PREVALENCE AND FACTORS ASSOCIATED WITH NECK AND LOW BACK PAIN AMONG BREASTFEEDING MOTHERS IN THE KLANG VALLEY

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Abstract

The World Health Organization recommends exclusive breastfeeding up to 6 months and continued breastfeeding for up to 2 years. Breastfeeding mothers adopt different breastfeeding techniques and positions which predispose various musculoskeletal pain. A cross-sectional study was aimed to identify the prevalence of neck and low back pain and its association with various factors (breastfeeding position, feeding side, mode, technique, duration and total breast-feeding sessions per day) among breastfeeding mothers in the Klang Valley. A validated self-administered questionnaire was used to determine the prevalence and associated factors of neck and low back pain. A total of 193 breastfeeding mothers responded to the questionnaire. The prevalence of neck and low back pain among breastfeeding mothers in the Klang Valley was 58% and 69.4%, respectively. There was no significant association between the prevalence of neck and low back pain with various risk factors as the *p*-values were > 0.05, except for significant association of total breastfeeding sessions per day for neck pain with $p = 0.02$. Musculoskeletal pain is common among breastfeeding mothers in the Klang Valley, with a higher prevalence of low back pain compared to neck pain.

Keywords: Breastfeeding, Musculoskeletal Pain, Prevalence

Introduction

The World Health Organization (WHO) and United Nations Children Emergency Fund (UNICEF) are international bodies that advocate exclusive breastfeeding up to 6 months of life with continued breastfeeding up to 2 years, in addition to complementary food (1). Exclusive breastfeeding is the most effective way to reduce infant mortality and is estimated to reduce 13% of mortality of children under 5 years old in low-income countries (2). Breastfeeding reduces the risk of breast, ovarian and uterine cancers, reduces postpartum bleeding and promotes early uterine involution as well as postpartum weight loss (3). According to the National Health & Morbidity Survey (NHMS) in 2016, breastfeeding practices were 3.2% higher in urban areas (48.3%) compared to rural areas (45.1%) (4). In view of this trend, this study was conducted at urban areas in order to determine the current prevalence and the contributory factors that may influence exclusive breastfeeding practices. According to the National Plan of Action for Nutrition of Malaysia III (2016-2025), in 2015, the prevalence of early initiation of breastfeeding, immediately following birth for at least 1 hour was 86.4%, the prevalence of exclusive breastfeeding at 4 months was 63.1%, the prevalence of exclusive breastfeeding at 6 months was 49.4% (5). However, such studies are scarce in Malaysia. Breastfeeding in this study is defined as the provision of breastmilk irrespective of the mode of breastfeeding, which is classified as direct latching, expressed breast milk (EBM) feeding and mixed feeding which is the combination of direct latching and EBM feeding. Mothers who practice exclusive EBM feeding have a higher risk of terminating breastfeeding earlier than those who practice direct latching and mixed feeding (6). Most infants require 8 to 12 breastfeeding sessions in 24 hours as newborns until they are 3 to 6 months old, with the average time of each breastfeeding session varying from 10 to 45 minutes (7).

Musculoskeletal pain is common among breastfeeding mothers. Common reasons for musculoskeletal pain among breastfeeding mothers are improper breastfeeding

posture, stress and tension, physiological changes of pregnancy affecting ligaments, weak core muscles and sleep deprivation (8). The prevalence of neck pain (NP) and low back pain (LBP) in breastfeeding women in Pakistan was 36.8% and 22%, respectively (9) while a study conducted in Japan reported that the prevalence of neck and shoulder pain for postpartum women was 73.1%, one of the causes being breastfeeding (10). To the best of our knowledge, there are no published studies on the prevalence of neck and back pain among breastfeeding mothers in the Klang Valley. In addition, the association between prevalence of musculoskeletal pain and various breastfeeding-related factors (mode of breastfeeding, breastfeeding positions, positions during breastfeeding, side of breast that the mother always offers for breastfeeding, total breastfeeding sessions in a day and average duration per breastfeeding session) among breastfeeding mothers in the Klang Valley is unclear. Consequently, the objective of this study is to identify the prevalence of neck and low back pain among breastfeeding mothers in Malaysia and to identify the association between the prevalence of neck and low back pain with the various factors.

