

## **Development of *Kasuti* emroidery motifs in knitted Kurties through CAD**

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### **ABSTRACT**

The investigation entitled 'Knitwear product development using *kasuti* embroidery motifs' was carried out in Ludhiana city. This investigation was conducted in Ludhiana city. For the selection of motifs and colour combinations panel of judges comprising faculty of College of Home Science, PAU, Ludhiana were selected. Three colleges of the city namely Guru Nanak Girls College, Model Town; Khalsa College for Women, Ghumar Mandi and College of Home Science, PAU were selected for studying the preferences for the preparation of *kurti*. Traditional motifs of *kasuti* embroidery were selected and plates were developed through Corel Draw 13 and were shown to 10 panel of judges. After the selection of motifs, three colour combinations of each motif were developed and again shown to 20 judges to finalize the 10 colour combinations of the 10 selected motifs for the development of design. After that two different design placements were prepared of the 10 most preferred motifs and their colour combinations. An interview schedule was prepared for the purpose of collecting data from 80 female respondents between the age group of 20 to 30 years selected randomly from three colleges of Ludhiana city. The results of the study revealed that majority of the respondents were graduates, belonging to nuclear families. Seventy per cent of the respondents were aware of knitwear designs and 51.25 per cent aware of *kasuti* embroidery and 70 per cent respondents preferred to buy knitwear *kurtis*. Readymade *kurtis* were the most preferred *kurtis* with medium length and V-shape necklines. Multi coloured combination was the most preferred colour combination followed by two colour and three colour combinations. Skin, *pista* green, red and cream were the most preferred colours.

**Key Words :** Kasuti, Kurties, CAD

### **INTRODUCTION**

Knitting is one of the most important processes for producing garments and worldwide represents a considerable and increasing percentage of the population's apparel. Knitting is used to produce garments that cover every part of human body, in a wide range of garment types from socks, caps, gloves and underwear to upper and lower body garments varying from T-shirts to formal jackets (Brackenbury, 1996).

The unique capability of knitting to manufacture shaped and form fitting articles has been utilized for centuries, modern technology has enabled knitted constructions in shaped and unshaped fabric form to expand into a wide range of apparel, domestic and industrial end uses (Spencer, 1989a).

Though knitted fabrics earlier had drawbacks in patterning and design intricacies, loosing the form etc., the technological developments significantly changed the scenario to over come these.

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Also production of multi-head and multi-feeder electronically patterned knitting machines is an added advantage (Vidure, 1999).

There have been many changes in the knitwear industry during the last few decades previously knitwear used to be processed manually but now-a-days, different technologies are available for producing good quality products in less time. Technological advancement has brought automation and Computer Aided Designing/ Computer Aided Manufacturing (CAD/CAM) system in all the areas of manufacturing including textile and garment industry.

In this scenario, time constraint is very important in any application which can be effectively achieved by CAD where less time is required to achieve good quality product as reported by (Anbumani et al., 2001).

CAD is industry specific design system using computer as a tool to design anything from an aircraft to knitwears. CAD is increasingly used for colouring, printed, knitted and woven fabric designs, creating Embroidery reflects the cultural traditions of the people among whom it takes birth and develops. Each region in India has developed a distinct style of its own because embroidery more than any other craft reflects the local traditions, cultural and physical environment. The best known embroideries of India are *Kashida* of Kashmir, *Phulkari* of Punjab, *Kantha* of Bengal, *Chikankari* of Uttar Pradesh, *Dasuti* of Haryana, *mirror work* of Gujarat and *Kasuti* of Karnataka. *Kasuti* is the traditional embroidery of Karnataka state. It has always been cultivated as purely a domestic art, merchandising presentation and pattern design (Anonymous, 2004).

Since CAD is gradually taking momentum in the era of textile designing the present study will be conducted to design simple but stylish knitwear products with *Kasuti* embroidery. The product will be developed to accomplish practical wearable garments which will make an individual to stand on the top of the fashion trend. Now days, Knitwear production is a very important technology and is one of the world's largest design-driven industry. The knitwear design process involves a complex and interesting interaction between aesthetic and technical designers. Increasingly sophisticated CAD systems play a vital part in the design of knitted garments, so the study is planned to develop *Kasuti* embroidered products through knitwear designing with the following objectives:

1. To identify the *Kasuti* embroidery motifs suitable for rendering into knitted structures.
2. To develop knitwear designs using *Kasuti* motifs and incorporate these into knitted products.

## METHODOLOGY

The present study was undertaken to develop the Knitwear products using *Kasuti* embroidery motifs on the basis of consumers' preferences for motifs, colour combinations, designs placements and embellishments on *kurtis*.

The study was undertaken in Ludhiana city. An interview schedule was employed to study the preferences of 80 female respondents, aged between 20-30 years, for knitwear *kurtis* made with *kasuti* embroidery motifs. The study was conducted in four stages i.e. the first stage included the selection of traditional *kasuti* embroidery motifs. The second stage contributes to the selection of colour combinations of the most preferred motifs. The third stage includes the placements of design on the *kurtis*. The fourth stage dealt with the preparation of *kurtis* and determination of consumer acceptance and cost effectiveness of the developed *kurtis*.

A total of thirty motifs were collected and plates were prepared and shown to a panel of judges. Out of these motifs, the ten most preferred motifs and their colour combinations were selected. Twenty placements of designs were developed and out of these ten placements of designs were considered for the development of *kurtis*.

## RESULTS AND DISCUSSION

### **Identification of traditional *kasuti* embroidery motifs:**

The results pertaining to the preference of the respondents regarding motifs of *kasuti* embroidery have been furnished in Table 1. The data revealed that from thirty collected motifs, ten the most preferred motifs were selected for further research outcomes. The *Bele Kamal* motif (M3), with a weighted mean score 8.0, was the most preferred motif and hence was given the first rank. *Bele Asana* (M1), *Hansa Asan* (M11), *Bele Patti Border* (M6), *Bele Patti III*(M29), *Murgi Butta IV* (M20), *Zondiga Simbi Flower Butta* (M22), *Bele Butta* (M2), *Murgi Butta II* (M13), *Murgi Kamal* (M19) were assigned the weighted mean scores of 5.9, 5.0, 4.8, 4.3, 3.9, 3.5, 3.3, 3.2, 3.1 and were given second, third, fourth, fifth, sixth, seventh, eighth, ninth and tenth rank, respectively.

