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Assessment of Quality-of-Life Following Vaginal Birth after Caesarean Section Versus Repeated Caesarean Section

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ABSTRACT

Background & Objective: Vaginal Birth After Cesarean Section (VBAC) is considered a safe childbirth method for reducing cesarean section rates and minimizing associated complications, thereby enhancing Quality of Life (QOL). Quality of life is a multidimensional concept influenced by physical, psychological, and social well-being, reflecting women's perceptions of satisfaction within their cultural context. While vaginal delivery may offer benefits, cesarean sections remain prevalent, highlighting the need to assess postpartum QOL between the two modes of delivery. To assess the quality of life after delivery in women who underwent Vaginal Birth After a Previous Cesarean Section (VBAC) in comparison to those who underwent elective repeated cesarean section.

Materials & Methods: A cross-sectional study was conducted at Ain Shams Maternity Hospital from April 2024 to December 2024, involving 100 postpartum women. Participants were divided into two groups: 50 women who underwent VBAC and 50 who underwent elective repeated cesarean sections. Data was collected using the Maternal Postpartum Quality of Life Questionnaire (MAP-QOL), assessing functioning, socioeconomic, social, and emotional support, psychological well-being, and health.

Results: Patients who underwent VBAC demonstrated significantly higher satisfaction across all quality-of-life domains compared to those who had repeated cesarean sections. VBAC was associated with better functioning, higher socioeconomic stability, stronger social and emotional support, improved psychological well-being, and enhanced health outcomes. No significant differences were found in maternal age or occupation between the groups.

Conclusion: Vaginal Birth After Cesarean Section Patients (VBAC) achieve high satisfaction among all parameters of quality of life compared to elective repeated cesarean section patients.

Keywords: Vaginal birth after cesarean section, Cesarean section, Quality of life, Postpartum period, Maternal health

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1. Introduction

The rate of Cesarean Sections (CS) in Egypt has increased significantly, from 52% of all births in 2014 to 72% in 2021, according to the Egypt Family Health Survey. This makes Egypt the country with the world's fourth-highest share of C-sections, nearly five times the World Health Organization's recommended rate of 10-15%. The rise in CS rates is driven by both medical and nonmedical factors, including socio-economic and cultural factors, as well as evolving risk factors among women over time. Additionally, factors related to obstetricians and healthcare institutions have emerged as independent risks contributing to increased CS rates **(1,2,3)**

Despite the complications associated with cesarean sections, many women continue to prefer them over vaginal deliveries. This may indicate a lack of awareness regarding the consequences of different delivery methods, highlighting the importance of discussing the benefits and risks of both CS and vaginal delivery with pregnant women **(4)**.

Vaginal Birth After Cesarean Section (VBAC) refers to delivering a baby vaginally after a prior cesarean section. VBAC is associated with less blood loss and a lower need for blood transfusions, shorter hospital stays, and fewer thromboembolic complications compared to CS. The success rate of VBAC can reach

60 to 70% if the primary cesarean was performed for non-recurring indications **(5)**.

Postpartum Quality Of Life (QOL) encompasses women's satisfaction with their cultural status, lifestyle, expectations, values, attitudes, goals, and living standards. Specific dimensions of postpartum QOL include functioning, socioeconomic factors, social and emotional support, psychological well-being, and health. Inadequate adjustment during the postpartum period may result in complications and decreased QOL **(6,7,8)**.

Mokhtaryan-Gilani reported that women's situation in life changes fundamentally under the effect of expectations and standards of the postpartum period, in which economic problems and physical health are not as important for mothers as mother newborn bonding, baby care, and breastfeeding. Baby problems overshadow mothers so much in which they pay less attention to their physical health. Also, partner and family support plays a crucial role in this period. Support is considered as an important component of all instruments of QOL such as the Maternal Postpartum QOL questionnaire, the Postpartum QOL questionnaire and World Health Organization QOL Brief Version (WHOQOL-BREF) **(9)**. Consequently, the study aimed to assess postpartum quality of life in women who underwent Vaginal Birth After Previous Cesarean Section (VBAC) in comparison to those who underwent repeated cesarean section.

