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## Gender participation and work station analysis of bead making enterprises

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**Abstract**

Entrepreneurs may be defined as a person responsible for setting up a business or an enterprise. He has the initiative, skill for innovation and who looks for high achievements. He is a catalytic agent of change and works for the good of people. He puts up new green field projects that create wealth, open up many employment opportunities and leads to growth of other sectors. Bead making is one of the small-scale entrepreneurs practiced in Northern western part of Haryana. Mangali, a little known village 12 km from Hisar in Haryana, where work goes on at a feverish pace from dawn to dusk in more than 100 units, producing wooden beads for rosaries for the domestic as well as the export markets. A bead is a small, decorative object that is formed in a variety of shapes and sizes of a material such as stone, bone, shell, glass, plastic, wood or pearl and with a small hole for threading or stringing. Beads range in size from under 1 millimetre (0.039 in) to over 1 centimetre (0.39 in) in diameter. The study was conducted in Mangali village (biggest producers of beads) of Hisar district for studying the gender participation, posture adopted in different activities of bead making process and studying workstation analysis. A well structured pre tested interview schedule was used to collect the data. Data collection was done using checklists and interview schedule.

**Keywords:** entrepreneurs, posture, gender participation, workstation

**Introduction**

Entrepreneurship has been described as the "capacity and willingness to develop, organize and manage a business venture along with any of its risks in order to make a profit. Entrepreneurship is the act of creating a business or businesses while building and scaling it to generate a profit. Entrepreneurs take on the risk to employ themselves. Their ambition to continue their business' growth eventually leads to the creation of new jobs. As their business continues to grow, even more jobs are created. Bead making is one of the small-scale entrepreneur practiced in Northern western part of Haryana. Mangali, a little known village 12 km from Hisar in Haryana, where work goes on at a feverish pace from dawn to dusk in more than 100 units, producing wooden beads for rosaries for the domestic as well as the export markets. Today the village is one of the biggest producers of beads made of sandalwood, red wood, *ber* wood, *shisham* and Ebonite. These beads are exported to countries like Saudi Arabia, Iraq, Iran, Abu Dhabi, France, the UK, and the USA. Mostly, these beads are used for making rosaries for members of different religious communities. Rosaries for Hindus have 108 beads, while those for Muslims have just 100. The rosary beads were earlier carved from sandalwood only. But with the cost of sandalwood skyrocketing, the poorer communities have begun using beads of cheaper materials like redwood, *shisham* and *ber* wood. However, beads meant for export are still made from sandalwood. Bead-making is a laborious task. It keeps the entire family busy throughout the day. Bead making comprises sub activities starting from procurement of wood, chopping of wood, seasoning of wood, bit designing, sharpening blade/Bit, designing Bead, drilling of beads, sieving & sorting beads, coloring/waxing/Buffering, stringing and mala making, 3-Eyed, Bead/ *guru* Bead fixing, tassel fixing, bundle making/*kaudi* forming. The present study was undertaken to assess gender participation and posture adopted in different activities of bead making enterprises and studying workstation analysis and health hazards.

**Methodology**

The present study was conducted in Mangali village (biggest producers of beads) of Hisar district. 10 bead making enterprises were selected and out of these selected enterprises, thirty respondents were selected for studying the gender participation and posture adopted in bead making. A well structured pre tested interview schedule was used to collect the data. Data collection was done using checklists and interview schedule.

## Results

### Gender participation and posture adopted in different activities of bead making enterprises

The information on gender participation and posture adopted in different activities of bead making enterprises has been presented in table 1 & 2. Both male and female were involved in various activities of bead making. Procurement (90%), chopping of wood (81.8%) and seasoning of wood (60%) were done largely by male respondents. Bit designing was done with bit designer mainly by male respondents (78.5%). Majority of male respondents (73.3%) were involved in Sharpening of blade done with blade sharpening machine. Designing of beads was done exclusively by male respondents

(100%) using bit designing machine. Maximum of the male respondents were involved in drilling of beads (46.7%) with bead drill machine. Sieving & Sorting of beads was done by female respondents (73.3%) with sieve/*chhaj*. Coloring/Waxing/Buffering of beads was done largely by male respondents (90.9%) with coloring and polishing machine. Stringing and mala making was done mainly by female respondents (66.6%) with manual string maker, ruler, scissors and needles. 3-Eyed Bead/ guru bead fixing was done cent percent by women with needle, scissor and knotting machine. Tassel fixing (80%) and bundle making (66.6%) was done largely by female respondents