<b>Table 1 : Weighted mean score of panel of Judges according to their preferences for various traditional motifs selected from secondary sources (n=10)</b>		
Motifs	Weighted mean scores	Ranks
BELE ASANA (M1)	5.90	II
BELE BUTTA (M2)	3.30	VIII
BELE KAMAL (M3)	8.00	I
BELE PATTI -I (M4)	1.60	-
MURGI BORDER (M5)	0.44	-
BELE PATTI BORDER (M6)	4.80	IV
BELE PATTI -II (M7)	0.50	-
MAGGI BUTTA (BUD) (M8)	0.60	-
HOWDA (TANK) BUTTA (M9)	0.55	-
HOOLIYUGURU BUTTA (M10)	0.72	-
HANSA ASAN (SWAN BUTTA) (M11)	5.00	III
LOTUS (M12)	1.70	-
MURGI BUTTA- II (M13)	3.20	IX
MURGI BUTTA-I (M14)	2.00	-
MURGI BUTTA-III (M15)	0.85	-
ELEPHANT(KUNJAR) (M16)	2.50	-
TEMPLE CHARIOT (M17)	1.30	-
TULSI VRINDAYAN (M18)	1.10	-
MURGI KAMAL (M19)	3.10	X
MURGI BUTTA- IV (M20)	3.90	VI
TEMPLE TOP (M21)	2.70	-
ZONDIGA SIMBI FLOWER BUTTA (M22)	3.50	VII
MURGI NAVILU (M23)	0.88	-
MURGI BORDER (M24)	0.90	-
MAGGI BUTTA (M25)	0.66	-
MAGGI PATTI (M26)	0.83	-
HOWDA PHUL (M27)	2.40	-
HOWDA PHUL BUTTI-II (M28)	2.60	-
BELE PATTI- III (M29)	4.30	V
HOWDA PHUL BUTTI- I (M30)	2.30	-

Kendall Coefficient of Concordance (W)

W = 0.197\*

It was found that *Bele Kamal* motif was the most preferred among all the motifs followed by *Bele Asana* and *Hansa Asan* while *Howda (Tank) Butta* (M9), *Bele Patti* (M7) and *Murgi Border* (M5) were least preferred by the respondents. The degree of agreement among the judges was analyzed by Kendall's coefficient of concordance, i.e.  $W = 0.197^*$  and was found to be significant at 5 per cent.

#### **Identification of colour combinations:**

The preferences of respondents regarding the colour combinations along with base colour and motif colour have been furnished in Table 2. After the selection of 10 most preferred motifs, for each motif three different colour combinations were developed. It was found that for the motif *Bele Patti III*

**Table 2 : Distribution and weighted mean scores (WMS) of selected panel of judges according to their preferences for colour combinations of knitted kurtis (n=20)**

Motifs	Base colour	Selected motif colour	Order of preference			WMS	W	Colour selected
			I	II	III			
<i>Bele Patti- III</i> (M29)	A	Red,	11	6	3	2.4 <sup>I</sup>		A
	B	Green &	7	10	3	2.2 <sup>II</sup>	0.21*	
	C	Yellow	2	4	14	1.4 <sup>III</sup>		
<i>Murgi kamal</i> (M19)	A	Red	10	9	1	2.5 <sup>I</sup>		A
	D	&	6	4	10	1.8 <sup>II</sup>	0.25*	
	E	Green	4	7	9	1.8 <sup>III</sup>		
<i>Bele butta</i> (M2)	C	Magenta	15	2	3	2.6 <sup>I</sup>		C
	E	&	4	9	7	1.9 <sup>II</sup>	0.36*	
	F	Green	1	9	10	1.6 <sup>III</sup>		
<i>Zondiga simbi flower butta</i> (M22)	B	Blue,	2	8	10	1.6 <sup>III</sup>		G
	F	Green &	7	6	7	2.0 <sup>II</sup>	0.19*	
	G	Magenta	11	6	3	2.4 <sup>I</sup>		
<i>Hansa asan (swan butta)</i> (M11)	A	Red	13	4	3	2.5 <sup>I</sup>		A
	B	&	3	8	9	1.7 <sup>III</sup>	0.24*	
	C	Purple	4	8	8	1.8 <sup>II</sup>		
<i>Murgi butta IV</i> (M20)	F	Magenta	4	8	8	1.8 <sup>III</sup>		G
	G	&	10	6	4	2.3 <sup>I</sup>	0.16*	
	H	Purple	6	6	8	1.9 <sup>II</sup>		
<i>Murgi butta II</i> (M13)	D	Green	2	8	8	1.5 <sup>III</sup>		H
	F	&	5	8	9	2.0 <sup>II</sup>	0.19*	
	H	Magenta	13	4	3	2.5 <sup>I</sup>		
<i>Bele kamal</i> (M3)	E	Yellow	1	8	11	1.5 <sup>III</sup>		I
	G	&	6	8	6	2.0 <sup>II</sup>	0.19*	
	I	Cream	13	4	3	2.5 <sup>I</sup>		
<i>Bele patti</i>	E	Green,	0	5	15	1.3 <sup>III</sup>		F
<i>Border</i> (M6)	F	Red &	14	5	1	2.7 <sup>I</sup>	0.38*	
	H	Blue	6	10	4	2.1 <sup>II</sup>		
<i>Bele asana</i> (M1)	A	Purple,	10	8	2	2.4 <sup>I</sup>		A
	B	Red &	2	7	11	1.6 <sup>III</sup>	0.17*	
	C	Green	8	5	7	2.1 <sup>II</sup>		

\*Weighted Mean Score-WMS

\*W-Kendall's coefficient of concordance

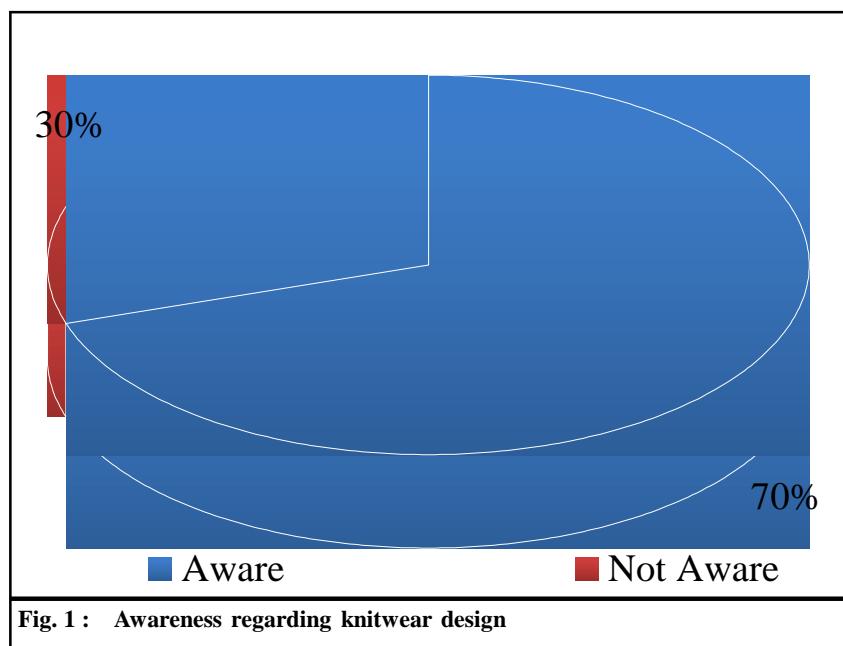
(M29,) from the three colour combinations, base of skin colour and motif of red, green and yellow colours with a weighted mean score of 2.40 was selected for the product development, for *Murgi Kamal* (M19) base of skin colour and motif of red and green colours with a weighted mean score of 2.50 was selected, for *Bele Butta*(M2) base of cream colour and motif of green and magenta colours with a weighted mean score of 2.60 was selected, for *Zondiga Simbi Flower Butta* (M22) base of *pista* green colour and motif of blue, green and magenta colours with a weighted mean score of 2.40 was selected, for *Hansa Asan* (M11) base of skin colour and motif of red and purple colours with a weighted mean score of 2.50 was selected.

