Sys Rev Pharm 2020;11(11):559-563
A multifaceted review journal in the field of pharmacy

Does Pain Catastrophizing among Pregnant Women affect their beliefs about Epidural Analgesia

Manal Kassab[a], Ala" A Alhowary[b], Shereen Hamadneh[c], Ahmad Smadi[d], Hadeel Malaabeh[e], Anit N Roy[f]

[a] Associate professor PhD, Faculty of Nursing, Department of Maternity, Jordan University of Science & Technology
[b] Assistant Professor MD / Anesthesia Consultant, Department of Anaesthesia, Jordan University of Science and Technology, *P.O Box* 3030, 22110. Jordan
[c] Associate professor RN, PhD, Faculty of Nursing *Al al-Bayt University, Jordan*
[d] Assistant professor PhD, Faculty of Nursing, *Al al-Bayt University*, Jordan
[e] RN Faculty of Nursing, Jordan University of Science & Technology, Jordan
[f] Kerala University of Health Sciences, Thrissur, Kerala, India

Abstract

This study explores pregnant women's beliefs about epidural analgesia and the influence of pain catastrophizing on epidural analgesia use among Jordanian pregnant women. A descriptive, cross-sectional design was used. A non-probability convenient sample of 191 pregnant women was recruited in the antenatal clinics of two university hospitals in Jordan to participate in the study. Both catastrophizing pain scale (PCS) and Beliefs Epidural Analgesia Questionnaire (BEAQ) were used to collect the data. Data were analyzed using the Statistical Package for Social Sciences (SPSS) software version 22. Chi-square was applied to examine the association between some variables with demographical data. Independent sample t-test and one-way AVONA test were also used to determine the differences in EA beliefs and pain catastrophizing. Pearson correlation test was used to examine the correlation between pain catastrophizing and the beliefs about EA. The study findings show that there is a statistically significant association between intention to choose EA during pregnancy and the actual use of EA during childbirth. There is also a significant difference between the EA beliefs and the intention to choose and use of EA among pregnant women. Pain catastrophizing is not affecting pregnant women's believes in choosing the epidural analgesia during childbirth. There was no correlation between pain catastrophizing and beliefs about epidural on EA used. Pain catastrophizing was not found to be a significant factor concerning the decisions made to choose EA and the actual application of EA made by pregnant women about the birth experience. There are

Keywords: Epidural Analgesia, Pain Catastrophizing, pregnant women, beliefs, childbirth, Jordan

many factors found to affect pregnant women's decision about the birth experience and its associated pain. Among these factors are demographic characteristics, family support provided during labour, pregnant women believe of what ideal birth should look like, women's preference about the method to control delivery and finally women's perception of the potential risks during pregnancy.

INTRODUCTION

Childbirth is one of the most painful and sophisticated experience for many women in their lives. Childbirth pain ranks as the most intense compared to other acute pain (Melzack, 1984). About 60% of women who experience birth for the first time describe the childbirth pain as severe or too severe (Melzack, 1993). Therefore, expecting extreme childbirth pain may be correlated to psychological reactions, such as pain catastrophizing (Flink, Mroczek, Sullivan, & Linton, 2009).

In the fear-avoidance model, pain catastrophizing is identified as a cognitive precursor to pain-related fear and inclination to avoid pain (Vlaeyen & Linton, 2000). This, in turn, justified the higher demand for pregnant women for pain relief medications during childbirth (Veringa, Buitendijk, de Miranda, de Wolf, & Spinhoven, 2011). Across different cultures and ages, epidural analgesia (EA) is considered one of the pharmacological methods to relieve labour pain (Caton, 2004). In Jordan, many private childbirth institutions provide an EA service, and the maternal request for EA varies. The EA rate at King Abdullah University Hospital (KAUH) in 2013 was 13.6%, and notice dramatically decreased to 8.1% in 2017. Contrary to Jordan University Hospital (JUH) used for epidural analgesia, EA rate in 2013 was 8.5% and increased to reach 16.7% in 2019. The decision to use EA during childbirth is dependent on several factors, including the site of delivery, preference of a doctor or midwife, cost of maternity services, and women's preferences about pain relief options (Marmor & Krol, 2002). Women's beliefs and intentions consider the more important factor that influences women to decide to choose EA (Marmor & Krol, 2002). Therefore, the beliefs differ among women who intend to choose versus women who do not intend to choose EA during childbirth (Heinze & Sleigh, 2003). According to the researcher's knowledge, there are lacking studies conducted in Jordan that assess EA's beliefs and the influence of pain catastrophizing on the use of EA among Jordanian pregnant women during childbirth.

