

# Knowledge, attitude, and practice of childbearing women toward epidural anesthesia during normal vaginal delivery in Alsanayeah Primary Health Care in Khamis Mushait

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## ABSTRACT

**Background:** Labor pain is a severe form of agony that females experience while giving birth. A lot of pregnant women prefer epidural anesthesia (EA) to avoid labor pain. **Objective:** This study focuses on women's general awareness about EA during the childbearing age. **Methods:** A cross-sectional, hospital-based study was conducted using a self-administered questionnaire. The study included all females of childbearing age getting routine antenatal care. The survey was designed to measure their awareness toward EA. A total of 328 females participated in the study. Of these, 205 (62.5%) women showed a low level of knowledge toward EA. Data were analyzed using the Chi-square test and Independent Samples *t*-test. **Results:** Participants in our study included 328 women of childbearing age. Most women (172 [52.4%]) participating in the study were aged between 30 and 40 years. In terms of education, 204 (62.2%) women had university-level education. Two hundred and ninety (88.4%) women were multipara. The majority of women (205 [62.5%]) had a low-level knowledge about EA with a significant relationship between the level of perception and primary education, as well as postgraduation with  $P < 0.023$  and  $P < 0.001$ , respectively. Also, previous EA with pregnancy significantly related to the level of knowledge with  $P < 0.001$ . Through past pregnancies, 106 (32.3%) women had experience with EA. Of these, EA caused complications in only 13 (12.3%) women and side effects in 29 (27.4%) women. **Conclusion:** The majority of women of childbearing age had limited knowledge about the benefits and complications associated with EA. During the antenatal visit, it is essential to educate all women about EA. This could be done by the obstetrician, anesthesiologist, or midwives and/or through flyers and brochures.

**Keywords:** Awareness, epidural analgesia, labor pain, regional anesthesia

## Introduction

Labor pain is one of the most common and severe forms of suffering that women experience, and it is a well-known cause of dissatisfaction among women in labor. A lot of pregnant

women, concerned about the severity of childbirth pain, search and ask for the availability of pain-relieving methods. Some pregnant women prefer to feel the natural process while others may choose to get epidural anesthesia (EA).<sup>[1]</sup> EA makes childbirth less stressful and more acceptable for mothers. Epidural analgesia in labor is widespread due to its benefit in pain relief both during pregnancy and in delivery. However, it is associated with an apparent increase in the risk for obstetric

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intervention and related to long-term dissatisfaction with the birth.<sup>[2]</sup>

EA, as the most prevalent form of labor analgesia, is widely considered an effective pain relief method in Western countries and used to save anesthetic time when a cesarean delivery (C-section) is needed.<sup>[3,4]</sup>

Epidural analgesia is performed by injecting a mixture of a local and opioid analgesic into the lumbar epidural space. It diffuses into the subarachnoid space and acts on the spinal nerve roots. Epidural analgesia blocks potential action transmission, thus, inhibiting the perception of pain.<sup>[5]</sup>

The EA mechanism acts by numbing nerves that are responsible for pain in the delivery anatomical region via the spinal cord. The degree of numbness depends on the type of medication and volume used.<sup>[6]</sup>

It is the only technique that relieves labor pain satisfactorily without maternal or fetal sedation and does not interfere with the restoration of regular uterine activity.<sup>[7]</sup>

If well-timed, EA allows almost complete labor pain relief (90–95%). Once the medication wears off, the pain in the affected areas will be felt. EA is an active regional painkiller without loss of consciousness, and it always relieves pain better than other medications.<sup>[6,8]</sup>

Systematic review studies demonstrated that EA has no impact on the risk of C-section, instrumental vaginal delivery for dystocia, long-term backache, breastfeeding, or neonatal Apgar scores.<sup>[9]</sup>

The aim of our study is to determine and evaluate the knowledge, behavior, and experience of women in the stage of childbearing toward semiconscious anesthesia in natural delivery through the uterus. The awareness of usage, effects can determine this knowledge, and complications of EA and their future desirability to have it again. The results will estimate the level of consciousness, complete the gap, correct the misconceptions, and facilitate decision-making. Some international studies show limited knowledge about epidural effects and complications,<sup>[10-12]</sup> three of which were in the Middle East—one each in the United Arab Emirates (UAE), Iraq, and Saudi Arabia.<sup>[13-15]</sup>

