



To Study The Effect Of Traditional Milking Posture Of Female Farmer Of Banas Kantha Region In Cases Of Peripheral Nerve Radiculopathy In Lower Limb:

AN OBSERVATIONAL STUDY

Dr. PARTH JOSHI¹, Dr. BRIJAL PATEL², Dr. RUCHA ACHARYA³

¹second year MPT STUDENT, ²Assistant Professor, ³Assistant professor

GOKUL GLOBAL UNIVERSITY, SIDDHPUR, GUJARAT

ABSTRACT

Objectives: To find out proportion of cases of peripheral nerve radiculopathy in lower limb due to traditional buffalo milking posture of female farmers

Methods: An observational study was conducted at different villages of Banaskantha region after checking inclusion and exclusion criteria, we take demographic data and asked their work-related questions to the milking female farmers. the sciatica bothersome Ness index and sciatica frequency index were filled by asking milking female farmers to know proportion of peripheral nerve radiculopathy in lower limb.

Results: The milking female farmers of Banaskantha region have experienced symptoms of peripheral nerve radiculopathy during their milking posture. Also, the symptoms are increased in higher age group as compared to lower age group.

Conclusion: In this study we observed that proportion of peripheral nerve radiculopathy symptoms are increased in milking female farmers due to traditional milking posture. Also, we have observed that with increased age group of female farmers there is significant increase in SBI total score and SFI total score. Most of the milking female farmers have no assistance during their milking job.

Keywords: Milking female farmers, peripheral nerve radiculopathy, Milking posture, pain

INTRODUCTION

India has the greatest number of cattle and is the world's largest producer of milk.^{[1][2]} The white revolution's father was Kurien. Dr. Kurien led the Indian dairy cooperative movement and improved the social and economic conditions of the nation's milk farmers. Dr. Kurien has consistently served as a mentor and advisor to dairy farmers.^[3] The state that produces the most milk in the nation is Gujarat. Based in Gujarat's Banaskantha district, Banas Dairy (Banaskantha District Cooperative Milk Federation, Palanpur) is Asia's top producer of milk.^[4] The livestock business is milking. More than 85% of rural Indian families rely on agriculture as their primary source of income. Though they confront ongoing challenges and financial limitations that prevent them from participating further in animal husbandry. Female farmers play revolutionary role in the growth of animal husbandry in developing nations. There are significant regional differences in the type and degree of women's participation. The degree of involvement varies greatly depending on the family's socioeconomic condition, caste, ecological system, and family structure.^[5] Approximately 70 million rural families are projected to own animals of some kind. Approximately 69% of workers in the livestock industry are women.^[6] Without a doubt, women have continued engagement in animal husbandry and dairy production along with their regular home duties. Although women are important and play a major role in raising cattle, their contributions have not received the recognition they merit, and they will always be seen as invisible laborers.^[7] In 90 percent of livestock-keeping households, women take care of the young animals and manage the male animals and fodder production, while men handle the feeding, cleaning, and milking of dairy cows . Women also perform other responsibilities in animal husbandry.^[8] Actually, the most of the credit for making Banaskantha the largest milk producing dairy in Asia and for the notable increase in the district's per capita milk availability must go to the predominantly rural women dairy farmers in the BanasKantha region. Farm women make decisions regarding various farm operations, manage household chores effectively, and take care of their kids and other family members. Milking is an art that calls for knowledge and expertise. Milking should be done swiftly, silently, carefully, cleanly, and without causing the animal any pain, discomfort, or trouble. Effective milking practices involve milking at regular intervals, quickly within the allotted time, and thoroughly. Using hygienic practices contributes to a high milk

output. Superior milk yield with reduced incidence of mastitis. Hand milking, complete hand milking, stripping, knuckling, and machine milking are examples of milking techniques.



Figure 1: Gripping pattern in Hand milking.^[9]

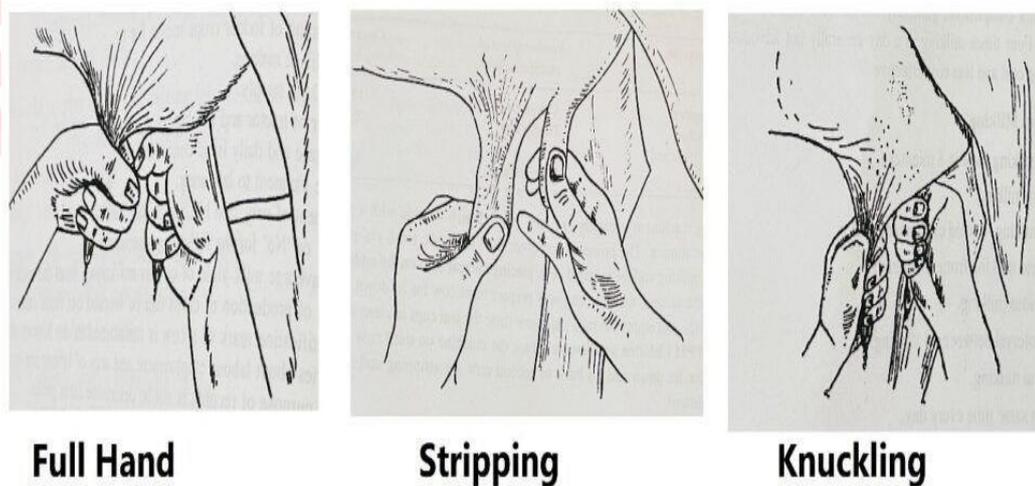


Figure 2: Hand milking method^[10]



Figure 3: Traditional milking posture. ^[11]

NEED OF THE STUDY

There is a connection between lower limb peripheral nerve radiculopathy and the traditional buffalo milking posture. The posture used to milk buffalo has numerous physiological and psychological effects.

To address the posture-related pain experienced by agricultural women, research on the relationship between milking position and radicular pain in this population is necessary.

No research has yet been done specifically on the relationship between radiculopathy in the lower limbs and limitations associated to it in milking female farmers.

This study will provide insight into the impact of a traditional buffalo milking posture on lower limb-related problems in cases of peripheral nerve radiculopathy in female farmers.

AIMS AND OBJECTIVES

AIMS

- To study proportion of peripheral nerve radiculopathy symptoms in milking female farmers due to traditional milking posture.

OBJECTIVES

- To study proportion of peripheral nerve radiculopathy frequency in milking female farmers.
- To study assistance the milking female farmers get during their work.
- To find out other common joint pain during their dairy farming work.

HYPOTHESIS

NULL HYPOTHESIS: There may not be significant correlation between traditional milking posture of female farmers of Banaskantha region in cases of peripheral nerve radiculopathy in lower limb.

