

Effect of Mode of Childbirth on Health-related Quality of Life at Six Weeks Postpartum: A Brief Meta-Analysis

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Abstract:

Background: The postpartum Health-Related Quality of Life (HRQoL) refers to quantifiable physical and mental dimensions of maternal functioning that are affected by the experience of labour and childbirth. This study compares the HRQoL at six weeks postpartum between mothers who had Vaginal versus Caesarean delivery, using a meta-analysis approach.

Materials and Methods: A database search was performed in PubMed/MEDLINE, Scopus, and ProQuest for studies published in English between 2000 and the end of September 2021. The STROBE and CASP checklists were used to assess the quality of the studies. Studies included in the analysis were studies that utilized the SF-36 for assessing HRQoL to reduce heterogeneity between studies. The extracted data was analyzed using mean, t-test and presented using box-plots with the aid of SPSS 21 statistical software (IBM Chicago, Illinois, USA).

Results: Four relevant studies involving 918 respondents (vaginal delivery = 469 and Caesarean delivery = 449) was reviewed. At six weeks postpartum, HRQoL varied from 53.4 to 88.4 for vaginal delivery and 27.5 to 81.5 for caesarean delivery. Using pooled data, no significant difference in HRQoL scores was noted between mothers who had vaginal versus caesarean delivery ($t = 1.57, p = 0.129$).

Conclusion: Based on available data, HRQoL at six weeks postpartum was not significantly different between mothers who had caesarean and vaginal delivery. An elaborate meta-analysis is recommended to enable the confirmation of the findings.

Key Word: Quality of life; Postpartum period; Cesarean section; Mothers; Delivery.

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I. Introduction

Childbirth is a psychophysical event with short and long-term physical, emotional, social, and existential implications. It is one of the most challenging events in a mother's life.¹ Globally, between 10% and 34% of pregnant women have traumatic birth experiences that negatively affect their quality of life.² It not only puts a mother's mind and body through a whirlwind of change; it also forces the family to make psychological adjustments. It is a period in which couples address their worries and expectations about becoming parents. As a result, parenthood requires physical and psychological adaptations in both mother and family depending on the conditions surrounding pregnancy, labour, and mode of childbirth (vaginal and Caesarean delivery).

Vaginal delivery is the birth of off-springs through the maternal vagina. It is the natural mode of birth for humans.³ The different types of vaginal delivery may include normal (spontaneous) vaginal delivery, assisted vaginal delivery, and induced vaginal delivery. Virtually all types of vaginal delivery produce some changes in the maternal body.¹ When vaginal delivery is not possible, a caesarean section is performed to decrease the risk of birth problems.⁴

Caesarean delivery is the birth of off-springs through a surgical incision made through a mother's abdomen and uterus.⁵ The surgical opening is known as the Caesarean section. Conventionally, it is divided into emergency and elective caesarean deliveries because some caesarean births are also performed on demand when there is no medical indication to do so.⁶

Mothers who had a vaginal or caesarean birth may have physical discomfort, hemorrhoids, constipation, urine incontinence, postpartum mood disorders, and difficulties recovering energy. As a result, the postpartum phase, which is a period of recuperation following childbirth, is filled with mental and physical changes aimed at restoring the mother's natural health balance and quality of life.⁷ In this context, quality of life

is the subjective satisfaction with one's daily life as represented in physical and mental functioning.⁸ Typically, the postpartum period begins immediately after birth and extends for about six weeks. Mothers are expected to quickly transition from gravid to pre-gravid health-related quality of life status during this period, regardless of their mode of birth.⁹ A Scandinavian study reported that mothers fully recover their Health-related Quality of Life at 6-8 weeks postpartum irrespective of their mode of birth.¹⁰

Health-Related Quality of Life (HRQoL) refers to elements of human functioning that are influenced by one's health condition, and it is based on quantifiable physical and mental dimensions.¹¹ It is invariably an indicator of how one's health state impacts the capacity to deal satisfactorily with daily tasks. Understanding the link between mode of birth and maternal rate of postpartum HRQoL recovery may be critical in obstetricians' and midwives' comprehension of maternal postpartum experiences. Additionally, the information may also be used to advise employers on maternity leave and the resumption of pre-gravid work routines as judged by the mode of birth.

