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A survey to determine the knowledge, preference and perception towards labor analgesia among women in the ministry of health hospitals, Jeddah, Saudi Arabia

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ABSTRACT

Background: Pain during childbirth is one of the most common types of pain experienced by women. Epidural analgesia (EDA) refers to local anesthetics and adjuvants injected into the epidural space and is widely used as a form of pain relief in labour. *Methods:* This cross-sectional study was conducted in the waiting areas of the obstetric ward and clinic of East Jeddah Hospital, King Abdullah Medical Complex and King Abdul-Aziz Hospital in Jeddah, Saudi Arabia from October to November 2022. We used an online self-administered questionnaire and data was entered, coded and analyzed using Statistical Package for Social Science (SPSS) version 23. *Results:* A total of 475 women of childbearing age participated in this study; about 18.9% were found to be well informed about EDA and 54.9% were informed to some extent. We found associations between knowledge of EDA and age, nationality, education, marital status, occupation, average monthly income, residence and type of family housing (P = < 0.001, 0.002, < 0.001, < 0.001, < 0.001, < 0.001, 0.007 and < 0.001, respectively). Good knowledge of EDA was associated with 25-34 years of age, Saudi nationals, higher education, being married, being employed, higher income, Jeddah residents. *Conclusion:* Although two-thirds of the participants will use it in future pregnancies after being presented with information on the procedure. A health education program should be established to provide detailed information about EDA to all interested pregnant women.

Keywords: Epidural Analgesia, Regional Anesthesia, Women Awareness

1. INTRODUCTION

Labour pain is difficult for women as they prepare to give birth. Among the different interventions, epidural analgesia (EDA) is mainly used to ease pain (Lowe, 2002) by injecting local anaesthetics into the epidural space (NHS, 2019). In developing countries, it is not widely used by women due to their lack of knowledge and awareness and different insights. EDA eases labour difficulty, but some studies have also reported its side effects, such as maternal hypotension, longer stages of labour and increased chances of operative deliveries, whether vaginal or caesarean (Anim-Somuah et al., 2011).

The most common side effects are headache and lower back pain. Other factors include the body mass index (BMI) of the patient, skin trauma while injecting the epidural, sitting positions of the patient and several attempts to inject the EDA (Eriksen et al., 2011). Several factors are involved in a pregnant woman's decision whether to use EDA during labour. These include poor knowledge and awareness of the risks and advantages of EDA (Edwards and Ansari, 2015), demographics, low education, ethnic origins (Le-Ray et al., 2008), age, gestational age (Olayemi et al., 2005), previous experience, socioeconomic status, separation of family members and lack of access to anaesthesia providers on time (Saisto et al., 1999).

Several previous studies have evaluated EDA awareness and knowledge among pregnant women. Out of 105 women in a study in Jeddah, 25 were completely unaware of EDA, 63 showed limited awareness and 17 completely understood EDA (Almuntashiri et al., 2022). In another study in Riyadh, factors affecting women's decisions on the use of EDA were also analyzed, along with the awareness of EDA among first-time pregnant mothers (Alakeely et al., 2018).

Another study focused on the impact of neuraxial analgesia on the incidence of foetal heart rate abnormality and the extended side effects of analgesia on mothers and neonates. The authors investigated the side effects of intrathecal opioid analgesia and mixtures and reported better results using regional intrathecal analgesia in the mother and fetus (Velde, 2005).

Harkins et al., (2010) analyzed the factors responsible for women's decisions on whether to have an epidural during labour. These factors included partner preference, previous experience with epidural, language, education, age, labour duration, type of insurance and use of oxytocin injection. The factors most critically linked to decisions regarding EDA use were partner preference and previous epidural experience (Harkins et al., 2010).

There are a few studies similar to our topic in Saudi Arabia but not in hospitals of the ministry of health, Jeddah, Saudi Arabia. Women's preference for EDA and perception must be analyzed for pain management and intervention during labor. Therefore, we aim to evaluate the preference to epidural analgesia as an option for pain control during labor and knowledge of the provisioning services. This will give an insight towards the factors affecting the women's decision for EDA.

