

## **Impact assessment of value added tie and dye cotton products**

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**ABSTRACT :** Keeping in mind the charm of real tie and dye products produced at cheaper cost and as an entrepreneurial venture the present study was conducted in 3 villages of Fatehabad district. Total 75 respondents selected randomly for intervention programme on value addition of cotton fabric *i.e.* 25 each from Bhodia Khera, Bhuthan Kalan and Jandli Kalan. Five days intervention programme was organized in each village which included a well blend of rapport building, focus group discussions, expert lectures, literature, charts and demonstrations. Total 8 tie and dye techniques were demonstrated along with dyeing procedures and embellishments techniques. Embellishment techniques were applied on dyed samples namely embroidery, mirror work, *sitara* work and sequencing. Highest post exposure knowledge was found in 'thread tying technique' (95.7%) and for embellishment technique it was found in 'embroidery work' (85.0%). Skill acquisition was found high (82.66%) for 'tie and dye' technique and 73.33 per cent for 'embellishment' techniques. Aesthetic appeal was found highest for samples / articles prepared with 'thread tying' (m.s. 3.65) and 'marbling' (m.s. 3.60). Impact was assessed for knowledge gain, attitudinal change and skill acquisition in tie and dye technique and embellishment methods and it was found 68.14 per cent which speaks of significant impact achieved through intervention programme.

**Key words :** Aesthetic appeal, embellishment, inherent, skill acquisition, tie and dye

The uplift and economy of rural India greatly depends on the financial contribution of women which form a large percentage of rural population. Appropriate technologies for the benefit of rural women especially the poor section of rural society, need to be relevant to their needs, resources and capacities. Tie and dye is one of the simplest methods of decorating the cotton fabric and apparels. It embellishes and enriches the fabrics that improve the appearance. It adds depth, colour and creativity to casual wear as well as office attire. Tie and dye designing technique brings manual skill, creative ability, confidence, knowledge of colours and texture, and last but not the least, lovely products to use or sell. The use of certain colours in *bandhini* (tie and dye) is considered auspicious also. Religion and custom have a great influence on it.

Tie and dyeing of cotton fabric is considered to be economically viable, easy to apply and creates the patterns which are liked by one and all. Each pattern has its significance

according to design and motif. Tie and dye/resist dyeing technique was reported as cost effective, acceptable and time and energy saving by Parul (2002). Tie and dye not only provides a scope for individual expression and creativity but can also be undertaken as an avenue of household income by women. Tie and dyed materials have an international market which should be explored to its fullest extent for the benefit of traditional craftsmen. Considering all these facts, intervention programme were organized on value addition and enrichment of cotton fabric by 'tie and dye' and 'embellishment' techniques.

### **MATERIALS AND METHODS**

The present study was conducted in Fatehabad district of Haryana state in year 2011-2012, 2012-2013. Three villages namely, Bhodia Khera (Bhattoo block), Bhuthan Kalan (Fatehabad block) and Jandli Kalan (Bhuna block) were randomly selected for intervention programme. From each village 25 rural women and

adolescent girls were selected randomly thus covering 75 respondents as a sample of present study. Five days intervention programme which included rapport building, focused group discussions, expert lectures, literature, charts and demonstrations was given to all the respondents in each village. Eight techniques of tie and dye were selected for imparting training. These were knotting, thread tying, pegging and clipping, marbling, strip and check effect, object tying, *tritlik* and cello tape method. Samples were prepared. Four embellishment techniques were demonstrated on tie and dyed prepared samples. These were embroidery mirror work, *sitara* work and sequencing for value addition of prepared samples. Samples were prepared by all respondents by using all tie and dye techniques as well as embellishment techniques. Pre- and post exposure knowledge and skill was assessed on duly structured interview schedule.

Knowledge inventory on tie and dye techniques was prepared which consisted of 163 questions covering all aspects of tie and dye process. Knowledge items were categorized into four major categories consisting general aspects of tie and dye, techniques, dyeing process and embellishment techniques. Skill acquisition was assessed on high, medium and low categories.