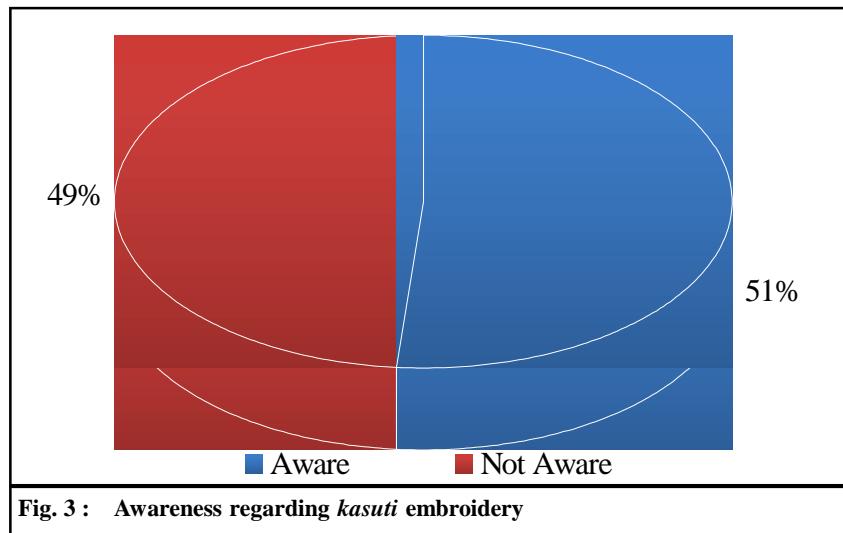
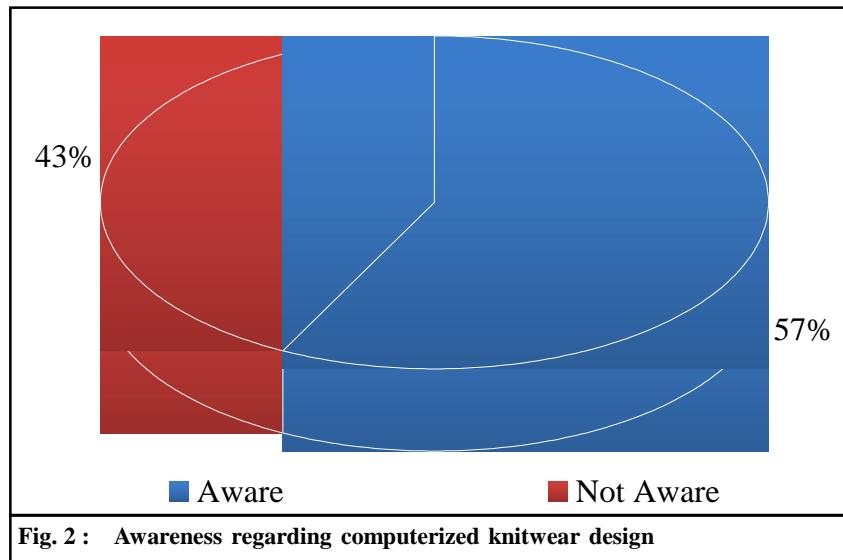
For *Murgi Butta* IV (M20) base of *pista* green colour and motif of magenta and purple colours with a weighted mean score of 2.30 was selected, for *Murgi Butta* II (M13) base of pink colour and motif of green and magenta colours with a weighted mean score of 2.50 was selected, for *Bele Kamal* (M3) base of magenta colour and motif of yellow and cream with a weighted mean score of 2.50 was selected, for *Bele Patti Border* (M6) base of light yellow colour and motif of green, red and blue colours with a weighted mean score of 2.70 was selected and for *Bele Asana* (M1) base of skin colour and motif of purple, red and green colours with a weighted mean score of 2.40 was selected for the product development. The degree of agreement among the judges was analyzed by Kendall's coefficient of concordance and was found to be significant at 5 per cent level in all the cases.

#### Awareness of knitwear designs and *kasuti* embroidery:

This section deals with the awareness of the respondents regarding knitwear designs, computerized knitwear designs and *kasuti* embroidery.

In Fig. 1, it can be seen that 70 per cent of the respondents were aware of knitwear designs while 30 per cent of the respondents were not aware whereas, Fig. 2 shows that 57.5 per cent of the respondents were aware of computerized knitwear designs while 42.5 per cent of the respondents were not aware. The Fig. 3 shows that 51.25 per cent of the respondents were aware of *Kasuti* embroidery while 48.75 per cent of the respondents were not aware.





#### **Awareness regarding knitwear designs, computerized knitwear designs and *kasuti* embroidery: Preferences of respondents regarding developed knitwear *kurtis*:**

Table 3 shows the response of respondents regarding possession of computerized knitwear article and preference for knitwear *kurtis*. The data revealed that 57.50 per cent of the respondents possess computerized knitwear article while 42.50 per cent of the respondents do not possess computerized knitwear article. Regarding the preference of knitwear *kurtis* 70 per cent of the respondents liked to buy knitwear *Kurtis* while 30 per cent of the respondents were not interested in buying knitwear *kurtis*.

The preferences of the respondents regarding the fabric structure have been furnished in Table 4. It was found that in summer season 66.25 per cent of the respondents prefer knitted fabric, 18.75 per cent prefer both woven and knitted fabric and 15 per cent prefer woven fabric while in winter season

DEVELOPMENT OF *Kasuti* EMPROIDERY MOTIFS IN KNITTED *Kurties* THROUGH CAD

70 per cent prefer knitted fabric, 20 per cent prefer woven fabric and 10 per cent prefer both woven and knitted fabric.

The results pertaining to the preferences of the respondents regarding various kind of fibre content of yarns for knitwear have been furnished in Table 5. The data revealed that 51.25 per cent of the respondents prefer wool yarn, followed by 38.75 per cent of the respondents preferred cotton yarn and rest 7.5 per cent and 2.5 per cent preferred acrylic and any of the above said yarns.