2. METHODOLOGY

Study design

This was a cross sectional study.

Study area

This study was conducted in the waiting areas of the obstetric wards and clinics of East Jeddah Hospital, King Abdullah Medical Complex and King Abdul-Aziz Hospital in Jeddah, Saudi Arabia.

Study population

Women of childbearing age who were visiting the obstetric wards and clinics of the participating hospitals were recruited for this study.

Inclusion criteria

To be included in the analysis, women had to be of childbearing age and visiting the obstetric wards and clinics of East Jeddah Hospital, King Abdullah Medical Complex and King Abdul-Aziz Hospital in Jeddah, Saudi Arabia.

Exclusion criteria

Women who were not of childbearing age were excluded.

Sample size

The sample size was calculated using EPI and based on a 95% confidence interval, a 5% margin of error and the total selected population. The estimated sample size was 384, adjusted to 422 to compensate for a 10% non-response rate.

Data collection tools

The study was conducted using an online self-administered questionnaire via Google Forms. The aim of this study was clearly explained at this interface. A validated questionnaire was used based on previous studies. The questionnaire contained questions on patients' socio-demographic characteristics as well as their knowledge, preference and perception of EDA for labour. A common grading method was used for each variable: 1 point was given for the correct option and 0 for neutral or the incorrect option.

Pilot study

The questionnaire was pre-tested in a pilot study with a sample of 20 participants. Their results were not included in the study. Some modifications were made to ensure clarity and easy understanding of the questions.

Sampling technique

A convenient non-probability sampling technique was employed to collect participant data.

Data analysis

Data were coded, entered and analyzed using the Statistical Package for Social Science (SPSS) version 23. Qualitative data were expressed in the form of numbers and percentages (No. & %). The chi-square (χ^2) test was used to examine differences in the qualitative data between the two groups.

3. RESULTS

Participant characteristics

This study included 475 respondents of childbearing age; they were grouped by age as follows: 18-24 years (12.8%), 25-34 years (50.5%), 35-44 years (29.5%) and more than 45 years (7.2%). Most participants were of Saudi nationality (90.7%), while 9.3% were non-Saudi. Most were married (88.8%), while 5.9% and 2.7% and 2.5% were single, divorced and widowed, respectively. Of the participants, 85.5% were from Jeddah and the rest (14.5%) were from outside Jeddah. We found that 47.8% of the respondents had university education, 36.4% had secondary school education, 11.2% had elementary education, 1.7% had higher education and 2.9% were illiterate. Of the respondents, 32.8% were employed, while the remaining 67.2% were unemployed. A large proportion (46.7%) of the participants had a household income level of 5000-9999 SR, while the remaining had income of 3000-4999 SR (17.5%), 10000-14999 (16.8%), <2999 SR (6.9%) and >15000 SR (6.7%) and 5.3% were uncertain. More than half (57.3%) of the participants had rented their family housing. We found that 20% of the participants had health insurance, whereas 80% had no insurance. Of those with health insurance, 20% had private insurance and 80% had governmental insurance. The participants' characteristics are listed (Table 1).

Table 1 Participant characteristics (n=475)

Variable	Categories	Frequency	Percent
Age (years)	18-24	61	12.8
	25-34	240	50.5
	35-44	140	29.5
	>45	34	7.2
Nationality	Saudi	431	90.7
	Non-Saudi	44	9.3
Marital status	Single	28	5.9
	Married	422	88.8
	Divorced	13	2.7
	Widowed	12	2.5
Region	Jeddah	406	85.5
	Outside Jeddah	69	14.5
Educational level	Illiterate	14	2.9
	Elementary school	53	11.2
	Secondary school	173	36.4
	University/college	227	47.8