2. Materials and Methods

A cross-sectional study was done at Ain Shams Maternity Hospital from April 2024 to December 2024 on 100 postpartum mothers, Patient involved in this study were recruited from Ain Shams University hospitals either from contraception clinic or from mother's presents in the ward in the maternity hospital or mothers in pediatric clinics and pediatric reception or from ≥maternity hospital archive records.

Women with age ranges from 20 to 35 years, previous one cesarean section with single lower segment C/S scar, singleton pregnancy, and women delivered at term≥37 weeks were included in the study. While, women with any contraindications to vaginal delivery in the current pregnancy such as large fetus> 4.5 kg, contracted pelvis, placenta Previa, polyhydramnios and oligohydramnios, abnormal fetal presentation and/or position were excluded from the study.

Sample Size Calculation: Based on the results of a study by Rezaei et al., with the mean quality of life after two months in NVD group 69+/- 20 while the mean in CS group 54+/- 25, with alpha error 5% and power of study 80%, the required sample size was 100 female patients, 50 in each group. The program for sample size calculation is STATA 10.

100 postpartum women were enrolled since April 2024 to December 2024, after that they were divided into 50 women that had experienced a VBAC delivery which ended successfully and without complications and 50 women with elective repeated cesarean delivery. Revision of cases data including age, occupation, residence, full medical, surgical and obstetric history including parity, indication of previous cesarean section, maternal & fetal outcome was done.

Before enrolment, the patient read an Arabic consent containing all elements required in the study and both patient and information provider signed by a dated formal signature. If the patient was illiterate, an explanation of the information in the written consent form was done verbally in the presence of an impartial witness who signed a dated formal signature beside the patient's legally recognized alternative to her signature as stamp or fingerprint. The principal investigator retained all the original signed consent documents with data confidentiality guaranteed.

After that, the questionnaire was presented via google form link sent to them across WhatsApp, some of them via contacting them across mobile phones and others through introducing a printed written copy of the questionnaire (Appendix I).

The Maternal Postpartum Quality of Life Questionnaire (MAP-QOL) that was used in the study was introduced by Hill et al., **(10)** in English and was translated in Arabic by Nabulsi et al., **(11)**. MAP-QOL is a validated instrument that has 39 items divided into five domains: functioning (11 items); socioeconomic (9 items); social and emotional relationship (9 items); psychological (4 items); and health (6 items). Each domain in MAP-QOL consisted of multiple questions divided into two parts. The first part asked the participants about the extent of her satisfaction with a certain aspect of her life and the second part asked the participants about the importance of each item using a Likert scale, ranging from 1 'very dissatisfied/ very unimportant' to 6 'very satisfied/ very important'. Scores were calculated by weighing the response of each satisfaction with its paired importance response and higher scores reflecting better quality of life.

Follow up of the mothers for postpartum quality of life assessments were performed in 6 weeks postpartum to align with the usual postpartum check-up and provide insight into early recovery and adaptation.

The procedures described in this study protocol were presented for approval by the research ethics committee and the council of obstetrics and gynaecology department at Ain Shams university to ensure the standard ethical principles governing research which includes human subjects.

Recording hospital numbers was done in case record form and the investigator maintained a confidential

patient identification list as number of patients with corresponding names to enable record identification.

All data of the research was owned by the university as part of the project. The principal investigator of this project took responsibility for the collection, management and sharing of all research data.

The proposed research data were obtained from questionnaires in which data were made and documentation available to users under a data sharing agreement for a commitment to use data only for research purposes and not to identify any individual participant, to secure data using appropriate computer technology and to destroy or return data after completion of analysis.

Ethical Consideration: This study was approved by the Research Ethics Committee of Ain Shams University. Written informed consent was obtained from all participants before enrollment. The confidentiality and anonymity of all participants were maintained throughout the study.

Statistical analysis: Statistical package for social sciences, version 23.0 (SPSS Inc., Chicago, Illinois, USA) were used to analyze the recorded data in which after that were presented as mean± standard deviation and ranges. Also, qualitative variables were presented as number and percentages, then a proper statistical analysis was applied. The confidence interval was set at 95% and the margin of error accepted was set at 5%.

