



EVALUATION OF EFFICACY OF GENERAL ANESTHESIA VERSUS SPINAL ANESTHESIA ON LIFE ACTIVITY AMONG WOMEN AFTER CESAREAN SECTION IN GENERAL GOVERNMENT HOSPITAL IN LIBYA

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ABSTRACT

Background: Cesarean section (CS) is considered a significant surgical intervention necessitating a high level of professional skill and a choice between general anesthesia (GA) and spinal anesthesia. Anesthesia type can significantly influence postoperative recovery patient satisfaction, and life activity. This study aims to compare the impacts of General Anesthesia and Spinal Anesthesia on life activity among women after Cesarean section. **Methods:** This study was carried out comparatively on 200 pregnant women who want to have a cesarean section with spinal anesthesia and general anesthesia preference to mothers or physicians were included in a purposive sample carried out in the operating room at Libya Teaching Hospital from **January 2024 to July 2024**. The self-administered questionnaire was used by the participants to measure their health. **Results:** spinal anesthesia resulted in significantly better outcomes for mobility (70% vs. 44% no problems), self-care (8% vs. 11% no issues), and pain (83% vs. 75% moderate pain) ($p < 0.05$). After one week, the advantages of spinal anesthesia remained for self-care (78% vs. 44% no problems) and anxiety/ depression (66% vs. 47% not anxious) ($p < 0.05$). After post-delivery, health outcomes were similar between anesthesia methods. **Conclusions:** The study found that spinal anesthesia offers better health-related life activity outcomes than general anesthesia for cesarean delivery. As a result, spinal anesthesia is commonly referred to as the anesthesia technique for cesarean delivery in many countries.

KEYWORDS: Spinal, General, Anesthesia, Cesarean section.

INTRODUCTION

Background: Childbirth has long been viewed as conferring divine benefits for human reproduction. The delivery method can significantly. Impact both the mother's and the newborn's health.

The most common methods of childbirth include vaginal delivery and cesarean section (CS or C-sections).^[1,2] Cesarean section is a surgical method of childbirth in which the baby is delivered through an abdominal incision (Laparotomy) and an incision in the uterus (Hysterotomy) instead of the vaginal canal.^[3] Vaginal birth is a natural process, but sometimes a cesarean section is needed to protect the health of the mother and baby.

Not using a cesarean section when needed can lead to more maternal and perinatal mortality and morbidity. On

the other hand, using a cesarean section when it is not medically necessary does not provide benefits and can be harmful and a waste of resources.^[4,5] According to the most recent data (2010-2018) from 154 countries, which covers 94.5% of global live births, approximately 21.1% of women worldwide delivered their babies through cesarean sections.^[6] Cesarean section rates in Libya the two main categories of anesthesia employed in cesarean sections are general anesthesia (GA) and spinal anesthesia (SA).^[8,9]

General anesthesia induces unconsciousness, rendering the patient unaware and unresponsive to painful stimuli throughout the surgery. It is achieved by the inhalation or intravenous administration of anesthetic agents, often supplemented with muscle relaxants.^[10,11] Conversely, spinal anesthesia, a form of regional anesthesia, involves injecting local anesthetics into the subarachnoid resulting

in sensory and motor blockage below the level of the injection.

This method allows the patient to remain conscious throughout the surgery, yet free from pain.^[12,13] Various factors, such as clinical indications, patient preference, and the proficiency of anesthesiologists often influence the decision-making process when selecting between general anesthesia and spinal anesthesia for a cesarean section.^[14,15] While both methods have their advantages and disadvantages, their differential impacts on the activity of life post-surgery are still a subject of ongoing research. Several studies have looked at different anesthesia methods for C-sections, comparing things like maternal mortality, pain after surgery, and bleeding.^[16,17] Other studies have compared the quality of life after C-sections to vaginal deliveries.^[18,19] However, limited studies have directly compared health-related activity of life between women who had general anesthesia versus spinal anesthesia for their cesarean section. As previously mentioned, there is a growing trend of C-section procedures, emphasizing the importance of choosing the most suitable anesthesia method that minimizes adverse effects on the activity life among women undergoing this procedure. Since there is a lack of comprehensive research in the Middle East, specifically in Libya, on this subject, it was imperative to conduct a study to compare the effects of general anesthesia and spinal anesthesia on the activity life of women after cesarean sections.

