

# A Case Study on Risk of Musculoskeletal Disorder Due to Poor Ergonomics in First Time Lactating Mother with Recurrent Myofascial Trigger

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## A Case Study on Risk of Musculoskeletal Disorder Due to Poor Ergonomics in First Time Lactating Mother with Recurrent Myofascial Trigger

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### ABSTRACT

**Purpose:** A case study was done to analyze the risk of musculoskeletal disorder due to poor ergonomics and to evaluate the post-partum depression in first-time lactating mothers with recurrent Myofascial triggers.

**Design/Methodology/Approach:** The researchers used a descriptive research methodology to assess and analyze all the activities which could help to meet the objectives of the study. The positions of lactating mothers are explained accurately and factually based on observation, personal interviews, and analyzed postpartum depression using Edinburg Postnatal Depression Scale (EPDS). Thus, this design may help to open a few facts about the breastfeeding positions of first-time moms, which is still having a scarcity of literature. Data collected from the study are noted, explained, and analyzed for comparison and further studies. The respondents of the study were the patients/mother who came to health care services due to physical and mental issues after eight weeks of delivery.

**Finding/Result:** This case study has shown that new moms who are breastfeeding their babies are more prone to the risks of musculoskeletal disorders due to their poor ergonomics. It is also clear that post-partum depression is common in new mothers. From secondary data, there is an association between poor ergonomics and recurrent Myofascial triggers. So, it is important to give proper guidance in good ergonomics for newly lactating mothers during an antenatal and post-natal period to avoid the risk of musculoskeletal disorders.

**Originality/Value:** An ergonomic dimension of this study.

**Paper Type:** Case Study Research

**Keywords:** Ergonomics, Musculoskeletal Disorder, Post-Partum Depression, Breast Feeding Mother, Myofascial Trigger

### 1. INTRODUCTION :

Breastfeeding acts as a defensive mechanism against any kind of disease in babies and mothers. Exclusive breastfeeding (EBF) means feeding a newborn with mother's milk only for the first six months of life, provided if the baby needs any additional supplement prescribed by the doctor [1-2]. Breast milk has many advantages for both mother and baby [3-4]. Breast milk supplies necessary nutrients which are important for a baby's growth. It protects infants against gastrointestinal infection, respiratory infections, and various illnesses by strengthening the infant's immune system. Thus, it reduces medical expenses, nutritional supplement expenses, and hospitalization due to illness also [5-6]. Breastfeeding rates are low worldwide even if it has great benefits for infants' health and mothers too [7]. Many women feel that breastfeeding is done naturally and may lose their confidence in the early days, even if they are experienced mothers in breastfeeding with their elder child. Effective positioning and attachment of an infant at the breast are skills that are essential to each mother/baby. These are very

important to continued breastfeeding and to avoid post-partum problems. The position of the baby is drawn close to the mom's body straight to the level of the breast to achieve good attachment [8].

The most important thing during breastfeeding is the mother's body posture. The different methods for breastfeeding are the cross-cradle, side-lying, under-arm posture, which is also known as football hold, and supine positions which means lying face upward. The appropriate position to feed premature babies is the football position or underarm posture. It helps mothers to see their baby's face better and can have control of the infant's head. Raising an infant to the same level of the breast with the support of a pillow is the best method in cross-cradle position. The infant and mother should lie down, stomach-to-stomach, and the mom covers her one hand above the infant's head and with the other hand covers around the baby and draw close to her body in the laying down method. Mother and baby feel more attachment as it is a close feeding when mom is lying down [8]. The cross-cradle method is the most frequently used breastfeeding method, as the infant is held very intimately to the mom: the head and shoulder of the infant are supported, and other body parts are aligned. Mother can see the baby's nose pointed to the breast opposite to the nipple [9].

### **1.1 Breast Feeding and Post-Partum Depression:**

Postpartum depression (PPD) is defined as a serious mental health issue. They stated that it affects an estimated 13% to 19% of women who have recently given birth [10]. The main characteristic of postpartum depression is feeling low mood most of the time in first-time moms, which often goes along with the feelings of a bad mother, valueless, sad, and downhearted. Postpartum depression (PPD) is different from the baby blues, as the baby blues is an emotional issue, which should subside after a week. Symptoms like mood swings, dysphoria, anxiety, sadness, tearfulness, trouble sleeping, irritability, etc. will be experienced by most of the moms (up to 4 in 5 women) within two to three days after the baby is born and usually go away by their own within 10 days [10-11].