3. Results

This study was conducted at Ain Shams University Maternity Hospital (ASHMH) during period from April 2024 to December 2024 on 100 female patients divided into equally group according to mode of delivery in the second pregnancy) 50 patients underwent vaginal birth following cesarean section versus 50 patients with repeated cesarean sections).

Analysis of the Sociodemographic data among two study groups showed no statistical significant differences were found in age, occupation, medical history, or surgical history between the two groups, but the gestational age was significantly higher in the VBAC group (39.1±1.88 weeks) compared to the CS group (38.46±0.71 weeks) as P-value=0.027 that can be explained as they were elective CS versus spontaneous onset in VBAC group as shown in (Table 1).

Regarding satisfaction among both study groups, concerning functioning domain, there was statistically significant increase in control over life, meeting family responsibilities, household maintenance, energy for activities, physical appearance, daily routine, and self-care scores among VBAC group as shown in (Figure 1). There was no statistical significance in time for husband, herself, friends and relatives in addition to her sexual life.

Concerning socioeconomic domain, there was a statistically significant increase in economic capacity, financial obligations, material possessions, transportation access, neighborhood, medical care, and living situation among VBAC patients compared to the CS group. However, there was no statistical significance among financial independence and employment between the two study groups as shown in (Figure 2).

Concerning social and emotional support domain, VBAC group showed significantly higher satisfaction in relationships with husbands, the overall environment, and time for children, there was no statistical significance among emotional support from extended family and friends between the two groups as shown in (Figure 3).

Concerning psychological domain, VBAC group showed significantly higher satisfaction in all parameter's overall happiness, life in general, peace of mind, and fewer worries in comparison to the CS group as shown in (Figure 4).

Concerning health domain, VBAC reported significantly higher satisfaction in surgical incision or episiotomy, pain levels, overall health, and ability to feed the baby compared to the CS group, but there was no statistically significant difference between two groups in breast health and baby's health as shown in (Figure 5).

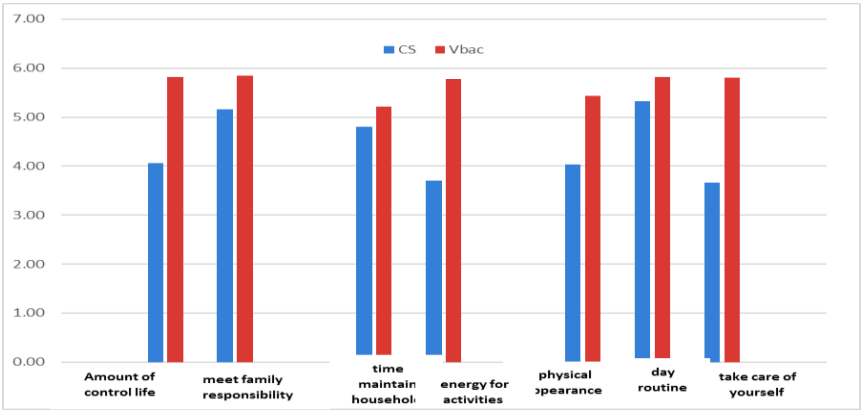


Figure 1. Satisfaction assessment of functioning domain between the two study groups

