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AWARENESS AND KNOWLEDGE ABOUT SPINAL ANESTHESIA COMPLICATIONS DURING AND AFTER CESAREAN DELIVERY AMONG FEMALE POPULATION IN ALMADINA ALMUNWARRA

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Abstract:

Background: *Spinal anesthesia is the process of injecting a local anesthetic into the subarachnoid space to block the nerve roots that are supplying the surgical field in the abdomen, pelvis or lower limbs. The patient's concerns about spinal anesthesia and its complications should be considered and studied carefully.*

Objective: *The present study was conducted with an aim to measure the degree of awareness and knowledge about spinal anesthesia complications among female population at Almadina Almunwwarah.*

Methods: *A cross-sectional study was conducted from November 2018 to December 2018 using a self-administered, closed-ended questionnaire.*

Results: *Total 1181 women were included in the study, of which the mean age was 32.33 ± 8.31 years. Among all the respondents, 359 (30.4%) strongly preferred general anesthesia to spinal anesthesia. The respondents had low level of knowledge regarding spinal anesthesia as majority of them answered "I don't know" for the questions related to complications of spinal anesthesia such as urinary retention (63.5%), high blood pressure during the operation (68.9%), chronic back pain (32.5%), headache after surgery (40.1%) and hemiplegia (45.8). The mean knowledge score difference was statistically significant with respect to age groups (p <.001), level of education (p=0.044) and marital status of the respondents (p=0.025) but not with the explanation provided by the anaesthetist regarding spinal anesthesia.*

Conclusion: *The mean knowledge score difference was statistically significant with respect to age groups, level of education and marital status of the respondents.*

Keywords: *Anesthesia, Anaesthesiologist, Knowledge, Spinal.*

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INTRODUCTION:

Spinal anesthesia is the process of injecting a local anesthetic into the subarachnoid space to block the nerve roots that are supplying the surgical field in the abdomen, pelvis or lower limbs [1]. Spinal anesthesia proved to be a safe, reliable, and rapid method of anesthesia for caesarean delivery. Compared to general anaesthesia, spinal anaesthesia has several advantages, including avoidance of managing a difficult airway [2], avoidance of multiple drugs required for general anaesthesia and allowing the patient to participate and enjoy the birthing experience. Moreover, analgesia produced during regional anaesthesia can extend to the postoperative period with pain control [3]. In spite of being safe and reliable, spinal anesthesia is absolutely contraindicated if patient refused [1].

Fortunately, serious complications of spinal anesthesia are rare with a rate of 2.2 per 100,000 cases [4] but they must be recognized and managed immediately. The most common complication is post-dural puncture headache with an incidence of 0-14.5% using a 25G pencil point needle [5] followed by the occurrence of a neurological sequelae presented as permanent neurological damage (less than 1:10,000); while total spinal, respiratory depression caused by intrathecal opioids, meningitis and vertebral canal haematoma are considered as rare complications [6].

Spinal-induced hypotension of spinal anesthesia associated with caesarean delivery is common. It occurs in up to 70% of cases and can result in a range of adverse effects either in maternal such as nausea, vomiting and syncope, or fetal-like acidosis and hypoxia [7]. Unfortunately, patients usually are either not aware about these complications and its true incidence, or listening to misleading common society wrong believes about spinal anesthesia complications. Such factors may affect their decision to accept or refuse the medical advice of the anesthesia team to have spinal anesthesia during caesarean delivery.

As patient refusal is one of the absolute contraindications of spinal anesthesia, patients concerns about spinal anesthesia and its complications should be considered and studied carefully in order to overcome any wrong believes that interfere directly or indirectly with seeking or accepting medical advice. Hence, the present study was conducted with an aim to measure the degree of awareness and knowledge about spinal anesthesia complications among female population at Almadina Almunwwarah and identifying the most common wrong believes about these complications. Such results may facilitate in the future to conduct a proper educational program that target female population.

