



Child Birth and its Effect on Functional Status of Women: A Review

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Though highly satisfying motherhood comes with its own challenges. Often underestimated, the effect of child birth on maternal function is a huge and can invariably effect not only the individual but the society in general. Yet there seems to be an attitude of "its all part and parcel of motherhood" when it comes to the functional status of mothers. To improve the functional status of women one needs to quantify it and a scale for Indian mothers are not in existence yet. No matter the mode of delivery, the maternal function is compromised, its said that the physiological healing is complete at 6 weeks post delivery but the researchers are not able to come to terms regarding time needed to achieve the pre pregnancy functional status or in many cases if it

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ever returns. Hence the gravity of situation is dare and needs acknowledgment not only from the health care professionals but from the society in general. In this article, we are examining the different modes of delivery and its subsequent effect on physical functions of women.

Keywords: Maternal function; physical function; delivery; postpartum; child birth.

1. INTRODUCTION

Motherhood -one of the most satisfying role a woman can play comes with its own set of challenges. It was observed in the mid 80s that motherhood calls for an integration of a new role and responsibilities and the existing roles and responsibilities for a woman, often making this a transitional period in the women's life [1]. Women often handle many roles in life while fulfilling her duties and responsibilities like employee or a family member, this along with the additional responsibility of infant care makes motherhood-for lack of better term a balancing act [2]. Mercer in 2004 [3] coined the term 'becoming a mother' (BAM) improvising the work done by Rubin in early 60s by concluding that motherhood is a role that is not set in stone , rather it is an ever dynamic process which is evolving rapidly with each interactions of the mother and child and that it is reciprocated, interactive and learned.

Though the society and the culture do guide the new mother in certain direction, but these are not well-established map. Needless to say, the expectations surrounding a new mother is not well defined. Thus, often women are left to learn mothering through trial and error [4-5]. These along postpartum fatigue which finds its way well into the 2nd year post birth [6] act as stressors for the mother which can be overcome only by the overwhelming love and bonding between the mother and the child [7]. The importance of the first year and the mother child interactions is evident from the work of Fowles and Horowitz (2006) where they concluded that the infant's development greatly depended on this initial interaction of the mother and child [8]. Hence the functional status of women especially in the postpartum period is highly important not only to the child but to the family and in turn to the community.

2. FUNCTIONAL STATUS

The concept of 'functional status' was analysed in detail by Wang in early 2000s, where the definitions of functional status, functional capacity and functional performance are clearly

given. Wang defines functional status as 'activities performed by an individual to realize needs of daily living in many aspects of life including physical, psychological, social, spiritual, intellectual, and roles [9]. Wang went on to analyse different definitions of functional capacity and functional performance given by Knight [10] and Abdel-Moty [11] and listed the WHO's [12] definition of the same terms. They concur that the functional capacity is the ability of an individual to do an action to the perfection often called upon only in extreme situations while functional performance is the ability of the individual to perform the task in his natural environment. Another term often used in place of functional status is the quality of living, where WHO defines Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns [13].

The functional status is considered as a biopsychosocial well-being, the assessment of which is an important measure to set the goals of rehabilitation and to review the prognosis. The main domains of functional status are: cognition, psychological function, physical activities, sexual function and role activities [14]. The components of physical and psychological functions is the most relevant in the postpartum period, and as the psychological component is not within the scope of this paper , the physical functions will be looked at in detail.

3. ACTIVITIES OF DAILY LIVING

Coined by Sydney Katz in 1950 [15] activities of daily living(ADL) is often described as the fundamental skills needed to independently care for oneself eg eating,bathing, toileting , mobility etc. ADL is often seen as a measure of functional status. When an individual is unable to perform the ADLs it is understood that the functional status of the person is poor and so is the quality of life.

The ADLs can be classified as Basic activities of daily life (BADLs)and instrumental activities of

daily life (IADLs). Basic activities of daily life are those skills that are necessary to manage the physical needs like personal hygiene, mobility, eating etc while the instrumental activities of daily life (IADLs) refers to the more complex activities that is needed for the person to function in the community.

3.1 Basic Activities of Daily life (BADLs) Include the Following

- Ambulating or the ability of a person to move from one point to another.
- Dressing is the ability to select the appropriate cloths and wear them
- Feeding is the ability to feed oneself
- Personal hygiene is the ability to maintain the hygiene through regular baths, grooming activities like brushing, nail cutting and hair care.
- Contenance is the ability to regulate the functions of bladder and bowel
- Toileting is the ability to reach the toilet , use it and clean after oneself and returning from the toilet.