## Material and Methods

This was a hospital-based cross-sectional study. It included all females of childbearing age, having routine antenatal care in the obstetrics clinic, using purposive (judgmental) sampling. Women who refused to participate were excluded. Informed consent was obtained from all the participants. A questionnaire was designed in English and translated into Arabic. Data were analyzed using the Chi-square test and Independent Samples t-test 3. The study was approved by king Khalid university ethics committee on 7/4/2018 (REC #2018-05-45).

## Results

A total of 328 completed questionnaires were returned. All females were of childbearing age. The study group comprised of 55 (16.85%) young patients aged less than <30 years and 101 (30.8%) advanced maternal age (>40 years) patients. The majority of women (172 [52.4%]) were between the age of 30 and 40 years. The level of education ranged between secondary (71 [21.6%]) and basic (21 [6.4%]) education. Most of the women in the sample (204 [62.2%]) had higher education, including a university degree while 32 (9.8%) women had a postgraduation. The majority of the participating women (290 [88.4%]) were multipara while a minority (17 [5.2%]) were nonpregnant or had a history of one pregnancy (21 [6.4%]). The income of the majority of the women (187 [57%]) ranged between 8 and 20k [Table 1].

As per our study, 106 (32.3%) had a positive history of a previous pregnancy with EA. The majority of them (93 [87.7%]) experienced no complications with EA while a minority of them (13 [12.3%]) had a history of difficulties. Also, 77 (72.6%) participating women had no side effects [Table 2].

In terms of awareness about EA, the participating women were asked true/false/do not know questions to evaluate their opinions and knowledge about EA. They were inconclusive if EA was expensive (167 [50.9%]) or not (161 [49.1%]). Also, 171 (52.1%) women considered EA affordable while 157 (47.9%) agreed that it is inaccessible. If EA was free, 167 (50.9%) women said that they would agree to it while 71 (21.6%) women were neutral. One hundred and thirty-three (40.5%) women did not know if EA had adverse effects. While the majority of the

**Table 1: Descriptive statistics of women in the study**

Basic characteristics	Description (n=328)
Age (years)	
Range	18-51
Mean±SD	37.2±7.6
Median (IQR)	37 (32-43)
Age (years)	
<30	55 (16.85%)
30-40	172 (52.4%)
>40	101 (30.8%)
Educational level	
Basic	21 (6.4%)
Secondary	71 (21.6%)
University	204 (62.2%)
Postgraduate	32 (9.8%)
Pregnancy	
Nonpregnant at all	17 (5.2%)
Pregnant once	21 (6.4%)
Multiple pregnancies	290 (88.4%)
Income	
<8k	107 (32.6)
8-20k	187 (57%)
>20k	34 (10.4)

SD=Standard deviation, IQR=Interquartile range

**Table 2: A participant with the previous history of EA**

Previous pregnancy with EA	
Yes	106 (32.3%)
No	222 (67.7%)
Complications (n=106)	
Yes	13 (12.3%)
No	93 (87.7%)
Side effects (n=106)	
Yes	29 (27.4%)
No	77 (72.6%)

EA=Epidural anesthesia

women (150 [45.7%]) said that their husband must agree on EA, 118 (36%) disagreed. One hundred and forty-four (43.9%) women disagreed that EA has social and financial effects while the majority of them (296 [90.2%]) agreed that EA should be available during deliveries. Two hundred and five (62.5%) women agreed that EA is just a syringe administrated in the lower part of the spine, 291 (88.7%) women did not accept that any healthcare worker can perform EA, 200 (61%) women confirmed that EA is the most commonly used painkiller in deliveries, and as per 230 (70.1%) women, it is the most effective painkiller. Unfortunately, 208 (63.4%) women in the study said that they did not know if EA increased the probability of a C-section. To the question, “Is EA is more painful than delivery?” 171 (52.1%) women correctly answered it to be false. Two hundred and eighty-two (86%) women agreed that EA needs written consent.