METHODS:

A cross-sectional study was conducted among the female population to measure the degree of awareness and knowledge about spinal anesthesia complications at Almadina from November 2018 to December 2018 (two-months study duration). Ethical approval was obtained from the scientific research ethics committee. Verbal informed consent was taken from participants after discussing the objective of the study. Female aged more than 15 years living in Almadina were included and females aged less than 15 years, living outside Almadina, male population and who refuse to be part of the study were excluded from the study.

A pilot study was conducted among 50 females to validate the questionnaire and also to determine the feasibility of the study. The results of the pilot study were found satisfactory and no changes were required in the questionnaire.

A convenience sampling technique was used to collect the data through primary health centers (PHC), malls, and through an electronic survey. A self-administered, closed-ended questionnaire was distributed to all the respondents and was asked to respond to this survey and to rate each item of the questionnaire choosing the most suitable response. They were informed about the study and their participation was purely voluntary.

The questionnaire consisted of 12 multiple choice questions (MCQ).Demographic details of the female population were collected regarding age, level of education, marital status and number of children. The respondents were asked about the number of cesarean section they have undergone under the influence of spinal anesthesia, explanation regarding spinal anesthesia before cesarean section by the anesthesiology team and level of preference of general anesthesia over spinal anesthesia. Respondents' knowledge about spinal anesthesia was observed by ten 4-points Likert scale questions. Points were assigned as follows: strongly agree = 1, agree = 2, I don't know = 3, and disagree = 4.

Statistical analysis

Baseline characteristics were presented as frequencies and percentages. Respondents' knowledge about spinal anesthesia was observed by ten 4-points Likert scale questions and were presented in a table. These points were counted for each respondent and compared across the baseline characteristics and level of explanation about spinal anesthesia by the anesthetists before cesarean section. One-way

ANOVA test was done to observe the comparisons. The analysis was performed in 95% confidence interval using the Statistical Package for Social Science (SPSS), version 23.0 (IBM, Armonk, NY, USA).

RESULTS:

Total 1181 women were included in this cross-sectional study. The mean age of all the study participants was 32.33 ± 8.31 years. Studied baseline characteristics were presented in table 1. More than half, 731 (61.8%) did not undergo cesarean section. Among the women who underwent a cesarean section, 279 (23.6%) underwent once. Only about 15% of women underwent cesarean section more than once. Interestingly, among the 450 respondents who underwent cesarean section 202 (45.1%) did not receive any explanation about spinal anesthesia from the anesthetists before the procedure while 139 (30.9%) received detailed explanation and answers to their all anesthesia-related questions from the anesthetists. (Figure 1, 2)

Respondents' knowledge regarding spinal anesthesia was observed by ten 4-points Likert scale questions which were listed and presented in table 2. Among all the respondents, 359 (30.4%) strongly preferred general anesthesia to spinal anesthesia (Figure 3).

The mean knowledge score difference was statistically significantly different in different age groups. The highest mean score was observed among 21 to 25 year age group, 29.28 ± 3.86 and the lowest knowledge score was observed among 31 to 35 year age group, 27.64 ± 3.89 (p <.001). Again, the mean score was significantly different in different level of education (p .044) and marital status (p .025). However, explanation about spinal anesthesia by the anesthetists before cesarean section did not create any statistically significant difference in mean knowledge score among the studied cases (p .439) (Table 3).

DISCUSSION:

Spinal anesthesia, also known as a spinal or subarachnoid block is the process of injecting a local anesthetic into the subarachnoid space to abolish temporarily the sensory and motor functions of several groups of spinal nerves that are supplying the surgical field in the abdomen, pelvis or lower limbs [1]. August Bier from Germany along with assistant Hildebrandt first introduced spinal anesthesia on his friend using cocaine [8].

