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Research Article

Analysing the Functional Impairments Among Postpartum Women After Childbirth by Using the Barkin Index Maternal Functioning Assessment Scale

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Abstract

Postpartum physical issues are frequently written off as temporary or relatively minor, but it affects one's emotional and functional health and have a detrimental impact on women's quality of life by causing health problems that are prevalent, obvious, and get worse over time.

Methods: A total of 114 participants in NR COLONY government maternity hospital and MOTHERHOOD were selected based on inclusion and exclusion criteria. The participants had been briefed about the Research before participating in the study and The Barkin Index of Maternal Functioning Scale were used and assessed among the participants.

Results: A statistical analysis of 114 participants revealed that mothers who delivered their babies through caesarean section had greater functional impairments than mothers who gave birth through vaginally.

Conclusion: This study shows that in vaginal delivery, 14.5% of functional impairment is affected, and for C-sections, 65.4% of functional impairment is affected.

Keywords: Barkin Index of Maternal Functioning; Postpartum Depression; Post-Operative Day

Introduction

The process of bringing forth a child from the uterus or womb is called childbirth. After the delivery, the female's body changes following delivery to revert to its pre-pregnancy state. During this period, they need emotional support because severe conditions can occur that may cause interference with day-to-day activity during the postpartum, and thus, with their standard of life. The way a woman gives birth is associated with how long it takes her to recover, which could lead to functional limitations [1].

After delivery, the woman's body changes to return to its non pregnant stage called the post-partum period []2. Postpartum depression mostly lasts longer and has a significant effect on a woman's ability to return to her daily activities but baby blues typically pass quickly [3]. Additionally, about one in seven women may experience PPD (postpartum depression). Among 51% of women' s had suffered from headaches, nausea, or fatigue since giving birth; more than half said the severity of these conditions was moderate (20.2%) or major (7.7%), as opposed to minor (23.1%) [4]. In 2021, the average birth rate worldwide was 18.1 births per 1,000 people. Vaginal deliveries account for about 80% of births worldwide. According to recent data collected from 43 countries it was discovered that the risk of PPD was 31.4% for all women and that it was 27.6%, 31.8%, and 34.9% for vaginal, elective, and emergency c – sections, individually [5]. Fewer, more recent studies have covered a far wider range of health-related subjects that mothers who are expecting or have recently given birth to their children face, making it challenging for them to go about their daily lives [5]. It clearly indicates that postpartum physical health issues have a detrimental effect on women's quality of life after giving birth [6].

The Barkin Index of Maternal Functioning (BIMF) was made to assess difficulty in daily life in the year after giving birth. It was

created with new mothers' ideas and experiences in mind. New mothers are best suited to provide insight into the measure's content because they are ones going through the condition of interest—that is, adjusting to new motherhood. The content validity is enhanced by this patient-centred approach.10 BIMF is a self-report rating that consists of 20 items and was created to evaluate general difficulties in the context of new mothers [7]. Depending on the situation, a clinician may administer the measure or the patient may complete it themselves. The functional domains that are addressed include people's support, handling, mother-infant interaction, taking care of the baby, self-nurturing, adaptation, and the mother's mental health [8].

Even though postpartum physical issues are frequently mentioned as temporary or relatively minor issues, research indicates a strong correlation between the mental and physical activity of the individual mothers with poor emotional and functional health. Hence this study aim is to analyse the functional impairments among postpartum women after childbirth by using the Barkin Index of Maternal Functioning (BIMF) scale which assess the physical health issues that arise after childbirth that are common, noticeable, and increasing, and they harm the standard life of women [9].

Need of the study

Evidence states that postpartum pain and depression are most common in mothers who have undergone two types of delivery but there is less evidence stating about the functional impairment after delivery. Thus, the goal of this study is to identify the functional impairments of postpartum women after birth who have undergone both vaginal and c-section delivery.

Methodology

- **Study type:** Observational study type
- **Sample size:** 114 Subjects
- **Study setting:** Government maternity hospital, NR colony and Motherhood Bangalore
- **Study duration:** 12 week.
- **Study population:** Subjects who undergone both vaginal and C-section delivery.
- **Inclusion criteria:** Females aged around 18- 39, postpartum women including normal and vaginal delivery, both primiparous and multiparous mothers
- **Exclusion criteria:** Participants who are not willing for the study, women with any psychological problems, women with any mental illness, women with any neurological condition and deficits, women with any autoimmune disease.