3.2 Instrumental Activities of Daily Life (IADLs) are the more Organisational Complex Skills Needed to Function Adequately in the Community. These are:

- Transportation and shopping: this is the ability to arrange the transport to or from an event or shops, procuring the necessary groceries etc.
- Managing finances is the ability to manage ones financial assets and to successfully pay the bills within the deadline
- Shopping and meal preparations: this includes everything that is needed to get the meal to the table, from planning the meals, procuring needed things, preparing and serving the meals. This also includes the ability to shop for clothes and other necessities.
- House cleaning and home maintenance includes the ability to maintain a clean and tidy home and keeping up the regular home maintenance.
- Communications including the telephone and mail used to communicate with others.

- Managing medications including the ability to procure and consume the medications as per instructions [16].

On scrutiny of these traditional ADLs we can conclude that this cannot directly translate to the childbirth-motherhood scenario as the major component the mother faces- infant care is not a part of the traditional ADLs. Hence there raised a need to introduce a term which can explain the functional status of a new mother.

4. MATERNAL FUNCTIONING

The maternal functioning- a term coined by Barkin in the year 2010 refers to the mothers capability to integrate the different roles and responsibilities that are expected of her [17] Despite of the culture, society, marital status, economical condition and age group, the mothers often take up the role of primary care givers of the child as evident from the work of Logsdon [18]. Hence to be a high functional mother, Barkin identified 7 major components, they being social support, self care, psychological wellbeing, infant care, mother child interaction, management of routine roles and responsibilities and adjustment [17]. Tulman concurred stating that Functional status of women during postpartum period is multidimensional concept that included personal care, physical infant care, household care, social activities, and occupational activities [19].

From the work of many renowned researchers especially that of Fowels and Horowitz quoted earlier it is evident that the functional status of mothers effect not only the child's development but the family unit and society , yet there seems to be little study especially from the field of physiotherapy that exclusively deal with functional status, of the maternal functional status.

5. CHILD BIRTH

Child Birth or Labor is a physiological process that begins during pregnancy and ends with the delivery of baby. It is a normal physiological process. Labor begins after the uterus has started to contract. The ends of the pregnancy occurs when the placenta is expelled from the womb [20].

Labor is usually between 36 and 42 weeks of gestation and end when the placenta is expelled [21]. The first stage of labor begins with uterine

contractions and ends when the cervix fully dilated to 10 cm. This stages is again divided into 3 phases which is latent phase (usually lasts for 6-8 hours with cervix dilation of 3- 4cm) active phase (cervix dilation of almost 7 cm) and transitional phase (with cervix dilation 10cm).The second stage starts when the cervix is fully dilation and culminates when the baby is born [22]. This stage usually takes an average duration of almost 20 mins in multigravidas and 50 mins in primigravids [23]. In between each contraction and push, the uterus relaxes, and baby recedes. Once the head is born, the shoulder and body follow with each contraction. Perineal trauma is common in this stage. Third stage is the delivery of placenta and the control of bleeding of prevent hemorrhage. This stage usually lasts for 5 to 30 mins or long [22].

Musculoskeletal system is most effect during pregnancy. There is generalized increased in joint laxity and so in joint range, which is hormonally mediated. Some women experienced greater degrees of relaxation of pelvic gridle joints. 50% of pregnant women experienced back pain due to the adaptation of posture to compensate for her change in center of gravity. Water retention (the third trimester) may result in varying degree of oedema of ankles and feet can reduced joint range. Static positions during labor etc will aggravate back pain and can potentially affect the mother's function in the postpartum period [24].

Childbirth delivery options include natural unassisted childbirth, assisted childbirth, and delivery by Cesarean surgery (C – section) [25].

Vaginal delivery is safest for the fetus and for the mother when the newborn is full-term at the gestational age of 37to 42 weeks. Vaginal delivery is preferred considering the morbidity and the mortality associated with operative cesarean births has increased overtime [26]. Assisted vaginal delivery includes episiotomy, forceps delivery and vacuum extraction. Episiotomy involves an incision in the perineum which can be mediolateral or medial. The objective is usually to speed delivery or avoid excessive stretching or tearing of the surrounding tissues. Episiotomy used in conjunction with forceps or vacuum extraction allows more space for introduction of the instruments into the vagina. Assistance with forceps may be necessary in the second stage: when progress is nil or very slow, or in case fetal distress to speed up the delivery, for maternal distress, exhaustion or where minimum maternal effort is desirable, e.

g. in cardiac failure, severe pre-eclampsia, cystic fibrosis or hypertension, to protect a preterm baby or during a breech delivery to protect the after-coming head. Forceps should not be used if the head is not engaged. For vacuum extraction, a suction cup of an appropriate size is introduced into the vagina and applied to the fetal scalp posteriorly. At delivery the baby will have a raised, red imprint of the cup on its head [27].