Further findings revealed that the respondents gave different reasons regarding the selection of particular yarn as shown in Table 6. The results showed that 53.75 per cent of the respondents selected particular yarn due to season, 26.25 per cent due to the suitability for the purpose and rest 13.75 per cent and 5 per cent due to the texture and soft feel of the yarn.

The preferences of respondents regarding possession of various types of *Kurtis* have been furnished in Table 7. The data revealed that 57.50 per cent of the respondents possess both casual wear and formal wear *Kurtis* while 31.25 per cent possess formal wear *Kurtis* followed by 11.25 per

<b>Table 3 : Possession of computerized knitwear articles and preferences of respondents for knitwear <i>Kurti</i> (n=80)</b>	
Possession of computerized knitwear article	Frequency (%)
Yes	46 (57.50)
No	34 (42.50)
Preferences for knitwear <i>Kurti</i>	
Yes	56 (70.00)
No	24 (30.00)

Figures in parentheses indicate percentages

Fabric structure	Summer frequency (%)	Winter frequency (%)
Woven	12 (15.00)	16 (20.00)
Knitted	53 (66.25)	56 (70.00)
Both woven and knitted	15 (18.75)	8 (10.00)

Figures in parentheses show percentages

<b>Table 5 : Preferences of respondents for the kind of fibre content of yarns they prefer to use for knitwear (n=80)</b>	
Kind of fibre content of yarn	Frequency (%)
Cotton	31 (38.75)
Acrylic	6 (7.50)
Wool	41 (51.25)
Any of above	2 (2.50)

Figures in parentheses indicate percentages

<b>Table 6 : Reasons for using a particular yarn by the respondents (n=80)</b>	
Reasons	Frequency (%)
Texture	11 (13.75)
Season	43 (53.75)
Suitability for the purpose	21 (26.25)
Soft feel	4 (5.00)

Figures in parentheses indicate percentages

cent possessed casual wear.

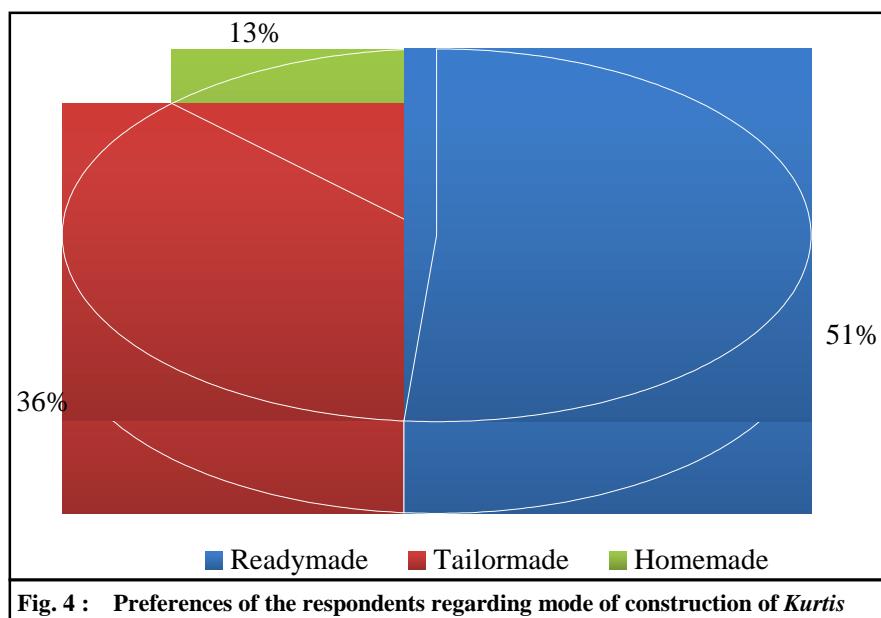
#### Mode of construction of *kurtis*:

The data revealed that 51 per cent of the respondents preferred readymade *Kurtis* while 36 per cent preferred tailor made and rest 13 per cent preferred homemade *Kurtis*.

It is evident from Table 8. that 60 per cent of the respondents preferred V - shape necklines, 31.25 per cent preferred round shape, 27.50 per cent prefer U-shape and 11.25 per cent said they like all types of necklines.

Respondents preferences regarding the length of *Kurtis* revealed in Fig. 5., i.e. 98.75 per cent of the respondents preferred medium length (knee level) while 23.75 per cent long length (below knee level) and rest 15.00 per cent preferred short length (above knee level).

Responses regarding different types of structural designs in Table 9. shows that 57.50 per cent of the respondents prefer fusion of traditional and modified structural designs, 27.50 per cent prefer



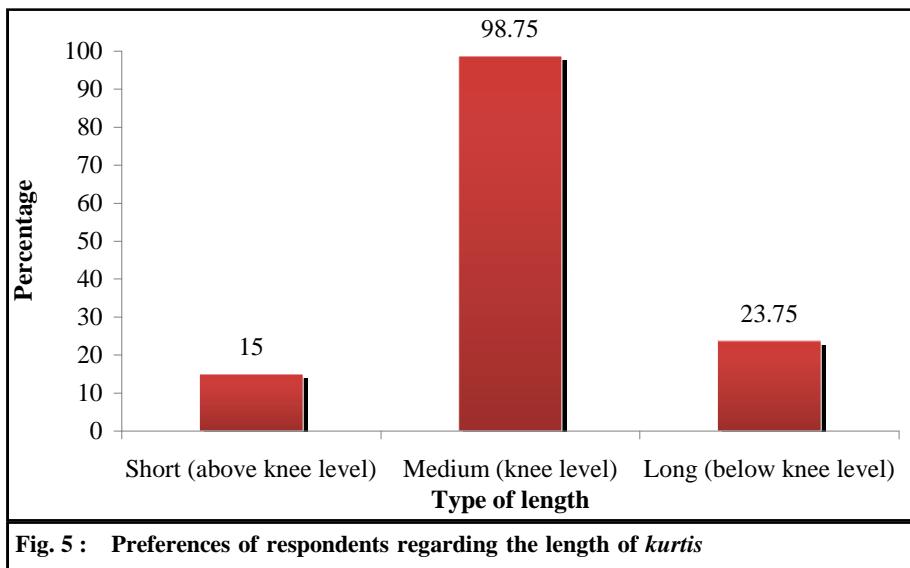
**Table 7 : Possession of various types of *kurtis* by the respondents (n=80)**

Type of <i>Kurti</i>	Frequency (%)
Causal wear <i>kurti</i>	9 (11.25)
Formal wear <i>kurti</i>	25 (31.25)
Both	46 (57.50)

Figures in parentheses indicate percentages

**Table 8 : Preferences of respondents for the type of necklines in kurtis (n=80)\***

Type of necklines	Frequency (%)
Round	25 (31.25)
V shape	48 (60.00)
U shape	22 (27.50)
All types	9 (11.25)

**Table 9 : Preferences of respondents for the type of structural designs (n=80)**

Type of structural designs	Frequency (%)
Traditional	22 (27.50)
Fusion of traditional and modified	46 (57.50)
Plain	10 (12.50)
Any of these	2 (2.50)

traditional structural designs while 12.50 per cent prefer plain structural designs and rest 2.50 per cent did not showed interest in any particular structural design.