Goal of the study

- The aim of our study was to the importance of choosing the most suitable anesthesia method that minimizes adverse effects on the activity life among women after this procedure.
- Since there is a lack of comprehensive research in the Middle East, specifically in Libya, on this subject, it was imperative to conduct a study to compare the efficacy of general anesthesia and spinal anesthesia on the activity life of women after cesarean sections.

MATERIAL AND METHOD

Study design

This study was prospective, randomized, and informed consent was obtained from all participants prior to inclusion.

This study was conducted on patients who attended to General Government Hospital of Libya to evaluate the impact of general and spinal anesthesia on the activity of life of women after cesarean section delivery. The present study commenced during the period from January 2024 to July 2024.

They were recruited from the operation room, post-operative, and emergency ward in General Government Hospital of Libya.

The maternity hospital has main departments including (the consultation department, emergency department, delivery room, operative room, postpartum department, postoperative department, Intensive Care Unit (ICU), and Neonatal Intensive Care Unit (NICU) which give maternal health care service, especially emergency and special care for the Libyan population.

The study enrolled a total of 200 participants, equally divided into the general anesthesia group (n=100) and the spinal anesthesia group (n=100). A non-probability targeted sampling method was used to select pregnant women who underwent elective cesarean surgery.

The study participants included pregnant women of Libyan nationality, between 23-48 years old. All participants were scheduled for elective cesarean section, were able to communicate effectively, and were willing to take part in the research study.

The exclusion criteria for the study were as follows: Pregnant women who had to switch from spinal anesthesia to general anesthesia during the cesarean section, patients undergoing emergency cesarean section for any reason, those who declined to provide informed consent or refused to participate in the study, those who did not complete the follow-up or failed to answer phone calls after one week or one month.

The researchers constructed the questionnaire and applied it to collect the data using a standard that includes five steps.

Step 1: Of the study involved collecting socio-demographic data from pregnant women, which included their age, educational level, occupation, place of residence, body mass index (BMI), and mobile phone number.

Step 2: Obstetrical history: This includes the number of pregnant, para, miscarriage, and gestational age in weeks of the fetus which was reported by ultrasound and according to the last menstrual period (LMP) and expected date of delivery (EDD) were taken from the record of pregnant women of both groups.

Step 3: The decision to choose anesthesia by mother or physician request, previous type of anesthesia, number of cesarean sections, and indication of cesarean section.

Step 4: The participants were asked to complete the self-administered questionnaire at three different time intervals: 24 hours, one week, and one month after their cesarean section procedure.

The questionnaire consisted of questions related to various aspects of their health, including mobility, self-care, usual activities, pain, discomfort, anxiety, and depression. In this study, elective indication was defined as any cesarean section that was previously scheduled with a set admission and surgery appointment.

Statistical analysis

These were performed with SPSS 20.0 software (SPSS Institute). *P*-value less than (0.05) was considered statistically significant.

THE RESULTS**Table 1: Sociodemographic characteristics of the study.**

Variables		General=100	Spinal=100
		F (%)	F (%)
Age (year)	<20	7(7)	4(4)
	20-29	54 (54)	41 (41)
	30-39	35 (35)	44 (44)
	>40	4(4)	11 (11)
		Mean (Std) = 27.880 (5.8175)	Mean (Std) =30.090 (6.7136)
Education Level	Illiterate	19 (19)	13 (13)
	Can read and Write	7(7)	8(8)
	Primary School	25 (25)	27 (27)
	Intermediate School	17(17)	13 (13)
	High School	10 (10)	9(9)
	Institution and University	22 (22)	30 (30)
Occupation	House wife	93 (93)	77 (77)
	Governmental-employment	6(6)	18 (18)
	Student	1(1)	5(5)
Residency	Urban	46 (46)	52 (52)
	Rural	54 (54)	48 (48)
BMI	Underweight	8(8)	18 (18)
	Normal	39 (39)	28 (28)
	Over weight	40 (40)	38 (38)
	Obese	13 (13)	16 (16)
		Mean (Std) = 25.4 (5)	Mean (Std) = 25.9 (5)
P-Value= 0.310			