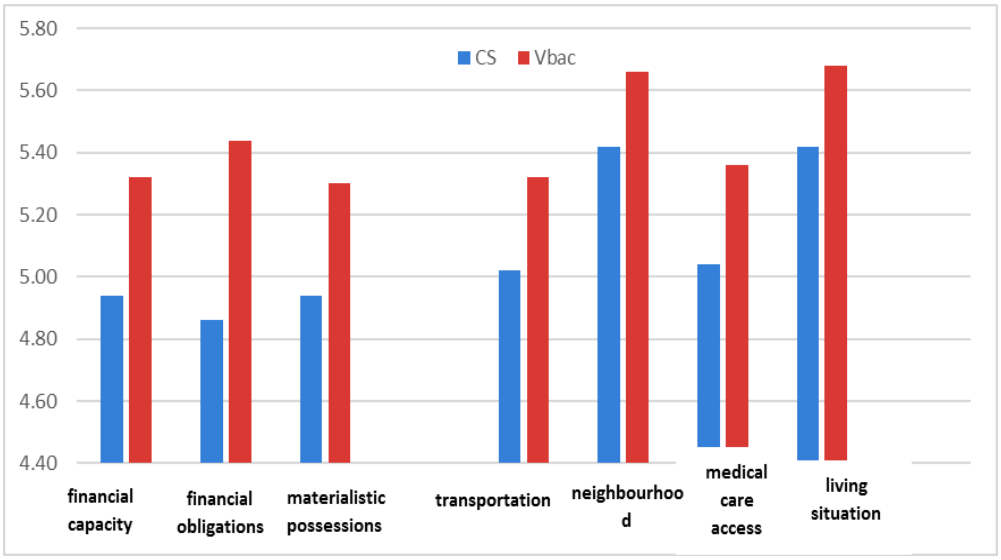


Figure 2. Satisfaction assessment of Socioeconomic domain between the two study groups

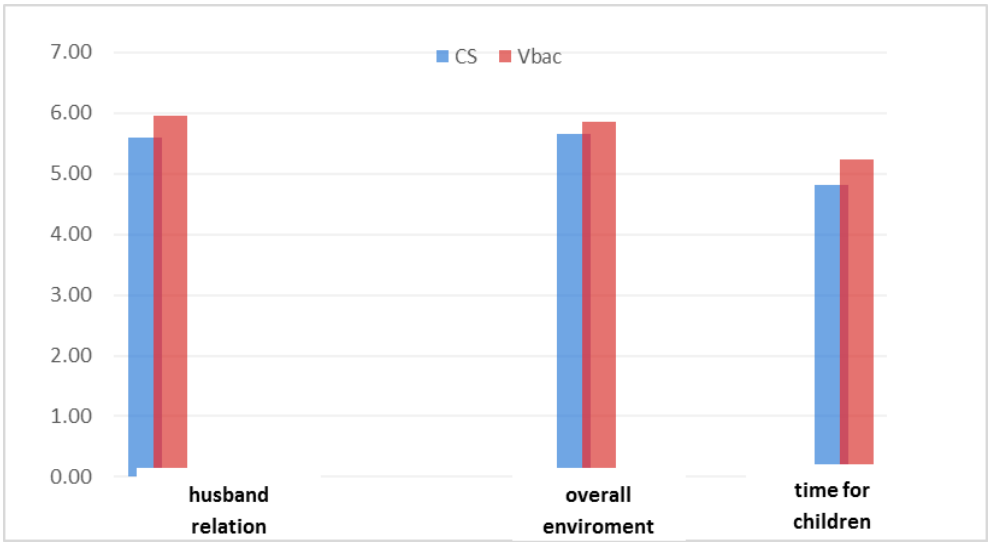


Figure 3. Satisfaction assessment of Social and emotional support domain between the two study groups

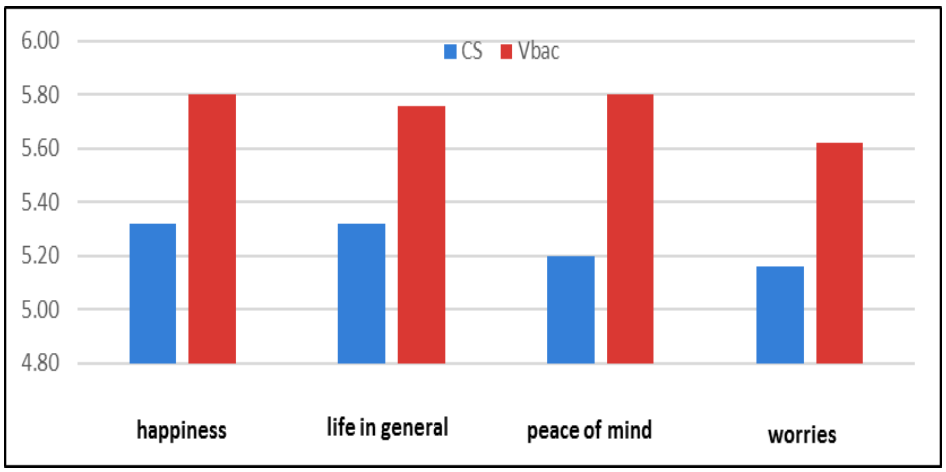


Figure 4. Satisfaction assessment of psychological domain between the two study groups