Some of the postnatal problems include perineal trauma, back pain, diastasis recti abdominis, diastasis symphysis pubis, sacroiliac joint dysfunction, thoracic pain, coccydynia etc. Perineal trauma can be perineal lacerations, haematoma or perineal tear. Labial lacerations are a common occurrence in the childbirth process and they may bleed profusely and be painful but are generally superficial. Stretching of the vagina and labia at delivery may result in rupture of veins. The resulting haematoma can be quite large, cause great pain, and may require aspiration. Perineal tears may occur spontaneously at delivery or tearing may extend an episiotomy. Perineal tears can be classified into four: first degree tear (involves the skin of the fourchette only), second degree tear (involves the skin of the fourchette, the perineum and perineal body.) third degree tear (involves the skin of the fourchette, the perineum, perineal body and anal sphincter.) fourth degree tear (involves the skin of the fourchette, perineum, perineal body and external and internal anal sphincters and the anal epithelium).

Back pain is a very common postnatal complaint and is not confined to women who experienced back pain during pregnancy. The physiological ligamentous changes during pregnancy take up to 6 months to reverse, thus maintaining posture is important. Thoracic pain is seen in some women and is be relieved by paying attention to postures during functional activity. Another common postnatal problem is coccydynia. Coccydynia can be due to damaged ligaments, with or without displacement of the coccyx, or aggravation of a previous injury. All these factors may have effect on physical function [27].

Cesarean section is one of the commonly performed surgical procedures in obstetric and is certainly one of the oldest operations in surgery. There are two types of cesarean section according to types of incision, these two types includes the classical caesarean section (CS) and lower uterine segment section (LSCS) [28]. Majority of caesarean section are done in emergency situations and previous CS is the

most frequent indication of caesarean section [25].

5.1 Indication for Cesarean Delivery are

- 1) Maternal : Prior cesarean delivery, abnormal placentation, maternal request, , invasive cervical cancer, HSV or HIV infection, Cardiac or pulmonary disease, pelvic deformity etc
- 2) Maternal – Fetal : Cephalopelvic disproportion, Failed operative vaginal delivery.
- 3) Fetal: Non reassuring fetal status, Malpresentation, Macrosomia, Congenital anomaly, Abnormal umbilical cord doppler study, Thrombocytopenia, Prior neonatal birth trauma [29].

The prevalence of maternal mortality and maternal morbidity is higher after CS than after vaginal birth. CS is associated with an increased risk of uterine rupture, abnormal placentation, ectopic pregnancy, stillbirth, and preterm birth, and these risks persist in the future pregnancies too. There is emerging evidence that babies born by CS have different hormonal, physical, bacterial, and medical exposures, and that these exposures can subtly alter neonatal physiology. Short- term risks of CS include altered immune system development, an increased likelihood of allergy, atopy, asthma, reduced intestinal gut microbiome diversity [30].

6. MODE OF DELIVERY AND FUNCTIONAL STATUS

Mode of delivery directly affect the functional status of the mother in the puerperium and the postpartum period. The c- section is a surgical procedure and it comes with its own trauma. The functional activities of women who underwent CS is affected due to pain, fatigue, effects of anesthesia ,late recovery period, increased hospitalization duration, breast feeding problems not to mention the complications that may occur due to immobility [31-32].

Vaginal delivery comes with its own challenges, the injury sustained by the perineum and the possibility of tear (1st, 2nd, 3rd or 4th degree) , episiotomy and injuries imposed by vacuum or forceps delivery in assisted deliveries act up affecting the functional status of women [31].

The injuries sustained due to vaginal delivery during 2nd stage of labor affects the functional status of women. It may present itself as a 1st or 2nd degree perineal tear or as an indication for episiotomy [31]. Episiotomy -in itself a concept that is debated from the early 1700s to date

because of the absence of scientific proof of its efficacy both in maternal and fetal terms ,often is painful that restrict the mother from movements, breast feeding and ambulation in the immediate postpartum and even at long term it may present with complications like urinary incontinence, dyspareunia etc [32].