	Higher education	8	1.7
Employment status	Employed	156	32.8
	Non-employed	319	67.2
Household income level (SAR)	<2999	33	6.9
	3000-4999	83	17.5
	5000-9999	222	46.7
	10000-14999	80	16.8

Preference and perception of epidural analgesia for labour

Women were assessed for preference and perception toward EDA during labour; 60% of them were pregnant at the time of study and 53.7% of these were at 0-13 weeks of pregnancy. A total of 79.6% women had a history of previous pregnancy; 57% had become pregnant more than twice and the remaining 21.6% and 21.4% had been pregnant twice and once, respectively. Among the women who were currently pregnant or had a history of previous pregnancy (n=430), 71.9% had a history of normal vaginal delivery and 28.1% did not. As for caesarean section history, more than half (61.6%) had never experienced it and 38.4% had experienced it once. More than half of the respondents (56.7%) were exposed to EDA, whereas the rest were not (43.3%). The majority of those who had experienced EDA (86.1%) were satisfied, whereas only 13.1% were not satisfied. Of these, 64.8% developed side effects, whereas 35.2% did not. The side effects they developed included back pain (83.5%), headache (74.1%), low blood pressure (42.4%) and other (9.5%). Almost half of the participants (48.4%) had used EDA once, 18% twice and 33.6% more than twice. About 58.9% of the participating women planned to use EDA, while 41.1% did not. Preference and perception toward EDA in labour (Table 2).

Table 2 Preference and perception toward epidural analgesia for labour (n=475)

Variable	Category	Frequency	Percent
Current pregnancy	Yes	285	60
	No	190	40
Current pregnancy weeks (n=285)	0-13	24	8.4
	14-26	108	37.9
	27-40	153	53.7
History of previous pregnancy	Yes	379	79.6
	No	87	20.4
Previous pregnancy (n=379)	Once	81	21.4
	Twice	82	21.6
	>Twice	216	57
History of normal vaginal delivery (n=430)	Never	121	28.1
	At least once	309	71.9
History of caesarean section (n=430)	Never	265	61.6
	At least once	165	38.4
Exposure to EDA (n=430)	Yes	244	56.7
	No	186	43.3
What was your experience using EDA? (n=244)	Not satisfied	32	13.1
	Satisfied	210	86.1
	Not available	2	0.8
Did you develop side effects? (n=244)	Yes	158	64.8
	No	86	35.2
What side effects did you develop? (n=158)	Headache	117	74.1
	Back pain	132	83.5
	Low blood	67	42.4
	Pressure Other	15	9.5
How many times have you	Once	118	48.4

used EDA? (n=244)	Twice	44	18
	More than twice	82	33.6
Did you plan to use the EDA?	Yes	280	58.9
	No	195	41.1

We assessed why women refused to take the epidural: 29.4% were hoping for a natural birth, 25.9% thought it was risky for the mother, 24.1% were discouraged by family/friends, 18.8% were afraid of pain from the procedure and 25.9% had other reasons (Figure 1). Our findings showed that 63.6% of the participants planned to use EDA for future births (Figure 2) after they were educated regarding the benefits and misconceptions towards EDA.