Methodology

A non-probability convenience sampling method is used. The sample was classified to three groups based on the intention to choose EA during childbirth; pregnant women who have the plan to choose EA during labour, pregnant women who have no intention to choose EA during labour, and pregnant women who still not decided to choose or not choose EA yet. After childbirth, follow-up was conducted by telephone calls to classify the participants based on actual EA used during childbirth to EA group and non-EA group.

Instruments

Pain catastrophizing scale (PCS)

Catastrophizing pain scale (PCS) consists of 13-items, which measuring the catastrophic thinking, painful experiences for the person and indicates the degree to which one experiences thoughts or feelings during pain related to three categories (i.e., rumination, magnification, and helplessness). The responses will be recorded as a five Likert-type scale, and the participant's responses ranging as follow: (0= not at all, 1= to a slight degree, 2= to a moderate degree, 3= to a great degree, 4= all the time). Higher scores indicate a high degree of pain catastrophizing. The Arabic version of PCS showed good reliability and validity with the correlation coefficients (*r*) were 0.84, 0.83, and 0.81, 0.8 for the total PCS, rumination, magnification, and helplessness subscales. Face validity of the Arabic version is clear, and easy to understand, address and covered important issues regarding pain catastrophizing (Terkawi et al., 2017).

The beliefs about Epidural Analgesia Questionnaire (BEAQ)

The Beliefs about Epidural Analgesia Questionnaire (BEAQ) assesses specific beliefs about epidural analgesia that will influence pregnant women's decision to choose epidural analgesia. BEAQ consists of 20 items, which operationally measuring attitude towards epidural analgesia, subjective norms: which assessed the influence of experts and the influence of the immediate social environment to choose EA, and perceived control: which measured the perceived ability to cope with the pain during birth. Responses of the first section (i.e., the intention to choose EA during childbirth) indicate one of the other three alternatives: ''I will select epidural analgesia' 'I will not select epidural analgesia'' or ''I'm not sure yet''. The remaining 19 items of the BEAQ measured as a 5-point Likert scale ranging from 1-5 (1= completely disagree, 2= disagree, 3= neutral, 4= agree, 5= agree).

Procedure

Pregnant women completed both questionnaires BEAQ, and the PCS returned to the researcher before the time of labour. Data were analyzed using the Statistical Package for Social Sciences (SPSS) software version 22. Descriptive statistics including frequencies, means, standard deviation and central tendency measures were used Chi-square test. An independent sample t-test was used to compare EA and non-EA groups in terms of beliefs about EA and PCS. One-way AVONA test was used to determine the differences in beliefs about EA and pain catastrophizing based on choosing EA. Pearson correlation test was used to examine the correlation between pain catastrophizing and the beliefs about EA,

P-value less the 0.05 was set as statistically significant for all statistical tests. Ethical approval was sought from an

IRB ethical approval board at a governmental institution. IRB approval number (623-2017). The research was funded (Grant #: 20180054).

Results

Use EA, intention to choose EA groups and demographical characteristics

During pregnancy, 26.8% (n=45) of the pregnant women were intended to use EA, 35.7% (n=60) did not intend to use EA, and about 37.5% (n=63) had not made any decision yet, as shown in table 1. Almost half of the women (51.2%, n=86) used epidural analgesia at delivery, and less than half of women (48.8%, n=82) did not use epidural analgesia. The association between intention to choose EA and used EA measured using the chi-square test. There was a statistically significant association between intention to choose EA during pregnancy and the EA's actual use during birth. Pregnant women to choose EA and pregnant women who did not choose EA were associated with high EA used during childbirth.

A Chi-square test was used to examine the association between the actual EA used groups and demographical characteristics. There was a statistically significant association between women who used EA and women who not used EA with parity; women who were pregnant with their first child, more often used EA than women who had already two or more children. Also, women who have private insurance often used EA than women with public insurance (p= 0.001). Moreover, women who had a good previous EA experience often tend to use EA more than women who had a bad previous experience with EA (p=0.009). Furthermore, there was a statistically significant difference in age between women who used EA and women who not used EA using independent sample t-test (p = 0.001), in contrast, the non-EA group had a significantly higher mean of age (M= 31.1, SD= 4.63) compared to EA group (M= 26.9, SD= 5.79).