A comprehensive assessment of the literature over the last twenty-one years revealed a scarcity of systematic reviews comparing the HRQoL of women at six weeks after vaginal versus caesarean births. Given this circumstance, this study was embarked upon to fill the observed knowledge gap. The systematic review and meta-analysis aimed to compare the HRQoL at six weeks between mothers who had caesarean versus vaginal birth. The research question for this study was crafted in PICOT format (an acronym for Population (P), Intervention/Treatment (I), Comparison (C), Outcome (O), and Time (T)). It was stated as: Among mothers (P), is there evidence to suggest that caesarean delivery (I), compared to vaginal delivery (C) negatively affects the Health-related Quality of Life (O) at six weeks postpartum (T). This study gathered evidence to test the null hypothesis: there is no significant difference in HRQoL at six weeks postpartum between mothers who had caesarean versus vaginal delivery.

II. Material And Methods

This systematic review and meta-analysis involved a total of 918 respondents (vaginal delivery = 469 and caesarean delivery = 449) in 4 studies published between 2000 and September 2021.

Study Design: systematic review and meta-analysis

Search Strategy: A PubMed/MEDLINE, Scopus, and ProQuest database search were conducted for research articles on the HRQoL of mothers at six weeks postpartum. During the search, the limiters were set to retrieve only English Language articles published in scholarly journals between 2000 and the end of September 2021. Keywords such as quality of life, SF-36, vaginal, caesarean, and postpartum were used to search the databases. The search was first conducted using each keyword, followed by a search using the keywords combined with Boolean operators. For example, the combined keywords search string used for PubMed/Medline was (((Quality of life) AND (SF-36)) AND (vaginal)) AND (caesarean)) AND (postpartum). The stated search string was further translated into search strings for Scopus and ProQuest databases. Additional manual searches were done by locating references in selected articles (Ancestry approach). The Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines (PRISMA) were adhered to in the conduct and reporting of this study.

Inclusion Criteria: Studies that met the following criteria were included: (1) Healthy mothers, (2) birth at term 37-40weeks, (3) singleton births, (4) cross-sectional and cohort studies involving women who had either vaginal or caesarean delivery, (5) studies that utilized the standardized SF-36 questionnaire for the estimation of HRQoL, and (6) studies published between 2000 and September 2021.

Exclusion Criteria: Studies that met the following criteria were excluded: (1) Mothers with disease conditions, (2) involving preterm births, (3) twin births, (4) Meta-synthesis, meta-analysis, experimental, quasi-experimental, case-reviews, and qualitative studies, (5) studies that utilized instruments other than the SF-36, and (6) Studies published before the year 2000.

Predictor and Outcome Variables: The predictor variable in this study is the mode of birth (vaginal and caesarean delivery). The outcome variable in this study is HRQoL.

Study Selection and Data Extraction: There were a total of 178 article hits. All members of the study team individually collected and reviewed the titles and abstracts of the applicable articles for relevance. Before any definitive exclusion of items, a consensus was established. As indicated in figure 1, articles were eliminated because they were duplicates (n = 73), their titles and abstracts were irrelevant to this study (n = 90), or they did not fulfill the inclusion criteria (n = 11). Finally, four (n = 4) articles satisfied the criteria for inclusion and were included in this analysis. Before final inclusion, the STROBE and CASP checklists were used to assess the quality of the articles. The author's name, year of publication, research location, design, sample size, sampling technique, the instrument used, and results were extracted using the JBI data extraction form (Developed by The Joanna Briggs Institute). The study selection process is illustrated using a PRISMA flow diagram in figure 1 below.