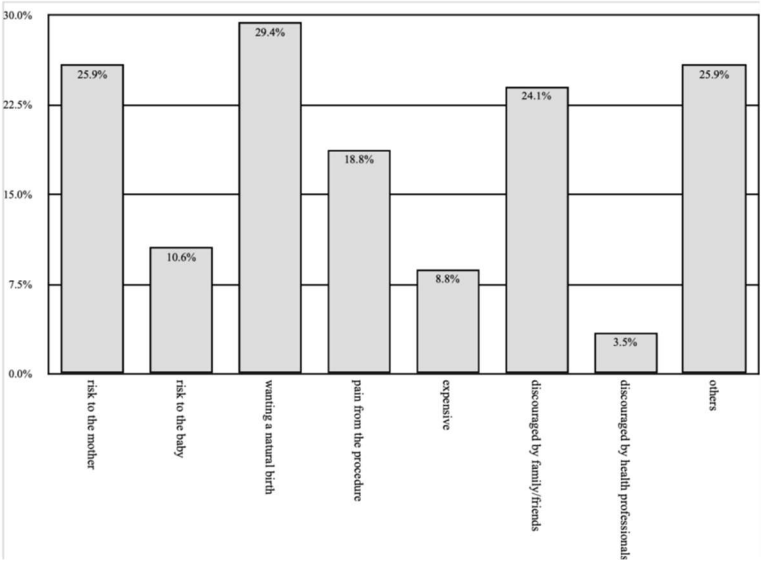

Figure 1 Reasons not to use EDA (n=186)

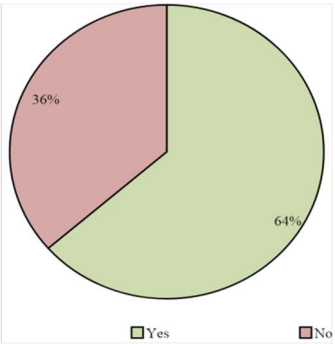

Figure 2 Do you plan to use EDA for future births? (n=464)

Women's knowledge of epidural analgesia for labour

Out of a total of 15 points, the mean knowledge score was found to be 7.2 ± 3.1 points (range 0-13). Our findings showed that only 18.5% of the participants were well informed about pain management in labour, 54.9% were somewhat informed, 18.5% were uninformed and 7.8% were unsure. Furthermore, 92.9% knew that there was a procedure called EDA, whereas 6.1% did not; 66.7% were aware that EDA is provided in hospitals, while 8.8% were not. A total of 69.7% knew that EDA is an injection of local anaesthesia through a catheter into the epidural space of the spine. Regarding its frequency and effectiveness, 69.7% said it was the most frequently used and most effective way to relieve labour pain and 7.2% did not agree. Of the respondents, 14.3% stated that any physician or nurse could perform EDA, while 72% did not; 19.6% said that EDA can increase the chances of having a caesarean section, while 35.2% said the opposite and 45.3% said they did not know. Of the participants, 40.2% believed that EDA may cause lower-limb weakness/paralysis, while 29.7% did not. More than half (55.4%) said that EDA causes headache, 13.3% said it does not,

and 31.4% did not know. A total of 34.7% stated that EDA may cause low blood pressure, while 17.1% disagreed. A large proportion of participants (73.1%) believed that EDA caused back pain. Furthermore, 32.2% of the participants reported that the contractions became weak or stopped after the administration of EDA. More than half (54.5%) stated that EDA reduces labour pain and allows the mother to push as needed and 35.6% said they did not know. Only 8.4% said that EDA posed a risk to the baby. The majority of participants (73.3%) said that women should agree and provide consent for the application of EDA in labour. The participants' knowledge is presented (Table 3).

Table 3 Women's knowledge of epidural analgesia

Variable	Categories	Frequency	Percent
What do you know about pain management in labour?	Well informed	89	18.9
	Somewhat informed	261	54.9
	Uninformed	88	18.5
	Unsure	37	7.8
Did you know there is a procedure called EDA?	Yes	438	92.2
	No	29	6.1
	I don`t know	8	1.7
Are you aware it is provided in the hospital?	Yes	317	66.7
	No	42	8.8
	I don`t know	116	24.4
Is EDA an injection of local anesthesia through a catheter into the epidural space of the spine?	Yes	331	69.7
	No	9	1.9
	I don`t know	135	28.4
Is EDA the most frequently used and most effective way to relieve labour pain?	Yes	321	67.6
	No	34	7.2
	I don`t know	120	25.3
Can any physician or nurse perform EDA?	Yes	68	14.3
	No	342	72
	I don`t know	65	13.7
Can EDA increase the chances of having a caesarean section?	Yes	93	19.6
	No	167	35.2
	I don`t know	215	45.3
May EDA cause lower limb weakness/paralysis?	Yes	191	40.2
	No	141	29.7
	I don`t know	143	30.1
Can EDA cause headache?	Yes	263	55.4
	No	63	13.3
	I don`t know	149	31.4
Can EDA cause low blood pressure?	Yes	165	34.7
	No	81	17.1
	I don`t know	229	48.2
Can EDA cause back pain?	Yes	347	73.1
	No	52	10.9
	I don`t know	76	16
Do contractions become weak or stop after the administration of EDA?	Yes	110	23.2
	No	132	27.8
	I don`t know	233	49.1
Does EDA reduce labour pain and allow the mother to push	Yes	259	54.5
	No	47	9.9