With regards to the awareness of the complications associated with EA, the majority of the women (199 [60.7%]) did not know if EA may cause a headache, fever, and ambulatory hypotension and only 112 (34.1%) women agreed. In the study, 195 (59.5%) females did not know if EA may weaken uterine contractions. Also, 180 (54.9%) women did not know if EA may cause lower limb (LL) weakness and only 113 (34.5%) agreed. Overall, 205 (62.5%) women in the study showed a low level of awareness toward EA (low [ $<60\%$ ]) [Table 3].

Regarding determinants of EA awareness, a Chi-squared test was used to evaluate relations of perception. Among the study group, some of the women ( $\geq 60\%$ ;  $n = 123$ ) had a high level of consciousness while most women ( $<60\%$ ;  $n = 205$ ) had a low awareness level. It was found that there is a significant relationship between awareness level and women's age, ( $P = 0.011$ ) with mean age value equal  $38.1 \pm 7.5$  in the low-awareness group and  $35.9 \pm 7.6$  among the high-awareness group. The significant between elderly age women and awareness was significant ( $P = 0.028$ ).

With regard to the education level, there was a significant relation between postgraduation and high awareness with  $P = 0.001$ , as well as the relation between basic education level and a low level of consciousness ( $P = 0.023$ ).

Interestingly, pregnancy in the childbearing age has an insignificant connection to the level of knowledge with

**Table 3: KAP questions to assess awareness about EA**

Questions	Description (n=328)
Is EA a high cost?	
Yes	167 (50.9%)
No	161 (49.1%)
Is EA affordable for you?	
Yes	171 (52.1)
No	157 (47.9)
Is EA is acceptable if offered for free?	
Agree	167 (50.9)
Neutral	71 (21.6%)
Disagree	90 (27.4)
Does EA have adverse medical effects?	
Agree	127 (38.7)
Neutral	133 (40.5%)
Disagree	68 (20.7)
The husband should accept EA	
Agree	150 (45.7%)
Neutral	60 (18.3)
Disagree	118 (36%)
EA has social and financial effects	
Agree	76 (23.2)
Neutral	108 (32.9)
Disagree	144 (43.9%)
EA should be available during deliveries	
Agree	296 (90.2%)
Neutral	25 (7.6)
Disagree	7 (2.1)
EA is just a syringe administrated in the lower part of the spine	
True	205 (62.5%)
False	7 (2.1)
I don't know	116 (35.4)
Any healthcare worker can perform EA	
True	1 (0.3)
False	291 (88.7%)
I don't know	36 (11)
EA is the most commonly used painkiller in deliveries	
True	200 (61%)
False	46 (14)
I don't know	82 (25)
EA is the most effective painkiller in deliveries	
True	230 (70.1%)
False	26 (7.9)
I don't know	72 (22)
EA increases the probability of C-section	
True	31 (9.5)
False	89 (27.1)
I don't know	208 (63.4%)
EA is more painful than delivery	
True	18 (5.5)
False	171 (52.1%)
I don't know	139 (42.4)
EA decreases labor pain	
True	148 (45.1%)
False	46 (14)
I don't know	134 (40.9%)

Contd...

Table 3: Contd...

Questions	Description (n=328)
EA needs a written consent	
True	282 (86%)
False	14 (4.3)
I don't know	32 (9.8)
EA may cause a headache, fever, and hypotension	
True	112 (34.1%)
False	17 (5.2)
I don't know	199 (60.7%)
EA may cause LL weakness	
True	113 (34.5%)
False	35 (10.7)
I don't know	180 (54.9%)
EA may weaken uterine contractions	
True	84 (25.6)
False	49 (14.9)
I don't know	195 (59.5%)
EA awareness	
High ( $\geq 60\%$ )	123 (37.5)
Low ( $< 60\%$ )	205 (62.5%)

KAP=Knowledge, attitude, and practice, EA=Epidural anesthesia, C-section=Cesarean section, LL=Lower limb

$P > 0.05$ . A low income of less than 8k among the women showed a significant ( $P = 0.014$ ) association as well as the previous history of EA during pregnancy ( $P < 0.001$ ). However, there were insignificant relations between complications and side effects in women who underwent former EA with pregnancy and level of awareness [Table 4].

