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## Exploring the lac bangle-making practices of artisans in the Muzaffarpur District of Bihar

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#### Abstract

India is the land of natural resources and lac is one of the natural products and in forests the form of raw material. In the present scenario, lac is generally used in home accessories decorative items and fashion accessories like lac bangles, and jewellery. Lac bangle refers to the ornament purpose of women who wear it on their hands. The Lac bangle production system is a small-scale enterprise where most of the rural people are engaged and sustained their livelihood. Lac bangle production system is carried out all over the country and makes its identity in the Indian economy. Muzaffarpur in a Bihar state is more popular for bangle production in an unorganised way. The present study explored the activities of artisans and their characteristics who engaged in lac bangle enterprise. The study was conducted in the Muzaffarpur district of Bihar state, where only two lac bangle enterprises were selected using purposively sampling. A sample of 120 lac bangle artisans was selected randomly. Information was gathered using a self-structured interview schedule. The result of the study was found most of the respondents belonged to the adult age group i.e. 30-40 years and also 53 percent of respondents were found illiterate whereas regarding posture adopted during each activity most of the respondents i.e. 45 percent were working in a sitting position. Therefore, it can be concluded lac bangle workers do all the work in very awkward posture and are prone to various occupational problems.

**Keywords:** Lac Enterprise, artisans, occupational problems, work environment, posture

#### Introduction

India is a traditional and culturally dominated country where a lot of skilful work has been done unorganised way. Lac bangle making is such type of work which has been done by trained workers called artisans. Locally, lac bangle is known as lahathi and it is produced in various parts of the country such as Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Mumbai etc. The Lac bangle is an ornament worn in the hands of all Indian married women representing the identity of Indian culture from Bihar state and also other places.

The term "Lac" has derived from the Sanskrit word "Laksha" meaning a hundred thousand and is suggestive of the large number of insects involved in its production. The lac insect (*Kerriallacca*) found in nature secretes lac with the help of host plants like Palas (*Butea monosperma*), Kusum (*Schleicheraoleosa*), Ber (*Ziziphus mauritiana*), Khair (*Acacia catechu*), etc. The main lac-producing states in India are Chhattisgarh, Jharkhand, Madhya Pradesh, West Bengal, Uttar Pradesh, Orissa, Maharashtra and Gujarat. Chhattisgarh ranks 1<sup>st</sup> among the states followed by Jharkhand, Madhya Pradesh, Maharashtra and West Bengal. These five states contribute around 95 % of the national lac production. Nearly 75-80% of the finished product is exported and only a small portion nearly 20 to 25 % is consumed within the country (Chatopadhyay, 2011) [2]. Lac is a natural product and has multipurpose uses in the manufacture of glazed paper, printing and waterproofing inks, lac bangles, dry mounting tissue paper, dental plates and optical frames. Lac is mostly preferred as a soothing effect when worn in the form of a lac bangle (Lahathi) and does not cause infections or irritations as in the case of plastic, glass or metal bangles.

Lac bangle Industry in India comes under small enterprises and plays an important role in our Gross Domestic Product (GDP). It is carried out all over the country especially Jaipur, Jodhpur, Udaipur, Uttar Pradesh, Odisha, West Bengal, Jharkhand and Bihar. West Rajasthan is known as the origin place of the lac bangle in India. Lakhera or laheras are the hereditary artisan community involved in lac bangle making in Jharkhand, Rajasthan, Bihar, West Bengal, Odisha, Chattisgarh, Andhra Pradesh, Telangana, Madhya Pradesh and Maharashtra. In this way Bihar is a state of India where the Lahathi bangle makers are mostly from the districts of Muzaffarpur, Laheriasarai, Madhubani and Lakhisarai (Mishra and Bhatnagar, 2013) [3].

A large number of the rural population have been engaged in the production of lac bangles and supplement their family income.

Meanwhile, Muzaffarpur is one of the most centrally located districts of Bihar, which has been known nationwide for its lac products, especially lac bangles and is the second largest producer in the country. A huge number of the rural population have been engaged in the production of lac bangles for more than 40 years. The lahthi making is done in Muzaffarpur in various places like Kanhauli, Indra colony, Ratwara, Bela and Bakhari. The Lahti manufacturing at Rampur Bakhari cluster of Muzaffarpur is one of the oldest and most prestigious industrial clusters in India. Artisans inherited the skill of lac bangles making (Lahti) from their ancestors and sustain their livelihood.

