

Awareness of epidural analgesia among pregnant women in Jeddah, Saudi ArabiaAbdulrahim Gari^{1,2}, Ala Aziz^{2,3}, Nourah ALSaleh^{2,3}, Yosra Hamour^{2,4}, Hanaa Abdelal⁵, Raed Sayed Ahmed^{1,5}¹ Department of Obstetrics and Gynecology, College of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia² King Faisal Specialist Hospital and Research Center, Jeddah, Saudi Arabia³ MBBS, College of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia⁴ MBBS, University of Khartoum, Kharyoum, Sudan⁵ International Medical Center (IMC), Department of Obstetrics & Gynecology, Jeddah, Saudi Arabia**Type of article:** Original**Abstract**

Background and objective: Labor pain is one of the most severe forms of pain that women experience throughout their lifetime. Many pregnant women decide to have an epidural anesthesia to cope with labor pain. This study has focused on general awareness about epidural anesthesia among pregnant women in Jeddah, Saudi Arabia.

Methods: This was a cross-sectional hospital-based study using a self-administered questionnaire, conducted in King Faisal Specialist Hospital and Research Center and International Medical Centre. The study was carried out from July to September 2016 and included all pregnant women who were having a routine antenatal care. They were asked about four main topics that tapped their knowledge on epidural anesthesia. A total of 384 questionnaires were returned and analyzed. Data were analyzed by SPSS version 21 using chi-square and multivariate logistic regression.

Results: According to multivariate logistic regression, women aged between 21–35 years were more likely to opt for an epidural anesthesia (EPA) than those aged less than 20 years, but women aged >35 years were less likely to select EPA, compared with women < 20 years old. Women who were previously exposed to EPA were 2.14 times more likely to prefer EPA during their current pregnancy than those who were not previously exposed (O.R 95% C.I: 1.123–3.66, p=0.006). Those who believed that EPA was commonly used by other women in the Kingdom were also 1.41 times more likely to report their preference to EPA (O.R 95% C.I: 1.15–1.74, p=0.001).

Conclusion: This study demonstrates a lack of knowledge about EPA in certain countries but is better than in some other countries. In an aim to fill this gap, it is recommended that information about EPA must be given to all women during the antenatal visit either by the obstetrician, anesthetist, or through flyers and brochures.

Keywords: Epidural analgesia, Regional anesthesia, Labor pain

1. Introduction

One of the most severe forms of pain that women experience throughout their lifetime is labor pain. During pregnancy, many women give some thought to how they will be able to cope with labor pain and the availability of pain-relieving methods. While some women go natural, many decide to have an epidural anesthesia (EPA) (1). EPA works by numbing pain nerves as they enter the spinal cord. An anesthetic is injected into an area of the spine known as the epidural space. The extent of the numbness will depend on the type of medication used, and the amount injected. It provides almost complete labor pain relief (90%–95%) if administered timely. Once the medication has worn off, feeling in the affected areas will return. EPA is effective and can almost always relieve pain better than other medications (2, 3). This study aims to determine pregnant women's knowledge about the usage, effects, and complications of EPA and their future desirability to have it again. The results will help to evaluate pregnant women's awareness about EPA to estimate and fill the knowledge gap and to correct the

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misconceptions and facilitate decision-making. Previous international studies showed low knowledge about epidural roles and side effects (4-6). Two studies were in the Middle East: one in the UAE, and one in Iraq (7, 8). A single study was done in Riyadh, the capital of Saudi Arabia; this study is, therefore, focused on the general awareness about EPA among pregnant women in Jeddah (9).

2. Material and Methods

This was a cross-sectional hospital-based study, conducted in King Faisal Specialist Hospital and Research Center and International Medical Centre. It included all pregnant women who were having routine antenatal care in the obstetrics clinic, using purposive (judgmental) sampling. Females who were not pregnant and those who refused to participate were excluded. The data collection started in July 2016 and was completed in September 2016. Informed consent was obtained from all participants. A structured self-administered questionnaire was designed in English and translated into Arabic. A total of 384 questionnaires were completed and returned. Analysis of the collected data was done by IBM® SPSS® Statistics version 21 (IBM® Corp., Armonk, NY, USA) using chi-square and multivariate logistic regression.