Spinal anesthesia is easy to perform and provides excellent operating conditions. As compared with general anaesthesia, spinal anaesthesia has several advantages such aslesser need for postoperative analgesia, avoidance of multiple drugs required for general anaesthesia, allowing the patient to participate and enjoy the birthing experience [2], reduced risk of airway obstruction or the aspiration of gastric contents as control of the airway is not compromised, provides excellent muscle relaxation for lower abdominal and lower limb surgery [9] and the incidence of postoperative deep vein thrombosis and pulmonary emboli are less common following spinal anaesthesia [10]. Recently, it has gained popularity especially for caesareansection because of the above-mentioned reasons. A randomized control trial describes benefits of earlier intravenous cannula removal, ambulation, breast-feeding initiation and potential for shorter hospitalization period after caesarean delivery under spinal anaesthesia [11].

In the present study, most of the females were from 26-30 years age group (23.7%) and the mean age was 32.33 ± 8.31 years which was consistent with the Dharmalingam T et al study where majority of the females (62.5%) were aged between 20 and 30 years and the mean age (standard deviation) was determined as 28.88 years (SD 5.44) [12]. Jemal B et al study also found the same results with respect to age groups (39.7% were between 25- 29 years of age) [13].

Our study found that the majority of the females (56.6%) were multigravida which was similar with Dharmalingam T et al study, where 55.5% patients were multigravida and 44.5% were primigravida [12]. In our study, the mean knowledge score difference was statistically significantly with respect to age groups (p<0.001), level of education (p=0.044) and marital status (p=0.025), whereas, studies conducted by Affleck et al. [14] and Jackson et al. [15] found no impact of women's age on level of knowledge and studies done by Pattee et al. [16] and Jackson et al. [15], revealed no correlation between level of education and women's knowledge related to spinal anesthesia.

In our study, 450 respondents underwent caesarean section and among them, majority of the females (45.1%) did not receive any explanation about spinal anesthesia from the anesthetists before the procedure and there was no statistically significant difference in mean knowledge score among the studied cases (p=0.439), whereas, in Dharmalingam T et al study, all the patients (98%) were satisfied with the complete explanations provided by the trained personnel regarding applicable anaesthesia methods[12].Maternal satisfaction with pre-anaesthesia information about the procedure was 67.1% in Makoko U et al study [17] and 36% in Shisanya and Maremastudy [18].

Among all the respondents, 30.4% strongly preferred general anesthesia to spinal anesthesia in our study. In Jemal B et al study, 77% of pregnant women preferred general anesthesia and only 23 % preferred Spinal anesthesia [13].

Along with the history of the method of spinal anesthesia, the history of its complications is also very old. The very first spinal anaesthetics (Bierand Hildebrandt) were followed by post-dural puncture headaches (PDPHs) after their experiment and Bier headache was related to posture [8]. In the initial days of spinal anesthesia, it gained great popularity and was claimed to be a safe method. But after some time, few tragic events occurred with spinal anesthesia such as the Woolley and Roe case, in which two patients became paraplegic in the adjoining operating rooms following spinal anesthesia for relatively minor procedures [19]. Then again in the 1950s, the reputation of spinal anesthesia was restored and it was found that spinal anesthesia causes serious morbidity and mortality only in rare cases [20].

Fortunately, the rate of serious complications with spinal anesthesia is 2.2 per 100,000 cases [4]. The most common complication of spinal anesthesia found was PDPH with the incidence of 0-14.5% with a 25G pencil point needle [5] caused due to leakage of cerebrospinal fluid through the puncture site and the resultant traction of intracerebral content [21]. The next followed complication is the occurrence of neurological sequelae presented as permanent neurological damage (less than 1:10,000) and several other rare complications [6]. Women should be made aware of the possible complications of spinal anaesthesia. The complications of spinal anaesthesia can occur at the time of administration, shortly after the administration or postoperatively [22].