Materials and methods

Design and sampling

This is a cross-sectional study involving 193 breastfeeding mothers in the Klang Valley using the convenience sampling method. Unknown sample size calculation was performed and 384 samples were required, but the response rate was 50.26%. A Google Form link for the questionnaire was posted on several Facebook groups such as The Breastfeeding Advocates Network (TBAN), The Breastfeeding Club Malaysia (TBC) and Mummy Chat Area and eligible participants in these platforms were encouraged to participate in the study. Inclusion criteria of participants were: (i) aged 18-40 years old, (ii) breastfeeding mothers at the point of data collection, (iii) able to read and understand English, (iv) had pregnancy-related neck and low back pain. Breastfeeding mothers included those who practiced either exclusive direct latching or mixed feeding, which is the combination of direct latching and EBM feeding. Exclusion criteria of participants included breastfeeding mothers with (i) twins/ triplets/ quadruplets practicing tandem breastfeeding, (ii) history of prenatal and antenatal NP or LBP (iii) spinal disorders (iv) spinal trauma and spinal surgery in the past one year.

Ethics approval

Ethical clearance was received from the ethical committee of INTI International University prior to the recruitment of participants and data collection with the following ethical registration number: INTI-IU/FHLS-RC/BPHTI/7NY12019/015. Informed consent was obtained from participants after providing the information sheet. Participants were informed on their rights to voluntarily participate and withdraw at any time during the study without providing any reason. Data were managed privately and confidentially.

Outcome measurement

The self-administered questionnaire was developed using Google Form and consisted of 4 sections – Part 1: Mother's demographic data, Part 2: Infant or toddler's demographic data, Part 3: Pregnancy and delivery process, Part 4: Breastfeeding positions and experience. It was developed in the English language and some questions were adopted from a study related to breastfeeding done in Japan (11). The questionnaire was validated by experts and admins from The TBAN to evaluate the content and face validity of the questionnaire.

Data analysis

Data were analyzed using Statistical Package for the Social Sciences (SPSS), version 26. Descriptive statistics were used to summarize and quantitatively describe the results while Pearson's Chi-square test was used to determine the associations. The level of significance was set at $p < 0.05$.

Results

A total of 193 breastfeeding mothers enrolled in this study, mostly Malaysian (94.3%) with a mean age of 32.77 ± 3.64 years. Table 1 shows details of the breastfeeding mothers. Participants in this study were mostly Chinese (65.8%) with an age range of 30-35 years (59%) and had a vaginal mode of delivery (67.9%). Despite the majority of participants experiencing back pain (64.2%) throughout pregnancy, only a few experienced neck pain throughout pregnancy (14%).

Table 1: Details of breastfeeding mothers (n = 193)

Characteristics	n	%
Age (years)		
18-23	0	0.0
24-29	37	19.2
30-35	114	59.1
36-40	42	21.8
Ethnicity		
Chinese	127	65.8
Indian	29	15.0
Malay	28	14.5
Others	9	4.7
Mode of Delivery		
Vaginal	131	67.9
Caesarean (C-section)	62	32.1
Anaesthesia		
Epidural	50	25.9
General	20	10.4
Spinal	30	15.5
Unsure	17	8.8
None of the above	76	39.4
Neck Pain during pregnancy		
Yes	27	14
No	166	86
Low Back Pain during pregnancy		
Yes	124	64.2
No	69	35.8

Table 2 highlights participants' breastfeeding experience. Mothers in the current study preferred cradle hold position (51.8%) and the position of sitting on the bed and leaning against the wall or headboard during breastfeeding (37.7%). Approximately 68% of participants preferred to place a pillow at the back and alternating between both breasts while breastfeeding (60.6%). The total number of sessions of breastfeeding among the mothers in this study was 6-10 sessions in a day (44.6%), with a duration of 11-20 minutes per session mostly (50.3%).