3. Results

A total of 384 completed questionnaires were returned; all women were pregnant. Young patients aged less than (<20 years) and patients with advanced maternal age (>35 years) represented only 14.3% of the study group. The majority were between (21 and 35) years (81.3%). Saudis represented the majority (75.3%), and the rest were expatriate women. The education level ranged between secondary education or less (21.9%). Higher education, including diploma degree or higher (78.1%), represented the majority of the sample. Moreover, the majority of women were unemployed (56%), and the rest were employed either in the medical field (16.7%) or in other professions (27.3%). The gestational age ranged between 1–42 weeks, a number of reported live births (parity) ranged between zero and seven children. Half the patients (54.4%) had normal vaginal delivery (NVD) at least once; likewise, about a quarter (25.3%) reported a history of cesarean delivery (C/S) at least once (Table 1). Women were asked to rate how much they believed that EPA was commonly used during labor in the Kingdom; less than the third (31.5%) believed that EPA is used often by women, followed by (26.8%) who were unsure and (25.3%) believed it is occasionally used for controlling labor pain. However, the rest either believed it was common (9.6%) or very rare (6.8%). Thus, in general, 41.1% believed it is often to a commonly used method of labor pain control.

Table 1. Demographic Data of the Respondents

Variables	<i>n</i>	%	
Age (year)	<20	17	4.4
	21–30	190	49.5
	31–35	122	31.8
	>35	55	14.3
Nationality	Saudi National	289	75.3
	Non-Saudi National	95	24.7
Education	Secondary Education or Less	84	21.9
	Higher Education.	300	78.1
Employment status	Unemployed	215	56
	Employed-Medical Professions	64	16.7
	Employed-Non-Medical Profession	105	27.3
History of NVD	Never	175	45.6
	At least once	209	54.4
History of C/S	Never	287	74.7
	At least once	97	25.3

Women also were asked for certain whether they once had a previous encounter of EPA and how they would rate their experience with pain control using this method; out of the 384 women, only 123 (32%) had an epidural anesthetic at least once during their previous labors, and the rest (68%) reported they have never had it (Table 2). Women were asked to respond with true/false/do not know to four questions that tapped their opinion/knowledge on four main points on EPA, whether contractions become weaker with EPA, whether the epidural's needle insertion is very painful, whether EPA is convenient and will ease delivery though allowing women to push when needed, and whether EPA leads to paraplegia as a complication. A chi-squared test of goodness-of-fit was used to explore

women's responses as to whether they would differ from expected equal responses for each answer (true = 128 women; false =128 women; and do not know = 128). The chi-squared showed that women significantly responded they did not know (57.8%) whether contractions become weak or stop completely after administration of EPA, fewer disagreed (22.4%), and less than (19.8%) agreed ($p<0.001$). Likewise, women's responses differed from expected when asked about whether the epidural insertion is more painful than the labor pain itself; almost half the patients (48.2%) responded as they do not know, followed by 44.8% who believed that it is not true. Very few believed that it is true (7%) ($p<0.001$). On the other hand, the majority (51%) reported they were uncertain whether the epidural reduces labor pain and allows the mother to push when needed; fewer agreed that it is an advantage of EPA (40.6%) and few (8.3%) believed it is untrue. Finally, 49% were uncertain whether the epidural causes paraplegia, and more than third (35.1%) believed it is not true; only 15.9% believed EPA truly can cause paralysis; the chi-squared goodness-of-fit showed the pattern of answers is significant, and the biggest proportion were uncertain denoting that lack of knowledge is predominant ($p<0.001$) (Table 3).

Table 2. Frequency of Epidural Usage and History of Exposure

Questions		n	%
How common do you think epidural analgesia is used during labor?	Rarely	26	6.8
	Occasionally	97	25.3
	Often	121	31.5
	Commonly	37	9.6
	Not sure	103	26.8
Have you ever had epidural anesthesia?	Yes	123	32
	No	261	68

Table 3: Knowledge About Epidural Anesthesia

Items of questionnaire	True	False	Do not know	p-value
	n (%)	n (%)	n (%)	
Contractions become weak or stop completely after administration of	76 (19.8)	86 (22.4)	222 (57.8)	<0.001
Epidural insertion is more painful than the labor pain itself	27 (7)	172 (44.8)	185 (48.2)	<0.001
Epidural reduce labor pain and allow the mother to push when needed	156 (40.6)	32 (8.3)	196 (51)	<0.001
Epidural causes paraplegia	61 (15.9)	135 (35.2)	188 (49)	<0.001