Impact was assessed in terms of knowledge gain, skill acquisition and attitudinal change of the respondents with formula given below:

$$IAI = \frac{\sum f_i x_i}{N \times X} \times 100$$

Whereas;

IAI = Impact assessment index

$f_i$  = frequency in  $c_i$  cell

$c_i$  = Cell score of  $c_i$  cell (Product of corresponding scale)

N = Total number of respondents

X = Highest scale value on X dimensions

Y = Highest scale value on Y dimensions

Z = highest scale value on Z dimensions

## RESULTS AND DISCUSSION

**Pre and post exposure knowledge of the respondents :** Results regarding the pre and post exposure knowledge of all aspects of tie and dye techniques are depicted in Table 1. It can be observed from the data knowledge regarding 'general aspects of tie and dye' technique: The respondents had meager knowledge at pre exposure level. However, 21.50 per cent respondents had knowledge about 'requirement of material' while non of the respondents had knowledge about 'tie and dye technique procedure'. At post exposure stage majority of the respondents (90.10%) had knowledge about 'requirement of material' followed by 'preparation before dyeing' (72.50%), and 'procedure of dyeing' (71.30%).

**Knowledge of the respondents regarding 'tie and dye' techniques/ methods:** Non of the respondents had pre exposure knowledge about tie and dye techniques except a few of them had knowledge about 'object tying'(21.52%) and thread tying ( 19.5%). This might be due to the reason that they were already engaged in making cotton *durries* as studied by Yadav ( 2006)

However, post exposure knowledge of the respondents regarding tie and dye techniques as depicted in Table 1 show that majority of the respondents ( 95.7%) had gained knowledge regarding 'thread tying' followed by 'knotting'(90.0%) and 'marbling' (68.70%). However more than half (59.20%) of the respondents had got post exposure knowledge regarding '*tritlik*' followed by 'strip and check effect' (58.0%) and 'cello tape' method (56.59%).

**Knowledge regarding 'dyeing process':** As depicted in Table 1 that non of the respondents had knowledge about 'dyeing process' before intervention programme. It was interesting to note the level of knowledge of the respondents at post exposure knowledge level in all aspects of dyeing process that is 'procedure of dyeing'(82.0%), 'colour fixing'( 80.90%) and

**Table 1.** Pre and post exposure knowledge regarding cotton tie and dye technique

n=75

Sr. No.	Knowledge statement( )*	Pre exposure/m.s. (%)	Post exposure/m.s. (%)
<b>1.</b>	<b>General aspects of tie and dye ( 27)</b>		
	· Requirement of material (12)	1.4 (21.50)	5.2 (90.10)
	· Preparation before dyeing (7)	0.2 (4.5)	4.4 (72.50)
	· Procedure of dyeing (8)	0.0	3.9 (71.30)
<b>2.</b>	<b>Tie and dye techniques/methods (71)</b>		
	· Knotting (6)	0.00	4.70 (90.0)
	· Thread tying (8)	0.2 (19.5)	5.68 (95.7)
	· Marbling (6)	0.0	4.30 (68.70)
	· Pegging and clipping (6)	0.0	4.20 (67.20)
	· Object tying (16)	0.3 (21.52)	
	· Strip and check effect (8)	0.0	3.8 (58.0)
	· <i>Tritilik</i> (16)	0.0	3.9 (59.2)
	· Cellotape method (5)	0.0	3.2 (56.59)
<b>3.</b>	<b>Dyeing process ( 33)</b>		
	· Procedure of dyeing (13)	0.0	4.82 (82.0)
	· Colour fixing (6)	0.0	4.37 (80.9)
	· Precautions (14)	0.0	3.2 (79.8)
<b>4.</b>	<b>Embellishment technique ( 32)</b>		
	· Embroidery work (12)	3.4 (50.40)	5.7 (85.0)
	· Mirror work (8)	2.8 (46.2)	4.3 (78.3)
	· <i>Sitara</i> work (6)	2.6 (44.3)	4.6 (79.2)
	· Sequencing (6)	0.7 (38.0)	2.8 (60.2)

\* Figure in parenthesis indicates knowledge items  
m.s - mean score

‘precautions’(79.80%) which spoke very high percentage and they succeeded in gaining knowledge regarding dyeing process. Similar trend of results was observed in a study by Yadav *et al.*, (2012).