as needed?	I don`t know	169	35.6
Is EDA risky for the baby?	Yes	40	8.4
	No	311	65.5
	I don`t know	124	26.1

Factors associated with women's knowledge of epidural analgesia

We found that there was a significant association between participant knowledge of EDA and nationality. Those of Saudi nationality showed a higher knowledge score (P =0.016). Moreover, married participants had the highest knowledge score, while single participants showed the lowest score (P =0.16). Jeddah residents showed a higher knowledge score than those from outside Jeddah (P = 0.004). In addition, those who owned houses had a higher knowledge score than those who rented houses (P =0.014) (Table 4).

Table 4 Factors associated with women's knowledge of epidural analgesia

Variable	Categories	Knowledge score mean (SD)	P value
Age	18-24	5.38 (2.25)	< 0.001
	25-34	8.10 (2.86)	
	35-44	6.74 (2.76)	
	>45	6.26 (3.01)	
Nationality	Saudi	7.25 (3.00)	0.002
	Non-Saudi	5.89 (3.24)	
Education	Illiterate	5.07 (3.10)	< 0.001
	Elementary school	6.23 (2.69)	
	Secondary school	6.68 (2.82)	
	University/collage	7.95 (3.10)	
	Higher education	8.50 (2.97)	
Marital status	Single	4.11 (2.98)	< 0.001
	Married	7.47 (2.89)	
	Divorced	6.77 (4.30)	
	Widowed	6.25 (3.33)	
Employment status	Employed	8.62 (3.01)	< 0.001
	Non-employed	6.53 (2.83)	
Household income level	<2999	5.33 (3.01)	< 0.001
	3000-4999	6.40 (2.94)	
	5000-9999	7.72 (3.00)	
	10000-14999	7.68 (2.65)	
	>15000	8.16 (2.66)	
	Uncertain	5.36 (3.67)	
Residence	Jeddah	7.37 (3.04)	0.007
	Outside Jeddah	6.30 (2.96)	
Type of family housing	Rented	6.63 (2.84)	< 0.001
	Owned	8.01 (3.15)	
Health insurance	Yes	7.67 (3.14)	0.089
	No	7.10 (3.02)	

4. DISCUSSION

Labour experience is complicated and individualized. A woman's view of labour is influenced by a variety of factors, making each experience distinct. However, compared to other difficult life experiences, labour pain is consistently rated highly on the pain scale

(Melzack, 1984). As such, pain management is a crucial concern for women during childbirth. The severity of pain and the efficiency of pain treatment may have an impact on women's contentment with labour and delivery and may have both short and long-term emotional and psychological impacts (Christiansen et al., 2007). In a previous study conducted in Jeddah, 32% of the participants had experienced EDA. However, a higher percentage (56.7 %) was reported in our study (Gari et al., 2017).