Procedure

A total of 114 mothers in NR colony government maternity hospital and Motherhood Bangalore has been subjected in this study and the participants have been chosen according to inclusion and exclusion criteria. An explanation of the study and its goal has been provided to the participants. The consent form has been obtained from the interested participants. Demographic details were obtained from the individual. The Barkin Index of Maternal Functioning Scale which is a self-reporting questionnaire used to measure the maternal functioning [10]. Following the completion of the questionnaire, data were gathered, recorded, and statistical analysis was performed.

Statistical analysis

Statistical analysis was performed by using the SPSs software (SPSS Inc; Chicago, IL) version 29.0.10.

Results

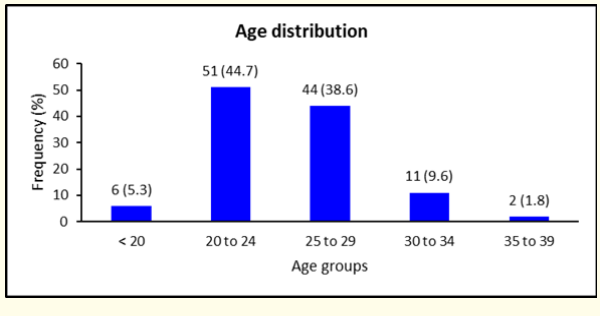
A total number of 114 post-partum mothers were included in the study and the data was analyzed by using the SPSs software (SPSS Inc; Chicago, IL) version 29.0.10.

(n = 114)		Frequency	%
Type of delivery	Vaginal delivery	62	54.4
	C-section	52	45.6

Table 1: Number of deliveries.

n: No of type of delivery.

This table 1 shows the number of deliveries where the percentage of vaginal deliveries is 54.4% and the percentage for C-sections is 45.6%.



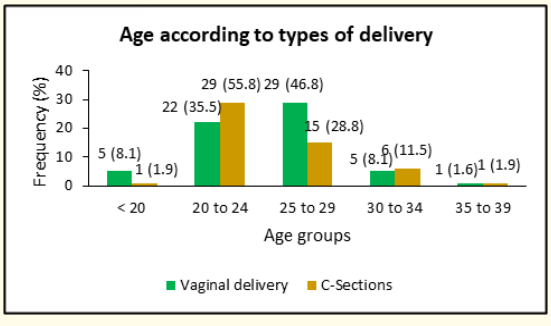
Graph 1: Age distribution graph.

Age groups	Types of delivery	
	Vaginal delivery	C-section
	%	%
< 20	8.1	1.9
20 to 24	35.5	55.8
25 to 29	46.8	28.8
30 to 34	8.1	11.5
35 to 39	1.6	1.9

Table 2: Age according to types of delivery.

C-section: Cesarean delivery.

This table 2 shows the age group percentage according to types of deliveries. Where vaginal delivery accounts for 8.1 % of births under <20 of age, 35.5% of births between 20 and 24 of age, 46.5% of births between 25 and 29 of age, 8.1% of births between 30 and 34 of age, and 1.6 % of births between 35 and 39 of age. C-section rates are 1.6% of births under <20 of age, 5.8% for those between 20 and 24 in age, 28.8% for those between 25 and 29 of age, 11.5% for those between 30 and 34 of age, and 1.6% for those between 35 and 39 of age.



Graph 2: Age according to types of delivery.

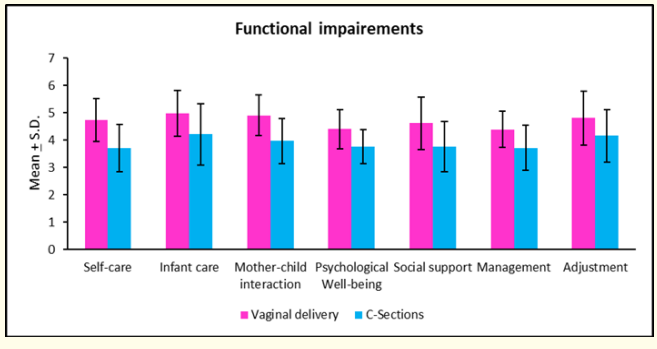
This table 3 shows p value of deliveries by comparing the functional impairments using BIMF according to types of delivery. Using the method of independent t test and p value. There was a difference ($p < 0.05$) in the functional impairments between vaginal delivery cases and C-Sections, except for the domain "I worry about how other people judge me".