Table 1. Sociodemographic characteristics and Satisfaction assessment for functioning, socioeconomic, emotional & social support, psychological and health between two study groups

Sociodemographic characteristics		Group		Test of significance		
		CS	VBAC			
		Mean±SD N (%)	Mean±SD N (%)	Value	P-value	Sig.
Age		29.5±4.2	30.4±3.74	t= -1.132	0.260	NS
Occupation	Housewives	36(72%)	40(80%)	X2= 0.877	0.349	NS
	Working	14(28%)	10(20%)			
Medical history	No	48(96%)	50(100%)	FE	0.495	NS
	Yes	2(4%)	0(0%)			
Surgical history	Previous CS	43(86%)	42(84%)	X2= 0.078	0.779	NS
	Other surgeries	7(14%)	8(16%)			
GA (Weeks)		38.46±0.71	39.1±1.88	t= -2.257	0.027	S
Functioning				T	Student t-test p-value	Sig.
Q23.Time for yourself		4.44±1.03	4.58± 0.76	-0.772	0.442	NS
Q4. Amount of control you have over your life		4.06±1.13	5.82±0.48	-10.113	<0.001	S
Q16. Your ability to meet family responsibilities		5.16±0.91	5.84±0.42	-4.787	<0.001	S
Q21. Time for friends & relatives		3.98±0.74	3.82±0.8	1.037	0.302	NS
Q20. Time for maintaining the household		4.8±0.61	5.22±0.79	-2.983	0.004	S
Q3. Energy amount for everyday activities		3.7±1.54	5.78±0.55	-8.992	<0.001	S
Q22. Time for husband		5.02±0.94	5.14±0.83	-0.677	0.500	NS
Q6. Physical appearance		4.04±1.23	5.44±0.61	-7.215	<0.001	S
Q26. Day-to-day life routine		5.32±0.62	5.82±0.44	-4.656	<0.001	S
Q5. Ability to take care of yourself without help		3.66±1.32	5.8±0.49	-10.743	<0.001	S
Q9. Sex life		5.06±0.71	5.28±0.45	-1.843	0.068	NS
Socioeconomic						
Q33b. Your economic or financial capacity		4.94±0.71	5.32±0.84	-2.434	0.017	S
Q30. Your ability to meet financial obligations		4.86±0.9	5.44±0.61	-3.759	<0.001	S
Q33a. Your materialistic possessions		4.94±0.71	5.3±0.76	-2.44	0.016	S
Q29. Your financial independence		4.88±0.75	5.2±0.97	-1.85	0.067	NS
Q32. Your access to transportation		5.02±0.14	5.32±0.68	-3.04	0.004	S
Q28. Your neighbourhood		5.42±0.64	5.66±0.56	-1.997	0.049	S
Q31. Your access to medical care		5.04±0.35	5.36±0.56	-3.421	0.001	S
Q27. Your ome/apartment/place where you live		5.42±0.64	5.68±0.51	-2.238	0.027	S
Q34b. Your own employment		5.32±1.06	5.62±0.6	-1.742	0.085	NS
Social and emotional support						
Q15. Your relationship with your husband		5.6±0.81	5.96±0.2	-3.06	0.003	S
Q14a. Emotional support from your husband		5.48±0.97	5.64±0.48	-1.04	0.302	NS
Q14b. Emotional support from your extended family		5.86±0.45	5.84±0.51	0.208	0.836	NS
Q25. Your husband's health		5.58±0.5	5.64±0.9	-0.413	0.68	NS
Q34a. Your husband's employment		5.6±0.95	5.84±0.37	-1.668	0.1	NS
Q33c. Your overall environment/surroundings		5.66±0.56	5.86±0.35	-2.148	0.035	S
Q14c. Emotional support from your friends or other people		4.36±0.92	4.28±0.5	0.541	0.59	NS
Q18. Baby care & other children assistance		5.28±0.76	5.26±0.44	0.161	0.872	NS
Q19. Time for children		4.82±0.72	5.24±0.56	-3.267	0.002	S
Psychological						
Q11. Your happiness in general		5.32±0	5.8±0	-3.331	0.001	S
Q12. Your life in general		5.32±0	5.76±0	-2.766	0.007	S
Q10. Your peace of mind		5.2±0	5.8±0	-3.202	0.002	S
Q13. Your amount of worries in life		5.16±0	5.62±0	-3.339	0.001	S
Health						
Q8. Your surgical incision or episiotomy		4.76 ± 1.3	5.48 ± 0.58	-3.571	0.001	S
Q2. Amount of pain that you have		3.64 ± 1.4	5.4 ± 0.86	-7.596	<0.001	S
Q7. Your breasts		4.92 ± 0.6	5.02 ± 0.14	-1.146	0.257	NS
Q1. Your health		3.66 ± 1.39	5.74 ± 0.44	-10.055	<0.001	S
Q24.Ability to feed your new baby		5.2 ± 1.05	5.78 ± 0.46	-3.572	0.001	S
Q17. Your baby's health		5.76 ± 0.43	5.84 ± 0.42	-0.938	0.351	NS