% Percentage. n = number of patients

A total of 200 patients were enrolled and analyzed. All of these patients continued follow-up. Table 1 presents the sociodemographic data of participants. The majority of participants (54%) who received general anesthesia fell within the age range of 20 to 29 years while the majority of those (44%) who received spinal anesthesia were between 30 and 39 years old. Regarding education level, the result indicates that the highest percentage 25% of the general anesthesia group held a primary school degree in comparison with 30% of the spinal anesthesia

held an institute or university degree. The majority of participants 93% and 77% in both groups were housewives, respectively. The same table indicates that the highest percentage 54% of women in general anesthesia live in rural areas while 52% of women in spinal anesthesia live in urban. Regarding body mass index, the result mentioned that the highest percentage 40% and 38% of women in both groups were in the group of Body Mass Index (BMI) which represents overweight respective.

Table 2: General anesthesia VS spinal anesthesia regarding Questioners.

Variables		General Anesthesia		Spinal Anesthesia		<i>P</i> -value
		F	%	F	%	
Mobility	I have no problems in walking about.	44	44	70	70	0.001
	I have some problems in walking about.	34	34	20	20	
	I am confined to bed.	22	22	10	10	
Self-Care	I have no problems with self-care.	11	11	8	8	0.001
	I have some problems with washing or dressing myself.	0	0	44	44	
	I am unable to wash or dress myself.	89	89	48	48	

Activities	I have no problems with performing my usual activities.	0	0	0	0	0.410
	I have some problems with performing my usual activities.	4	4	2	2	
	I am unable to perform my usual activities.	96	96	98	98	
Pain / Discomfort	I have no pain or discomfort.	2	2	4	4	0.050
	I have moderate pain or discomfort.	75	75	83	83	
	I have extreme pain or discomfort.	23	23.0	13	13	
Anxiety / Depression	I am not anxious or depressed.	67	67	74	74	0.327
	I am moderately anxious or depressed.	23	23	18	18	
	I am extremely anxious or depressed.	10	10	8	8	
Total		100	100	100	100	

Table 2: Indicates the descriptive statistics about Questioners of health postoperatively. The descriptive statistics about 5 dimensions of health postoperatively. The results showed statistically significant differences favoring spinal anesthesia in mobility ($p < 0.05$), self-care ($p < 0.05$), and pain/discomfort ($p < 0.05$). Specifically, 70% of spinal anesthesia patients had no mobility problems compared to only 44% of general anesthesia patients. For self-care, only 8% of spinal patients reported no problems versus 11% of general patients. Moderate pain was reported in 83% of spinal patients compared to 75% of general patients. No significant differences were seen between the two anesthesia methods for activities ($p > 0.05$) or anxiety/depression ($p > 0.05$).

DISCUSSION

This study examined the effects of spinal and general anesthetics on activity life after cesarean sections. It found that spinal anesthesia was associated with better overall recovery than general anesthesia in the early postoperative period. Specifically, spinal anesthesia patients had less difficulty with mobility and self-care and experienced less pain after surgery. However, there were a few differences between the two anesthesia groups regarding mobility, activities, pain levels, and psychological well-being.

A study by *Ghaffari et al. (2018)*, investigated the effect of spinal versus general anesthesia on activity life in women undergoing cesarean delivery on maternal request. The study found that more women who underwent spinal anesthesia reported "no problem" with respect to mobility, self-care, and usual activities at various time points after the cesarean delivery. Furthermore, the EQ general health score was higher 24 hours after cesarean delivery with regional anesthesia than general anesthesia. This indicates that spinal

anesthesia may provide better activity life outcomes for women after cesarean sections.^[20] *Reddy et al. (2021)* also conducted a study to investigate the effect of general anesthesia versus spinal anesthesia on the activity life of women after cesarean section. The results of Nit's study confirm the results of *Ghaffari's* study and are consistent with the results of the present study.^[21] The findings of the present study revealed that fewer women opted for spinal anesthesia as their preferred anesthetic technique.

The degrees of "Pain/Discomfort" felt by women 24 hours and one month following a cesarean birth were reported in the current study. Effective pain management is essential, especially following a cesarean birth since uncontrolled pain can severely influence the care of the mother and her baby.

The results of the current study are consistent with this notion since patients who got spinal anesthetic experienced less discomfort right away after the procedure.