This graph shows the functional impairments under the domain of self-care, infant care, mother–child interaction, psychological well-being, social support, management, and adjustment.

This table 4 shows the percentage of functional impairments affected in both vaginal and c-section delivery. In vaginal delivery, it shows that 14.5% of functional impairment is affected, and

		Mean	S.D.	"t"	p value
I am a good mother	Vaginal delivery	5.29	0.69	5.85	< 0.001*
	C-Sections	4.5	0.75		
I feel rested	Vaginal delivery	4.79	0.89	5.93	< 0.001*
	C-Sections	3.71	1.05		
I am comfortable with the way I have chosen to feed my baby	Vaginal delivery	4.9	1.04	6.40	< 0.001*
	C-Sections	3.67	1		
My baby and i understand each other	Vaginal delivery	5.05	0.98	6.14	< 0.001*
	C-Sections	3.92	0.97		
I am able to relax and enjoy time with my baby	Vaginal delivery	5.08	0.82	6.32	< 0.001*
	C-Sections	4	1.01		
There are people in my life that I can trust to care for my baby when I need a break	Vaginal delivery	4.85	0.81	4.95	< 0.001*
	C-Sections	3.98	1.08		
I am comfortable allowing a trusted friend or relative to care for my baby(can include baby's father or partner)	Vaginal delivery	4.68	1.1	5.04	< 0.001*
	C-Sections	3.6	1.19		
I am getting enough adult interaction	Vaginal delivery	4.39	1.42	3.40	0.001*
	C-Sections	3.54	1.21		
I am getting enough encouragement from other people	Vaginal delivery	4.53	0.99	3.92	< 0.001*
	C-Sections	3.79	1.04		
I trust my own feelings (instincts) when it comes to taking care of my baby	Vaginal delivery	4.68	0.88	4.77	< 0.001*
	C-Sections	3.79	1.11		
I take a little time each week to do something for my self	Vaginal delivery	4.76	1.04	4.63	< 0.001*
	C-Sections	3.81	1.16		
I am taking good care for my baby's physical needs (feedings, changing diapers, doctor's appointments)	Vaginal delivery	4.66	1.1	3.71	< 0.001*
	C-Sections	3.88	1.13		
I am taking good care of my physical needs (eating, showering, etc.)	Vaginal delivery	4.68	1.04	4.52	< 0.001*
	C-Sections	3.75	1.15		
I make good decision about my baby's health and wellbeing	Vaginal delivery	4.73	0.93	3.78	< 0.001*
	C-Sections	3.98	1.18		
My baby and i are getting into a routine	Vaginal delivery	4.6	1.03	2.97	0.004*
	C-Sections	3.98	1.18		
I worry about how other people judge me (as a mother)	Vaginal delivery	2.55	1.75	-1.74	0.084
	C-Sections	3.08	1.43		
I am able to take care of my baby and my mother responsibilities	Vaginal delivery	4.35	1.29	2.24	0.027*
	C-Sections	3.85	1.09		
Anxiety or worry often interferes with my mothering abilities	Vaginal delivery	2.47	1.91	-1.93	0.056
	C-Sections	3.1	1.5		

Table 3: Comparison of the functional impairments using BIMF according to types of delivery.

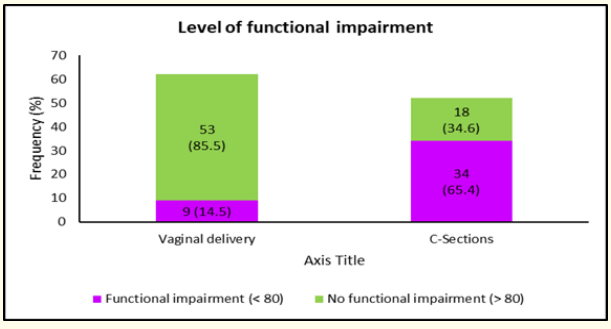


Graph 3: Functional impairment graph.