## Discussion

The primary care setting is an essential place for family health promotion.<sup>[16]</sup> One of the behavioral health promotions is the readiness of the pregnant mother for labor periods and their interventions.<sup>[17]</sup> Our study evaluated opinions and concerns of women of childbearing age, whether they had been pregnant before or not, about EA. In recent times, EA is frequently used in maternity and children's hospitals. However, our study results suggest that women are not well-informed about EA for pain relief in labor, so they do not pick it. Interprofessional role in primary has widely extended into tertiary care, such as the operating room. Anesthesia plays a critical role at different levels of health care modes.<sup>[7]</sup>

Informed consent regarding epidural analgesia is required from the pregnant female before doing the process. However, because of a lack of information about EA, they may miss the benefits. Also, because of the critical nature of giving birth, usually, there is not enough time to explain the EA procedure, its benefits, and possible complications.<sup>[18]</sup> This anticipatory action could be done better during primary antenatal care.<sup>[19]</sup>

Our results showed that most females of childbearing age have a low-awareness level toward EA. This is similar to a study done by Barakzai *et al.* and William, who confirmed that there is

Table 4: Determinants of EA awareness

	EA awareness		P
	High ( $\geq 60\%$ ) (n=123)	Low ( $< 60\%$ ) (n=205)	
Age (years)			
Range	20-51	18-51	
Mean $\pm$ SD	35.9 $\pm$ 7.6	38.1 $\pm$ 7.5	0.011*
Median (IQR)	36 (30-40)	38 (32-45)	
Age (years)			
<30	27 (22)	28 (13.7)	0.052*
30-40	67 (54.5)	105 (51.2)	0.568*
>40	29 (23.6)	72 (35.1)	0.028*
Educational level			
Basic	3 (2.4)	18 (8.8)	0.023*
Secondary	24 (19.5)	47 (22.9)	0.467*
University	75 (61)	129 (62.9)	0.724*
Postgraduate	21 (17.1)	11 (5.4)	0.001*
Pregnancy			
Nonpregnant at all	5 (4.1)	12 (5.9)	0.479*
Pregnant once	12 (9.8)	9 (4.4)	0.055*
Multiple pregnancies	106 (86.2)	184 (89.8)	0.327*
Income			
<8k	30 (24.4)	77 (37.6)	0.014*
8-20k	76 (61.8)	111 (54.1)	0.176*
>20k	17 (13.8)	17 (8.3)	0.112*
Previous pregnancy with EA			
Yes	67 (54.5)	39 (19)	<0.001*
No	56 (45.5)	166 (81)	
Complications (n=106)			
Yes	6 (9)	7 (17.9)	0.222*
No	61 (91)	32 (82.1)	
Side effects (n=106)			
Yes	15 (22.4)	14 (35.9)	0.132*
No	52 (77.6)	25 (64.1)	

\*Chi-square test and Independent Sample t-test. EA=Epidural anesthesia, SD=Standard deviation, IQR=Interquartile range

poor general awareness among women about epidural analgesia benefits during labor, which is constant with the study results of Waghchoure and Sable.<sup>[1,12,20]</sup>

Minhas *et al.* found high awareness about EA among most of the pregnant females. However, only a small number of women were willing to undergo the procedure due to fears and misbeliefs.<sup>[8]</sup> Also, a study conducted in India concluded that most of the mothers suffer labor pain due to poor awareness, concerns, and lack of knowledge about the availability of regional anesthesia during childbirth.<sup>[16,21]</sup>

A lot of studies explained that poor acceptance of EA is related to religious issues. Sheiner *et al.* showed that women with religious backgrounds were less likely to use EA because of a lack of knowledge and support from religious leaders.<sup>[13,22]</sup> This study was conducted in the UAE and found that giving birth among Muslim women is a robust spiritual event, and they depend on Allah during labor.<sup>[23]</sup> Sheiner *et al.* concluded that health professionals underestimate the severity of pain of Bedouin women, who endure delivery pain with stoicism.<sup>[24]</sup> Also, Toledo



*et al.* found that females from Hispanic backgrounds used EA at a significantly lower rate compared to Caucasian women.<sup>[25]</sup>

The study by Chen *et al.* concluded that the majority of the women in their study reported that the price and fertility insurance affects their decision-making process.<sup>[26]</sup> Also, our study results showed that the cost EA changed women's decision and a lot of them would accept it if it was for free. However, the majority of women (144 [43.9%]) disagreed that EA has social and financial effects.