Our study showed that 92.9% knew there is a procedure called EDA, which is higher than a study conducted in Pakistan where 76% of participants had heard of EDA (Minhas et al., 2005). Moreover, our study demonstrated that women had below-average knowledge of EDA compared to those in a study conducted in Jeddah in 2017, which found that women have poor knowledge (Gari et al., 2017). Other studies have also found low awareness of EDA, emphasizing the need for more education (Barakzai et al., 2010; To, 2007). In this study, we found that some women did not desire EDA for reasons including risk to the baby and wanting to experience a natural birth; these findings are similar to those of a study done in India (Poomalar and Sameera, 2016). We discovered that other reasons for avoiding EDA included wanting natural birth and the expenses of epidurals, which is similar to the findings (Ezeonu et al., 2017). Women also did not want to use EDA because they thought it may harm the baby, they were discouraged by family/friends or discouraged by health workers; similar results were discovered by Ageel et al., (2022) in the Jazan area. We found that 86.1% of our participants were satisfied after using EDA and after educating about EDA in terms of benefits, side effects, and common misconceptions; 63.6% said they would like to use it in their future births. A similar study Ezeonu et al., (2017) revealed that 96% of the participants were satisfied and 92% would like to use it again. Almost half of the participants (48.4%) had used EDA once, 18% twice and 33.6% more than twice; this compares to a similar study conducted in Palestine that showed 53% of the respondents had used EDA once, 11.1% twice and 3.6% more than twice (Hejaz, et al., 2020). Our study also showed that 43.3% of women who did not use EDA were afraid of experiencing side effects, a finding similar to that of the Palestinian study, which showed 43% of participants were afraid (Hejaz et al., 2020).

Our study found that 23.2% of the participants said that contractions may become weak or stop after administration of EDA; this compares to 19.8% in a previous study in Jeddah. In addition, some women believed that EDA may cause lower limb weakness/paralysis, which is similar to the findings of a previous study (Gari et al., 2017). We found that 54.5% believed EDA reduces labour pain and allows the mother to push as needed, while 30% believed the same in a study conducted in Jazan (Ageel et al., 2022). Of our participants, 14.3% said that EDA can be performed by any physician or nurse, compared to 0.3% in a study completed in Khamis Mushait; 19.6% said that EDA increases the probability of having a caesarean section (compared to 9.5% in Khamis Mushait) and 78.3% said women should agree and provide consent for the use of EDA (compared to 86% in Khamis Mushait) (Alahmari et al., 2020).

According to our study, some participants developed side effects such as headache (74.1%), low blood pressure (42.4%) and back pain (83.5%) after EDA, which is high compared to a study conducted in Palestine in which 5.28% and 22.4% developed headache and back pain, respectively and a small fraction developed low blood pressure (Hejaz et al., 2020). Furthermore, when we asked what is the source of information about EDA 56% answered from family or friends, having the source of knowledge mainly from friends and family members as shown in our study would explain the misconception about EDA and turn affect attitudes among women.

5. CONCLUSION

Our findings showed that participants lacked knowledge regarding EDA and its application in labour, but almost two-thirds of the participants planned to use it in future births after learning about the procedure. A health education program should be established to provide detailed information about EDA to all interested pregnant women. This will further women's understanding of the coordination between obstetricians and anaesthesiologists.

Recommendations

We recommend that more research be conducted in Saudi Arabia and more awareness programs should be implemented to teach women about EDA and its role in managing labour pain.

Author's contributions

Ahmed: Created the study design, wrote the introduction and methodology reviewed the manuscript and gave final approval of the manuscript; Lina: wrote the introduction, interpretation and writing of results, shared in writing the introduction and methodology, review and final approval of manuscript; Waleed: Statistical analyses wrote the discussion and gave final approval of the manuscript; Abdullah M: Data entry, validation and coding, shared in writing the discussion; Mohammed: Data Entry, shared

in writing the discussion and gathered references; Abdullah H: Data Entry, shared in writing the discussion and gave final approval of the manuscript; Yazeed: Data Entry, shared in writing the discussion and gathered references

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Ethical approval

This study was approved by the research ethics committee of the Ministry of Health (IRB log No: A01461). All participants were volunteers. All data were kept confidential and used only for research purposes.

Informed consent

An informed consent was obtained from all the individual participants included in the study

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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