**Knowledge regarding embellishment techniques:** Pre and post exposure knowledge was assessed on all 4 embellishment techniques. As data depicted in Table 1 showed that about half of the respondents had pre exposure knowledge about all 4 techniques that is ‘embroidery work’, ‘mirror work’, ‘*sitara* work’ and ‘sequencing’ which ranged between 38.0 per cent to 50.40 per cent. Highest pre exposure knowledge was found in ‘embroidery work’ (50.40 %) followed by ‘mirror work’ (46.2%), ‘*sitara* work’ (44.30%) and ‘sequencing’ (35.0%). However, after intervention programme majority of the respondents had significant gain in knowledge about all the embellishment techniques i.e. ‘embroidery work’ (85.0%), followed by ‘*sitara* work’

(79.20%), ‘mirror work’ (78.30%) and ‘sequencing’ (60.20%). The results are in consonance with the findings studied by Dahiya (2013).

#### **Skill acquisition of respondents regarding tie and dye and embellishment techniques :**

The intervention programme on all tie and dye and embellishment techniques was imparted. After intervention programme, skill acquisition of the respondents was assessed on all tie and dye techniques *i.e.* knotting (6 steps), thread tying (8 steps), marbling (6 steps), pegging and clipping (6 steps), object tying (16 steps), strip and check effect (8 steps), *tritilik* (16 steps) and cellotape (5 steps).

It can be observed from Fig.1 that 96.0 per cent of the respondents had low level of skill before intervention programme. Only 4.0 per cent respondents had medium level of skill. This might be due to fact that only few respondents had practice of colouring cotton yarn for *durrie* making. However, after training most of the