The results pertaining to the preferences of the respondents regarding the type of colour combination used in motifs while making knitwear kurtis have been furnished in Fig 6. The results revealed that 38.75 per cent prefer multicoloured motifs, 30 per cent prefer two colours while 26.25 per cent prefer three colours and 5 per cent prefer any of these colour combinations respectively.

Colour combinations preferred by respondents in Fig 7. reveals that 58.75 per cent of the respondents prefer particular colour combination to make product attractive, 38.75 per cent prefer because of suitability for particular design, 22.50 per cent prefer due to present trend while 21.5 per cent prefer particular colour combination according to seasonal demand, rest 18.75 per cent prefer particular colour combination according to availability of colour and 5.00 per cent preferred particular colour combination because of their liking.

The preferences of respondents regarding the price range for *Kurtis* have been furnished in table 10. It was found that for casual wear *Kurtis* 76.25 per cent prefer price range less than Rs. 1000, 20 per cent prefer price range between 1001-2000 and 3.75 per cent prefer price range between 2001-3000 while for formal wear *Kurtis* 47.50 per cent prefer price range between 1001-2000, 31.25 per cent prefer price range between 2001-3000 and 21.25 per cent prefer price range less than 1000.

The results pertaining to the preference of the respondents regarding the type of fabric design have been furnished in Table 11. The data revealed that plain fabric, with a weighted mean score 3.45, was the most preferred fabric design and hence was given the first rank. Printed design, plain with self design, structural design, both structural and printed design and self design were assigned the

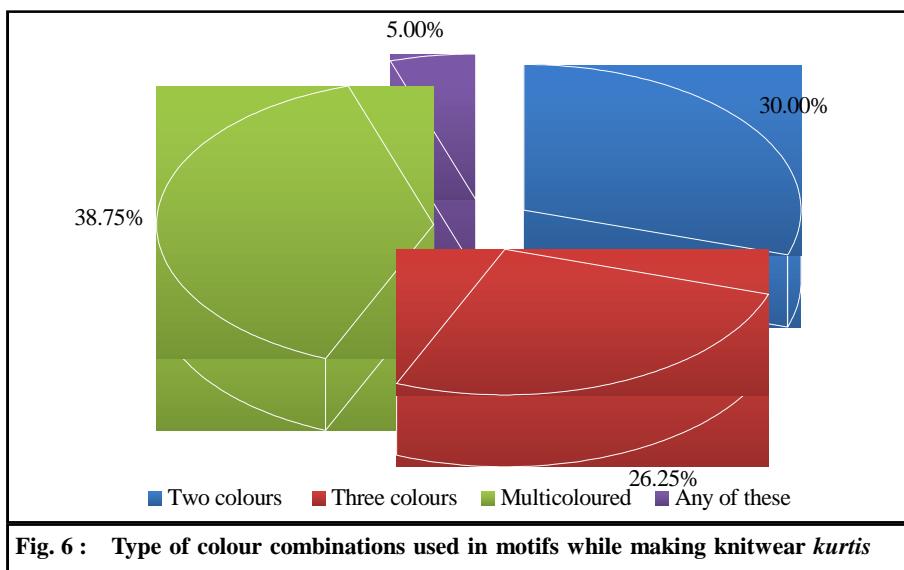


Fig. 6 : Type of colour combinations used in motifs while making knitwear kurtis

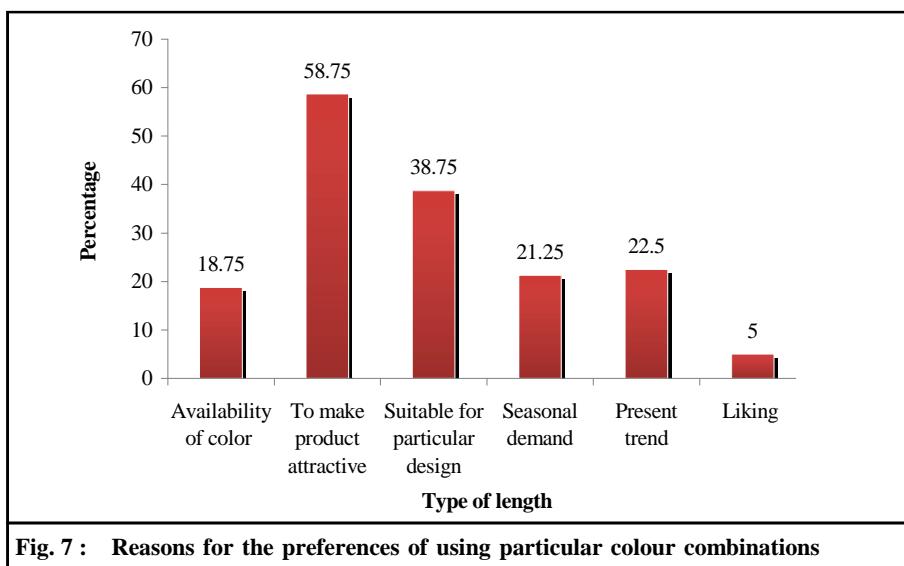


Fig. 7 : Reasons for the preferences of using particular colour combinations

weighted mean scores of 2.76, 2.74, 2.59, 2.39 and 1.86 and were given second, third, fourth, fifth and sixth rank, respectively. The Kendall's coefficient of concordance *i.e.*  $W = 0.0315^*$  was found to be significant.