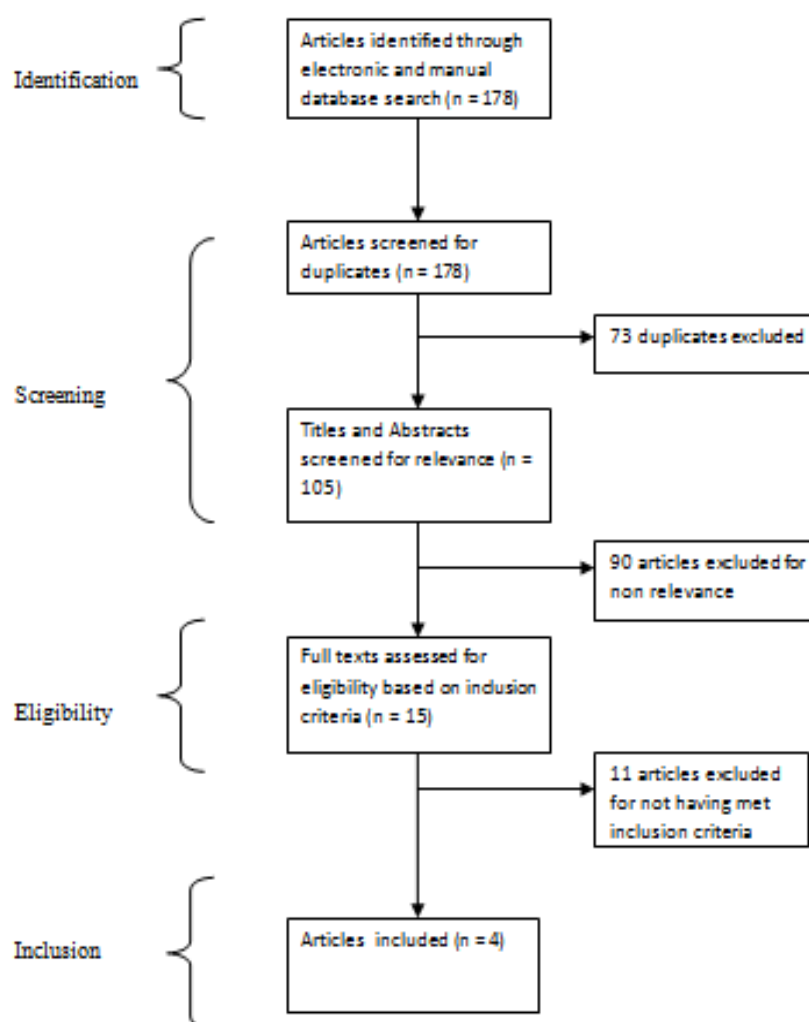


Figure 1: PRISMA flow diagram

Statistical Analysis: A box plot and independent-sample t-test was used to compare the mean, minimum, and maximum HRQoL domain scores of women who had vaginal versus cesarean deliveries. The statistical software package Statistical Products and Service Solutions version 21 was used to analyze the data (SPSS 21, IBM Inc, Chicago, Illinois, USA).

III. Result

The four articles evaluated included a total of 918 respondents (vaginal delivery = 469 and Caesarean delivery = 449). At six weeks postpartum, HRQoL varied from 53.4 to 88.4 for vaginal delivery and 27.5 to 81.5 for caesarean delivery. Table 1 summarizes the features of the included studies. Additionally, no significant difference in HRQoL scores was noted between mothers who had vaginal versus caesarean delivery ($t = 1.57$, $p = 0.129$). The comparison of HRQoL scores between women who had vaginal versus caesarean delivery is summarized in Figure 2.