ALTERNATIVE HYPOTHESIS: There may be significant correlation between traditional milking posture of female farmers of Banaskantha region in cases of peripheral nerve radiculopathy in lower li

REVIEW OF LITERATURE

Epidemiology of Musculoskeletal Pain

Although there are few clear epidemiologic data in the literature, the majority of reports indicate that lumbosacral radiculopathy affects patient populations at a prevalence rate of 3% to 5%. Furthermore, the ailment is a major factor in patient referrals to orthopedic spine surgeons, neurologists, or neurosurgeons.^[16] In the general population, lower back pain is extremely prevalent, yet lumbar radiculopathy has only been found to occur in 3–5% of cases.^[16] Sciatica affects 5–10% of persons with low back pain. It is estimated that 2.2% of the general population experiences disc-related sciatica each year.^[17] The majority of the time, the prognosis is good, with the pain and any associated limitations going away in two weeks.^[17] However, a sizable portion (30%) of the population experiences pain lasting a year or more.^[17]

Profession and peripheral nerve radiculopathy in lower limbs

A condition known as lumbar radiculopathy frequently occurs and has serious socioeconomic repercussions. The incidence of lumbar radiculopathy with a discal etiology is around 2%. Lumbar radiculopathy accounts for 11% of the working population's 12.9% incidence of low back problems.^[18] Lumbosacral radiculopathy has been reported to affect 9.9% to 25% of people.^[19] Activities that provide an excessive or repetitive strain on the spine are risk factors for radiculopathy. Individuals with a more sedentary lifestyle are less likely to develop radiculopathy than those who participate in intense labor or contact sports. A condition known as lumbosacral radiculopathy results in pain that travels from back to down the back of the thigh and into the leg. Compression of the nerve roots leaving the spine at levels from L1 to S4 is the source of this injury. Numbness, paresthesia, tingling, radiating pain, and even shooting agony can all be caused by compression. Although radiculopathy can affect any area of the spine, most frequently affects the neck (cervical radiculopathy) and lower back (lumbar-sacral radiculopathy). Thoracic radiculopathy affecting the central part of the spine, is less prevalent. Radicular pain was substantially correlated with female gender, middle age, lower educational attainment, moderate job, and repetitive hand motions at work. Radicular pain syndromes affected a significant portion of the populace. Poor comprehension prevents the afflicted individuals from receiving treatment. Conditions affecting the muscles, nerves, tendons, joints,

cartilage, and supporting components of the lumbosacral region are together referred to as sciatica, or conditions causing radiating pain.

Milking farming females and workload

Backbreaking labor was required in dairy production since all of the jobs required awkward postures. For several of the tasks, the women assume challenging static postures that increase the static muscular effort, leading to low productivity. Studies have shown that the optimal work design is one that minimizes energy consumption and places the least amount of strain on the cardiovascular and muscular systems.^[20] For rural women, dairy farming is a beneficial employment. Increased muscle strain results in increased weariness. Therefore, better instruments for carrying out the chosen tasks are advantageous since they lessen physical strain and drudgery, assist women in assuming proper posture, and decrease the angle of deviation.

Milking posture and musculoskeletal changes

Since dairy farming strains nearly every area of the body, it is an extremely difficult exercise on the back. Each animal receives 10–12 minutes of attention at one time (morning or evening), for a total of 20–25 minutes of activity per animal per day. This is a regular task that impacts the ability of any worker. Utilizing better instruments to carry out the chosen tasks minimizes the strain on the muscles, resulting in optimal health and productivity. Speaking of basic milking procedures, research found that a lady would typically extract milk from two animals at once. Both personal and economic purposes were served by the milking. She spent ten minutes with each animal, extracting nine liters of milk at a time. This indicates that she obtained nine liters of milk from one animal in ten minutes. The majority of the women used steel containers, and they were all crouching when performing the activity. It takes just one worker to milk an animal. Women milked an animal in nine minutes on average, using 46 strokes to extract 10.4 liters of milk. In comparison to the traditional method of milking in a squatting position, women were able to make more strokes and extract more milk with a revolving pihri. However, when milking in a squatting position, she was only able to extract 8.6 liters of milk in 41 strokes per animal. Physiological workload during the milking activity while employing Drudgery Reducing Tools (DRT) versus the traditional approach. Utilizing the traditional way of milking activity resulted in higher average working heart rates (110

beats/min), recovery heart rates (96 beats/min), and peak heart rates (129 beats/min) than using DRT (104, 91, and 119 beats/min, respectively). By employing a drudgery-reducing tool, it was possible to reduce heart rate on average by 5.45 percent (6 beats/min), 5.20 percent (5 beats/min) in recovery heart rate, and 10 beats per minute (7.75%) in peak heart rate while working.^[20]

Impact of age and gender on postural stress of dairy workers

The development of occupational disorders among dairy workers is influenced by their age and gender. Similar to other developing and developed nations, India lacks precise data regarding the frequency and occurrence of exposure to occupational health hazards. The issue of stooping and crouching posture as a work-related risk factor, which is more prevalent in developing nations like India. Milking is a relatively common squatting task carried out by dairy workers. The goal of the current study is to determine the postural stress experienced by milking females in both lower and higher age groups, as well as the effect of this stress has on peripheral nerve radiculopathy in the lower limbs. The results of the study will be helpful in establishing appropriate equipment and procedures for milking operations while taking the workers' age and posture into consideration. This will improve the working conditions of the dairy industry and improve the work and health status of the workers. The purpose of this study was to determine how a female farmer's traditional milking posture affected her lower limb peripheral nerve radiculopathy patients. Both the sciatica frequency index and the sciatica bothersome Ness index have been measured. The percentage of peripheral nerve radiculopathy in the lower limb can be reliably determined. Numerous research has been conducted to examine its validity and dependability among individuals in various professions. This questionnaire covers the degree and frequency of pain, tingling, numbness, and weakness in several areas, ranging from the soles of the feet to the back. What occurs when you squat too long? Your quadriceps, hamstrings, gluteus, abdominals, and calves, as well as your back, paraspinal, shoulder, scapular, cervical, and forearm and hand muscles, are all targeted by the traditional milking stance. The prevalence of musculoskeletal pain is higher in milking females who have been squatting for extended periods of time each day. Long-term squatting has been linked to findings of bilateral peroneal nerve palsy. While there can be other causes for this besides squatting.^[21] The purpose of this study was to determine how a female farmer's traditional milking posture

affected the lower limb peripheral nerve radiculopathy patients. Sciatica discomforting the sciatica frequency index and the bothersome Ness index have been obtained. The percentage of peripheral nerve radiculopathy in the lower limb can be reliably determined. Numerous research has been conducted to examine its validity and dependability among individuals in various professions. This questionnaire covers uncomfortable Ness and the frequency of pain, tingling, weakness, and numbness in several areas, ranging from the soles of the feet to the back. A basic examination that includes their age, weight, height, BMI, and any further joint problems is also included. They can work independently or with assistance.