	Vaginal delivery		C-Sections	
	n	%	n	%
Functional impairment (< 80)	9	14.5	34	65.4
No functional impairment (≥ 80)	53	85.5	18	34.6

Table 4: Level of functional impairment according to types of delivery.

85.5% is not affected. As for C-sections 65.4% of functional impairment is affected and 34.5% is not affected.



Graph 4: Level of functional impairment.

Discussion

The Statistical analysis reports the effects of vaginal and c-section deliveries on postpartum mothers, as well as how these affect the mother's general daily activities. Under the domain of self-care, infant care, mother-child interaction, psychological well-being, social support, management, and adjustment, the table shows that functional impairments are common impacts on functional impairments following vaginal delivery and cesarean delivery. The objective was to analyse postpartum women who had more functional impairments following childbirth and we have used Barkin index of maternal functioning scale to measure the daily limitations in which the normal score was 80. This study has found that functional impairments are more affected in mothers who had undergone C-section delivery in comparison to women who gave birth vaginally.

In a study conducted by Thalita R.C. Pereira, 2017 among vaginal delivery and c-section delivery it has been reported that postpartum cesarean women experience neck pain, and abdominal pain. And women who gave birth vaginally reported experiencing postpartum pelvic pain. Following a cesarean section, postpartum pain was more intense during movement, making it painful to sit, sit-to-stand position, and walk, lay down, and have a bath. Postpartum C- sections and movement activities accounted for the greatest number of complaints. Additionally, our research revealed that, in comparison to vaginal delivery, women who underwent C - sections had greater functional impairments [1].

S M Miovech, 2013, conducted a study on Cesarean women and stated that at two weeks after delivery, the women expressed the greatest number of physiologic concerns; by eight weeks, the number had significantly decreased. 70% of the subjects report abdominal pain, 20% report incisional pain, and 7% report back pain at two weeks after delivery. Incisional issues accounted for 42% of the main concerns at 8 weeks. At the 2-week data point, the major complaints is Psychological and lifestyle concerns (40%) were related to activity changes. Whereas in current study found that the functional impairments postpartum after C- section delivery were 65.4% which includes the seven functional areas [8].

Anne Niyigena, 2023, conducted a study on functional recovery after cesarean delivery and states that poor functional status was reported at post-operative day (POD) 3, POD11, and POD30 by 54.0%, 25.9%, and 26.8% of respondents, respectively. At POD 30, inability to do routine tasks (15.6%) and poor or very bad overall health (48.1%) were the two most frequently self-reported indications of impaired functioning. Whereas in current study we found that 65.4% of functional impairments were affected in C- section delivery within 1 to 10 days after delivery using Barkin Index of Maternal Functioning Assessment Scale.

Overall, using the Barkin Index of Maternal Functioning Assessment scale, this study demonstrates the functional impairments among postpartum women after childbirth. Therefore, preventive measures like reducing the mother's workload, implementing health education that focuses on physical, mental, and social well-being, offering basic exercise regimens, and ergonomic training, and raising awareness of postpartum issues related to functional impairments to motherhood can all be given in future studies to reduce functional impairments.

Conclusion

This study aimed to compare which group of deliveries caused more functional problems in daily life and to find the functional impairments among postpartum women following childbirth. This study found that out of 62 mothers who underwent vaginal delivery and 52 mothers who underwent c-section, the functional impairments which were more affected were mothers who gave birth through c-section delivery. This finding may aid in the creation of facilities, ergonomics training, physical activity programs, and preventive measures to lessen functional difficulties in both groups.

Clinical implications

BIMF was used in clinical setup at NR colony and Motherhood in Bengaluru. The functional impairments were measured between day 1 to day 10 for all types of delivery in a clinical setting.

Limitations

This study was confined to only NR colony government hospital and Motherhood hospital in South Bengaluru. Further studies can be focused on basic exercise regimens, ergonomic training,

and awareness regarding the difficulty in daily activities related to postpartum.

Future scope

Sample size can be increased covering all parts of Bengaluru. For further studies, an experiment study involving the pre & post measurement of BIMF scores and subsequent treatment with ergonomics and therapeutic exercises may be conducted. They can re-evaluate their BIMF score after ten days or post-treatment to determine whether there has been any improvement. Implementing health education targeted at mothers on physical, mental, and social well-being is another action that can be taken. It is also possible to teach mothers stress management and ergonomic training, both of which will improve their well-being.

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