Colour preferences of respondents have been furnished in table 12. It was found that in summer season white colour was ranked first with weighted mean score of 2.81. Pink, red, cream and yellow were given second, third, fourth and fifth ranks with weighted mean scores of 2.25, 2.24, 2.15 and 2.13, respectively. Black and blue were ranked sixth and seventh with weighted mean scores of 2.11 and 1.86 where as maroon, mauve and green were ranked eighth, ninth and tenth with weighted mean scores of 1.68, 1.49 and 1.36, respectively. Skin was least preferred where as brown and orange were not at all preferred by the respondents. The Kendall's coefficient of concordance, *i.e.*  $W = 0.031^*$  and was

**Table 10 : Preferences of respondents for the price range of kurtis (n=80)**

Price range	Casual wear frequency (%)	Formal wear frequency (%)
Less than Rs. 1000	61 (76.25)	17 (21.25)
1001 – 2000	16 (20.00)	38 (47.50)
2001 – 3000	3 (3.75)	25 (31.25)

Figures in parentheses indicates percentages

**Table 11: Preferences of respondents for type of knitwear fabric in kurtis (n=80)**

Fabric design	Order of preference					WMS	Rank s
	I	II	III	IV	V		
Plain	37 (46.25)	6 (7.50)	9 (11.25)	12 (15.00)	16 (20.00)	3.45	I
Self design	8 (10.00)	5 (6.25)	7 (8.75)	8 (10.00)	52 (65.00)	1.86	VI
Plain with self design	17 (21.25)	13 (16.25)	9 (11.25)	14 (17.50)	27 (33.75)	2.74	III
Printed design	8 (10.00)	18 (22.50)	20 (25.00)	15 (18.75)	19 (23.75)	2.76	II
Structural design	4 (5.00)	19 (23.75)	21 (26.25)	12 (15.00)	24 (30.00)	2.59	IV
Both structural and printed design	4 (5.00)	17 (21.25)	14 (17.50)	16 (20.00)	29 (36.25)	2.39	V

Figures in parentheses show percentages

Kendall's coefficient of concordance  $W=0.0315^*$

Weighted Mean Score-WMS

\*Significant at 5 per cent

found to be significant at 5 per cent.

The data revealed that in winter season skin colour was ranked first with weighted mean score of 2.70. Green, red, cream and black were given second, third, fourth and fifth ranks with weighted mean scores of 2.44, 2.40, 1.93 and 1.89, respectively. Blue and pink were ranked sixth and seventh with weighted mean scores of 1.81 and 1.65 where as maroon, mauve and brown were ranked eighth, ninth and tenth with weighted mean scores of 1.63, 1.60 and 1.56, respectively. Yellow and orange were least preferred where as white colour was not at all preferred by the respondents. The Kendall's coefficient of concordance, i.e.  $W = 0.028^*$  and was found to be significant at 5 per cent.

The data presented in Table 13. indicated that stones, laces, hand embroidery, sequins were preferred as decorative material for the *kurtis* by majority of the respondents with weighted mean scores of 3.30, 2.56, 2.53 and 2.51 and were given first, second, third and fourth ranks, respectively. Ribbons were given fifth rank with weighted mean scores of 1.90 respectively. Braids, beads, frills and glass tubes were least preferred as decorative material. The Kendall's coefficient of concordance, i.e.  $W = 0.025^*$  and was found to be significant at 5 per cent.

The results pertaining to the preference of the respondents regarding the different placements of the developed designs with the most preferred motifs and colour combinations on knitwear *kurtis* have been furnished in Table 14. The results revealed that out of two placements  $P_1$  and  $P_2$  of *Murgi Kamal* ( $M_{19}$ ) motif, placement  $P_1$  (Plate no. XI) was liked by 82.50 per cent respondents thus selected for the development of *kurtis*, from placements  $P_3$  and  $P_4$  of the motif *Bele asana* ( $M_1$ ), placement  $P_3$  (Plate no. XII) with 52.50 per cent was selected, from placements  $P_5$  and  $P_6$  of the motif *Murgi Butta-IV* ( $M_{20}$ ), placements  $P_5$  (Plate no. XIII and XIV) with 66.25 per cent was selected, from placements  $P_7$  and  $P_8$  of the motif *Zondiga Simbi Flower Butta* ( $M_{22}$ ), placements  $P_8$  (Plate no. XV) with 52.50 per cent was selected, from placements  $P_9$  and  $P_{10}$  of the motif *Bele Kamal* ( $M_3$ ), placements  $P_9$  (Plate no. XVI) with 66.25 per cent was selected, from placements  $P_{11}$  and  $P_{12}$  of the motif *Hansa Asan* ( $M_{11}$ ), placements  $P_{12}$  (Plate no. XVII) with 61.25 per cent was selected, from placements  $P_{13}$  and  $P_{14}$  of the motif *Bele Patti Border* ( $M_6$ ), placements  $P_{13}$  (Plate no. XVIII) with 77.50 per cent was selected, from placements  $P_{15}$  and  $P_{16}$  of the motif *Bele Patti-III* ( $M_{29}$ ), placements  $P_{15}$  (Plate no. XIX) with 65 per cent was selected, from

**Table 12 : Preferences of respondents for fabric colours in kurtis for summer and winter season (n=80)**

Fabrics colour	Summer Order of preference					WMS Ranks					Winter Order of preference					WMS Ranks	
	I	II	III	IV	V	XI	25	5	8	5	37	2.70	1				
Skin	3 (3.75)	2 (2.50)	1 (1.25)	4 (5.00)	70 (87.50)	1.30	(31.25)	(6.25)	(10.00)	(6.25)	(46.25)						
White	28 (35.00)	6 (7.50)	2 (2.50)	11 (13.75)	23 (41.25)	2.81	1	--	--	--	--						
Black	7 (8.75)	15 (18.75)	6 (7.50)	4 (5.00)	48 (60.00)	2.11	VI	3	16	4	3	54	1.89	V			
Red	7 (8.75)	11 (13.75)	14 (17.50)	10 (12.50)	38 (47.50)	2.24	III	12	9	16	5	38	2.40	III			
Blue	2 (2.50)	11 (13.75)	11 (13.75)	6 (7.50)	50 (62.50)	1.86	VII	5	7	6	12	50	1.81	VI			
Yellow	6 (7.50)	10 (12.50)	13 (16.25)	10 (12.50)	41 (51.25)	2.13	V	--	7	2	2	69	1.34	XI			
Cream	6 (7.50)	10 (12.50)	11 (13.75)	16 (20.00)	37 (46.25)	2.15	IV	7	4	14	6	49	1.93	IV			
Brown	--	--	--	--	--	--	--	1	7	4	12	56	1.56	X			
Green	2 (2.50)	3 (3.75)	4 (5.00)	4 (5.00)	67 (83.75)	1.36	X	13	11	10	10	36	2.44	II			
Pink	9 (11.25)	9 (11.25)	14 (17.50)	9 (11.25)	39 (48.75)	2.25	II	4	5	4	13	54	1.65	VII			
Mauve	1 (1.25)	5 (6.25)	5 (6.25)	10 (6.25)	59 (73.75)	1.49	IX	4	4	5	4	60	1.60	IX			
Orange	--	--	--	--	--	--	--	1	2	2	4	71	1.23	XII			
Maroon	9 (11.25)	2 (2.50)	3 (3.75)	6 (7.50)	60 (75.00)	1.68	VIII	5	6	4	4	61	1.63	VIII			

Figures in parentheses indicate percentages  
Kendall's coefficient of concordance