A multivariate logistic regression model was used to understand the joint relationship between women's intent to undergo an EPA during their current pregnancy and their age, belief on the popularity of EPA, and whether they were exposed to the previous idea about the EPA beside their answers to specific popular misconceptions (misunderstanding), facts which were asked on a true/false/do not know manner about EPA side effects, benefits, and possible injuries or side effects due to the invasive nature of the procedure. We specified these predictors for the purpose of understanding their effects on the outcome variable; the predictors were tested using standard logistic regression with predictors entered as a block. The model indicated that at least one, or more, of the included predictors had a significant relationship with the woman's intent to undergo an EPA during her current pregnancy (Table 4). Interestingly, the age of women was not statistically significant in our model, but women aged between 21–30 years are 1.67 times more likely to opt for an EPA than those aged less than 20 years; those who were aged between 30–35 years were also 1.15 times more likely to prefer EPA during labor than women <20 years old. In addition, women aged >35 years compared with women < 20 years old were 0.77 times less likely to select an EPA anesthesia. This cubic (rise then fall) effect for age group on women's odds electing EPA during the current pregnancy (Figure 1) is consistent across the two groups, but those who had previous knowledge (dotted line) are predicted to have significantly higher probability electing an EPA across all age groups than those who do not have a previous idea (solid black line) (Table 4). To illustrate the effects of these predictors on women's electing to use EPA during current pregnancy, those women who were previously exposed to EPA were 2.14 times more likely to prefer EPA during their current pregnancy than those who were not previously exposed, (O.R 95% C.I: 1.123–3.66,

$p=0.006$). Furthermore, those who believed that EPA was commonly used by other women in the kingdom were also 1.41 times more likely to report their preference to EPA (O.R 95% C.I: 1.15– 1.74, $p=0.001$). In addition, women who believed EPA could not cause more pain than labor-associated pain were 3.56 times more likely to report their preference to the EPA as an anesthetic method, on average; when compared with those who reported they were uncertain (O.R 95% C.I: 1.94-6.53, $p<0.001$), on the other hand, those who believed the EPA truly causes pain were not statistically different from those who were uncertain, $p=0.764$, denoting those who did not know and those who wrongly believed EPA insertion is as painful, as labor pains were at the same odds of electing an EPA during current pregnancy. Likewise, women who believed the EPA as an anesthetic method during labor would truly allow the mother to push during childbirth and would reduce pain were 2.14 times more likely than those women who were uncertain/did not know (O.R 95% C.I: 1.94–6.53, $p=0.014$), and those who believed this effect is not tenable did not differ significantly with their odds electing an EPA during this current pregnancy than those who were uncertain, $p=0.281$. This denotes they are also almost equally likely not to elect EPA. Moreover, women who did not believe EPA insertion is associated with paraplegia were 1.74 times more likely to prefer an EPA as an anesthetic during their current pregnancy when compared with those who were uncertain whether EPA would cause such a side effect (O.R 95% C.I: 0.95–3.18); however, the difference was not significant, $p=0.073$. Those women who believed that EPA would truly cause paraplegia as a side effect were 0.341 (a decreased) times less likely to select an EPA than those who were uncertain (O.R 95% C.I: 0.341–0.150, $p=0.010$), denoting they are significantly less predicted to elect an EPA than those who did not know whether such a side effect for EPA is possible (Table 4). Women were asked if they preferred an educational session to be provided to them prior to undertaking EPA, and the majority responded they would like such educational session during the antenatal classes (64.3%), and the rest believed they do not. Those who liked the idea provided their preferred methods was during physician consultation sessions (25.5%) or special session by the anesthetist (25%) or by means of video 8.9%, followed by those who preferred methods like written pamphlets (Table 5).

