive epidural analgesia. However, a high number of the obstetricians believed that the use of epidural analgesia for labor will affect maternal obstetric outcomes, including prolonging the second stage of labor and increasing the rate of instrumental delivery. The development of an epidural analgesia service for supporting the widespread use of epidural analgesia for labor in our institute should be undertaken when possible.

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Potential conflicts of interest

The authors declare no conflicts of interest.

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