Pain catastrophizing and EA beliefs based on the intention to choose EA and Actual used of EA

To examine the differences in beliefs about epidural analgesia based on the intention to choose EA groups, a one-way ANOVA test was used. There was a statistically significant difference between the three groups means (F (2, 165) =30.67, p=0.001) in terms of BEAQ total mean as shown in table 2. Scheffe post hoc test revealed that there was a statistically significant difference in the beliefs about EA between women who intend to choose EA and women who not intend to choose EA during pregnancy (p=0.001). Women to choose EA had a significantly higher mean score (M =3.55, SD= 0.28) compared to women who had no intention to choose EA (M= 3.01, SD= 0.38). Also, there were no statistically significant differences in pain catastrophizing between groups of intention to choose EA (F (2, 165) = 0.144, p=0.86).

Table 1: Intention to choose EA and EA used percentage (n=168).

Intention to choose EA during pregnancy	EA group	non-EA group	Total
I will choose	32 (71.1%)	13 (28.9%)	45
I will not choose EA	19 (31.7%)	41 (68.3%)	60
Not sure yet	35 (55.6%)	28 (44.4%)	63

Table 2: Differences in beliefs about EA and the intention to choose EA groups.

	Mean (SD)	Df	F	P-value
BEAQ (total mean)		2	30.672	0.001*
I will choose (n=45)	3.55 (.28)			
I will not choose (n=60)	3.01 (.38)			
Not sure yet (n=63)	3.41 (.42)			
Attitude		2	27.913	0.001*
I will choose (n=45)	3.86 (.37)			
I will not choose (n=60)	3.24 (.46)			
Not sure yet (n=63)	3.63 (.43)			
Subjective norms		2	74.077	0.001*
I will choose (n=45)	3.74 (.53)			
I will not choose (n=60)	2.13 (.61)			
Not sure yet (n=63)	3.21 (.86)			
Perceived control		2	41.553	0.001*
I will choose (n=45)	2.11 (.83)			
I will not choose (n=60)	3.65 (.79)			
Not sure yet (n=63)	3.95 (.90)			

* P-value is significant at <0.05 level

Differences in pain catastrophizing between women who used EA and women who did not use EA during childbirth were examined using an independent sample t-test. The total PCS scores for women who used EA was (M= 21.14, SD= 12.48), and for women who did not use EA, PCS score was (M= 21.23, SD=10.73). There was no statistical difference in pain catastrophizing scores between women who used EA and women who did not use EA (p= 0.95).

Moreover, the independent sample t-test was used to examine the differences in beliefs about epidural analgesia between women who used EA and women who did not use EA during

birth (table 3). There was a statistically significant difference in beliefs about epidural analgesia and EA use during birth (p=0.006). EA group had a significantly higher BEAQ score (M= 3.39, SD= .368) compared to non-EA group (M=3.21, SD=.481). Moreover, the EA group had a significantly higher attitude mean (M=3.66, SD=.447) than a non-EA group (M=3.44, SD=.521), p=0.004. Also, the EA group had higher subjective norms mean (M=3.21, SD=.878) compared with a non-EA group (M=2.70,

SD=.979), p=0.001. However, the non-EA group had significantly higher perceived control means (M=3.21, SD=.951) than the EA group (M=2.74, SD= 1.07), p=0.003.

Table 3: Differences in beliefs about EA and EA used groups (n=168).

	Mean (SD)	T	Df	P-value
BEAQ (total mean)		2.81	166	0.006*
EA group (n=86)	3.39 (.368)			
Non-EA group (n=82)	3.21 (.481)			
Attitude		2.90	166	0.004*
EA group (n=86)	3.66 (.447)			
Non-EA group (n=82)	3.44 (.521)			
Subjective norms		3.55	166	0.001*
EA group (n=86)	3.21 (.878)			
Non-EA group (n=82)	2.70 (.979)			
Perceived control		-3.01	166	0.003*
EA group (n=86)	2.74 (1.07)			
Non-EA group (n=82)	3.21 (.951)			

* P-value is significant at <0.05 level

Discussion

In this study, 51.2% of women used epidural analgesia during childbirth. This percentage is low in comparison with results in Belgium (55%, (Bussche, Crombez, Eccleston, & Sullivan, 2007) and Israel 63%, (Horowitz, Yogev, Ben-Haroush, & Kaplan, 2004). But high in comparison with KSA 25% (Alakeely et al., 2018). The large majority of women had decided in advance whether they would use EA. 31.7% of women changed their mind and used EA during childbirth. A similar percentage has been noted in a previous study 25%, (Bussche et al., 2007), 25.8% in France (Kpéa et al., 2015).

Multiple pregnant women changed their minds, from no desire to choose an epidural on arrival to the hospital to wanting one during the process of childbirth. This change in pregnant women mind may be attributed to medical staff's advice to use it (Lally, Murtagh, Macphail, & Thomson, 2008) and being afraid of possible risks and complications of EA and changed their mind after receiving medical counselling during labour (Harkins, Carvalho, Evers, Mehta, & Riley, 2010). However, this suggests that many women probably do not have clear expectations of the severity of labour pain and perhaps unable to make an informed choice until after they have experienced labour pain (Harkins et al., 2010).