In the present study, the respondents had low level of knowledge regarding spinal anesthesia as the majority of them answered “I don’t know” for the questions related to complications of spinal anesthesia such as urinary retention (63.5%), high blood pressure during the operation (68.9%), chronic back pain (32.5%), headache after surgery (40.1%) and hemiplegia (45.8). Most of the studies conducted in past revealed the reasons of dissatisfaction among women after spinal anesthesia. A study was conducted to determine the patients’ dissatisfaction after spinal anaesthesia, and it showed the following factors resulting in patient dissatisfaction; increasing number of attempts of spinal block, pain during spinal block, inadequate analgesia and post-operative urinary retention [23]. Another study by Sindhvananda et al. revealed that PDPH, pruritus, and post-operative nausea and vomiting (PONV) were predictors of dissatisfaction [24]. In addition, post-operative backache was associated with dissatisfaction and refusal of spinal blocks in another study [25]. Bhattarai et al. suggested that the main reasons for maternal dissatisfaction of spinal anesthesia were inability to move the lower extremities and dysesthesia in the upper extremities [26].

Spinal anesthesia is safe for caesarean section, provided that the anaesthetist is aware of the complications associated with the various techniques, takes precautions to prevent complications where possible, carefully monitors the patient, and manages complications timeously and appropriately.

CONCLUSION:

The mean knowledge score difference was statistically significant with respect to age groups, level of education and marital status of the respondents. However, explanation about spinal anesthesia by the anaesthetists before caesarean section did not create any statistically significant difference in mean knowledge score among the studied cases. Some factors should be kept in mind beforegiving spinal anaesthesia to the patient such astakinga patient’s consentwhile deciding the anaesthetic method and providing complete explanations regarding spinal anaesthesia before surgery by the anaesthetists.

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TABLES:

Table 1: Baseline characteristics of the study participants (n = 1181)

Characteristics	N (%)
Age	
▪ ≤ 20	61 (5.2)
▪ 21 – 25	242 (20.5)
▪ 26 – 30	280 (23.7)
▪ 31 – 35	186 (15.7)
▪ 36 – 40	209 (17.7)
▪ > 40	203 (17.2)
▪ Mean ± SD	32.33 ± 8.31
Level of education	
▪ Below high school	40 (3.4)
▪ High school	215 (18.2)
▪ University degree	926 (78.4)
Marital status	
▪ Single	194 (16.4)
▪ Married	932 (78.9)
▪ Divorced	45 (3.8)
▪ Widow	10 (0.8)
Number of children	
▪ No children	237 (20.1)
▪ 1	276 (14.9)
▪ 2	193 (16.3)
▪ 3	185 (15.7)
▪ 4	137 (11.6)
▪ 5	113 (9.6)
▪ More than five	40 (3.4)

Figure 1: Number of cesarean section respondents have undergone under the influence of spinal anesthesia

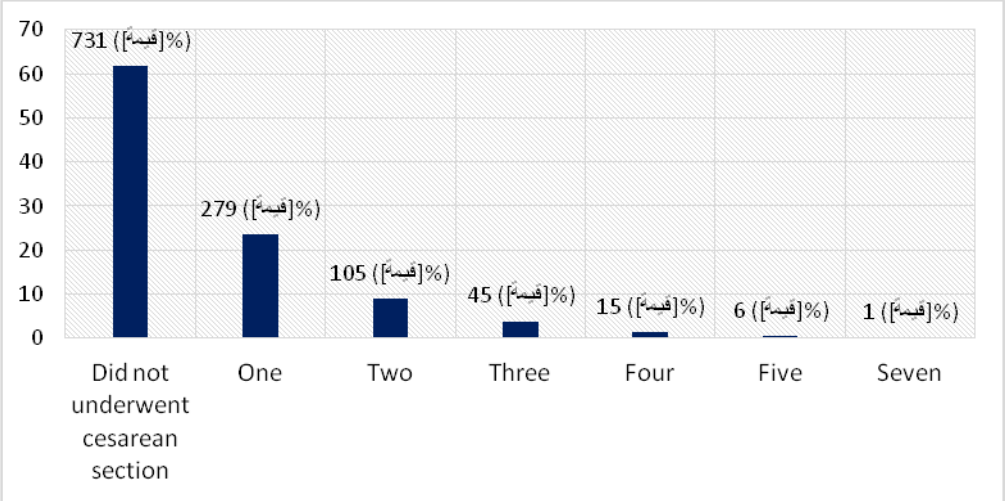

Figure 2: Level of explanation regarding spinal anesthesia before cesarean section by the anesthesiology team (n = 450)