Treatment for Radicular Symptoms

Depending on the cause and intensity of the symptoms, individual treatments are used. The first line of treatment is usually thought to be conservative management of symptoms. Acetaminophen, NSAIDs and in extreme situations, opiates are among the medications used to treat pain problems. Neuroleptic medications are frequently used to treat radicular symptoms. Although there is little evidence to support the use of systemic steroids, they are frequently recommended for acute low back pain. Non-pharmacologic treatments are also frequently employed. For the treatment of lumbosacral radiculopathy, traction, acupuncture, and chiropractic manipulation are usually employed. Notably, there is conflicting evidence to support the use of these therapy techniques. Two typical interventional methods are Percutaneous disc decompression and epidural steroid injections. Spinal fusion and surgical decompression are options for refractory cases. According to the worldwide consensus, conservative treatment is recommended throughout the first 6–8 weeks. ^[22] Only after a cautious course of treatment have the problems persisted for at least six weeks should surgery be considered. ^[23] According to research, most patients with radiculopathy respond favorably to this conservative course of care, and symptoms frequently go better in six weeks to three months. A discectomy is the surgical procedure used to treat sciatica, and it aims to remove the disc herniation and eventually a portion of the disc. ^[24] An additional possibility is spinal fusion. In addition to straightforward discectomy and spinal fusion, patients with disc herniation may undergo the following 3 surgical procedures: First, chemonucleolysis Secondly, percutaneous discectomy and last micro discectomy. ^[25] Despite a significant increase in spinal fusion surgeries, 90% of patients who underwent surgery for lumbar disc herniation underwent discectomy alone. Less than 1% of simple discectomy procedures are found to have complications.

Role of physiotherapy in peripheral nerve radiculopathy

The intervertebral foramen nerve pinch is the primary cause of the issue. There is a modicum of data supporting the use of spinal manipulation to relieve symptoms during an acute phase [26][27] In the case of persistent lumbar radiculopathy, minimal evidence supporting interventions was discovered. [18] Normal traction of the lower spine will also reduce the pain, as the origin of the discomfort is a narrowing of the intervertebral foramen. [25] In addition to pain relief, the patient requires muscle strengthening and more targeted stabilization. Pilate's exercises are effective for improving body awareness in addition to stabilization. [24] The McKenzie exercise is one that is well-known for relieving lower back discomfort. [19] Pain reduction is the primary objective of the therapy. In order to lessen discomfort, the patient must first learn to be conscious of his body. [25] Gentle stretching and pain-relieving techniques, conditioning exercises, and ergonomic programs are all examples of physical therapy. A thorough rehabilitation program consists of strengthening and flexibility deficiencies correction, postural training, muscle reactivation, and progression to functional exercises. [19] The initial line of treatment is frequently exercise therapy. Still, there isn't enough evidence to support this as of yet. [23][25] It is crucial to have core stability when a patient complains of instability. It is common practice to combine the abdominal drawing-in movements (ADIM) technique with core stabilization exercise (CSE). With little effort on the part of the surface muscles, these workouts engage the deep abdominal muscles. [2]

REVIEW OF ARTICLE

Sharma Anjuly , Tanwar Prahlad Singh and Singh Suryendra did study on Use of Improved tool (Revolving Pihri) for milking of dairy animals by farm women With a rotating pihri, ladies were able to make more strokes and get more milk than they could with the traditional method of milking while bending. Nevertheless, she could only obtain 8.6 liters of milk in 41 strokes per animal when milking in a bending position. physiological workload when using Drudgery Reducing Tools (DRT) as opposed to the traditional approach during the milking activity. The average working heart rate (110 beats/min), recovery heart rate (96 beats/min), and peak heart rate (129 beats/min) were all greater when milking activity was done the old-fashioned way than when DRT was used (104, 91, and 119 beats/min, respectively). The average heart rate might be decreased by 5.45 percent (6 beats per minute) and 5.20 percent (5 beats per minute) by using a drudgery-reducing device.^[20]

Marianne stal , a physiotherapist from Sweden did postal study on young females with milking and non milking job and stated that milking is high risk job for young females.^[28]

Ji-Hyuk Park, Hyun-Sul Lim, Kwan Lee did study on Work-Related Musculoskeletal Symptoms Among Dairy Farmers in Gyeonggi Province, Korea and concluded that milking four or more hours a day was substantially connected with low back WMS, and milking hours enhanced low back pain. With training, low back WMS was greatly decreased. We hope that WMS in dairy farmers will receive more attention and be the focus of further research.^[29]

Surabhi Singh did study on Work Load of Farm Women in Livestock Activities and Their Musculoskeletal Disorders Symptoms and concluded that practically every kind of livestock activity required active participation from farm women. For the majority of farm women, collecting dung and fodder was considered a difficult task. The majority of farm women reported having musculoskeletal diseases including symptoms of back pain, shoulder discomfort, and neck pain. Farm women experienced pain in many body parts when caring for cattle. This study suggests health education on common posture alteration and the early adoption of ergonomics interventions with appropriate understanding among farm women. It

is advised that corrective measures be put into place and closely observed in order to reduce morbidity from musculoskeletal problems. ^[30]

S.J. Patel did study on Involvement of Farm Women in Decision making Regarding Dairy Farming in Junagadh District of Gujarat State and concluded that majority of farm women participated more in decision-making related to management, feeding, milking, and milk products, but their involvement in general and health care decisions should be moderate in the dairy industry. ^[31]



SIGNIFICANCE OF RESEARCH

The profession of milking is practiced internationally. India is an agricultural nation. For dairy producers, animal husbandry is the foundation of their agricultural profession. It helps them pay for their everyday bills and provides them with cash flow stability. Gujarat is the most productive state in India in terms of milk production. Based in Gujarat's Banaskantha district, Banas Dairy (Banaskantha District Cooperative Milk Federation, Palanpur) is the leading milk producer in Asia. The milking industry in Gujarat is booming right now. The Banaskantha district is renowned for its involvement in the dairy industry. The milking industry needs a large number of flatfeet. Avoid the squatting position and overload that might cause pain in the musculoskeletal system in female milk workers. Large flatfeet Stoop squatting position resulted in damage to the spine as well as pain, tingling, and numbness in the lower limbs. Once the radicular pain in the milking females has been identified, treatment, prevention, and management relating to postural guidelines can be provided. Many female farmers are compelled to sell their livestock after giving up milking because of excruciating radicular pain. In order to protect our milking industry and its economy, milking ladies should not quit their jobs because of radicular pain; instead, they should use the newest technology and adopt healthier postures. This study focuses on difficulties associated to milking with radicular discomfort in female farmers who are linked to milking. This work may expand the scope of subsequent research using milking females.