In addition, retrospective research comprising 857 individuals who had elective cesarean deliveries found that greater pain levels in the early postoperative period were a significant independent risk factor for persistent pain following cesarean birth.^[22] In addition, *Eisenach et al. (2008)* found that women who experienced severe acute postpartum pain had a 2.5-fold greater likelihood of developing persistent pain than those who reported mild postpartum pain.^[23] Successful pain management after cesarean delivery can positively affect new mothers. It has been demonstrated that effective pain management following cesarean birth improves the activity life,^[24] which is more commonly achieved with spinal anesthesia than general anesthesia. This may be explained by the fact that pain medication makes it possible for the mother to be more compassionate,

vivacious, and active during this time when she assumes the role of motherhood, which includes many novel tasks like breastfeeding and infant care.

The present study found that more pregnant women who had spinal anesthesia for cesarean delivery reported no issues with mobility and self-care like washing and dressing 24 hours after the surgery, compared to women who had general anesthesia. Moreover, more women who had spinal anesthesia reported no problems resuming their usual daily activities 1 week and 1 month after the cesarean delivery versus women with general anesthesia. Consistent with our findings, *Gursoy et al. (2014)* showed that neuraxial anesthesia enables patients to return to normal daily activities earlier than general anesthesia. Because, the mobility, self-care, and activities scores were higher 24 hours and one week after cesarean delivery with spinal anesthesia compared to general anesthesia.^[25]

CONCLUSION AND RECOMMENDATIONS

While general anesthesia methods have their advantages and disadvantages, their differential impacts on the activity of life post-surgery are still not clear, there is a growing trend of C-section procedures, emphasizing the importance of choosing the most suitable anesthesia method that minimizes adverse effects on the activity life among women undergoing this procedure.

In this study, we have concluded that spinal anesthesia is the superior method for cesarean births in comparison to general anesthesia. This is not only because it eliminates the risks associated with general anesthesia, such as the potential for failed intubation and its associated complications, but also because it facilitates faster recovery and more effective pain management, leading to a better activity life for mothers.

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Conflicts of interest

The authors declare no conflict of interest.

Authors' contributions

AAE conducting study, interpreted data and draft the manuscript. All authors approved the paper for publication.

REFERENCES

1. Saraf T.S., Bagga R.V., Cesarean section or normal vaginal delivery: A cross-sectional study of attitude of medical students, *Journal of education and health promotion*, 2022; 11: 357.
2. Sheidaei S., Jafarnejad F., Zadeh F.M., Heravi A.T., The Effect of Peer Education on Pregnant Women's Choosing Mode of Delivery, *S I Kebidanan*, 2019; 7: 1880.
3. Sung S, Mahdy H. Cesarean Section. StatPearls. Treasure Island (FL) ineligible companies. Disclosure: Heba Mahdy declares no relevant financial relationships with ineligible companies.: StatPearls Publishing Copyright © 2023, StatPearls Publishing LLC, 2023.
4. Sobhy S., Arroyo-Manzano D., Murugesu N., Karthikeyan G., Kumar V., Kaur I., Fernandez E., Gundabattula S.R., Betran A.P., Khan K., Zamora J., Maternal and perinatal mortality and complications associated with caesarean section in low-income and middle-income countries: a systematic review and meta-analysis, *The Lancet*, 2019; 393: 1973.
5. Keag O.E., Norman J.E., Stock S.J., Long-term risks and benefits associated with cesarean delivery for mother, baby, and subsequent pregnancies: Systematic review and metaanalysis, *PLOS Medicine*, 2018; 15: e1002494.
6. Betran A.P., Ye J., Moller A.B., Souza J.P., Zhang J., Trends and projections of caesarean section rates: global and regional estimates, *BMJ global health*, 2021; 6.
7. Shabila N.P., Rates and trends in cesarean sections between 2008 and 2012 in Iraq, *BMC Pregnancy and Childbirth*, 2017; 17: 22.
8. Ring L., Landau R., Delgado C., The Current Role of General Anesthesia for Cesarean Delivery, *Current anesthesiology reports*, 2021; 11: 18.
9. Jafarzadeh A., Hadavi M., Hasanshahi G., Rezaeian M., Vazirinejad R., Aminzadeh F., Sarkoobi A., Effect of anesthesia techniques on pain severity, hemodynamic changes, and patients' satisfaction in elective cesarean section, *Acta Medica Iranica*, 2019; 57: 424.
10. Shallik N.A., Tawfik L., Alhammad M.F., Shallik N.N., Boutabba C., Pharmacology of the Most Common Anesthesia Drugs, In *Improving Anesthesia Technical Staff's Skills*, Cham: Springer International Publishing, 2022; 25.
11. Vats A., Marbaniang M.J., The principles and conduct of anaesthesia, *Surgery (Oxford)*, 2022; 40: 361.
12. Young-Fadok T.M., Craner R.C., Regional Anesthesia Techniques for Abdominal Operations. In: Ljungqvist O, Francis NK, Urman RD, editors, Enhanced Recovery After Surgery: A Complete Guide to Optimizing Outcomes, Cham: Springer International Publishing, 2020; 149.
13. Sadler A.L.K., Fettes P.D.W., Spinal anaesthesia, *Anaesthesia & Intensive Care Medicine*, 2018; 19: 607.
14. Emadi S.A., Baradari A.G., Khademloo M., Abotorabi M., Kiabi F.H., Evaluating patients' choice of general and spinal anesthesia for elective cesarean section and associated factors: a descriptive study, *Annals of medicine and surgery*, 2023; 2023, 85: 6.