These complications or rather the side effects of delivery makes postpartum period a transient one and are strongly related to both the functional impairment and poor emotional health of the women. The postpartum physical health problems are common, salient & cumulative features and negatively influence the quality of life women following parturition. The physical, functional, as well as emotional health status of women the year following child birth have a greater potential to identify the range of problem related to child birth, and thus improve the overall quality of care available to postpartum women [33]. Yet there is no outcome measure that can adequately measure the functional status of women in post partum period in India.

Currently there are 2 scales that exclusively measure the functional status of the mother in the postpartum period. These 2 scales differ from the scales that measure the quality of life of mothers, they give the functional status of the mother in terms of self care, infant care, household chores, social activities and occupational activities. These 2 scales are the Inventory of functional status after child birth (IFSAC) put forward by Fewcett in 1988 [34] and the Barkin index of maternal function formulated by Barkin in 2010 (BIMF) [35].

6.1 IFSAC and BIMF

Put forward by a nursing practitioner the IFASC was the scale used prominently in the late 80s and 90s. It had 5 subscales which measured the mother's readiness to assume the role of mother. They were self care, infant care, household chores, social activities and occupational activities [34] The IFSAC was found to have a very sound psychometric properties but the work of Aktan in 2007 [36] discredited this scale when he stated that using IFSAC without refinement might lead to questionable research finding although there was no other option at this given point of time.

Then in 2010 Barkin published a paper in which she studied the other major scales in the field obstetrics and gynecology including Postpartum Adjustment Questionnaire (PPAQ) and the

Maternal Adjustment and Maternal Attitudes questionnaire (MAMA) and found that these scales did not measure functional status of the mother but measured the maternal competence, maternal gratification, infant care tasks, feelings about one's baby etc [37]. Later in the same year she put forth the Barkin Index of maternal function – a scale with 20 items and 6 point Linkert scale with strong psychometric properties [35]. But one has to keep in mind the clinical setting that these scales are used in. for eg the Asian mothers differ in their attitude, expectations and traditions than the mothers of western countries where these scales had been formulated and used upon as evident from the work of U R Rout et al. [38]. Plus they both concentrates on the maternal function but the physical functional components alone.

7. CONCLUSION

It is concluded that there arises a need for functional status assessment scale that is targeting the mothers of India to understand their functional status and for early detection of possible dysfunction so that a preventive, subject tailored postnatal rehabilitation program may be designed. As the physical functional status of mother not only affects her but the baby, family and in turn the society this area cannot be forgotten or overseen. It is the need of the hour to sensitize this subject and stop the suffering of women in silence and the “ its all part and parcel of motherhood” attitude to change.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERANCES

1. Mercer RT. The process of maternal role attainment over the first year. *Nursing Research*. 1985;34:198–204.
2. O'Hara MW, Hoffman JG, Philipps LHC, Wright EJ. Adjustment in childbearing women: the Postpartum Adjustment Questionnaire. *Psychological Assessment*. 1992;4:160–169.

3. Mercer RT. Becoming a mother versus maternal role attainment. *Journal of Nursing Scholarship*. 2004;36:226–232.
4. Burr WR, Leigh GK, Day RD, Constantine J. Symbolic interaction and the family. In: Burr WR, Hill R, Nye FI, Reiss IR. (Eds.), *Contemporary Theories about the Family*. New York Press, New York. 1979;2:42–111.
5. Mercer RT. A theoretical framework for studying factors that impact on the maternal role. *Nursing Research*. 1981;30:73–77.
6. Runquist J. Persevering through postpartum fatigue. *Journal of Obstetric, Gynecologic and Neonatal Nursing*. 2007;36:28–37.
7. Weaver J, Usher J. How motherhood changes life—a discourse analytic study with mothers of young children. *Journal of Reproductive and Infant Psychology*. 1997;15:51–68.
8. Fowles ER, Horowitz JA. Clinical assessment of mothering during infancy. *Journal of Obstetric, Gynecologic and Neonatal Nursing*. 2006;35:662–670.
9. Wang TJ. Concept analysis of functional status. *Int J Nurs Stud*. 2004;41(4):457-62. DOI: 10.1016/j.ijnurstu.2003.09.004. PMID: 15050856.
10. Knight MM. Cognitive ability and functional status. *Journal of Advances in Nursing*. 2000;31(6): 1459–1468.
11. Abdel-Moty E, Khalil TM, Sadek S, Dilsen E, Fishbain D, Steele-Rosomoff R, Rosomoff H. Functional capacity assessment: a test battery and its use in rehabilitation. In: Mital, A. (Ed.), *Advances in Industrial Ergonomics & Safety*. Taylor & Francis, New York; 1992.
12. World Health Organization. *International Classification of Functioning, Disability, and Health*. World Health Organization, Geneva; 2013.
13. Development of the World Health Organization WHOQOL-BREF quality of life assessment. The WHOQOL Group. *Psychol Med*. 1998;28(3):551-8. DOI: 10.1017/s0033291798006667. PMID: 9626712.
14. Edemekong PF, Bomgaars DL, Sukumaran S, Levy SB. *Activities of Daily Living*. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; 2021.
15. Katz S. Assessing self-maintenance: activities of daily living, mobility, and