**Table 1:** Gender participation in different activities of bead making enterprises n=30

Activity	Total n=30	Male f(%)	Female f(%)	Both f(%)	Sourcing	Tools/Machinery Used
					At home/ Outsourcing	
Procurement of wood	30	27(90.0)	0	3(10.0)	At home	
Chopping of wood	11 (At home)	9(81.8)	2(18.2)	0	Outsourcing	Chopping machine ( <i>Aara /Aari</i> )
Seasoning of wood	30	18(60.0)	8(26.6)	4(13.3)	At home	-
Bit designing	14 (At home)	11(78.5)	0	3(21.4)	At home/Outsourcing was also made	Bit designer
Sharpening blade/Bit	30	22(73.3)	1(3.33)	7(23.3)	At home	Blade sharpening machine
Designing Bead	5	5(100.0)	0	0	At home	Bit designing machine
Drilling of beads	30	14(46.7)	4(13.3)	12(40)	At home	Bead Drill Machine
Sieving & Sorting beads	30	2(6.67)	22(73.3)	6(20.0)	At home	Sieve/ <i>Chhaj</i>
Coloring/Waxing/Buffering	22	20(90.9)	2(9.09)	-	At home/Outsourcing	Coloring & polishing machine
Stringing and Mala making	30	5(16.66)	20(66.66)	5(16.66)	At home/Outsourcing	Manual string maker, Ruler, Scissors, Needles
3-Eyed Bead/ <i>Guru</i> Bead fixing	8	0	8(100.0)	0	Outsourcing	Needles, Scissors, Knotting tools
Tassel fixing	30	3(10.0)	24(80.0)	3(10)	Outsourcing	Scissors, Knotting tools
Bundle making/ <i>kaudi</i> forming	30	5(16.6)	20(66.6)	5(16.6)	At home / Outsourcing	Knotting tools

\*\*Figures in parenthesis indicate percentages

### Posture adopted

Table 2 reveals the posture adopted in different activities of bead making enterprises. Procurement of wood was done in standing posture. Chopping of wood was done while sitting on stool (100%). Seasoning of wood was done cent percent in squatting and bending posture. Larger numbers of respondents (56.6%) were sharpening the blade in squatting posture. Cent percent respondents were carving the blades in squatting posture. Drilling of beads was done in sitting on floor posture by majority of the respondents (86.6%). Cent percent

respondents were doing it in bending posture. Sieving and sorting was done in squatting posture by all the respondents. Coloring of beads was done in standing and bending posture. Stringing and mala making was done while sitting on floor, sitting on stool in bending posture. 3 eyed bead or guru bead fixing (75%) and tassel fixing (73.3%) was done while sitting on stool. Bundle making was done mainly while sitting on stool/cot (100%) followed by sitting on floor (53.3%) (Table 2).

**Table 2:** Posture adopted in different activities of bead making enterprises n=30

Activity	Total n=30	Floor sitting	Stool/ Cushion/Cot Sitting	Squatting	Standing	Bending
Procurement of wood	30	-	-	-	25(83.3)	5(16.6)
Chopping of wood	11	-	11(100.0)	-	-	-
Seasoning of wood	30	-	-	30(100.0)	-	30(100.0)
Blade Sharpening / Bit designing	30	7(23.3)	6(20.0)	17(56.6)	-	-
Bead carving or designing	5	-	-	5(100.0)	-	-
Drilling of beads	30	26(86.6)	-	4(13.3)	-	30(100.0)
Sieving & Sorting beads	30	-	-	30(100)	-	-
Coloring/Waxing/Buffering	22	-	-	-	30(100.0)	30(100.0)
Stringing and Mala making	30	30(100.0)	30(100.0)	12(40.0)	-	30(100.0)
3-Eyed Bead/ <i>Guru</i> Bead fixing	8	2(25.0)	6(75.0)	-	-	-
Tassel fixing	30	8(26.6)	22(73.3)	-	-	-
Bundle making/ <i>kaudi</i> forming	30	16(53.3)	30(100.0)	8(26.6)	-	-

\*Multiple responses

\*\*Figures in parenthesis indicate percentages.