The process of making Lac bangle (Lahti) is complex and requires a high degree of precision. It has been passed through various stages and each stage requires skilled workers. Firstly Lac (available as coins, blocks, or pieces) is melted with limestone to prepare the base or dough as they call it. Lac dough, which is the basic raw material is rolled before colouring and the coloured lac is applied to it. It is then pressed with a flat wooden piece to make long thin stiff tubes and fix same on the base of the wire bangle. After this, the bangle is slightly heated to attain the proper shape by rolling over a long round tool made of wood. Bangles are again heated before embellishing. Semi-precious stones, glass beads, small broken mirror pieces etc are heated over a tin plate kept on a small burner. The base of the stones gets heated and thus easily melts the lac surface on which they are placed and stick thereafter cooling. They are picked up one at a time and stuck on the bangle. After that packaging and storage work has been done by workers. During lac bangle production various tools are used namely Khali, hatta, chimti/spatula, cutter, rolling rod etc. Lac bangle artisans are traditional craftsmen and they do all the tasks manually at the workplace. Due to their low awareness and demand for high productivity, lac bangle artisans conduct these various duties in no proper way, which occupies most of their time and energy. Therefore, behind this beautiful ornament is the unseen hard work of many workers.

The main purpose of this study is to highlight the distribution of time for each activity and adopted posture during lac bangle production. Studies were carried out in two selected lac bangle enterprises with the aim of working duration and their adopted position in work activities during lac bangle production in enterprises. The data gathered for analysis of work duration and their adopted posture was done using a self-structured checklist.

The bangle industry in India holds an important place not only from an economic point of view but even from a cultural and religious perspective. This bright-coloured accessory depicts the sentiments of a sacrament that is considered sacred. Therefore, it is essential to protect the craftsmen who mould them as well. The study emphasized the aspects of the lac bangle enterprise and occupational problems of artisans in the Muzaffarpur district of Bihar state.

### Methodology

The study was conducted in the lac bangle production enterprise in Muzaffarpur district of Bihar state. A descriptive research design was planned to achieve the objective. For the study, two enterprises were selected namely shagun lahathi

bhandar at Kachi-pakki road and beauty lahathi cluster at Ratwara in Muzaffarpur. A total number of 120 respondents was taken for the study. The data was gathered using the self-structured interview schedule and recorded various work activities through the checklist. The data were analysed in the form of frequency and percentage.

### Results and Discussion

#### Assessment of Socio-demographic Profile of Artisans Engaged in Lac Bangle Enterprise

The study explored the background characteristics of the population who engaged in lac bangle enterprise. The characteristics such as age, religion, education and family size are considered as independent variables of the study.

**Table 1:** Percentage Distribution of Population According to Age

Sl. No.	Age	N	(%)
1.	20-30 year	48	40
2.	30-40 year	54	45
3.	40-50 year	12	10
4.	Above 50 year	06	05

Table 1 indicated the result regarding the age of the respondents 45 per cent were from the age group of 30-40 years followed by 40 per cent from the age group of 20-30 years whereas around 10 percent showed from the age group of 40-50 years and remaining only 5 percent were coming from the age of above 50 years.

**Table 2:** Percentage Distribution of Population According to Education

Sl. No.	Education	N	(%)
1.	Illiterate	64	53.3
2.	Literate	42	35
3.	10 <sup>th</sup>	10	8.3
4.	12 <sup>th</sup>	04	3.3

The data revealed that half of the respondents i.e., around 53.3 percent belonged to the illiterate category whereas 35 percent were literate and 8.3 percent of respondents have completed 10<sup>th</sup> class education and the remaining 3.3 percent were in the 12<sup>th</sup> pass education category.

**Table 3:** Percentage Distribution of Population According to Marital Status

Sl. No.	Marital Status	N	%
1.	Married	85	70.83
2.	Unmarried	20	16.66
3.	Widow	10	8.33

Most of the respondents i.e. 70.83 per cent were married followed by 16.66 percent were unmarried while 8.3 percent were widows and the remaining 4 percent were divorced.

**Table 4:** Percentage Distribution of Population According to Family Size

Sl. No.	Size of Family	N	(%)
1.	Small (1-3)	76	63
2.	Medium (1-5)	30	25
3.	Large (>5)	14	12

The result showed in context to the size of the family, most of the respondents 63.33 percent were reported as the small-size

family followed by 25 percent were from medium size family and less than 11.66 percent were reported as large-size families.

In the lac bangle enterprise, most of the respondents were in the middle age group i.e. 30-40 years and were married with a family size was found in small on the other hand results regarding education majority of the respondents were seen as illiterate so it can be concluded that low level of education was affecting their background status of lac bangle artisans.

Illiterate was the reason that most respondents got married and engaged in the unit for their earnings to family livelihood. Kuppuswamy scale is a composite score of education and occupation of the head of the family along with the monthly income of the family, which yields a score of 5-29 and it classifies families into 5 groups, "upper class, upper middle class, lower middle class, upper lower and lower socio-economic class".