METHODOLOGY

Study design : Observational study

Study settings : Milking female farmers of Banaskantha region & physiotherapy center of palanpur

Sampling method : Random sampling method

Statistical tests : One way ANOVA, Pearson Correlation Coefficient

Level of Significance $P \leq 0.05$

According to inclusion criteria 323 subjects have been taken in the study.

Sampling Criteria :

Inclusion criteria:

- Willingness to participate
- Only female farmers
- Pain radiating from lower lumbar back area to lower limb.
- Age group: 30 to 50 years
- Working at least 1 hour /two times /A Day
- Patient with SLR positive

Exclusion criteria:

- Any previous musculoskeletal injury
- Upper back pain
- Any female farmer using stool for milking
- Plantar fasciitis
- Any Congenital deformity

- Any neurological disorders.
- Pregnancy
- Soft tissue injury or swelling in any part of body.
- Any recent fracture or injury.

Operational definition:

BMI: It is person's weight divided by the square of height in meters. $\text{Weight (kg) / height (m)}^2$.

Data collection tools:

1. Assessment form
2. Consent form
3. Data collection sheet
4. Pen, pencil, eraser, paper
5. Weighing machine
6. Stadiometer (height measurement scale)
7. sciatica bothersome Ness index

OUTCOME MEASURE:

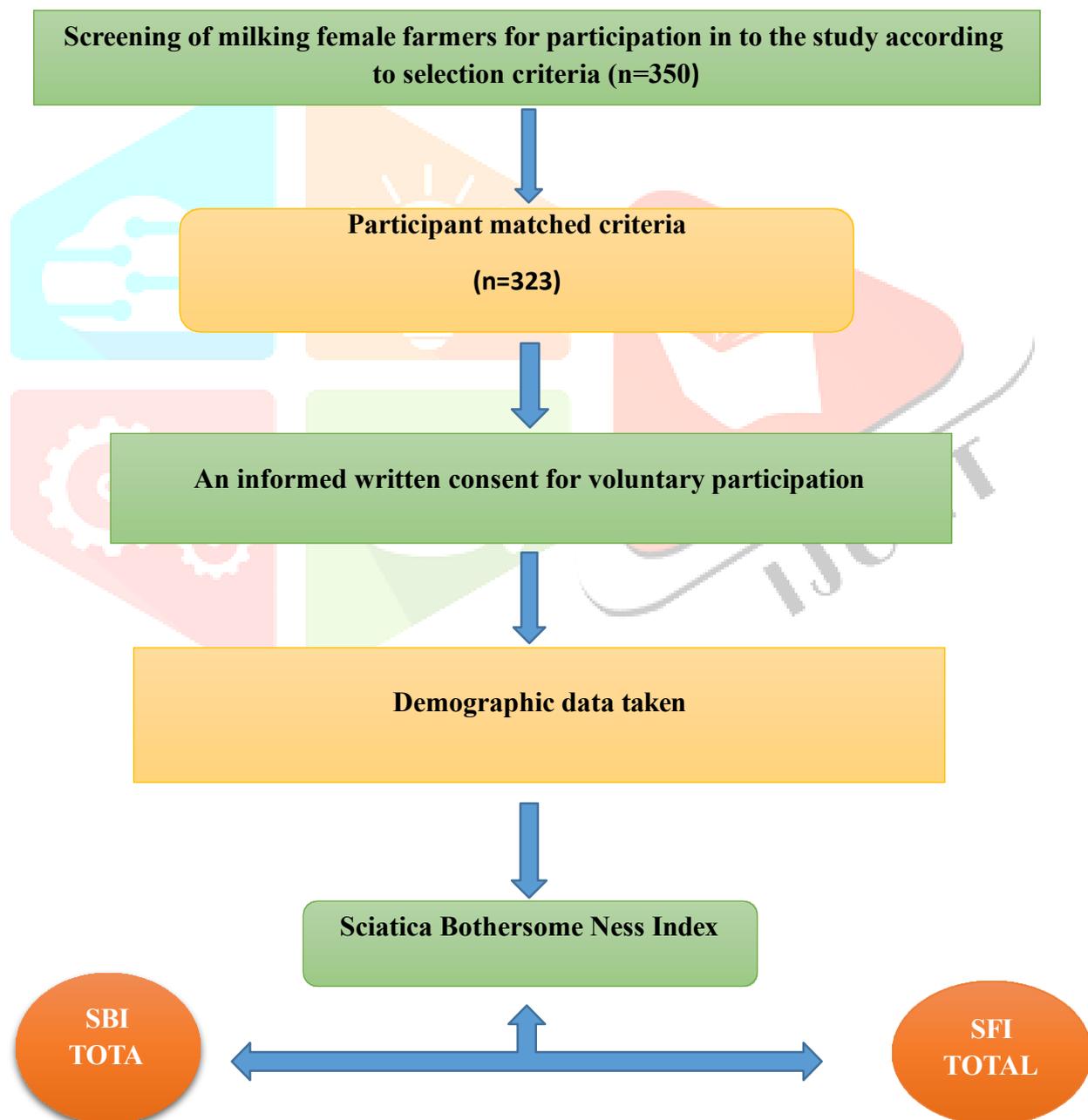
Sciatica bothersome Ness Index:

SBI total

SFI total

7.8: Data collection procedure:

I first made contact with a number of the Banaskantha region's villages as well as physiotherapy center in Palanpur. I urged female farmers' patients who had peripheral nerve radiculopathy and positive SLR tests linked to the milking industry to enroll in the research. I looked up the population's inclusion and exclusion criteria. I gave them the rundown on the study and told them that the milking female farmers were invited to participate. Following that, a selection of participants was made.



I collected demographic information once the informed consent form was signed, and then I began the operation. To verify BMI, I took measurements of their height and weight. I made a note of the number of hours and times they milked each day after asking them. I questioned them about quitting their jobs milking because of radicular pain.

I recorded the type of help they receive. I've described the steps involved in filling out the sciatica bothersome Ness index.