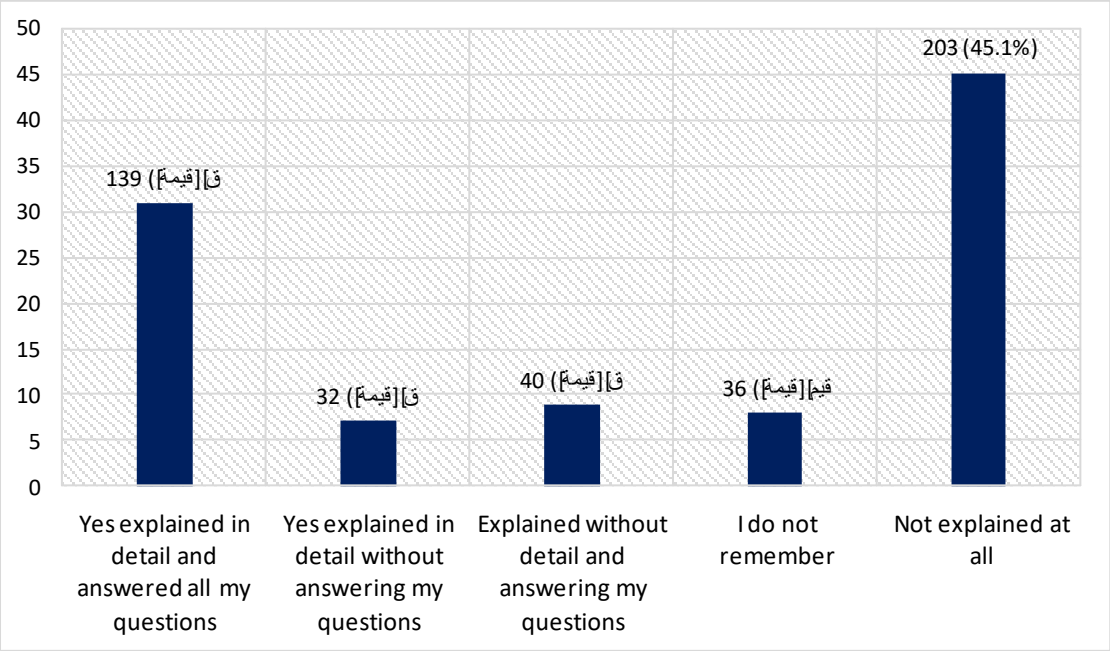

Table 2: Respondents' knowledge regarding spinal anesthesia

Sl. No.	Questions	Strongly agree	Agree	I don't know	Disagree
1	Do you think spinal anesthesia increases the chance of normal vaginal delivery?	91 (7.7)	231 (19.6)	597 (50.6)	262 (22.2)
2	Do you think spinal anesthesia always leads to cesarean delivery?	100 (8.5)	184 (15.6)	672 (56.9)	225 (19.1)
3	Do you think spinal anesthesia is given for more than 3 hours before the caesarean section?	41 (3.5)	107 (9.1)	698 (59.1)	335 (28.4)
4	Do you think spinal anesthesia is used only in caesarian delivery?	68 (5.8)	181 (15.3)	466 (39.5)	466 (39.5)
5	Do you think spinal anesthesia causes chronic urine retention?	33 (2.8)	141 (11.9)	750 (63.5)	257 (21.8)
6	Do you think that spinal anesthesia in cesarean delivery causes high blood pressure during the operation?	51 (4.3)	173 (14.6)	814 (68.9)	143 (12.1)
7	In your opinion, could spinal anesthesia cause chronic back pain?	252 (21.3)	370 (31.3)	384 (32.5)	175 (14.8)
8	Do you think spinal anesthesia causes headache after surgery?	239 (20.2)	315 (26.7)	474 (40.1)	153 (13.0)
9	Do you think spinal anesthesia may cause hemiplegia?	111 (9.4)	317 (26.8)	541 (45.8)	212 (18.0)
10	Do you think the headache after spinal anesthesia is a chronic headache?	73 (6.2)	200 (16.9)	596 (50.5)	312 (26.4)