Gari *et al.* found that about 41% of women in the study often used as a method EA for labor pain control.<sup>[15]</sup> Mohammed *et al.*<sup>[27]</sup> concluded that women in Riyadh, Saudi Arabia has an excellent level of knowledge regarding EA in contrast with women in Abu Dhabi, UAE, who did not know much about it. Additionally, Edwards *et al.*,<sup>[13]</sup> Hassan *et al.*,<sup>[14]</sup> and Mohammed *et al.*<sup>[27]</sup> in their studies in Babil, Iraq and Karachi, Pakistan, respectively, found mediocre general knowledge among females about the role of EA in labor. Nitahani *et al.* concluded in their study that the majority of women (90.5%) in medical college hospitals in India had inadequate information about labor analgesia, with 98.48% not having any knowledge about the role of EA in labor.<sup>[10]</sup>

This discrepancy concerning the level of awareness and acceptance of EA in labor could be explained by the fact that in developing countries, childbirth is viewed as a physiological process that does not require much interference. Also, lack of antenatal follow-up and explanations during the antenatal visits are responsible for the low level of awareness.

The level of knowledge is strongly related to age, education level, and previous exposure to EA. Although Gari *et al.* conducted a study that found that the age of the woman was statistically insignificant; women aged between 21 and 35 years preferred EA than women aged less than 20 and more than 35 years.<sup>[15]</sup> As per our study, there was a significant relationship between awareness and advanced maternal age (>40) of females in the study.

Our results, similar to Garli *et al.*, showed that previous exposure to EA made females prefer it during their next pregnancy as compared with those who did not experience EA.<sup>[15]</sup>

Mohammed *et al.*<sup>[27]</sup> in Riyadh, Saudi Arabia found that good knowledge was associated with education and previous exposure to EA. A similar finding was concluded by both Naithani *et al.* and our study.<sup>[10]</sup>

## Conclusion

It is recommended to establish a health education program to provide information about EA to all females in childbearing period requirements of women who want to find out more about EA. These awareness programs should include observation and communication, a simple diagram of the EA procedure to ease understanding the coordination between obstetricians and anesthesiologists.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

## References

1. Barakzai A, Yousef F, Haider A, Muhammad N, Haider G. Awareness of women regarding analgesia during labor. *J Ayub Med Coll Abbottabad* 2010;22:73-5.
2. Anim-Somuah M, Smyth RMD, Howell CJ. Epidural versus non-epidural or no analgesia in labor. *Cochrane Database Syst Rev* 2005;362:1503-10.
3. Lurie S, Priscu V. Update on epidural analgesia during labor and delivery. *Eur J Obstet Gynecol Reprod Biol* 1993;49:147-53.
4. Morishima HO. Labor analgesia in the US and Japan. *Masui* 2007;56:1040-3.
5. Wong CA. Advances in labor analgesia. *Int J Women's Health* 2009;1:139-54.
6. Sury MR, Arumainathan R, Belhaj AM, MacGPalmer JH, Cook TM, Pandit JJ. The state of UK pediatric anesthesia: A survey of National Health Service activity. *Pediatric Anesthesia*. 2015;25:1085-92.
7. Karn S, Yu H, Karna S, Chen LQ, Qiao DY. Women's awareness and attitudes towards labor analgesia influencing practice between developed and developing countries. *Adv Reprod Sci* 2016;4:46-52.
8. Minhas MR, Kamal R, Afshan G, Raheel H. Knowledge, attitude and practice of parturient regarding epidural analgesia for labour in a university hospital in Karachi. *J Pak Med Assoc* 2005;55:63-6.
9. Marucci M, Cinnella G, Perchiazzi G, Brienza N, Fiore T. Patient-requested neuraxial analgesia for labor. *Anesthesiology* 2007;106:1035-45.
10. Naithani U, Bharwal P, Chauhan SS, Kumar D, Gupta S, Kirti. Knowledge, attitude and acceptance of antenatal women toward labor analgesia and cesarean section in a medical college hospital in India. *J Obstet Anaesth Crit Care* 2011;1:13-20.
11. Oladokun A, Eyelade O, Morhason-Bello I, Fadare O, Akinyemi J, Adedokun B. Awareness and desirability of labor epidural analgesia: A survey of Nigerian women. *Int J Obstet Anesth* 2009;18:38-42.
12. To WW. A questionnaire survey on patients' attitudes towards epidural analgesia in labour. *Hong Kong Med J* 2007;13:208-15.
13. Edwards G, Ansari T. A survey of women's views of epidural analgesia in the Middle East. *Asian J Midwives* 2015;2:34-41.