15. Dongare P.A., Nataraj M.S., Anaesthetic management of obstetric emergencies, *Indian journal of anaesthesia*, 2018; 62: 704.
16. Iddrisu M., Khan Z.H., Anesthesia for cesarean delivery: general or regional anesthesia—a systematic review, *Ain-Shams Journal of Anesthesiology*, 2021; 13: 1.
17. Al-Husban N., Elmuhtaseb M.S., Al-Husban H., Nabhan M., Abuhlaweh H., Alkhatib Y.M., Yousef M., Aloran B., Elyyan Y., Alghazo A., Anesthesia for cesarean section: retrospective comparative study, *International Journal of Women's Health*, 2021; 13: 141.
18. Zaheri F., Nasab L.H., Ranaei F., Shahoei R., The relationship between quality of life after childbirth and the childbirth method in nulliparous women referred to healthcare centers in Sanandaj, Iran, *Electronic physician*, 2017; 9: 5985.
19. Kavosi Z., Keshtkaran A., Setoodehzadeh F., Kasraeian M., Khammarnia M., Eslahi M., A Comparison of Mothers' Quality of Life after Normal Vaginal, Cesarean, and Water Birth Deliveries, *International journal of community based nursing and midwifery*, 2015; 3: 198.
20. Ghaffari S., Dehghanpisheh L., Tavakkoli F., Mahmoudi H., The effect of spinal versus general anesthesia on quality of life in women undergoing cesarean delivery on maternal request, *Cureus*, 2018; 10: e3715.
21. Reddy V., Chirra S., General versus Spinal Anesthesia on Quality of Life in Women Undergoing Caesarean Delivery: A Prospective Comparative Study, *International Archives of Integrated Medicine*, 2021; 8: 35.
22. Sng B.L., Sia A.T.H., Quek K., Woo D., Lim Y., Incidence and Risk Factors for Chronic Pain after Caesarean Section under Spinal Anaesthesia, *Anaesthesia and Intensive Care*, 2009; 37: 748.
23. Eisenach J.C., Pan P.H., Smiley R., Lavand'homme P., Landau R., Houle T.T., Severity of acute pain after childbirth, but not type of delivery, predicts persistent pain and postpartum depression, *PAIN*, 2008; 140: 87.
24. Roofthoof E., Joshi G.P., Rawal N., Van de Velde M., PROSPECT Working Group* of the European Society of Regional Anaesthesia and Pain Therapy and supported by the Obstetric Anaesthetists' Association, Joshi G.P., Pogatzki-Zahn E., Van de Velde M., Schug S., Kehlet H., Bonnet F., PROSPECT guideline for elective caesarean section: updated systematic review and procedure-specific postoperative pain management recommendations, *Anaesthesia*, 2021; 76: 665.
25. Gürsoy C., Ok G., Aydın D., Eser E., Erbüyün K., Tekin İ., Baytur Y., Uyar Y., Effect of Anaesthesia Methods for Regaining Daily Life Activities in Cesarean Patients, *Turkish journal of anaesthesiology and reanimation*, 2014; 42: 71.