Table 2: Participants' breastfeeding experience

Characteristics	n	%
Preferred breastfeeding techniques		
Cradle hold	100	51.8
Cross-cradle hold	11	5.7
Football hold	8	4.1
Laid back	7	3.6
Side lying	67	34.7
Preferred breastfeeding positions		
Lie on bed	53	27.5
Sit on bed and lean against wall or headboard	73	37.7
Sit on bedside without back support	39	20.2
Sit on chair with back support	18	9.3
Sit on chair without back support	7	3.6
Sit on floor without leaning against wall	3	1.6
Breastfeeding side		
Both breasts	61	31.6
Alternate between both breasts randomly	117	60.6
Left breast only	5	2.6
Right breast only	10	5.2
Breastfeeding session		
1-5	84	43.5
6-10	86	44.6
11-15	19	9.8
Above 16	4	2.1
Breastfeeding duration (minutes)		
Less than 10	52	26.9
11-20	97	50.3
21-30	31	16.1
More than 30	13	6.7

Figure 1 exhibits high prevalence of LBP (134, 69.4%) and NP (112, 58.0%) throughout the participants' breastfeeding journey. Pearson's Chi square test showed no significant association ($p > 0.05$) between NP or LBP and various factors: mode of breastfeeding, breastfeeding techniques, positions during breastfeeding, side of breast, total breastfeeding sessions in a day, average duration per breastfeeding session, as highlighted in Table 3. The exception was the significant association of total breastfeeding sessions per day for neck pain with $p = 0.02$.

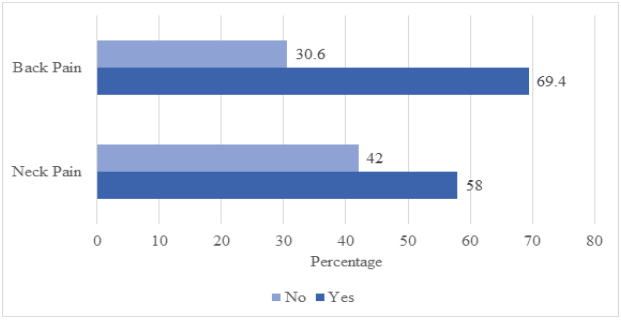

Figure 1: Prevalence of neck and back pain in participants during breastfeeding

Table 3: Association between neck and back pain with various factors

Variables	Neck Pain		Back Pain	
	Chi-square	*p*-value	Chi-square	*p*-value
Mode of breastfeeding	7.330	0.395	5.268	0.810
Breastfeeding techniques	18.140	0.923	32.834	0.620
Positions during breastfeeding	35.679	0.436	34.980	0.859
Side of breast	16.128	0.762	35.888	0.118
Total breastfeeding sessions in a day	35.895	**0.022***	30.675	0.285
Average duration per breastfeeding session	16.855	0.720	31.457	0.253

*$p<0.05$

Discussion

To the best of our knowledge, this is the first publication on the prevalence of NP and LBP in breastfeeding mothers and its associated risk factors in the Malaysian population. Our study found that 69.4% and 58% of mothers had LBP and NP, respectively, during the breastfeeding period. Moreover, 64.2% of mothers in this study had reported LBP during the time of pregnancy. A similar pattern of results was stated in the previous study, in which 68% of the population continued to suffer LBP from the prenatal stage (12). 36% had a relapse of LBP at 6 months after delivery and a high rate of pelvic girdle pain was reported in Indian women during the first 3 months of the postnatal period (13, 14). In contrast, the postpartum backache rate was 40.9% and 40% on the first day after delivery for those who received epidural and non-epidural analgesia, respectively. However, the LBP prevalence dramatically declined to 3.9% in the epidural group and increased to

11.3% in the non-epidural group, in the third month after delivery (15). Interestingly, in our study, there was a 5% hike in the prevalence of LBP before (64%) and after pregnancy (69.4%). Nevertheless, the current study finding was different from past literature in that back discomfort during pregnancy appeared to improve shortly after delivery and during the first 6 months after delivery (16, 17). This result is contrary to the present finding, for the reason that the earlier study was a 12-month follow-up of pregnant women who had pelvic girdle pain and pregnancy-related low back pain.

Our study also found that most mothers preferred to sit on the bed and lean against the wall to breastfeed. Upright-seated breastfeeding allows mothers' breasts to point downwards and outwards, promoting a better attachment between the infant and the mother's breast (18). In this study, the prevalence of LBP is relatively higher than the NP and is probably because most of the mothers adopted sitting on a bed as a breastfeeding position. Breastfeeding while sitting on the bed is associated with lumbopelvic pain (19). A divergent report was also found in an earlier study, in which 20% of mothers who sit on a mat and breastfeed had reported NP (20). However, our study revealed that there is no significant association between positions during breastfeeding and neck and lower back pain.