\*Weighted Mean Score-WMS  
W=0.031 \*W=0.028\*

\*Significant at 5 per cent

Decorative materials	Order of preference					WMS	Ranks
	I	II	III	IV	V		
Stones	30 (37.50)	10 (12.50)	13 (16.25)	8 (10.00)	19 (23.75)	3.30	I
Sequins	13 (16.25)	16 (20.00)	7 (8.75)	7 (8.75)	37 (46.25)	2.51	IV
Hand embroidery	13 (16.25)	15 (18.75)	10 (12.50)	5 (6.25)	37 (46.25)	2.53	III
Laces	6 (7.50)	14 (17.50)	20 (25.00)	19 (23.75)	21 (26.25)	2.56	II
Braids	1 (1.25)	4 (5.00)	3 (3.75)	1 (1.25)	71 (88.75)	1.29	-
Frills	--	3 (3.75)	4 (5.00)	2 (2.50)	71 (88.75)	1.24	-
Ribbons	5 (6.25)	8 (10.00)	7 (8.75)	14 (17.50)	46 (57.50)	1.90	V
Piping/ Binding	6 (7.50)	2 (2.50)	2 (2.50)	7 (8.75)	63 (78.75)	1.51	-
Buttons	5 (6.25)	6 (7.50)	7 (8.75)	8 (10.00)	54 (67.50)	1.75	-
Mirror work	--	3 (3.75)	5 (6.25)	5 (6.25)	67 (83.75)	1.30	-
Glass tubes	--	--	--	1 (1.25)	79 (98.75)	1.01	-
Beads	1 (1.25)	1 (1.25)	4 (5.00)	5 (6.25)	69 (86.25)	1.25	-

Figures in parentheses indicates percentages

Kendall's coefficient of concordance W=0.025\*

Weighted Mean Score-WMS

\*Significant at 5 per cent

placements P<sub>17</sub> and P<sub>18</sub> of the motif *Murgi butta* -II (M<sub>13</sub>), placements P<sub>18</sub> (Plate no. XX) with 58.75 per cent was selected, from placements P<sub>19</sub> and P<sub>20</sub> of the motif *Bele Butta* (M<sub>2</sub>), placements P<sub>20</sub> (Plate no. XXI and XXII) with 61.25 per cent was selected for the development of *kurtis*.

Details of the developed knitwear kurtis

**Kurti D<sub>1</sub>** – This was a *kurti* in *pista* green colour and the motif used in this *kurti* was *Zondiga Simbi Flower Butta* (M<sub>22</sub>) and the colours of motifs are green, blue and magenta. The neckline of *kurti* was V-shaped and it was a medium length *kurti* with full sleeves.

**Kurti D<sub>2</sub>** – It was a full sleeved *kurti* with centre panel design placement. The neckline of *kurti* was V-shaped and the length of *kurti* was medium. The base of *kurti* was in magenta colour and the motif used in this *kurti* was *Bele Kamal* (M<sub>3</sub>) with colour combination of yellow and cream.

**Kurti D<sub>3</sub>** – This was a *kurti* in skin colour and the motif used in this *kurti* was *Hansa Asan* (M<sub>11</sub>) in purple and red colours. The placement of design was at neck and sleeves. It was a full sleeved short length *kurti* with V-shape neckline. Knit designed patch was used on the *kurti*.

**Kurti D<sub>4</sub>** – *Kurti D<sub>4</sub>* was a cream coloured *kurti* with motif *Bele Patti Border* (M<sub>6</sub>) and the colours of the motif were green, red and blue. It was a full sleeved, A line *kurti* with V-shape neckline. Knitted fabric was used for the *kurti* and the design was made on the flat knitting machine and was attached on the knitted fabric. Braid of green colour and lace of red and green colour was used to embellish the

**Table 14: Preferences of respondents for different placements on knitwear kurtis (n=80)**

Motif	Frequency	%
<b><i>Murgi Kamal (M<sub>19</sub>)</i></b>		
P1	66	82.50
P2	14	17.50
<b><i>Bele Asana (M<sub>1</sub>)</i></b>		
P3	42	52.50
P4	38	47.50
<b><i>Murgi Butta -IV (M<sub>20</sub>)</i></b>		
P5	53	66.25
P6	27	33.75
<b><i>Zondiga Simbi Flower Butta (M<sub>22</sub>)</i></b>		
P7	38	47.50
P8	42	52.50
<b><i>Bele Kamal (M<sub>3</sub>)</i></b>		
P9	53	66.25
P10	27	33.75
<b><i>Hansa Ansa (swan butta) (M<sub>11</sub>)</i></b>		
P11	31	38.75
P12	49	61.25
<b><i>Bele Patti Border (M<sub>6</sub>)</i></b>		
P13	62	77.50
P14	18	22.50
<b><i>Bele Patti-III (M<sub>29</sub>)</i></b>		
P15	52	65.00
P16	28	35.00
<b><i>Murgi Butta-II (M<sub>13</sub>)</i></b>		
P17	33	41.25
P18	47	58.75
<b><i>Bele Butta (M<sub>2</sub>)</i></b>		
P19	31	38.75
P20	49	61.25

kurti.

**Kurti D<sub>5</sub>** – It was a full sleeved kurti with placement of design at neck and bottom. The kurti was in skin colour and the motif used was *Bele Patti III (M<sub>29</sub>)* in red, green and yellow colours.

**Kurti D<sub>6</sub>** – Kurti D<sub>6</sub> was a cream coloured kurti with motif *Bele Butta (M<sub>2</sub>)* of green and magenta colours. The sleeves of the kurti were umbrella cut with knitted design at the top and the hemline of the kurti was round. The design was on both sides of the kurti i.e. front and back. Stone of green colour and hand embroidery of magenta colour was used to embellish the kurti.