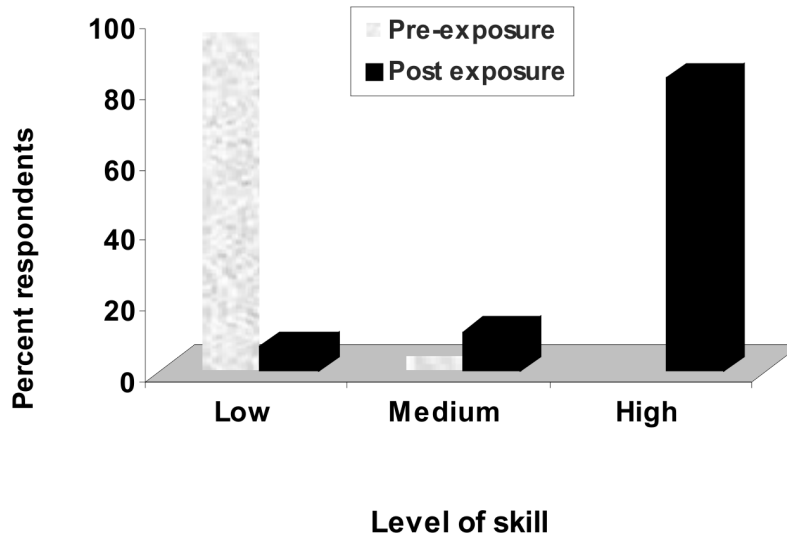


Fig. 1. Skill acquisition of respondents regarding tie and dye technique

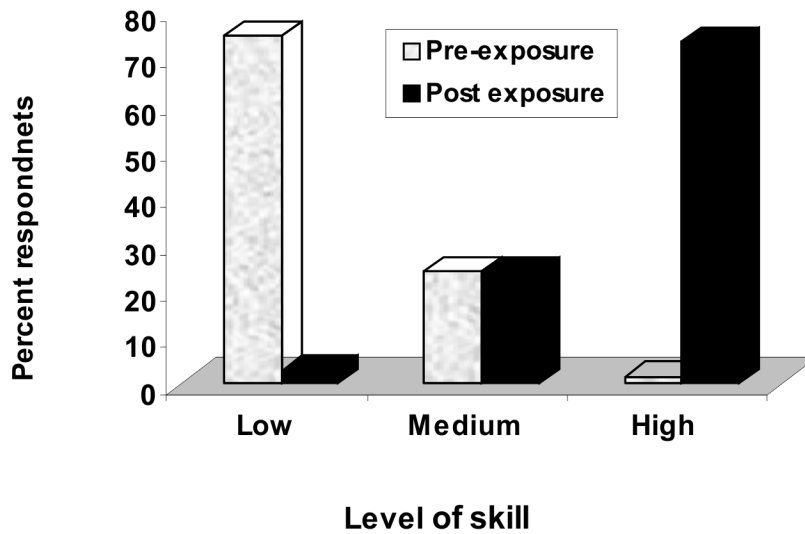


Fig. 2. Skill acquisition of respondents regarding embellishment technique

respondents 82.66 per cent had high skill regarding all tie and dye techniques followed by medium 10.66 per cent respectively. Moreover, creative and artistic designs were developed on cotton fabric by low cost colouring material. The most glowing colours and patterns were obtained by folding the material several times and then

tying.

The intervention programme on embellishment technique was also imparted along with tie and dye techniques. Skill acquisition of respondents was assessed on embroidery work (12 steps), mirror work (8 steps), *sitara* work (6 steps) and sequencing (6 steps).

**Table 2.** Aesthetic appeal of prepared tie and dye samples

n=75

Sr. No.	Technique	Level of appeal				W.M.S.	M.S.	Rank
		Most appealing (4)	Appealing (3)	Some what appealing (2)	Least appealing (1)			
1.	Knotting	40	15	15	05	240	3.2	VI
2.	Thread tieing	52	21	01	01	274	3.65	I
3.	Marbling	51	20	02	02	270	3.60	II
4.	Pegging and clipping	40	20	12	03	247	3.29	IV
5.	Object binding	35	30	8	02	248	3.30	III
6.	Strip and check effect	30	34	9	02	242	3.22	V
7.	<i>Trittik</i>	25	41	0	09	232	3.09	VII
8.	Cello tape	25	30	14	06	224	2.98	VIII

Results show in Fig. 2 that majority of the respondents 74.66 per cent had low level of skill about all embellishment techniques. However, some of the respondents (2.40%) had medium level of skill about embroidery stitches. After completion of training, majority of the respondents (73.33%) had high level of skill acquisition followed by medium (24.0%) regarding all embellishment techniques. This could be due to training exposures and need based craft of the women and adolescent girls as studied by (Dahiya, 2013).

**Aesthetic appeal of prepared tie and dye samples :** After preparing all the samples of demonstrated designs, the respondents were asked to rank their aesthetic appeals regarding all techniques.

It is evident from Table 2 that 'thread tieing' was adjudged first on aesthetic appeal and it got 1<sup>st</sup> rank (m.s. 3.65) followed by 'marbling' (m.s. 3.60), 'object binding' (m.s. 3.30) however, last rank was assigned to 'cellotape' method. However, 'cellotape' technique was ranked between 'appealing' to 'somewhat appealing' ranges as depicted through m.s. 2.98 assigned by the respondents. It was found by focused group discussions that the developed designs were simple, beautiful and creative. A design obtained by 'thread tieing' in *lahria* designs using bright colors can easily used on suits, sarees, *chunris* and household articles. The use of certain colours

in *bandhni* is considered auspicious. Similar trend in results was observed by Parul (2002).