**Table 5:** Socio Economic Status of lac bangle artisans

Sl. No.	Socio-Economic Status	Categories	N	%	Mean	SD
1.	Upper (I)	20-29	03	2.5	±12.13	3.48
2.	Upper Middle (II)	16-25	6	05		
3.	Lower Middle (III)	11-15	84	70		
4.	Upper Lower(IV)	5-10	20	16.66		
5.	Lower (V)	<5	07	5.83		

Table 5 depicts information regarding the socio-economic status of respondent's majority of respondents i.e. 70 percent belonged to the lower middle category followed by 16.66 percent in the upper lower category and very few respondent's 2.5 percent were in the upper-class category. The mean and SD values of socioeconomic status were ±12.13 and 3.48 respectively.

#### Assessment of Work Activities Profile of Artisans Engaged in Lac Bangle Enterprise

In the lac bangle-making system, artisans play a significant

role in the various activities of lac bangle production. The lac bangle-making process passes systematically and each step has its duty. The lac bangle-making process was divided into seven operations and each operation has an important role for lac bangle production. The first operation was stirring the lac liquid in a skillet on heat followed by the second spreading the lac liquid on wood block whereas the third operation was cutting the solid lac in proper size with the fourth melting the solid lac block on heat and the fifth was rolling melted lac on board after that sixth refers to decorating work by beads, stone etc. and final operation was packaging and storage.

**Table 6:** Distribution of Work Activities Duration Among Lac Bangle Artisans

Activities Time (In min.)	Stirring the lac liquid N (%)	Spreading lac liquid on wood block N (%)	Cutting the solid lac into the proper size N (%)	Melting the solid lac block on heat N (%)	Rolling melted lac on desk N (%)	Decorating with beads, glass & stone and finishing work N (%)	Packaging and storing N (%)
0 -15	12 (10)	56 (47)	72 (60)	05 (04)	20 (17)	07 (06)	08 (07)
15- 30	15 (12)	20 (17)	19 (16)	28 (23)	68 (57)	10 (08)	14 (12)
30 - 60.	20 (17)	10 (08)	06 (05)	65 (54)	10 (08)	70 (58)	10 (08)
60 - 90	62 (57)	16 (13)	15 (12)	12 (10)	15 (12)	18 (15)	30 (25)
90- 120	11 (09)	18 (15)	08 (07)	10 (09)	07 (06)	15 (12)	58 (48)

Table 6 reveals the results regarding the duration of work for each activity. Findings showed that most of the respondents which were 57 percent, 47 percent and 60 percent reported that the activity of stirring the lac liquid, spreading lac liquid on the wood block and cutting the solid lac in proper size were taking approximately 60 - 90 minute and 0 -15 minute respectively. Moreover, the majority showed in the activities of rolling melted lac on the desk, melting the solid lac block on the furnace, and decorating/finishing work i.e. 54 percent, 57 percent and 58 percent taking around 15 - 30 minutes 30-

60 minutes respectively. Furthermore, in the activities of packaging and storage, most of the respondents which were 48 percent reported was taken 90-120 minutes the time took in completed their work. In this way it could be seen there was a significant variation in the time expenditure pattern among respondents in their activities of lac bangle production. We can say that all the operations in lac bangle production take not a similar time which was taking time more or less in each activity.

**Table 7:** Percentage Distribution of Respondents as per their Adopted Posture in Lac Bangle Production Activities

Activities Adopted posture	Stirring the lac liquid	Spreading lac liquid on wood block	Cutting the solid lac into the proper size	Melting the solid lac block on the furnace by hatha	Rolling melted lac on board	Decorating by beads, glass & stone and finishing work	Packaging and storing	Total N=120
Sitting	-	2	5	10	18	12	7	54(45%)
Squatting	-	-	-	8	14	11	4	37(31%)
Bending	4	2	3	-	-	-	6	15(12%)
Standing	4	-	-	-	-	-	10	14(12%)

Results pertaining to posture adopted during each activity of the lac bangle production system. In the lac bangle production system, each work activity takes various types of positions like sitting, standing bending etc. Posture determines how the work is running smoothly or difficult way. It is also a measuring scale for goodness or harmful to physical health. Prolonged standing, bending or sitting can cause a bad effect on physical health, therefore, the adopted posture during work activity should be neutral. Table 2 result revealed that approximately one-half of the respondents adopted a sitting posture followed by 31 percent were doing work in squatting posture while 12 percent respondents were adopted bending and standing posture for each activity respectively.

Based on result it could be seen that there was a significant variation in adopted posture during each activity of lac bangle production system. More than half of the respondents were doing work in sitting position and prolonged sitting posture that may cause pain in upper back, neck and leg pain. Sitting for long periods without the opportunity to stand up and move around is another way in which employees are exposed to static loading of tissues, primarily in the lumbar areas of the back. It can also affect the upper back, neck and legs. The problem is exacerbated where awkward postures are also present.

The study concluded that there existing on significant variation among the socio-demographic profiles of respondents. The respondents adopted poor posture due to work activities of lac bangle production that cause ill effects on their health in various body parts. Poor posture give a harmful effect on the musculoskeletal system therefore proper attention in the workplace, and working posture to be improved for better physical health of artisans and working environment.

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