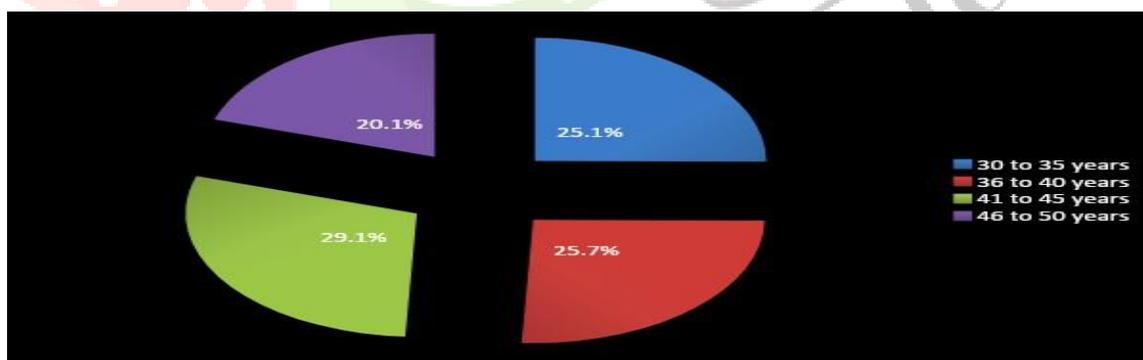
RESULTS

Descriptive statistics:

Table 1: Age group wise Number and their Percentage of study Subjects (N=323)

Age groups	Number	Percentages
30 to 35 years	81	25.1
36 to 40 years	83	25.7
41 to 45 years	94	29.1
46 to 50 years	65	20.1
Total	323	100.0

Out of 323 subjects, 81 (25.1%) were belonging to age from 30 to 35 years, 83 (25.7%) were from 36 to 40 years, 94 (29.1%) were from 41 to 45 years and 65 (20.1%) were from 46 to 50 years.



Graph 1: Age groups, Numbers, Percentage

Table 2: Assistance wise distribution

Assistance	Number	Percentages
Full assistance	19	5.9
Moderate assistance	77	23.8
No assistance	227	70.3
Total	323	100.0

Out of 323 subjects, 19 (5.9%) were having requirement of full assistance, 77 (23.8%) were having requirement of moderate assistance and 227 (70.3%) were not having requirement of any assistance.

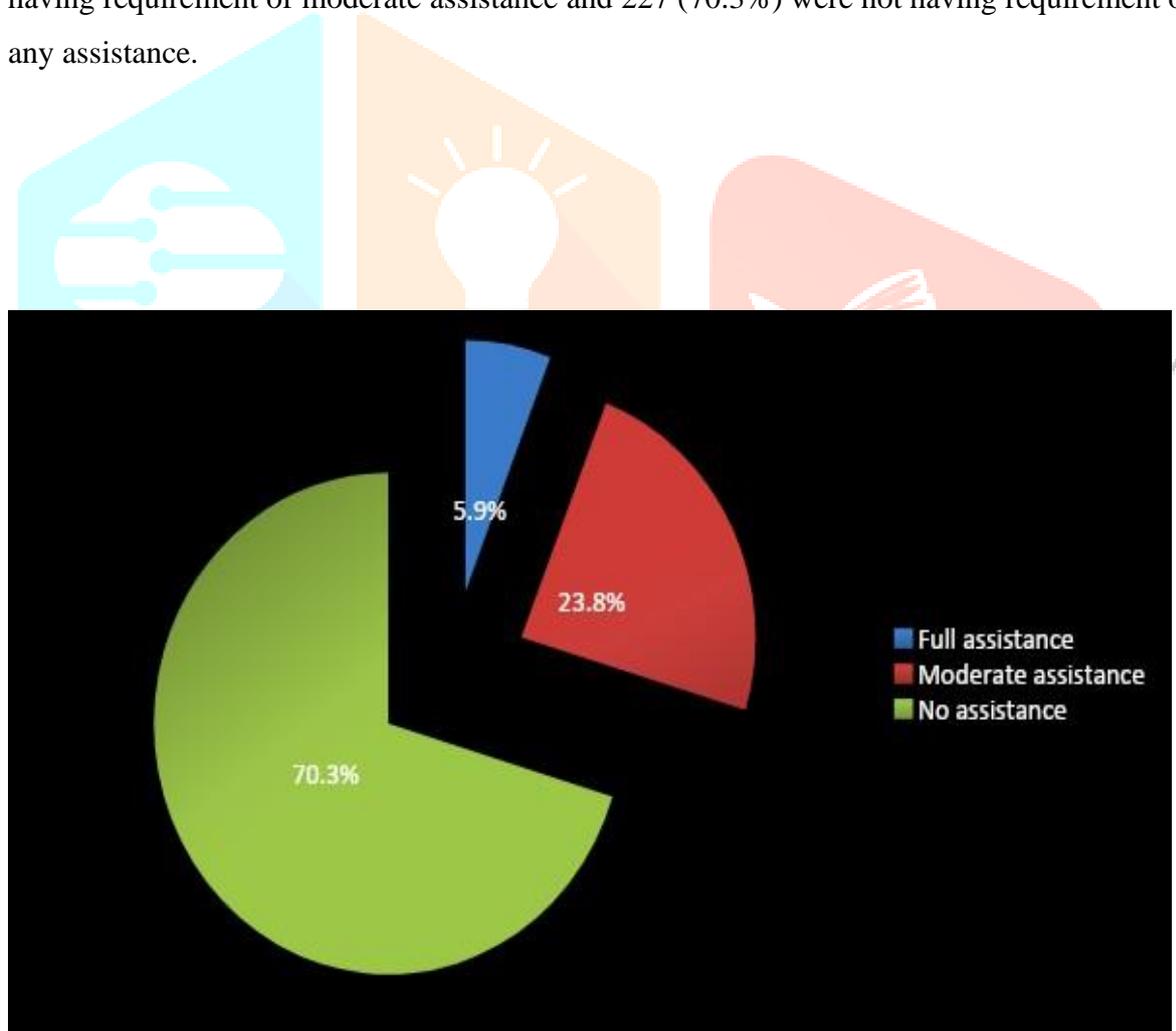
**Graph 2: Assistance wise distribution**

Table 3: Demographic profile of study Subjects (N=323) Parameters wise distribution

Parameters	Mean	SD
Age	40.25	5.69
Weight (kg)	58.51	7.48
Height (cm)	156.04	6.52
BMI kg/m ²	24.01	2.50
SBI TOTAL	6.89	2.89
SFI TOTAL	6.76	2.92

Mean age of study subjects was 40.25 ± 5.69 years, mean weight of study subjects was 58.51 ± 7.48 kg, mean height of study subjects was 156.04 ± 6.52 cm, mean BMI was 24.01 ± 2.50 kg/m², mean SBI score was 6.89 ± 2.89 and mean SFI score was 6.76 ± 2.92 .