In this study, the percentage of women who used EA increased from 51.4% in women with parity of 2-3 deliveries to 75% in nulliparas. This is consistent with findings reported by many studies (Kpéa et al., 2015, Chang, Chan, Chang, Yang, & Chen, 2008 ,Favilli et al., 2018, Koteles, de Vrijer, Penava, & Xie, 2012). This result could be related to the fact that primipara usually has a longer labour duration and may experience more fear of labour pain compared with multiparity. Another reason could be related to the fact that the obstetric team tends to offer epidural analgesia more often to primiparous women in the labor room. Moreover, multiparas take part in decision making during childbirth more than nulliparas, and they express easily the preferred method for labor pain (Lally et al., 2008). Pregnant women age was associated with epidural analgesia usage during childbirth. Pregnant women with younger age used epidural analgesia during childbirth more than women with older age. This result is consistent with Ekéus and colleagues study (2009).

Regarding insurance, the percentage of EA used increased from 47.1% of women with public insurance to 88.2% of women with private insurance. This result reflects that pregnant women in Jordan with private insurance went to the private hospitals where the EA is available there, where pregnant women with other insurance went to public hospitals unavailable of EA most of the time. Moreover, pregnant women with certain types of insurance may be less informed about epidural analgesia. Therefore, deciding to use EA becomes either in the pregnant woman hands or by the medical system (Conte, 2012). However, this result incongruent with Harkins (2010), where the insurance type did not predict epidural analgesia used.

The study results revealed no differences in PCS mean scores between pregnant women who choose EA and pregnant women who not choose EA during pregnancy (20.8, 20.7), respectively. This indicated that the intention to choose EA not influence by pain catastrophizing. Moreover, pain catastrophizing is not significantly affected by the use of EA. The mean PCS scores for women who used EA during childbirth was 21.14, and this results consistent with a prospective study for Carvalho (2014), in which the mean PCS score for women who used EA was 16.0, and this reflects that actual use of EA did not influence by pain catastrophizing. Although this result is congruent with Bussche (2007), it is inconsistence with Veringa study (2011), which indicated that intention to use EA was affected by pain catastrophizing. However, the study has shown a significant difference in the EA beliefs between intention to choose EA groups and a significant difference in beliefs about EA between actual EA groups, which both of attitude and subjective norms influence pregnant women to choose EA and to used EA during childbirth.

Whereas fear of EA needle insertion as one of the items of attitude subscales plays a major barrier for the use of EA (Chang et al., 2008). Also, Bussche et al. (2007) found that fear of the EA side effects considers an obstacle for EA used. Regarding subjective norms, Chang et al. (2008) and Bussche et al. (2007) found that the relative's experience and opinions were viewed as a more influential factor in EA's actual use than other sources. This could be justified by the fact that women who used EA during childbirth tend to show more fear during the delivery, be noncompliant with this process, and depend more on assistance from others (Heinze & Sleigh, 2003).

The study shows that pregnant women did not intend to choose epidural analgesia before labour, ended with the decision to receive EA during labour, which demonstrates inaccurate knowledge sources about EA. There are various extrinsic factors affecting women's choice, held believe and attitude toward EA usage during the labour. This study emphasized that pain catastrophizing had no correlation with pregnant women's beliefs about epidural analgesia and had no association with the epidural analgesia use during delivery.

Limitations

This study has a few limitations. Firstly, the participants give the views though this article is based on the opinions of the women at selected settings which may not reflect all Jordan pregnant women. Secondly, the questionnaires that have been used in the study were administered as a self-answer questionnaire without any observational methods. Finally, the data were collected through a small sample size at only two hospitals limiting the generalizability of the study results and not reflecting all other Jordanian pregnant women.

Recommendations for future research

In filling the gap and improving the knowledge, it is recommended for future studies to examine the impact of educational programs on epidural analgesia usage during labour. As well as recommended to ensure that the information about EA sessions should be given in the antenatal clinic to all pregnant women by a qualified person like an anesthetist or obstetricians and distributed effective educational means like brochures or flyers. Further studies should focus on the social impact of pain catastrophizing on pregnant women to test different hypotheses and models.a

References:

1. Alakeely, M. H., khalaf Almutari, A., Alhekail, G. A., Abuoliat, Z. A., Althubaiti, A., AboItai, L. A.-R., & Al-Kadri, H. (2018). The effect of epidural education on Primigravid Women's decision to request epidural analgesia: a cross-sectional study. *BMC pregnancy and childbirth, 18*(1), 124.
2. Bussche, E., Crombez, G., Eccleston, C., & Sullivan, M. J. (2007). Why women prefer epidural analgesia during childbirth: the role of beliefs about epidural analgesia and pain catastrophizing. *European Journal of Pain, 11*(3), 275-282.
3. Carvalho, B., Zheng, M., & Aiono-Le Tagaloa, L. (2014). A prospective observational study evaluating the ability of prelabor psychological tests to predict labor pain, epidural analgesic consumption, and maternal satisfaction. *Anesthesia & Analgesia, 119*(3), 632-640.
4. Caton, D. (2004). Medical science and social values. *International journal of obstetric anesthesia, 13*(3), 167-173.
5. Chang, K.-Y., Chan, K.-H., Chang, S.-H., Yang, M.-C., & Chen, T. H.-H. (2008). Decision analysis for epidural labor analgesia with Multiattribute Utility (MAU) model. *The Clinical journal of pain, 24*(3), 265-272.
6. Conte, S. R. (2012). Registered Nurses' Perception of Hispanic Women's Use, Decline and Preference of Pain Control During Childbirth.
7. Ekéus, C., Hjern, A., & Hjelmstedt, A. (2009). The need for epidural analgesia is related to birthweight–a population-based register study. *Acta Obstetricia et Gynecologica Scandinavica, 88*(4), 397-401.
8. Favilli, A., Laganà, A. S., Indraccolo, U., Righi, A., Triolo, O., D'Apolito, M., & Gerli, S. (2018). What women want? Results from a prospective multicenter study on women's preference about pain management during labour. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 228*, 197-202.
9. Flink, Mroczek, M. Z., Sullivan, M. J., & Linton, S. J. (2009). Pain in childbirth and postpartum recovery–The role of catastrophizing. *European Journal of Pain, 13*(3), 312-316.
10. Harkins, J., Carvalho, B., Evers, A., Mehta, S., & Riley, E. T. (2010). Survey of the factors associated with a woman's choice to have an epidural for labor analgesia. *Anesthesiology research and practice, 2010*.
11. Heinze, S., & Sleigh, M. J. (2003). Epidural or no epidural anaesthesia: relationships between beliefs about childbirth and pain control choices. *Journal of reproductive and infant psychology, 21*(4), 323-333.
12. Horowitz, E. R., Yogev, Y., Ben-Haroush, A., & Kaplan, B. (2004). Women's attitude toward analgesia during labor—a comparison between 1995 and 2001. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 117*(1), 30-32.
13. Koteles, J., de Vrijer, B., Penava, D., & Xie, B. (2012). Maternal characteristics and satisfaction associated with intrapartum epidural analgesia use in Canadian women. *International journal of obstetric anesthesia, 21*(4), 317-323.
14. Kpéa, L., Bonnet, M.-P., Le Ray, C., Prunet, C., Ducloy-Bouthors, A.-S., & Blondel, B. (2015). Initial preference for labor without neuraxial analgesia and actual use: results from a National Survey in France. *Anesthesia & Analgesia, 121*(3), 759-766.
15. Lally, J. E., Murtagh, M. J., Macphail, S., & Thomson, R. (2008). More in hope than expectation: a systematic review of women's expectations and experience of pain relief in labour. *BMC medicine, 6*(1), 7.
16. Marmor, T. R., & Krol, D. M. (2002). Labor pain management in the United States: understanding patterns and the issue of choice. *American journal of obstetrics and gynecology, 186*(5), S173-S180.
17. Melzack, R. (1984). The myth of painless childbirth (the John J. Bonica lecture). *Pain, 19*(4), 321-337.
18. Melzack, R. (1993). Pain: past, present and future. *Canadian Journal of Experimental Psychology/Revue canadienne de psychologie expérimentale, 47*(4), 615.
19. Terkawi, A. S., Sullivan, M., Abolkhair, A., Al-Zhahrani, T., Terkawi, R. S., Alasfar, E. M., . . . Altirkawi, K. A. (2017). Development and validation of Arabic version of the pain catastrophizing scale. *Saudi journal of anaesthesia, 11*(Suppl 1), S63.
20. Veringa, I., Buitendijk, S., de Miranda, E., de Wolf, S., & Spinhoven, P. (2011). Pain cognitions as predictors of the request for pain relief during the first stage of labor: a prospective study. *Journal of Psychosomatic Obstetrics & Gynecology, 32*(3), 119-125.
21. Vlaeyen, J. W., & Linton, S. J. (2000). Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. *Pain, 85*(3), 317-332.