### Work station checklist

Table 3 reveals the evaluation of workstation as per WISE checklist which has been presented by calculating weighted mean score on 5- point continuum from strongly agree (5) to

strongly disagree (1). Regarding work station checklist, work space allowed full range of movement (3.6), mechanical aids and equipments were available (4.0). Height of the workstation was not adjustable (3.0) however 2 of them had

adjusted as per their convenience otherwise neck bending was the long persisted posture effecting their health. Machinery was fixed and worker was not able to move it according to convenience. Handle of the bead making machine was positioned in a way that worker has to move his wrist minimal (3.8) and movement was minimal above the shoulder level (4.2). Static muscle loading was observed for left hand as worker has to hold wooden pieces with left hand in particular position for longer period of time (2.4). But positive thing about the workstation was that there was no need to fully extend arms while working (4.1). It also eliminated raised elbow (4.2) and raised shoulder (4.0). Workers were working in very small space and were not able to change posture (1.7).

Bead making machine could not be tilted (1.0) and hands were not free of sharp edges (1.0). Armrest was not provided (1.0) which was the biggest constraints in using workstation and leading to sustained MSD. Floor surface was not free of obstacles (1.0). Cushioned floor mats (about 1/2") were provided for the person to work for longer period of time (4.6). All task elements were visible from comfortable position (4.0) and regular servicing /maintenance for mechanical aids, tools, and other equipment (4.4) was done. There was not enough natural light to perform task without stress (1.8) and artificial light was not sufficient to perform the task (2.2). Temperature of the workstation was not comfortable (1.0) and was also very noisy (1.0).

**Table 3:** Work Station Checklist n=30

Work station checklist	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Weighted Mean score
Work space allow for the full range of movement		6(20.0)		24(80.0)		3.6
Mechanical aids and equipments available				30(100.0)		4.0
Height of the workstation adjustable/suitable		6(20.0)	18(60.0)	6(20.0)		3.0
Workstation is designed to reduce or eliminate bending or twisting of the wrist			6(20.0)	24(80.0)		3.8
Workstation is designed to reduce or eliminate reaching above the shoulder				24(80.0)	6(20.0)	4.2
Workstation is designed to reduce or eliminate Static muscle loading	3(10.0)	12(40.0)	15(50.0)			2.4
Workstation is designed to reduce or eliminate Full extension of the arms			6(20.0)	15(50.0)	9(30.0)	4.1
Workstation is designed to reduce or eliminate Raised elbow				24(80.0)	6(20.0)	4.2
Workstation is designed to reduce or eliminate Raised shoulder				30(100.0)		4.0
Workers are able to change posture	12(40.0)	15(50.0)	3(10.0)			1.7
Work surface can be titled or angled	30(100.0)					1.0
Hands and arms are free from the sharp edges on work surfaces	30(100.0)					1.0
Armrest is provided where needed	30(100.0)					1.0
Floor surface flat or free of obstacles	30(100.0)					1.0
Cushioned floor mats provided for employees required to stand for long periods				12(40.0)	18(60.0)	4.6
All task elements visible from comfortable positions			6(20.0)	18(60.0)	6(20.0)	4.0
Regular servicing /maintenance for mechanical aids, tools, and other equipment				18(60.0)	12(40.0)	4.4
There is enough natural light to perform the task without stress	15(50.0)	6(20.0)	9(30.0)			1.8
Availability of artificial light to ease the operations during day time	3(10.0)	18(60.0)	9(30.0)			2.2
The workplace temperature is comfortable	30(100.0)					1.0
Workplace is noise free	30(100.0)					1.0

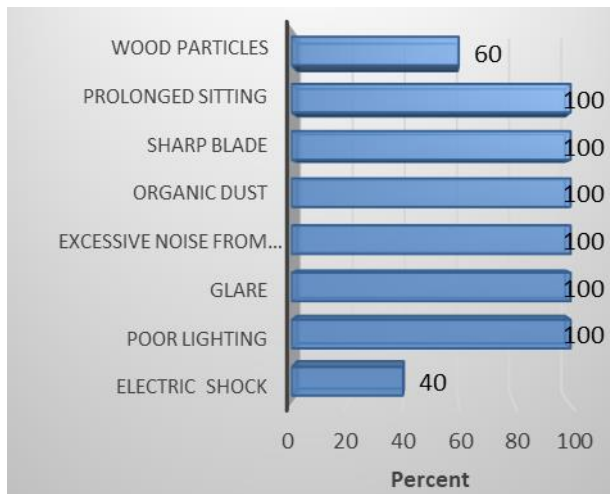
### Health hazards

Health hazards and its causes in bead making are presented in table 4 and 5. Majority of the respondents were aware about the health hazards due to the working conditions in bead making enterprise. Regarding symptoms encountered all the respondents had cuts (100%) followed by eye irritation (90%), itching (70%), muscle pain and discomfort (70%