Figure 3: Level of preference of general anesthesia over spinal anesthesia

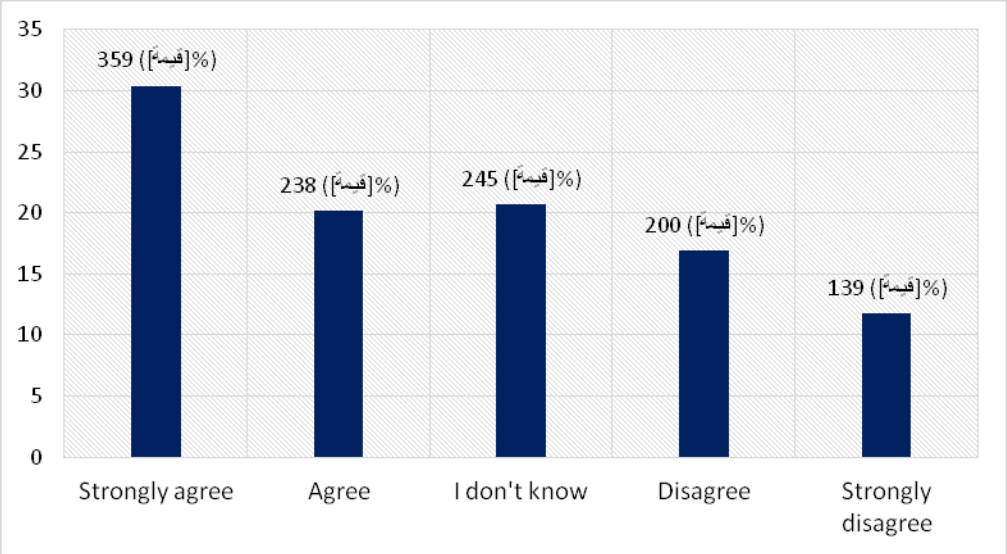

Table 3: Mean score differences across the categories (age, level of education, marital status, and explanation of spinal anesthesia)

Characteristics	Mean scores	p-value
Age		
▪ ≤ 20	28.29 ± 4.12	
▪ 21 – 25	29.28 ± 3.86	
▪ 26 – 30	28.99 ± 4.01	< .001
▪ 31 – 35	27.64 ± 3.89	
▪ 36 – 40	27.90 ± 3.22	
▪ > 40	28.23 ± 4.05	
Level of education		
▪ Below high school	27.90 ± 4.28	.044
▪ High school	27.95 ± 3.65	
▪ University degree	28.63 ± 3.91	
Marital status		
▪ Single	29.21 ± 3.81	
▪ Married	28.37 ± 3.88	.025
▪ Divorced	27.73 ± 3.81	
▪ Widow	28.20 ± 4.92	
Explanation about spinal anesthesia by the anesthetists before cesarean section		
• Explained in detail and answered all my questions	28.54 ± 5.52	
• Explained in detail without answering my questions	27.38 ± 4.08	.439
• Explained without detail and answering my question	27.56 ± 4.34	
• I do not remember	27.84 ± 3.63	
• Not explained at all	28.06 ± 4.44	