In terms of the mode of breastfeeding, most mothers preferred to practice mixed feeding which is the combination of direct latching and EBM feeding. The possible reason for this high prevalence of mixed feeding could be due to more females participating in the workforce nowadays. Nearly 60% of our participants were aged between 30 to 35 years old. In 2019, the female labor force participation rate in the labor market for prime age was 25-34 years (73%) and the female labor force participation rate in the second quarter of 2019 was 55.8% in Malaysia (21). Hence this data is in line with the age group of participants in the current study. If the mothers insist on practicing breastfeeding instead of formula feeding when they are working and away from their child, the only option is to express their breast milk and keep it in the fridge for future feeding purposes. However, this study showed that there is no significant association between the mode of breastfeeding and pain (neck and lower back).

In reference to the breastfeeding technique, almost more than 50% of the mothers practiced cradle hold breastfeeding technique. However, the results obtained from this study contradict previous studies done in Pakistan and Nigeria. Crossed cradle hold was the most reported baby hold technique practiced by the mothers (9, 20). Cross-cradle hold is suitable for very small babies or babies who have trouble in latching (9). The mean age for babies in this study was 8.72 ± 8.39 months; they are not considered to be very small babies. Hence, this clarifies the differences between this study and the previous studies (9, 20). Our current study findings also show that there is no significant association between breastfeeding position and NP and LBP. This is supported by a previous study that stated that there was no significant association between breastfeeding position and musculoskeletal pain (9).

The results obtained from this study show that most mothers breastfeed using both breasts, although they alternate between them randomly. Our study results also demonstrate that there is no significant association between the side of breast that mothers always offer for breastfeeding and NP or LBP. It is noteworthy and encouraging to learn that most of the mothers breastfed with both breasts as it helps in balancing their posture. A previous study found that the common features of breastfeeding include forward leaning of the neck and trunk and twisting of the spine to promote a closer reach to the child's mouth (22). By maintaining spinal alignment as well as avoiding shear posture which refers to the lateral displacement of the trunk will help to reduce musculoskeletal pain (23).

Most of the mothers in this study had 6-10 breastfeeding sessions in a day with an average of 11-20 minutes per session. Most of the time, a mother tends to breastfeed her child by bending her body towards her child instead of bringing her child closer to her nipple (9). A prolonged and inappropriate breastfeeding posture may lead to end-range loading of the periarticular structures and results in mechanical deformation of normal soft tissues in the form of musculoskeletal pain (20). Subsequently, in trying to compensate for the discomfort, the mother may adopt varied postures when sitting, standing, and laying, causing mechanical changes in her spine that alter her body's proper posture (9). If not addressed, it can cause long-term deformity by disrupting natural spine curvature, resulting in hyperlordosis, hyperkyphosis, or scoliosis. Our study results also demonstrated that there is no significant association between breastfeeding sessions and duration with NP or LBP. However, the results obtained from this study contradict a previous study done in Sweden, which reported that longer breastfeeding periods increased the risk of continuous LBP and pelvic pain at 6 months postpartum. Diverse ethnicities, on the other hand, have different endogenous pain regulating mechanisms. It indicates that people of different ethnicities react to pain in different ways. Mogren's (2006) study was conducted in Sweden and included mostly Caucasians, whereas the participants in the current study are mostly Asians (13). Caucasians are less vulnerable to acute pain reactions to nociceptive stimulation and the development of long-term chronic pain than other ethnic groups (24). This highlights the differences in the results between the current study and the previous study.

In the current study, we have not considered the psychological factors (stress level, depression, emotional level) which might have contributed to the musculoskeletal pain. We have also not considered the occupation and nature of the job which could influence the NP and LBP.

Conclusion

Musculoskeletal pain is common among breastfeeding mothers in the Klang Valley with a higher prevalence of LBP compared to NP among breastfeeding mothers. There is no significant association between prevalence of neck pain and low back pain with various factors (mode of breastfeeding, breastfeeding positions, positions during breastfeeding, side of breast that the mother always offers for breastfeeding and average duration per breastfeeding session) except for the total number of breast-feeding sessions per day. The prevalence of musculoskeletal pain among breastfeeding mothers does not only depend on breastfeeding techniques but also various contributing factors such as age, stress level, occupation and many more. Future studies are suggested to evaluate the association of the above-mentioned factors with musculoskeletal pain.

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Competing interests

The authors declare that they have no competing interests.

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