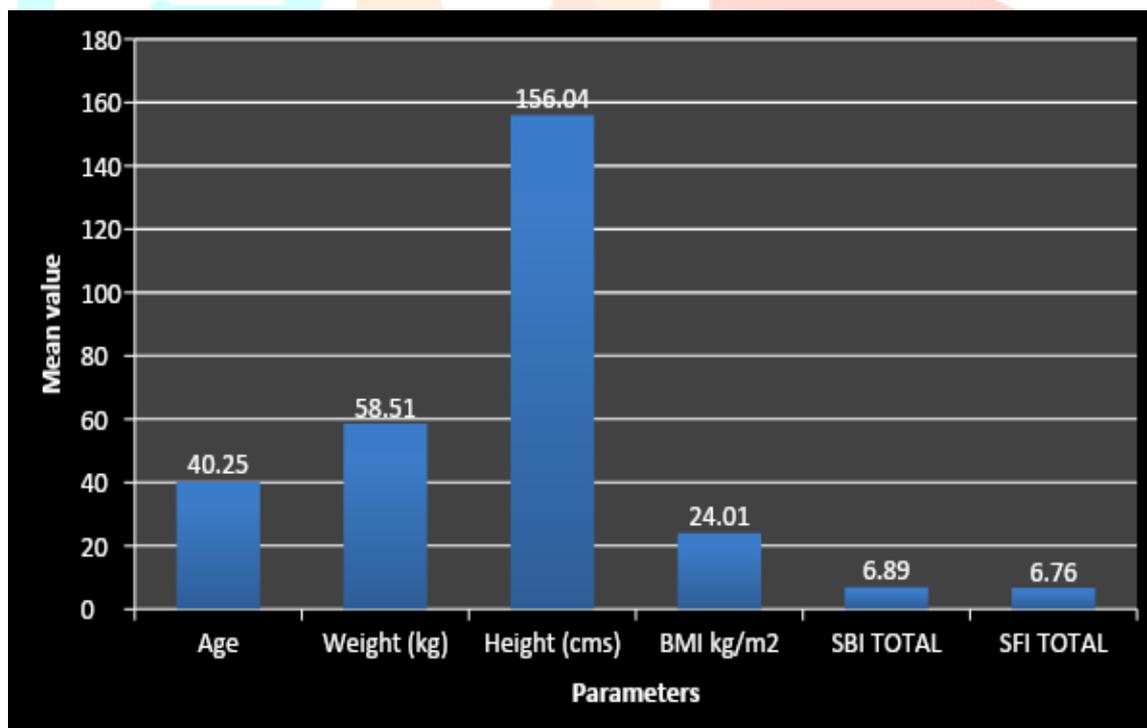
**Graph 3: Demographic profile of study Subjects (N=323) Parameters wise distribution**

Table 4 Age group and SBI Total score wise distribution

Age groups	Number	SBI score		95% CI		P Value
		Mean	SD	Lower	Upper	
30 to 35 years	81	5.56	2.42	5.02	6.09	≤ 0.001*
36 to 40 years	83	6.39	2.10	5.93	6.84	
41 to 45 years	94	6.91	2.48	6.41	7.42	
46 to 50 years	65	9.14	3.52	8.26	10.01	

Level of Significance $P \leq 0.05$, * Significant, ** Non-Significant

Mean SBI score was high in study subjects with age of 46 to 50 years (9.14 ± 3.52) followed by study subjects of 41 to 45 years (6.91 ± 2.48), subjects of 36 to 40 years (6.39 ± 2.10) and least in subjects of 30 to 35 years (5.56 ± 2.42). Statistically, significant difference was observed in SBI score among study subjects with various age groups.

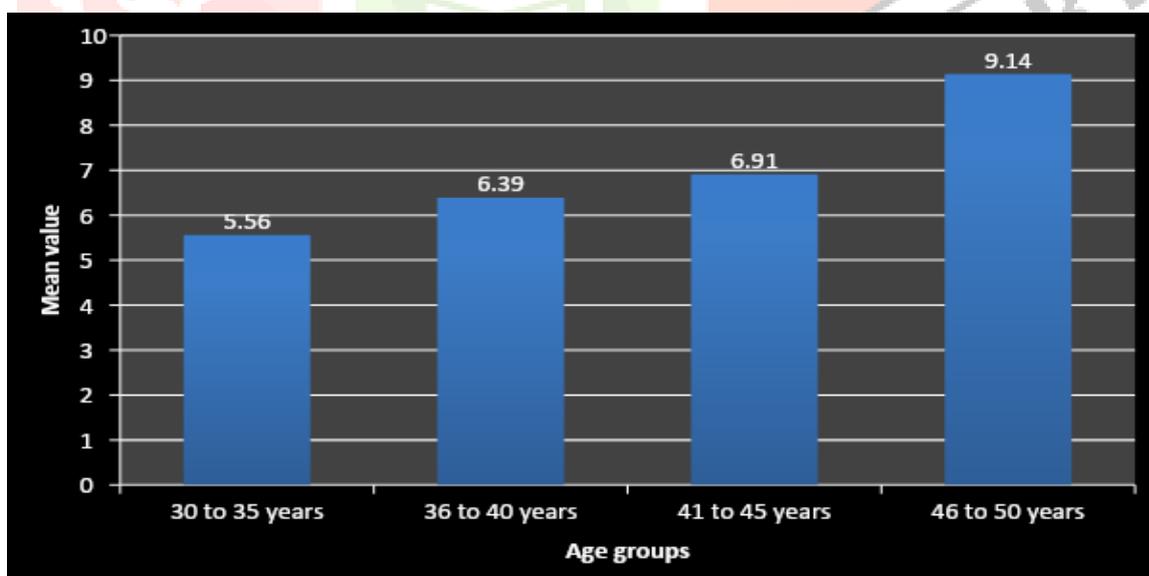
**Graph 4: Age group and SBI Total score wise distribution**

Table 5: Age group and SFI Total score wise distribution

Age groups	Number	SFI Score		95% CI		P Value
		Mean	SD	Lower	Upper	
30 to 35 years	81	5.57	2.38	5.04	6.10	≤ 0.001*
36 to 40 years	83	6.41	2.31	5.90	6.92	
41 to 45 years	94	6.73	2.66	6.19	7.28	
46 to 50 years	65	8.72	3.59	7.83	9.61	

Level of Significance $P \leq 0.05$, * Significant, ** Non-Significant

Mean SFI score was high in study subjects with age of 46 to 50 years (8.72 ± 3.59) followed by study subjects of 41 to 45 years (6.73 ± 2.66), subjects of 36 to 40 years (6.41 ± 2.31) and least in subjects of 30 to 35 years (5.57 ± 2.38). Statistically, significant difference was observed in SFI score among study subjects with various age groups.