each). Other symptoms experienced by them were breathlessness (50%), prevalence of asthma (50%), cough (40%) and electric shock (40%). Causes of hazards were poor lighting (100%), glare (100%), excessive noise from drill machine (100%), organic dust (100%) sharp blade (100%) and prolonged sitting (100%), and wood particles (60%) (Fig 1).

**Table 4:** Awareness and symptoms of health hazards encountered at workplace n=30

S. No.	Health hazards	Awareness		Symptoms encountered	
		Yes f(%)	No f (%)	Yes f(%)	No f(%)
1.	Breathlessness	30(100.0)		15(50.0)	15(50.0)
2.	Cough	30(100.0)		12(40.0)	18(60.0)
3.	Sneezing	30(100.0)		6(20.0)	24(80.0)
4.	Prevalence of Asthma	30(100.0)		15(50.0)	15(50.0)
5.	Chest tightness	18(60.0)	12(40.0)	3(10.0)	27(90.0)
6.	Eye irritation	30(100.0)		27(90.0)	3(10.0)
7.	Cataract		30(100.0)		30(100.0)
8.	Itching	30(100.0)		21(70.0)	9(30.0)
9.	Skin irritation	30(100.0)		12(40.0)	18(60.0)
10.	Cuts	30(100.0)		30(100.0)	
11.	Falls/slips/entangled	21(70.0)	9(30.0)	12(40.0)	18(60.0)
12.	Fire/explosions	30(100.0)			30(100.0)
13.	Hearing problems from excess noise	30(100.0)		9(30.0)	21(70.0)
14.	Electric shock	30(100.0)		12(40.0)	18(60.0)
15.	Muscle pain and discomfort	30(100.0)		21(70.0)	9(30.0)



**Fig 1:** Causes of Health Hazard in Bead making

**Table 5:** Causes of health hazards in bead enterprise

S. No.	Causes	Frequency (f)	Percentage
1.	Electric shock	12	40.0
2.	Poor Lighting	30	100.0
3.	Glare	30	100.0
4.	Excessive noise from drill machine	30	100.0
5.	Organic dust	30	100.0
6.	Sharp blade	30	100.0
7.	Prolonged sitting	30	100.0
8.	Wood particles	18	60.0

### Conclusion

Bead making enterprises were micro scale enterprises employing 2-9 male workers in an enterprise. Generally, beads were made from woods of *shisham*, *beri*, *loquat*, *sandal*, *kair*, *keim*, *bakain* and turmeric. Mainly male members were involved in various activities of bead making. However, women's involvement was higher in making of beads. Maximum of the respondents were working for 8 hr getting wages between Rs.200-300/day. Making of beads was carried out for 6-8 hrs with a micro tea break along with lunch break. Bead making was performed generally in sitting posture either on floor or patra (100.0%) in bending posture and also in squatting posture (83.3%). Stringing and mala making, sieving and sorting of beads, 3-eyed Bead/ guru bead fixing, tassel fixing (80%) and bundle making was mainly done by female respondents. Stringing and mala making was done while sitting on floor, sitting on stool in bending posture. 3 eyed bead or guru bead fixing (75%) and tassel fixing (73.3%) was done while sitting on stool. Bundle making was done mainly while sitting on stool/cot (100%) followed by sitting on floor (53.3%) Bead designing, requiring more concentration, was done mainly in squatting posture. It was done continuously for 2-3 hrs in a bending posture. Bead making machines were fixed and could not be adjusted and hands were not free of sharp edges. Armrest was not provided which were the major constraints in using workstation and leading to sustained MSD. Floor surface was not free of obstacles. Light intensity was inadequate as natural as well as artificial light (150-250 lux) was not sufficient to perform the task safely. Major health hazards faced by the respondents were cuts (100%), eye irritation (90%), itching (70%), muscle pain and discomfort (70% each) while drilling beads.

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