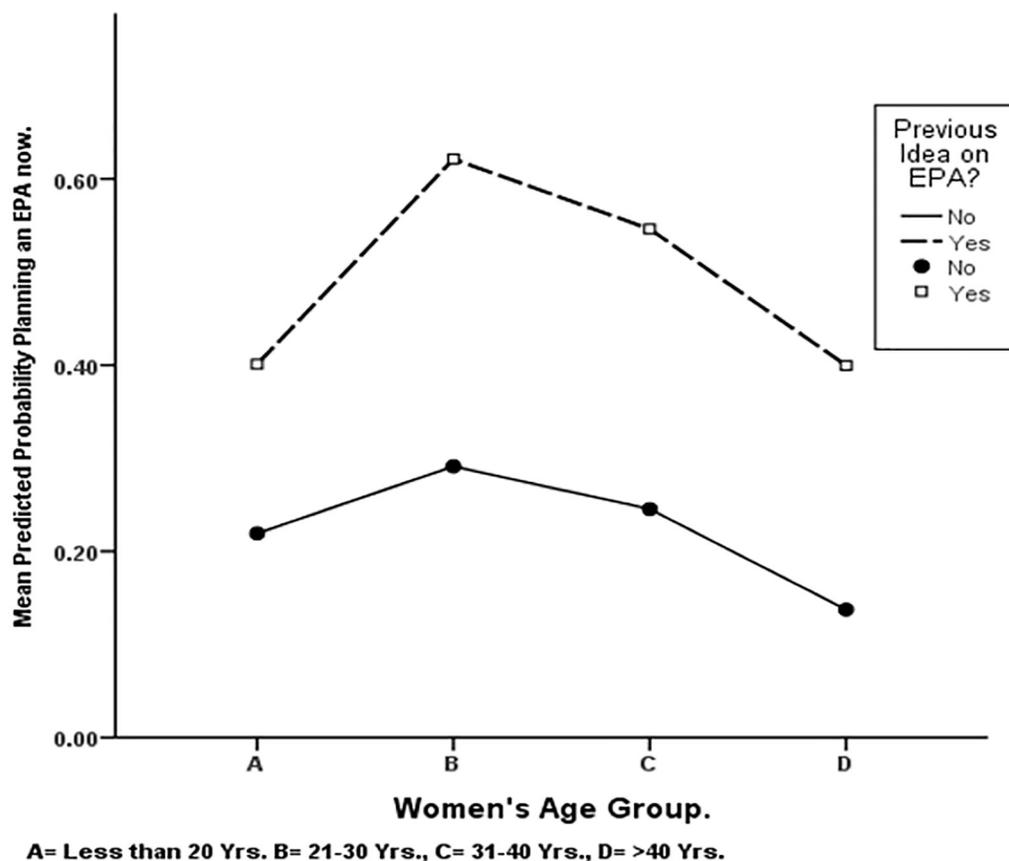


Figure 1. Effect of women's age on their likelihood of electing epidural anesthesia during current pregnancy.

Table 4. Logistic Regression Model Explaining Relationship Between Women's Characteristics, Beliefs, and Misconceptions with Their Preference To Epidural Anesthesia During Their Current Pregnancy. *N=384*

Variables	Odds Ratio	95% C.I. for O.R		Wald	Sig.
		Lower	Upper		
Age	<20 (ref.)			5.996	.112
	21–30	1.873	.519	6.755	.919
	31–35	1.153	.311	4.274	.045
	>35	.774	.186	3.222	.123
Previously Exposed to Epidural Anesthesia: Yes	2.114	1.219	3.666	7.105	.008
Believes Epidural is Common in Saudi Kingdom	1.413	1.149	1.738	10.708	.001
Epidural Insertion is More Painful	Don't Know (ref.)			20.863	.000
	True	.842	.275	2.581	.090
	False	3.556	1.935	6.533	16.711
Epidural Reduces Labor Pain and Allows the Mother To Push	Don't Know (ref.)			10.909	.004
	True	2.139	1.169	3.914	6.079
	False	.575	.210	1.573	1.160
Epidural causes paraplegia	Don't Know (ref.)			15.269	.000
	(1) True	.341	.150	.776	6.574
	(2) False	1.737	0.950	3.178	3.216
Constant	.051			17.241	.000

ref.: Reference comparison group/category.

Table 5. Future Education Preference

Questions		<i>n</i>	%
If you are considering the epidural analgesia in labor, do you prefer it to be introduced formally during your antenatal visits?	No	137	35.7
	Yes	247	64.3
If you would like future education/introduction on epidural anesthesia, how?	Does not require future introduction	137	35.7
	By means of readable pamphlets	19	4.9
	By means of video that you can watch	34	8.9
	During doctor's consultation	98	25.5
	In a special session by the anesthetist	96	25

4. Discussion

There are few published studies similar to our study in different countries, in comparing the results to know the difference in the attitude and awareness among women in Jeddah city and other parts of the world. To the best of our knowledge, this study is the second in Saudi Arabia (the first was in Riyadh 2013) and the fourth in the Middle East (one in Abu Dhabi 2015 and the other one in Babil 2016). About 41% of women in our study believed that epidural analgesia is often used as a method for labor pain control. In Riyadh, Mohammed et al. (9) reported in her study a good level of knowledge regarding EPA in contrast with women in Abu Dhabi who were not well informed about it; as reported by Edwards et al. (7) Hassan et al. (8), and Mohammed et al. (2) in their studies in Babil and Karachi, respectively, a poor general awareness of women about the role of EPA in labor. Nitahani et al. found that most of the patients (90.50%) in medical college hospitals in India were unaware of labor analgesia, with 98.48% not having any information about labour analgesia in studies conducted in rural areas in India done by Shidhaye (10). However, 19.5% of the Nigerian (5) women only know about EPA; in Hong Kong, William's survey (6) showed a poor general awareness of the proper role of EPA in intrapartum pain management.