Recently some reports indicated that the relationship has both owning side and an inverse side in nature, which means while postpartum depression may decrease the breastfeeding rates, not being involved in breastfeeding may influence the probability of postpartum depression. Figueiredo. B. et al. stated some evidence that breastfeeding may protect moms against postpartum depression or may help for a speedy recovery from symptoms [12]. According to Rita di, Cassia de et al suggested that musculoskeletal disorders like back pain or any other, maybe a danger factor of post-partum depression among puerperal women, and type of posture and musculoskeletal pain are interdependent [13].

### **1.2 Myofascial Trigger and Poor Ergonomics:**

Myofascial pain syndrome (MPS) is directly proportional to many orthopedic disorders. It is a chronic pain disorder of the muscles and adjoining fascia. Existing literature is very rare which shows the correct prevalence of myofascial pain syndrome in the common population. Up to eighty-five percent of patients with musculoskeletal pain suffer from Myofascial pain syndrome [14]. The common age group which affects MPS is from 27 to 50 years [15]. Myofascial pain syndrome (MPS) is distinguished by the appearance of myofascial trigger points (MTrPs) along with localized muscle pain and tenderness. MTrPs are hyperirritable nodules along with a taut band within a skeletal muscle and can be readily identified through palpation by trained therapists [16]. An article titled, "Surgical Ergonomics and Myofascial Pain Syndrome" stated that poor surgical ergonomics, combined with the stress and sleep deprivation inherent in surgical training and practice, would make surgeons prone to MPS. Poor ergonomics and posture during breastfeeding and daily infant care time may lead to Myofascial pain syndrome with trigger points.

## **2. LITERATURE REVIEW :**

A few Researchers wanted to prove that, musculoskeletal problems in lactating mothers are due to poor ergonomics during breastfeeding time. So, common breastfeeding positions among lactating mothers and musculoskeletal problems associated with it were the purpose of their study. They conducted a descriptive type of cross-sectional survey with four hundred breastfeeding mothers from different hospitals and communities of Rawalpindi and Islamabad using a self-made questionnaire. It was found that cross-cradle hold (opposite arm) was the most common position 283 (70.8%) used by the lactating mothers to feed their baby followed by side-lying position 86 (21.5%). And 31 (7.9%) mothers adopted other different positions as comfortable ones for breastfeeding their babies. Authors found many musculoskeletal problems like back pain and neck pain among those mothers. They concluded a study

that, there was no significant difference (p-value was 0.989) between breastfeeding position and musculoskeletal problems by using the chi-square test [17].

The aim of the studies earlier was to observe the task performed by nursing students have any influence on Myofascial trigger points of their trapezius muscle [18]. Alcalá de Henares University College of Nursing was the study setting with 30 third-year nursing students. Anyone with a tropic muscular disorder or taking any influential treatment was excluded from the study. They were asked socio-demographic questions about the type of tasks they carry out academic work factors etc. They were examined to check the presence of Myofascial trigger points in their trapezius muscle through diagnostic criteria by describing its active or dormant state. By algometer, researchers measured pressure pain threshold and active range of motion in cervical movements also noted. Pre and post-test (after one month of the experiment), measurements were taken. Results showed upper scoring on a visual analog scale and an average improvement in cervical ROM, except flexion. Tuda et al concluded the study as “the tendencies have been observed among the analyzed variables which allow the proposition of more specific studies about biological and socio-labor factors linked to MTPs to establish physio-therapeutic efficient strategies for incorporation into the professional world.”

Previous studies found that there is an association between postpartum depression, low back pain intensity, and any difference in alignment of posture among post-partum women. According to inclusion and exclusion criteria, eighty women at two to thirty weeks postpartum were included. Outcome measures were visual analog scale (VAS) for assessing pain, for assessing depressive symptoms Edinburgh Postnatal Depression Scale (EPDS) were used, Nordic Musculoskeletal Questionnaire and posture, by observing the mother in a natural environment. From the result, the research was concluded that there is an association between pain intensity and post-partum depression. But no association between type of posture and PPD [13].

New mothers are at risk for musculoskeletal disorders due to pregnancy and postpartum changes, including increased fluid retention, imbalance of postural muscles, ligament laxity, and irregular sleep patterns on top of following bad ergonomics, in self-care and childcare-related activities. There are lots of changes that occurred in her body like, physiological and postural from the beginning of pregnancy and the post-partum period, which combined with so many physical and mental demands of infant care and self-care too. So, new mothers are at risk of musculoskeletal disorders [19]. A summary table of the literature review is depicted in **Table 1**.