Table 1: Summary of included articles

Author (year)	Location	Type of study	Sample size	Sampling method	Instrument	Results
Torkan, et al., (2009)	Isfahan, Iran	Cohort	50 VD, 50 CD	Consecutive	SF-36	VD = mean 63.7 (min 59.5, max 88.4); CD = mean 68.1 (min 50.0, max 81.5); $p = 0.03$.
Sadat, et al. (2013)	Kashan, Iran	Cohort	150 VD, 150 CD	Stratified random	SF-36	VD = mean 60.4 (min 56.0, max 66.0); CD = mean 59.4 (min 51.1, max 66.5); $p = <$

Majzoubi, et al. (2014)	Hamadan, Iran	Cross-sectional	210 VD, 210 CD	Random	SF-36	0.001. VD = mean 70.8 (min 57.2, max 86.3); CD = mean 56.1 (min 42.5, max 62.3); $p < 0.001$.
Kavosi, et al. (2015)	Shiraz, Iran	Cross-sectional	59 VD, 39 CD	Multistage	SF-36	VD = mean 59.7 (min 53.8, max 64.0); CD = mean 54.2 (min 27.45, max 69.01); $p = 0.238$.

VD = vaginal delivery, CD = Caesarean delivery, SF-36 = Short form 36

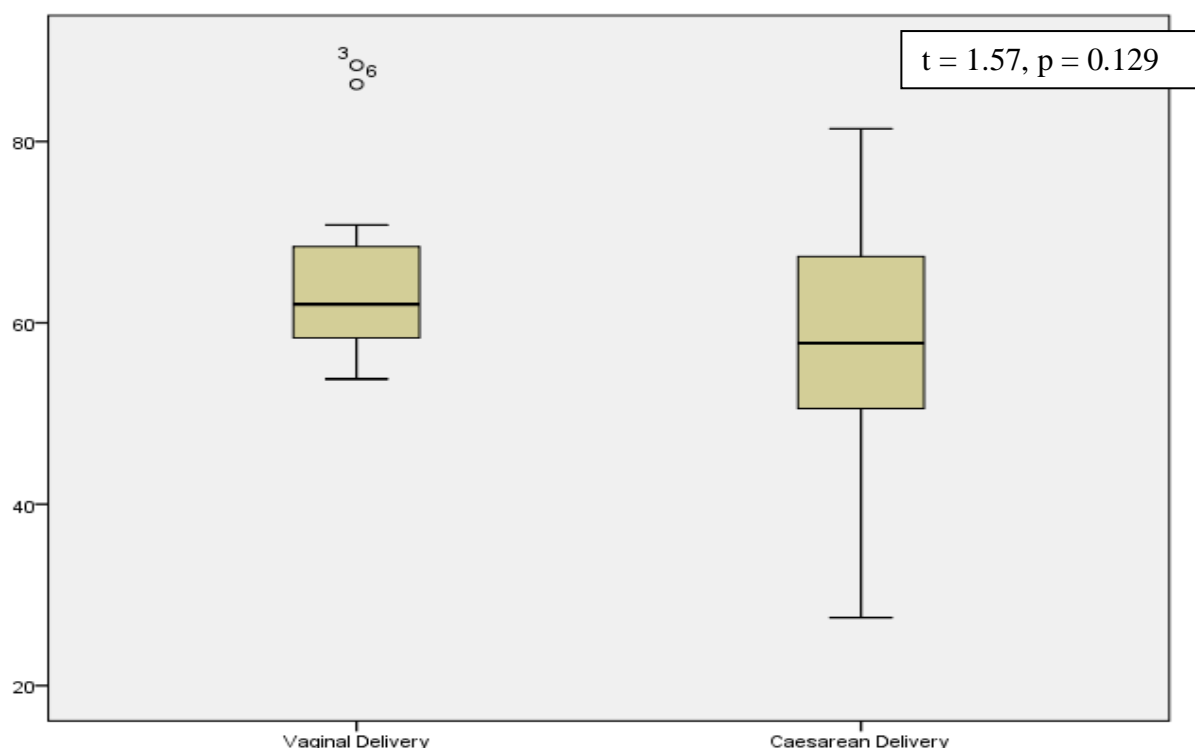


Figure 2: Box plot comparison of HRQoL between vaginal and caesarean delivery mothers

IV. Discussion

In the last 21 years, few studies that compare the HRQoL of postpartum women at 6-8 weeks following vaginal and caesarean birth have been published in English Language. The published studies mostly originated from Iran. The current study considered a globally known and frequently used measure for evaluating HRQoL (the SF-36) in the selection of studies to compare with the findings of this meta-analysis.