- instrumental activities of daily living. J Am Geriatr Soc. 1983;31(12):721-7
16. Edemekong PF, Bomgaars DL, Sukumaran S, Levy SB. Activities of Daily Living. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2021.
 17. Barkin JL, Wisner KL, Bromberger JT, Beach SR, Wisniewski SR. Assessment of functioning in new mothers. Journal of Women's Health. 2021a;19:1493–1499.
 18. Logsdon MC, Wisner KL, Pinto-Foltz MD. The impact of postpartum depression on mothering. Journal of Obstetric, Gynecologic, and Neonatal Nursing. 2006;35:652–658.
 19. Tulman L, Fawcett J. Feelings about motherhood, family relationships, and functional status. In: Women's health during and after pregnancy: A theory-based study of adaptation to change. New York: Springer Publishing Company. 2003;102–32.
 20. Williams Obstetrics 25th edition, chapter 22, Normal labor, page no: 918.
 21. Jill Mantle physiotherapy in Obstetrics and Gynaecology, 2nd edition, chapter – 2 page no: 53.
 22. Jean Rankin, physiotherapy in childbearing, 4th edition; 2017.
 23. Rebecca Gourley Stephenson et al. Obstetric and gynecology care in physical therapy 2nd edition, chapter –4page no: 116. 2000.
 24. Jill Mantle Physiotherapy in Obstetrics and Gynaecology, 2nd edition, chapter 2, page no:43.
 25. Erica Oberg et al. Childbirth delivery methods and types; 2020. Available:https://www.medicinenet.com/7_childbirth_and_delivery_methods/article.htm#childbirth_and_delivery_methods_and_types_facts.
 26. Desai NM, Tsukerman A. Vaginal Delivery. 2021 Jul 31. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan–. PMID: 32644623.
 27. Jill Mantle physiotherapy in obstetrics and gynaecology, 2nd edition, chapter 3, page:80, 228,240
 28. NaziaMussarat, lower segment caesarean section (LSCS), indication and complications at teaching hospital, Faisalabad. 2013;20 960:916-923.
 29. Williams Obstetrics 25th edition, chapter 30, Cesarean Delivery and peripartum hysterectomy, page no:1249.
 30. Carol Ewing Garber et al. Physical and mental health- related correlation of physical function in community dwelling older adults: across sectional study; 2010.
 31. TugbaEnise Benli1 et al.Impact of delivery mode and maternal postpartum functional state on breastfeeding self- sufficiencyJ Clin Med Kaz. 2020;6(60):73-78
 32. Hanan El-Sayed Mohamed El-Sayed et al.Effect of Early Progressive Bed Exercise and Movement on Recovery after Caesarean Section,IOSR Journal of Nursing and Health Science olume. 2020;9(1) Ser. XI:47-56
 33. David A. Webb et al. Postpartum physical symptoms in new mother: Their relationship to functional limitation and emotional well-being; 2008.
 34. Jacqueline Fawcett, Lorraine Tulman Sheila Taylor Myers.Development of the inventory of functional status after childbirth .Journal of Nurse-Midwifery. 1988;33:253-262.
 35. Barkin JL, Wisner KL, Bromberger JT, Beach SR, Terry MA, Wisniewski SR. Development of the Barkin Index of Maternal Functioning. Journal of Women's Health. 2010;19(12):2239–2246.
 36. Aktan NM. Functional status after childbirth: A review of the literature. Clin Nurs Res 2007;16:195–211
 37. Barkin JL, Wisner KL, Bromberger JT, Beach SR, Wisniewski SR. Assessment of functioning in new mothers. J Womens Health. 2010;19:1493–1499.
 38. Rout UR, Kagan. Work and family roles: Indian career women in India and the West. Indian J Gend Stud. 1999;6(1):91-103.

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