**Impact assessment of intervention programme on respondents:** Data in Table 3 showed the impact assessment index in terms of knowledge gain, skill acquisition and attitude change of respondents' was found 68.14 per cent. This is moderately high and speaks of significant impact achieved through action oriented training.

$$IAI = \frac{f_i \times c_i}{N \times X \times Y \times Z} \times 100 = 68.14 \text{ per cent}$$

Whereas;

- IAI = Impact assessment index;
- $f_i$  = Frequency in the  $i^{\text{th}}$  cell
- $c_i$  = Cell scores of  $i^{\text{th}}$  cell (Product of the corresponding scale)
- N = Total number of respondents; X= Highest scale value on X dimension
- Y = Highest scale value on Y dimension
- Z = Highest scale value on Z dimension

The results unfold the fact that rural women had been found interested in creating designs and patterns of tieing and dyeing the cotton fabric. They also learnt that resist dyeing provides a scope for individual expression and creativity by low cost input. The results are in consonance with the findings reported by (Gaba *et al.*, 2012 and Singh and Rose, 2001).

**Table 3.** Impact assessment of tie and dye on respondents

Attitude/skill	Knowledge			Total
	High	Medium	Low	
<b>Favourable (3)</b>				
High	31×3×3×3=837	2×2×3×3=36	1×1×3×3=9	<b>34</b>
Medium	12×3×3×2=216	2×2×3×2=24	1×1×3×2=6	<b>15</b>
Low	9×3×3×1=81	2×2×2×1=08	1×1×3×1=3	<b>12</b>
<b>Somewhat favourable (2)</b>				
High				
Medium	2×3×2×3=36	1×2×2×3=12	1×1×2×3=06	<b>4</b>
Low	2×2×3×2=24	1×2×2×2=08	0	<b>3</b>
	2×3×2×1=12	1×2×2×1=04	0	<b>3</b>
<b>Not favourable (1)</b>				
High	1×3×1×3=09	1×2×1×3=06	0	<b>2</b>
Medium	1×3×1×2=06	0	0	<b>1</b>
Low	1×3×1×1=03	0	0	<b>1</b>
<b>Total</b>	<b>61</b>	<b>10</b>	<b>4</b>	

### CONCLUSION

This paper is an attempt to enrich the cotton fabric through tie and dye techniques. Hence, tie and dye of cotton fabric is considered to be economically viable, easy to apply and creates the patterns which are liked and appreciated by the respondents. Total 8 tie and dye techniques and four embellishment techniques on dyed samples were demonstrated through intervention programme. Majority of the respondents had high skill acquisition regarding all tie and dye and embellishment techniques. Aesthetic appeal was found highest for thread tying and marbling techniques. Impact index was assessed after completion of 5 days intervention programme. It was found that it had significant impact on women and adolescent girls. It succeeded in gain in knowledge, change in attitude and skill acquisition of rural women.

### REFERENCES

**Dahiya, Rajesh 2013.** Capacity building of scheduled caste rural women through garment construction and soft toys making. *Ind. Jour. Social Res.* **54**: 570-76.

**Gaba, Geeta Yadav, Nirmal and Kant, Kamal 2012.** Eco friendly cotton dyeing at cottage level for rural women empowerment. National Seminar on “*Scenario of Women in Agriculture and Future Projections*” organised by Society of Home Science for Agricultural and Rural Institutions. February 16-17, 2012. pp. 70-71.

**Parul, 2002.** Development of resist dyeing techniques. *M.Sc. (Thesis)*, Deptt. of Clothing and Textile, CCSHAU, Hisar.

**Singh, S.J. and Rose, N.M. 2001.** Laboratory Manual on Dyeing and Printing. CCS Haryana Agricultural University, Hisar, pp. 63-69.

**Yadav, Nirmal 2006,** Designing techniques for value addition of traditional durrries. *Ph.D. (Thesis)* Deptt. of Clothing and Textiles, Dr.B. R. Ambedkar University, Agra.

**Yadav, Beena, Dahiya, Rejesh, Kundu, Poonam and Sabharwal, Kanta 2012.** Propagation of tie and dye – An art of royalty among rural women. *J. Dairy, Foods Home Sci.* **31**: 314-17.

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