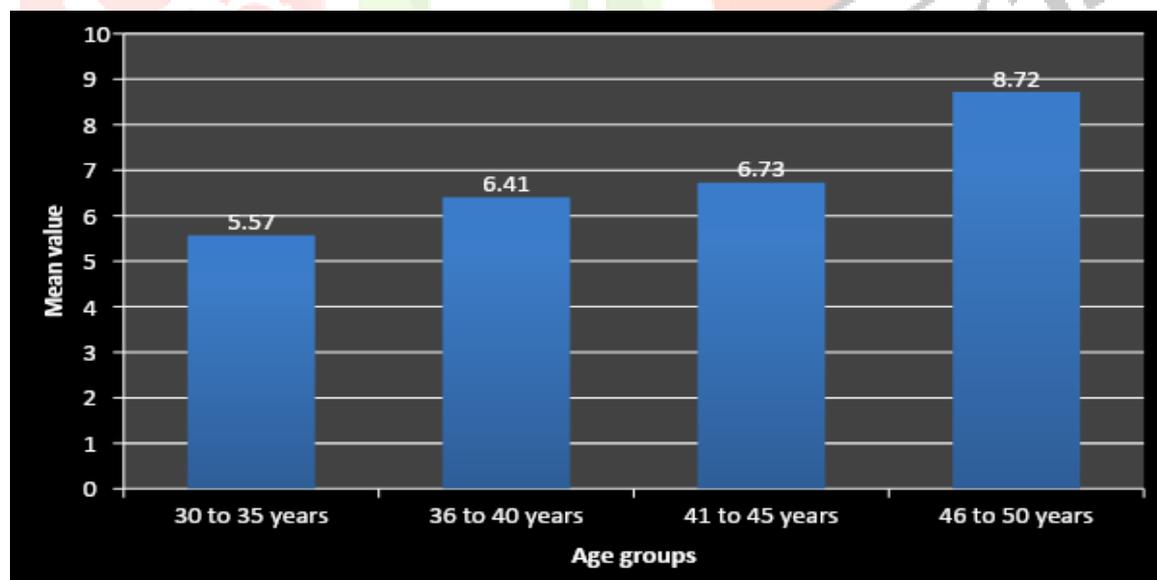
**Graph 5: Age group and SFI Total score wise distribution**

Table 6: Correlation wise distribution with SBI Score

Parameters	r Value	P Value
Age	0.401	≤ 0.001*
Weight (kg)	0.461	≤ 0.001*
Height (cms)	0.365	≤ 0.001*
BMI kg/m ²	0.255	≤ 0.001*

Level of Significance $P \leq 0.05$, * Significant, ** Non-Significant

Statistically, positive significant relation was observed in age, weight, height and BMI with SBI score.

Table 7: Correlation wise distribution with SFI Score

Parameters	r Value	P Value
Age	0.345	≤ 0.001*
Weight (kg)	0.433	≤ 0.001*
Height (cm)	0.342	≤ 0.001*
BMI kg/m ²	0.238	≤ 0.001*

Level of Significance $P \leq 0.05$, * Significant, ** Non-Significant

Statistically, positive significant relation was observed in age, weight, height and BMI with SFI score.

DISCUSSION

The goal of the study was to determine how female farmers in the Banaskantha region's traditional milking posture affected their ability to manage peripheral nerve radiculopathy in their lower limbs. We also sought to find the relationship between the total sciatica bothersome Ness score and the total sciatica frequency index according to age groups. Additional research conducted on dairy farmers demonstrates a noteworthy correlation between their labor-intensive work and musculoskeletal pain in several body regions.

In 1996, Marianne Stal wrote a systemic review study discussing the high risk nature of milking as a career for young girls. 161 ladies who milked cows on a regular basis. Just 26 (16%) do not report any musculoskeletal issues. 136 people (84%) reported having discomfort in various loco motor system locations at some point in the previous 12 months. ^[28]

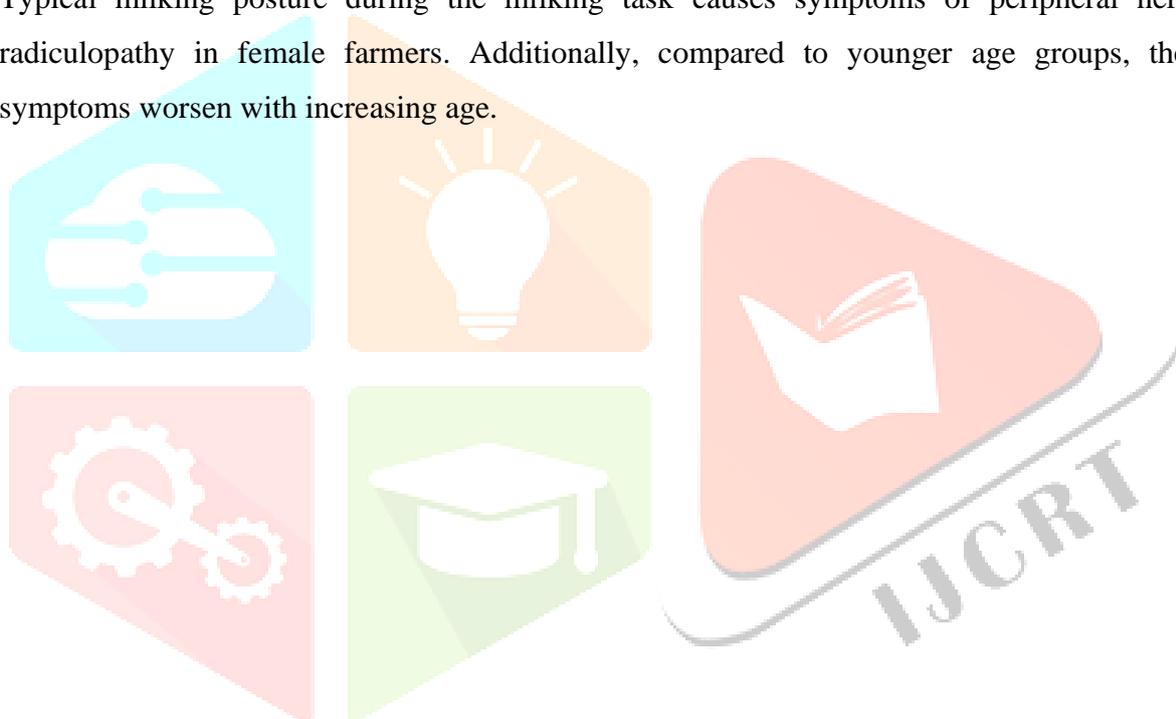
A systemic review found that using a "pihri" as opposed to the conventional approach (which involves sitting) is much more successful for extracting milk. It helps lower human labor costs, alleviate physical discomfort, and boost productivity. It facilitates a shift in work posture from squatting to sitting; the addition of wheels facilitates mobility and lessens the risk of musculoskeletal issues during activity. ^[20]

We have included milking female farmers with sciatica uncomfortable test results for SLR in our study. They described their symptoms and frequency using the sciatica bothersome Ness Index. A total of 323 female farmers were selected through the application of inclusion and exclusion criteria. We discovered that the majority of study participants experienced back and leg pain when sitting to standing. In this study, we discovered that the SBI and SFI totals increased as the age group grew. Additionally, we observed that the majority of the female farmers had heel and knee pain. Ankle and thumb aches complain. The majority of female farmers work alone when milking cows.