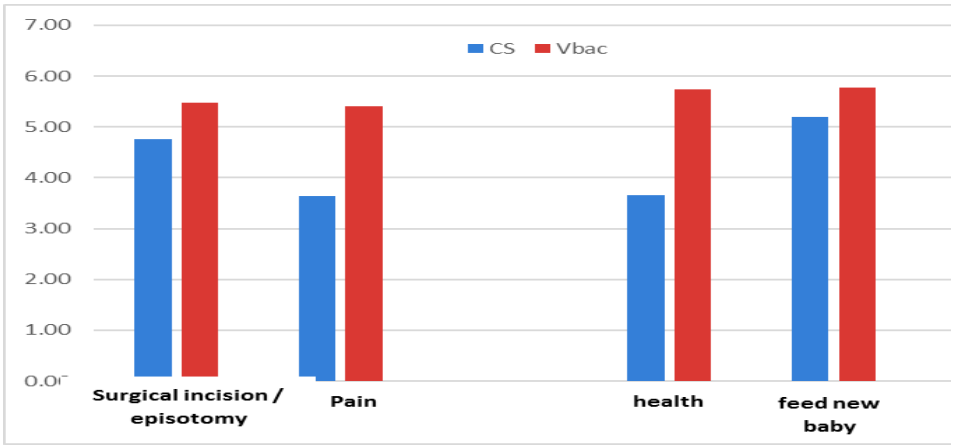


Figure 5. Satisfaction assessment of health domain between two study groups

4. Discussion

This cross-sectional study interviewed 100 postpartum women at Ain Shams Maternity Hospital (ASHMH), including 50 women with previous cesarean sections who underwent VBAC and 50 women who had repeated elective Cesarean Sections (CS). The study aimed to assess the Quality of Life (QoL) after VBAC versus repeated elective CS using the Maternal Postpartum Quality of Life Questionnaire (MPQOL) at one year post-delivery.

The Quality of Life (QoL) in this study was assessed using the Maternal Postpartum Quality of Life Questionnaire (MPQOL) at one year post-delivery, focusing on satisfaction and the importance of functioning, socioeconomic status, social and emotional support, psychological well-being, and health between two study groups.

These findings contrast with Martínez-Galiano et al., **(8)**, who conducted a cross-sectional study on postpartum women and reported a decline in QoL from the first to the third postpartum year compared to the first year. Additionally, the study's one-year postpartum assessment does not align with ACOG **(12)** guidelines, which state that the postpartum period may last up to one year. It also differs from Triviño Juárez et al., **(13)**, who conducted a longitudinal prospective study in Spain involving 546 postpartum women to evaluate health-related QoL at the sixth week and sixth month. Their study primarily addressed short-term postpartum QoL, while the current study extends to a full year.