**Table 1:** Literature review summary

S. No.	Findings	Authors
1	Breastfeeding acts as a defensive mechanism against any kind of disease in babies and mothers.	Joshi, P. C. et al (2014) [1].
2	The cross-cradle method in the sitting position is the most frequently used breastfeeding method.	Puapornpong, P. et al (2015) [9].
3	Postpartum depression (PPD) is defined as a serious mental health issue that affects an estimated 13% to 19% of women who have recently given birth.	O'Hara M. W. et al (2013) [10].
4	Postpartum depression (PPD) is different from the baby blues, as the baby blues is an emotional issue, which should subside after a week.	Heron J. et al (2019) [11].
5	There is an association between pain intensity and post-partum depression.	R. D. Angelo, et al (2014) [13].
6	Myofascial pain syndrome (MPS) is directly proportional to many orthopedic disorders. Up to eighty-five percent of patients with musculoskeletal pain suffer from Myofascial pain syndrome.	Skootsky, S. A. et al (1989) [14].
7	New mothers are at risk for musculoskeletal disorders due to pregnancy and postpartum changes.	Roberts, D. (2011) [19].

8	Post-Partum Depression was analyzed using Edinburg Postnatal Depression Scale (EPDS).	Cox, J. L. et al (1987) [20].
9	Musculoskeletal Discomfort was measured using The Nordic Musculoskeletal Questionnaire (NMQ).	Crawford, J. O. (2007) [21].
10	Anthropometric Measurement for the Proposed Breastfeeding Chair.	Gumasing, M. J. J. et al (2019) [22].

### 3. RESEARCH GAP :

New mothers have lots of physiological and mental changes from the beginning of pregnancy and the postpartum period. So, they need much help and support in self and childcare-related activities. There are many studies conducted on work-related musculoskeletal disorders (WMSD) due to poor ergonomics. Literature is scarce in musculoskeletal disorder and postpartum depression among first-time lactating mothers due to poor ergonomics with a recurrent myofascial trigger.

### 4. RESEARCH AGENDA :

The Key agenda of the study is to analyze the risk of musculoskeletal disorder due to poor ergonomics in first time lactating mothers with a recurrent myofascial trigger.

### 5. OBJECTIVES OF THE STUDY :

The specific objectives of this Case study are,

- (1) To analyze the risk of musculoskeletal disorder due to poor ergonomics in first-time lactating mothers with recurrent Myofascial trigger.
- (2) To analyze the post-partum depression in first-time lactating mothers with recurrent Myofascial trigger.

### 6. METHODOLOGY :

It is a single case study. A 29-year-old female had been married for more than five years and was under medication for infertility for almost three years. Bed rest was recommended by the Gynecologist at the beginning of the second trimester of her pregnancy as she was having Placenta Previa, and gestational diabetes mellitus too. She labored a baby boy with Caesarean Section at 36 weeks gestation. Spinal Anesthesia was given to her. She consulted a doctor in the public health care sector at Poothoota (Ernakulam, India) for physical and mental issues two months post-partum.

The patient complains of feeling sad, overwhelmed, and consistently fearful. She frequently felt very irritated and was unable to take care of her baby. She often felt like a 'Bad Mother' due to recurrent mood swings. She complained about pain in the neck, back, and leg also, which limits her daily activities. In history, she was not having any kind of musculoskeletal disorders or mood swings. After thorough assessment and evaluation by a physiotherapist, it was found that lack of good ergonomics especially in sitting, during breastfeeding, baby's nappy changing, and grooming time, was the main reason for the musculoskeletal problems. It was also noticed that the mother was having trigger points in the trapezius muscle and very recurrent calf muscle. Back pain was severe for her, as feeding baby for a long time in a poor ergonomics manner. She used the chairs which have no armrest, backrest for lumbar support, and footrest for feeding the baby. Psychological support from her family was also less.

**Outcome Measures:** Overall musculoskeletal Pain was analyzed using the Visual Analogue Scale (VAS), Post-Partum Depression was analyzed using Edinburg Postnatal Depression Scale (EPDS) [20] and Musculoskeletal Discomfort was measured using The Nordic Musculoskeletal Questionnaire (NMQ) [21]. VAS score was 7, which meant moderate to severe pain and EPDS was 17, which meant she was doubtlessly to have postpartum depression and was in immediate need of medical help. Musculoskeletal disorders such as neck pain, sometimes face and jaw pain, shoulder pain, upper and lower back pain, knee pain which restricts her from doing daily activities were analyzed by NMQ.