CONCLUSION

In this study, we found that the traditional milking posture increases the proportion of peripheral nerve radiculopathy symptoms in milking female farmers. Additionally, we have seen a considerable increase in the SFI and SBI total scores as the age group of female farmers has grown.

Typical milking posture during the milking task causes symptoms of peripheral nerve radiculopathy in female farmers. Additionally, compared to younger age groups, their symptoms worsen with increasing age.



LIMITATIONS OF THE STUDY

- In this study only milking female farmers have been taken to participate, as there are limited male farmers doing milking in the Banaskantha region.
- Sample size is less due to time constraint.

FUTURE RECOMMENDATIONS

- In future study researcher can study on upper limb radicular pain among milking female farmers.
- They can focus on treatment aspect of peripheral nerve radiculopathy of milking female farmers.
- Comparative study between male and female doing milking job can be done in future studies.
- Comparative study between workload during advance technology uses and traditional milking method use among female doing milking job can be done in future studies.

REFERENCES

1. Rajendran K, Mohanty S. Dairy co-operatives and milk marketing in India: Constraints and opportunities. *Journal of Food Distribution Research*. 2004;35(2):34-41.
2. Landes M, Cessna J, Kuberka L, Jones K. India's dairy sector: Structure, performance, and prospects.
3. Gulati A, Juneja R. White Revolution in India.
4. CHAUDHARI N, MINAMPATI DV. Influence of Dairy co-operatives in Rural Development in India: a case study of Banas Dairy, Banaskantha district, Gujarat. *The journal of contemporary issues in business and government*. 2021 Apr 30;27(2):1131-42.
5. Patel SJ, Kumar R, Patel AS, Patel NR, Parmar VN. Involvement of farm women in decision making regarding dairy farming in Junagadh district of Gujarat state. *Indian Journal of Hill Farming*. 2017;30(1).
6. Region D, Nadu T, Kendra KV. Other Publications of the Directorate
7. Chayal K, Dhaka BL, Poonia MK, Tyagi SV, Verma SR. Involvement of farm women in decision-making in agriculture. *Studies on Home and Community Science*. 2013 Apr 1;7(1):35-7.
8. Rangnekar S. Women in livestock production in rural India.
9. https://www.researchgate.net/figure/Illustration-of-the-three-hand-milking-techniques-compared-in-the-hand-milking-technique_fig2_40873287
10. https://www.pashudhanpraharee.com/milking-methods-in-dairy-cow-in-india/#google_vignette
11. <https://scroll.in/article/1038709/gujarats-model-dairy-industry-once-gave-the-nation-amul-but-today-is-struggling-to-survive>

12. https://deshgujarat.com/2023/07/24/banas-dairy-announces-20-27-percent-pay-hike-for-milk-producers-worth-rs-1952-crore/#google_vignette
 13. https://www.linkedin.com/posts/banas-dairy-6b334423a_our-dairy-farmer-in-banaskantha-gujarat-activity-7119906852896727040-y6RC
 14. <https://www.gjoe.org/papers/942.pdf>
 15. <https://www.youtube.com/watch?v=7MGjMQy0RRM>
 16. Alexander CE, Varacallo M. Lumbosacral Radiculopathy–Statpearls–NCBI Bookshelf. StatPearls [Internet]. Treasure Island (FL). 2019.
 17. Coster S, De Bruijn SF, Tavy DL. Diagnostic value of history, physical examination and needle electromyography in diagnosing lumbosacral radiculopathy. *Journal of neurology*. 2010 Mar;257:332-7.
 18. Tarulli AW, Raynor EM. Lumbosacral radiculopathy. *Neurologic clinics*. 2007 May 1;25(2):387-405.
 19. Kennedy DJ, Noh MY. The role of core stabilization in lumbosacral radiculopathy. *Physical Medicine and Rehabilitation Clinics*. 2011 Feb 1;22(1):91-103.
 20. Sharma A, Tanwar PS, Singh S. Use of Improved tool (Revolving Pihri) for milking of dairy animals by farm women.
 21. Toğrol E, Çolak A, Kutlay M, Saraçoğlu M, Akyatan N, Akin ON. Bilateral peroneal nerve palsy induced by prolonged squatting. *Military medicine*. 2000 Mar 1;165(3):240-2.
 22. Murphy DR, Hurwitz EL, Gerrard JK, Clary R. Pain patterns and descriptions in patients with radicular pain: Does the pain necessarily follow a specific dermatome?. *Chiropractic & osteopathy*. 2009 Dec;17:1-9.
 23. Keith LM, Arthur FD, Anne MR. A. Clinically Oriented ANATOMY. Seventh.
 24. Coster S, De Bruijn SF, Tavy DL. Diagnostic value of history, physical examination and needle electromyography in diagnosing lumbosacral radiculopathy. *Journal of neurology*. 2010 Mar;257:332-7.
-

25. Serdyuk V. Scoliosis and Spinal Pain Syndrome: New understanding of their origin and ways of successful treatment. Byword Books Private Limited; 2013 Dec 10.
26. Farny J, Drolet P, Girard M. Anatomy of the posterior approach to the lumbar plexus block. *Canadian journal of anaesthesia*. 1994 Jun;41:480-5.
27. Vloka JD, Hadžic A, April E, Thys DM. The division of the sciatic nerve in the popliteal fossa: anatomical implications for popliteal nerve blockade. *Anesthesia & Analgesia*. 2001 Jan 1;92(1):215-7.
28. Stål M, Moritz U, Gustafsson B, Johnsson B. Milking is a high-risk job for young females. *Journal of Rehabilitation Medicine*. 1996;28(2):95-104.
29. Park JH, Lim HS, Lee K. Work-related musculoskeletal symptoms among dairy farmers in Gyeonggi Province, Korea. *Journal of Preventive Medicine and Public Health*. 2010;43(3):205-12.
30. Singh S. Workload of farm women in livestock activities and their musculoskeletal disorders' symptoms. *International Journal of Livestock Research*. 2017;7(12):242-51.
31. Patel SJ, Kumar R, Patel AS, Patel NR, Parmar VN. Involvement of farm women in decision making regarding dairy farming in Junagadh district of Gujarat state. *Indian Journal of Hill Farming*. 2017;30(1).
32. Chauhan D. Impact of age and gender on postural stress of dairy workers. *African journal of agricultural research*. 2015 Jan 29;10(5):384-93

Sciatica Bothersomeness Index

	Not Bothersome		Somewhat Bothersome				Extremely Bothersome	
	0	1	2	3	4	5	6	
Leg Pain								
Numbness or tingling in the foot or groin								
Weakness in the leg or foot								
Back or leg pain while sitting								

SBI Total

Sciatica Frequency Index

	Not at all	Very rarely	A few times	About half the time	Usually	Almost always	Always
Leg Pain							
Numbness or tingling in the foot or groin							
Weakness in the leg or foot							
Back or leg pain while sitting							

SFI Total