This study found no association between maternal age and Quality Of Life (QoL), as there was no significant difference between the VBAC group (mean age 30.4) and the CS group (mean age 29.5), with maternal ages ranging from 20 to 35 years. These findings are consistent with Prick et al., **(14)**, who found no link between maternal age and QoL. However, they contrast with Park and Choi **(15)**, who used linear regression analysis to examine the relationship between maternal age at first childbirth and HRQoL, identifying younger maternal age as a negative factor.

Similarly, this study found no significant difference in QoL based on maternal occupation. Housewives made up about 80% of the VBAC group and 72% of the CS group, while working mothers constituted 20% of the VBAC group and 28% of the CS group. This finding aligns with de Oliveira et al., **(16)**, who found no difference in QoL between employed and non-employed postpartum women. In contrast, Rezaei et al., **(17)** reported that employed women scored higher on some QoL subscales compared to housewives.

In terms of satisfaction assessment, the VBAC group consistently reported higher scores compared to the CS group, indicating that women who underwent vaginal birth after cesarean were significantly more satisfied. This aligns with findings from Angelini et al., **(18)**, who conducted a retrospective cohort study on 801 women and reported better QoL after vaginal delivery both in the early postpartum period and up to five years later.

The satisfaction assessment of functioning between the VBAC and CS groups revealed a statistically significant increase in satisfaction among the VBAC group, with higher mean scores in several domains: control over life (5.82), meeting family responsibilities (5.84), household maintenance (5.22), energy for activities (5.78), daily routine (5.82), and self-care (5.8).

These results are consistent with Khanum et al., **(19)**, who conducted a comparative study on 104 postpartum women and reported that those who underwent cesarean sections faced more limitations and difficulties in performing daily tasks compared to women who had natural childbirth.

Similarly, Singh and Rasania **(20)** found that those who had vaginal deliveries resumed daily activities earlier, had better general health, and demonstrated positive self-appraisal, leading to an improved quality

of life. Additionally, Evans et al., **(21)**, through a systematic review, demonstrated a significant relationship between delivery modes and physical functioning, with vaginal delivery showing the strongest association with better functioning in all dimensions.

Regarding sexual life, this study found no significant difference in satisfaction between the VBAC and CS groups. This finding is inconsistent with Nikolaidou et al., **(22)**, who conducted a systematic review and found no correlation between delivery mode and postpartum sexual function at 6, 12, or 24 months. However, it contrasts with Handelzalts et al., **(23)**, who reported that sexual function was negatively impacted by negative childbirth experiences, particularly after operative vaginal delivery or emergency CS, emphasizing the role of psychological well-being.

Regarding physical appearance and body image, the VBAC group reported greater satisfaction (mean 5.44) compared to the CS group (mean 4.04). This is inconsistent with Khosravi et al., **(24)**, who concluded that a positive body and genital image prenatally influenced the preference for vaginal delivery. However, this result contradicts Jawed-Wessel et al., **(25)**, who studied 168 primiparous women and found that those with a history of vaginal delivery reported lower satisfaction with their genital image than women who delivered by CS.

The satisfaction assessment of social and emotional support revealed that the VBAC group showed significantly higher satisfaction in relationships with husbands (mean 5.96), emotional support (mean 5.64), overall environment (mean 5.86), and time for children (mean 4.24) compared to the CS group. However, emotional support from extended family and friends did not differ significantly between the two groups (VBAC: mean 5.84 & 4.28; CS: mean 5.86 & 4.36). This finding is inconsistent with Webster et al., **(26)**, who found that low support from a partner or family was associated with lower QoL across all domains. Additionally, Akbay and Tasci-Duran **(27)** highlighted the importance of spousal support in improving postpartum QoL.