This discrepancy in the level of awareness and acceptance could be attributed to the fact that childbirth is still viewed as a physiological process in most developing countries, which is managed with as little interference as possible or due to lack of antenatal follow-up and education during the antenatal visits. We found that the level of knowledge can be attributed to many factors such as age, education level and previous exposure to EPA. The age of women was not statistically significant in our model, but women aged between 21–35 years were more likely to prefer EPA as an anesthetic than women < 20 and >35 years old; those who were previously exposed to EPA were 2.14 times more likely to prefer EPA during their current pregnancy than those who were not previously exposed. Mohammed et al. (9) in Riyadh stated the reasons why women reported good knowledge, which can be attributed to education (38.9% of women had a bachelor degree) and previous exposure to EPA (13% had experience of EPA in their past delivery). A similar finding was reported by Naithani (4) in India: the medical college hospital for the study showed that the educational status of the graduate level had a positive impact on knowledge about labor analgesia, but there was no association between age and educational status in other studies done in rural areas of the same country by Shidhaye et al. (10). It also could be explained by women whose age is >35 years who may not have been exposed to EPA because it was not commonly used or not available in the past. Most of those aged <20 are experiencing pregnancy for the first time; they may focus on gaining information about the antenatal care and did not think about labor and its pain control.

Women with better education can understand the birth process and have the ability to collect information about pain relief in labor and may gradually develop acceptance to have it. There are many misconceptions and fears associated with epidural analgesia use. Paralysis is one of these concerns; in our study, almost half the women were uncertain whether the epidural anesthesia causes paraplegia, and more than a third believed it is untrue, and only (15.9%) believed it is true. Another fear is the pain caused by needle insertion; almost half the women did not know. Also, very few believed that it is true (7%), as revealed in our study in Jeddah compared with 55% in the Riyadh study (9). Most of the females in Pakistan (1), Karachi (2), and Hong Kong (6) think that EPA results in a permanent backache. However, 60% of the women in Riyadh (9) believe that it can cause muscle weakness in the lower limbs of mothers in labor. In India, Naithaniet et al. (4) reported that 2% had fear of getting the fetus affected, 4% had the fear of increased likelihood of cesarean delivery. In Abu Dhabi (7), over one-third of the women (35.1%) had concerns about risk to themselves, an additional small number of women expressed concern for their baby (3.1%) and (5.1%) fear of delay in labor or increased risk of caesarean section. The level of knowledge strongly affects the plan either to receive or refuse EPA in current and future pregnancy. Almost half of the women in Abu Dhabi (7) stated that they did not want an epidural in labor (49.2%), and about a fifth of the respondents (18.1%) stated that they planned to have it. Oladokun et al. found that only 15.8% of Nigerian women wanted to receive EPA in their next labor (5); for Riyadh's women, Mohammed et al. (9) reported their attitude toward using EPA in future labor was not clear. Some of the decisions made by women regarding pain relief in labor may be based on ethnic or cultural backgrounds and some are affected by wrong information gained from improper sources, i.e., family members/relatives and friends. In our study women were asked about the preferred method of education prior to undertaking EPA, the majority responded they would like such educational session during the antenatal visit (64.3%), Those who liked the idea were provided with their preferred methods during the doctor's visits special session by the anesthetist or by means of video followed by those who preferred methods such as through written pamphlets. Unfortunately, there were no other studies to compare the preferred method of education. We think that information about EPA should be given by the obstetricians during the antenatal physician, obstetrician, or nurses in collaboration with anesthesiologists to disseminate the appropriate knowledge about availability, benefits, and side effects. Flyers and brochures are other means of education.

5. Conclusions

This study demonstrates a lack of knowledge and understanding about EPA, but it is still better than some other countries in this said area. In filling the gap and improving the knowledge, it is recommended that information about EPA must be given to all pregnant women during antenatal visit either by the obstetricians in a special session or by the anesthetist during the antenatal classes or alternatively by means of flyers and brochures.

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Conflict of Interest:

There is no conflict of interest to be declared.

Authors' contributions:

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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