### 7. ANALYSIS AND DISCUSSION :

We have used a descriptive research methodology to assess and analyze all the activities which could help to meet the objectives of the study. The positions of lactating mothers are explained accurately and factually based on observation, personal interviews, and analyzed postpartum depression using Edinburg Postnatal Depression Scale (EPDS). Thus, this design may help to open a few facts about the breastfeeding positions of the moms, especially new mothers which is still having a scarcity of literature.

Data collected from the study are noted, explained, and analyzed for comparison and further studies. The respondents of the study are the patients/mother who came to health care services due to physical and mental issues after two months of delivery. After evaluating the patient, it has been clear that she was having musculoskeletal disorders due to poor ergonomics and was having post-partum depression which needs immediate medical attention. Ergonomics is very important in daily life especially for all new parents to conserve energy and protect their bodies and it helps in taking care of themselves and their baby. After C-Section, she was unable to care for herself and was bending over the changing table, improper lifting of baby, sitting prolonged time in an uncomfortable chair for feeding baby in every two hours, etc. caused her back pain, neck pain, and recurrent trapezius muscle and calf muscle Myofascial trigger.

Chair Specifications	Anthropometric Measurements	Percentile	Dimension (inches)
Seat Height	Popliteal Height	95th	15.27
Seat Depth	Buttock popliteal depth	5th	17.77
Seat Width	Hip breadth	95th	16.52
Backrest Height	Sitting shoulder height – popliteal height	5th	23.81
Backrest Width	Elbow-elbow breadth	95th	22.28
Armrest Height	Sitting elbow height	5th	28.62
Armrest Length	forearm length	95th	13.74
Armrest distance	Elbow-elbow breadth	95th	22.28
Footrest to seat distance	Popliteal height	5th	15.29
Headrest height	sitting height	5th	13.23

**Fig. 1:** Anthropometric Measurement for the Proposed Breastfeeding Chair [22].

A recent study that was aimed to design and develop the most comfortable and the best ergonomic breastfeeding chair. That breastfeeding chair aimed to improve the posture during feeding time and thus it avoids the risk of musculoskeletal disorders in mothers. Breastfeeding mom’s experience MSDs such as neck pain, back pain, pain in the face, and TMJ because of awkward posture and long sitting during breastfeeding time according to the National Health Interview Survey (NHIS) report in 2010. It is also noticed that moms slouch into different positions unconsciously that stress their bodies. If they adopt any wrong lifting force or posture due to carrying of babies during feeding time may also put stress in joints, muscles, and ligaments and that may lead to muscle spasm – pain cycle and could lead to injuries. This was the main reason for the researcher’s intention to design and develop an ergonomic intervention based on a breastfeeding chair for mothers in Filipino. Researchers used ergonomic tools such as RULA to assess and analyze the risk of upper limb disorders due to their adapted breastfeeding posture. And Corlett’s Body Part Discomfort Survey and Shackel’s General Comfort Survey were used to identifying body pain experienced by the lactating mothers due to the awkward posture. The proposed chair as illustrated in Figure 1 with ergonomic interventions consists of a headrest, armrest with pulling arc handle, backrest, cushioned seat, footstool with two-position lock, etc. Quality Function Deployment tool and value analysis were used to understand the technicalities of the product based on the target users' necessity. According to the researcher, this ergonomic chair for comfortable breastfeeding will provide a good and safe environment for both the mother and infant and it helps to increase their bonding also. The researchers have conducted direct observation, actual measurements, surveys, review of related literature, and statistical analyses to explain factually and accurately the proposed design of ergonomic interventions of breastfeeding chairs [22].

Thus, this study meets the objectives and shows the importance of ergonomics in first-time lactating mothers to avoid the risk of musculoskeletal disorders. By following good ergonomics, new mothers can avoid musculoskeletal disorders, and MPS-related trigger points also. So, this study gives light to the importance of awareness in newly lactating mothers regarding ergonomics. Another study can conduct in finding the association of postpartum depression and musculoskeletal disorders in new mothers.

## **8. CONCLUSION :**

From this case study, it is concluded that the new moms who are breastfeeding their babies are more prone to the risks of musculoskeletal disorders because of their poor ergonomics. It is also clear that post-partum depression is very common in new mothers. From secondary data, there is an association between poor ergonomics and recurrent myofascial triggers. Thus, the researchers emphasized giving proper guidance in ergonomic principles for post-partum women into breastfeeding and daily infant care during antenatal and post-natal periods to avoid the risk of musculoskeletal disorders.

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