Regarding psychological satisfaction, the VBAC group reported significantly higher satisfaction in overall happiness (mean 5.8), life in general (mean 5.76), peace of mind (mean 5.8), and fewer worries (mean 5.62) compared to the CS group (means 5.32, 5.32, 5.3, and 5.16, respectively). These findings align with Wiklund et al., **(28)**, who observed that women who underwent emergency CS had higher anxiety and stress levels 9 months postpartum compared to those with spontaneous vaginal delivery. However, the results are inconsistent with Furuta et al., **(29)**, who found that emergency CS contributed to post-traumatic stress symptoms and stress disorders.

In the socioeconomic domain, the VBAC group demonstrated significantly higher satisfaction in economic capacity (mean 5.32), financial obligations (mean 5.44), material possessions (mean 5.3), transportation access (mean 5.32), neighborhood (mean 5.66), medical care (mean 5.36), and living situation (mean 5.68) compared to the CS group (means 4.94, 4.86, 4.94, 5.02, 5.42, 5.04, 5.42, respectively). These results contradict Khwepeya et al., **(30)**, who found a positive correlation between QoL and rising monthly income in early postnatal women after vaginal delivery. Additionally, Ahmad et al., **(31)** noted that advanced-age mothers might feel more financially secure and better prepared for parenting, thus experiencing improved QoL compared to younger mothers.

The assessment of satisfaction regarding health and pain levels following surgical incisions after Cesarean Sections (CS) and Vaginal Birth After Cesarean (VBAC) revealed that the VBAC group reported significantly higher satisfaction (mean 5.4) compared to the CS group (mean 3.64), with a P-value of < 0.001. This finding contrasts with Majzoobi et al., **(32)**, who evaluated postpartum quality of life (QoL) and found that vaginal delivery led to gradual improvement in QoL, ranging from 67.84 in the first week to 88.39 by the twelfth month. Conversely, mothers who delivered by CS showed slower improvement, with scores increasing from 50 in the first week to 65 by the twelfth month, mainly due to chronic pain.

Regarding maternal satisfaction with newborn feeding ability, the VBAC group reported significantly higher satisfaction (mean 5.78) compared to the CS group (mean 5.2). This finding aligns with Benton et al., **(33)**, who found that women with emergency CS experienced more breastfeeding difficulties than those who delivered vaginally.

On the topic of postpartum fatigue, Badr and Zauszniewski **(34)** showed that age was highlighted as a crucial factor, with younger mothers showing mixed results. Henderson et al., **(5)** found that younger mothers were less likely to experience postpartum fatigue, while Baattaiah et al., **(6)** reported that younger mothers experienced more fatigue symptoms. This discrepancy was explained by Scott et al., **(35)**, who noted that younger mothers might lack coping skills for newborn care, leading to increased stress and fatigue compared to older mothers.

5. Conclusion

The study concludes that women who underwent Vaginal Birth After Cesarean (VBAC) reported significantly higher satisfaction across all domains of Quality of Life (QOL) compared to those who had elective repeated Cesarean Sections (CS). Specifically, VBAC was associated with better physical functioning, socioeconomic stability, stronger social and emotional support, improved psychological well-being, and enhanced health outcomes. These findings highlight the potential benefits of VBAC in improving

postpartum QOL, suggesting it as a preferable option for eligible women. The study underscores the importance of informed decision-making regarding delivery methods, emphasizing the need for healthcare providers to discuss the advantages of VBAC with patients to optimize maternal well-being postpartum.

6. Declarations

Acknowledgments

The authors would like to express their gratitude to the medical and administrative staff at Ain Shams Maternity Hospital for their invaluable support throughout the study. We extend our sincere appreciation to all the women who participated in this research, as their cooperation made this study possible.

Ethical Considerations

This study was conducted in full accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Research Ethics Committee of the Faculty of Medicine, Ain Shams University prior to initiating the study. All participants were informed about the study objectives, procedures, potential risks, and benefits. Written informed consent was obtained from each participant before enrollment. Confidentiality and anonymity of personal data were strictly maintained throughout the research process. Participation was voluntary, and all participants retained the right to withdraw from the study at any time without any impact on their medical care.

Authors' Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Conflict of Interest

The authors declare there is no conflict of interests related to this study.

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