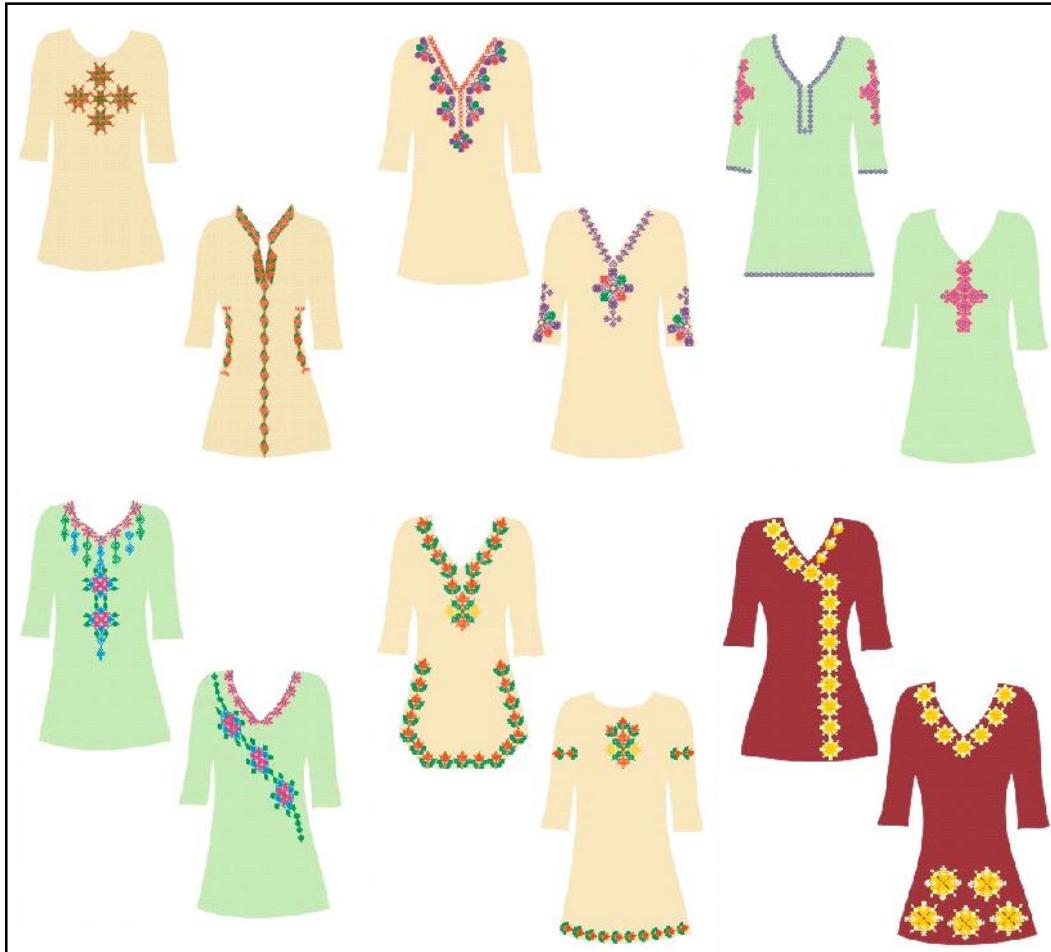
**Kurti D<sub>7</sub>** – This kurti was in pink colour with motif *Murgi Butta II (M<sub>13</sub>)* was of magenta and green colours. It was a full sleeved, A line kurti with cut at bottom and had round neckline. The placement of design was only at front.

**Kurti D<sub>8</sub>** – The base colour of kurti was *pista* green, *Murgi Butta IV (M<sub>20</sub>)* in magenta and purple colours was used. The design was more at the back than the front and also on the sleeves. It was a medium length kurti having V- shape neckline. Magenta colour stones were used on front, back and at sleeves inorder to embellish the kurti.

**Kurti D<sub>9</sub>** – The base of kurti was in skin colour with purple, red and green motif of *Murgi Kamal*

(M<sub>19</sub>). The placement of design was at neck and sleeves. It was a full sleeved, V-shaped neckline *kurti*.

**Kurti D<sub>10</sub>** – The *kurti* was in skin colour with motif *Bele Asana* (M<sub>1</sub>) of red and green colours. It was a full sleeved *kurti* with V-shape neckline. The placement of design was at centre panel and at waist level near side seam.



Results of the studies conducted by Sahni *et al.* (1995), Lele (2001) and Grewal (2002) revealed that the respondents appreciated the prepared articles as the work done was found to be very innovative.

#### Conclusion:

The conclusions drawn on the basis of the results of study are:

- Ten most preferred motifs namely *Bele Kamal* (M<sub>3</sub>), *Bele Asana* (M<sub>1</sub>), *Hansa Asan* (M<sub>11</sub>), *Bele Patti Border* (M<sub>6</sub>), *Bele Patti III* (M<sub>29</sub>), *Murgi Butta IV* (M<sub>20</sub>), *Zondiga Simbi Flower Butta* (M<sub>22</sub>), *Bele Butta* (M<sub>2</sub>), *Murgi Butta II* (M<sub>13</sub>), *Murgi Kamal* (M<sub>19</sub>) were ranked one to ten.
- The most preferred 10 colour combinations were taken for selected motifs. Skin colour was most preferred for the motif *Bele Patti III* (M<sub>29</sub>), *Murgi Kamal* (M<sub>19</sub>), *Hansa Asan* (M<sub>11</sub>) and *Bele asana* (M<sub>1</sub>) followed by *Pista* green colour for the motif *Zondiga Simbi Flower Butta* (M<sub>22</sub>) and *Murgi Butta IV* (M<sub>20</sub>).

- Majority of the respondents, *i.e.* 70 per cent were aware of knitwear designs whereas 57.5 per cent and 51.25 per cent of the respondents were aware of computerized knitwear designs and *kasuti* embroidery respectively.
- Majority of the respondents *i.e.* 57.50 per cent possess computerized knitwear article and 70 per cent of the respondents preferred to buy knitwear *kurtis*.
- In both the seasons summer and winter majority of the respondents prefer knitted fabric, *i.e.* 66.25 per cent and 70 per cent, respectively.
- Forty six respondents *i.e.* 57.50 per cent possess both casual wear and formal wear *kurtis*.
- Readymade *kurtis* were the most preferred *kurtis* followed by tailor made and homemade.
- Majority of the respondents prefer V-shape necklines followed by round shape, U-shape.
- Medium length of *kurtis* was the most preferred length by the respondents followed by long length and short length.
- Multicoloured combination was the most preferred colour combination by the respondents followed by two colour and three colour combinations.
- Majority of the respondents preferred particular colour combination to make product attractive followed by suitability for particular design, present trend, seasonal demand and availability of colour.
- For formal wear *kurtis* majority of the respondents preferred price range between Rs. 1000-2000 followed by Rs. 2000-3000 and less than Rs. 1000 while for casual wear *kurtis* majority of the respondents preferred price range less than Rs. 1000 followed by price range between Rs. 1000-2000 and Rs. 2000-3000.
- Skin, green, red, cream and black colours were preferred for winter wear while yellow and orange were least preferred and white colour was not at all preferred by the respondents.
- Stones, laces and hand embroidery were the most preferred embellishments while frills and glass tubes were least preferred embellishments.
- Regarding placements of prepared designs for the final development of *kurtis*, the respondents preferences for 10 final developed designs were P<sub>1</sub>, P<sub>3</sub>, P<sub>5</sub>, P<sub>8</sub>, P<sub>9</sub>, P<sub>12</sub>, P<sub>13</sub>, P<sub>15</sub>, P<sub>18</sub> and P<sub>20</sub>.
- All the *kurtis* were accepted by the consumers on the basis of suitability of design whereas *kurti* D<sub>4</sub> was the most preferred *kurti*.

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