Based on the results of 4 studies involving 469 women who had Vaginal delivery and 469 who had Caesarean delivery and were assessed using the SF 36 self-report questionnaire, no significant difference in HRQoL scores was found between the groups. This finding was not surprising. A probable reason for this finding is that vaginal delivery is the most physiological route of childbirth and caesarean delivery involves an operative procedure requiring anesthesia to minimize surgical pain. It would suggest that women who had vaginal delivery will only experience labour and women are naturally built to adapt to it and have rapid involution within 3-6 weeks following birth.¹² More so, women who had caesarean delivery will experience the effect of anesthetic agents which are expected to wear off in 3-4 weeks and the primary healing of the surgical scar occurs also occur within 6 weeks.^{13, 14} Furthermore, the protocol of care and support for women who undergo caesarean delivery may have played an additional role in their rapid HRQoL recovery.¹⁵ This finding contradicted the findings of another Iranian study, which found that HRQoL to significantly higher in women who had vaginal delivery compared to caesarean delivery in the first eight weeks of the postpartum period ($p < 0.001$).¹⁶ The contrast in findings between this study and the Iranian could be attributed to the Iranian study including women at various points in their postpartum period ranging from 2 weeks to 8 weeks. This may have contaminated the findings of the Iranian study. In this present study, the inclusion criterion ensured that all the respondents were between 6 and 8 weeks of their postpartum period.

The findings of this study are similar to those of a Scandinavian study that reported no significant difference in postpartum HRQoL at six weeks between 71 mothers after vaginal delivery, 36 mothers after elective caesarean delivery, and 34 mothers after emergency caesarean delivery.¹⁰ The similarity in findings was not expected owing to the idea that the Scandinavian study separated the cesarean delivery group into those who had an elective and emergency caesarean delivery. One would expect that the maternal-fetal threat and experiences that led to emergency caesarean surgery would have put the woman through undue strain on her HRQoL. However, a comparison between an unequal number of respondents in the vaginal and caesarean groups may be a limitation as the respondents were enrolled using consecutive sampling (non-probability sampling method). Additionally, the findings of this study were in line with the results of an Iranian study conducted in Shiraz that reported no significant difference in postpartum HRQoL at six weeks between women who had vaginal versus caesarean delivery ($p = 0.238$).¹⁷

The findings of this study contrasted the results of an Iranian study conducted in Isfahan, which reported that the vaginal delivery group had significantly higher health status in the SF-36 subscales at six weeks postpartum ($p = 0.03$).¹⁸ Based on the assumption that caesarean section is more than just a technique of childbirth and, like any surgical intervention, can inflict more physical and financial strain on the woman and her family than vaginal delivery, one would anticipate women in the vaginal delivery group to have significantly higher HRQoL. This finding did not corroborate two other Iranian studies conducted respectively in Kashan and Hamadan that reported a significant difference in HRQoL between mothers who had vaginal versus caesarean delivery ($p < 0.001$).^{19, 20}

Strengths and Limitations: One of the study's main features was the thorough examination of retrievable full-text studies in databases and hand-searching, for the most relevant articles. Multiple reviewers assess the suitability of articles for inclusion. The inclusion of studies was based on the use of a particular instrument for evaluating HRQoL, which reduced the possibility of heterogeneity in measured domains across the reviewed studies.

Despite this study's strengths, the results have inherent limitations. Firstly, a small number of studies were available for review. Secondly, all the reviewed studies originated from Iran. Thirdly, studies published in the English Language only were reviewed. The mentioned inherent issues may have imposed a fair chance of selection bias and impair the generalizability of this study's findings to other populations.

V. Conclusion

The HRQoL at six weeks postpartum between mothers who had caesarean and vaginal delivery was not significantly different based on the available evidence. An elaborate meta-analysis is recommended to enable the confirmation of the findings.

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