14. Hasan MS, Alsaadi ZA, Abbas MA, Algoraby JM. Awareness and attitude of pregnant women towards labor analgesia in babil province. *Med J Babylon* 2016;13:1.
15. Gari A, Aziz A, ALSaleh N, Hamour Y, Abdelal H, Ahmed RS. Awareness of epidural analgesia among pregnant women in Jeddah, Saudi Arabia. *Electron Physician* 2017;9:4274-80.
16. Raina SK, Kumar R, Galwankar S, Gilada I, Aggarwal P, Krishnan SV, *et al.* A health care delivery model focusing on development of a cadre of primary care physicians-recommendations of organized medicine academic guild. *J Family Med Prim Care* 2019;8:330-5.
17. Venkateswaran M, Bogale B, Abu Khader K, Awwad T, Friberg IK, Ghanem B, *et al.* Effective coverage of essential antenatal care interventions: A cross-sectional study of public primary healthcare clinics in the West Bank. *PLoS One* 2019;14:e0212635.
18. Jathar D, Shinde VS, Patel RD, Naik LD. A study of patients' perception about knowledge of anesthesia and anesthesiologist. *Indian J Anaesth* 2002;46:26-30.
19. Alakeely M, Almutari A, Alhekail G, Abuoliat Z, Althubaiti A, AboItai L, *et al.* The effect of epidural education on primigravid women's decision to request epidural analgesia: A cross-sectional study. *BMC Pregnancy Childbirth* 2018;18:124.
20. Waghchoure ND, Sable T. Women and nurses knowledge and awareness regarding epidural analgesia. *Sch J App Med Sci* 2016;4:3266-8.
21. Shidhaye RV, Galande M, Bangal VB, Smita J, Shidhaye UR. Awareness and attitude towards labour analgesia of Indian pregnant women. *Anaesth Pain Intensive Care* 2012;16:131-6.
22. Sheiner E, Sheiner EK, Shoham-Vardi L, Gurman G, Press F, Mazor M, *et al.* Predictors of recommendation and acceptance of intrapartum epidural. *Anesth Analg* 2000;90:109-13.
23. Khalaf I, Callister LC. Cultural meanings of childbirth: Muslim women living in Jordan *J Holist Nurs* 1997;15:373-88.
24. Sheiner E, Sheiner EK, Shoham-Vardi I, Mazor M, Katz M. Ethnic differences influence care giver's estimation of pain during labor. *Pain* 1999;81:299-305.
25. Toledo P, Sun BA, Grobman WA, Wong CA, Feinglass J, Hasnain-Wynia R. Racial and ethnic disparities in neuraxial labor Analgesia 2012;114:172-8.
26. Chen R, Cheng Y, Li J. Pregnant women's awareness and acceptance of epidural anesthesia and its influence on cesarean section rate control in China: A qualitative study. *Health* 2013;5:1455-60.
27. Mohamed HF, Alqahtani J, Almobaya N, Aldosary M, Alnajay H. Women's awareness and attitude toward epidural analgesia. *J Biol Agric Healthc* 2013;3. p.6