Statement of The Problem
Chapter 3

Statement of the problem

Knitted fabrics used for clothing construction must be of high quality. Structural parameters of knitted fabrics, as well as finishing processes directly influence their mechanical and physical properties and thus are closely connected with wearing properties of knitted garments.

Present study deals with the finishing of knitted fabrics. Problems like pilling and shrinkage is very common in knitted fabrics. The feature of modern life is the attention being paid to dress to make it attractive, varied and smart. It is therefore desirable that these shortcomings should be corrected, which can be done by resin finishes.

Many researchers have reported that mechanical properties of fabrics can be improved by polymer application, like shrink resistance, abrasion resistance, pilling, stiffness. However, perusal of literature revealed that very little work has been done on application of resin finishes to reduce pilling tendency. Work related to shrinkage control by resin finishing is limited to either woven fabric or knitted fabric of wool, cotton and their blends. Effect of resin finishing on knitted fabric of viscose, cotton/viscose, polyester/cotton, nylon or polyester has not been reported so far. Present study is a step in this direction.

The purpose here is to make an attempt to use DMDHEU, acrylic emulsion and silicone emulsion to modify performance characteristics of knitted fabrics. But these polymer finishes can effect the handle i.e. softness and stretchability of fabric which are highly desirable in knitwear. Therefore an attempt was made by investigator to find out effect of these finishes on elongation and elastic recovery.

Earlier researches have shown adverse effect of resin finishes on tensile and tearing strength of fabrics. Change in extensibility of knitted fabric by resin may affect bursting
strength. Therefore endeavor was made in this work to study the effect of DMDHEU, acrylic emulsion and silicone emulsion on bursting strength.

Properties likes stiffness and drapes are utilized in the making of skirt type garment. How these are influenced through the application of finish is also included in the work.

Previous study by Pant and Chaulker (2002) reported change in drape of garment made of wool and wool blend woven fabrics by localized application of polymer based finishes. However, use of polymer finishes to influence drape of knitted fabrics has not been reported so specifically and, that their extension in garment designing has been awaited. Changes or modifications in stiffness and drape properties of fabrics by resin finishing were utilized for application into garments made of knitted fabrics.

Based on this concept, work was planned to find out the effect of localized application of finish on skirt drape. Technique of modifying garment drape has been applied in a different manner i.e. by using angular panels and by application of finishing agent.

Garment drapability is directly affected by fabric quality, quantity, cutting and stitching. The quantity and the quality of a fabric at a particular location such as lower hemline of a garment affect the drape either by increasing or decreasing the draped area of garment.

In case of lower stitched garment, such as skirt and its variation, the attention has been towards getting flare, fullness etc. This is due to the fact that skirt is worn at waistline and drapes over the hip line, which naturally demands proper fitting at waist and looseness at hip for freedom of movement. Use of angular panels in skirt modifies the flare or fullness. Angular panels when placed at different positions and at different levels will thus influence drape points in skirt and also appearance/ aesthetic appeal of the skirt. Seam flare is another technique which is used to add fullness in skirt. It can start from waist line or hip line. On the basis of above context, an effort was made in this work to study the effect of angular panel placement at different levels and seam flare on drape of skirt.

Present study explores the effect of finishing agents on pilling and dimensional stability. Attempt were made to determine their influence on stretchability (elastic recovery),
handle and drapability of knit fabric. The study of drape specifically to develop new designs for garment (like skirt) was also included from utility angle of these improved properties of fabrics.

**Objectives of the study were as follows:**

1. To study the effect of DMDHEU, acrylic emulsion and silicone finishes on the selected properties of knitted fabrics.
2. To develop design for garment (skirt) on a proportionate model (i.e. dress form).
3. To study the effect of finishing agents on drape of designed garments, on localized application of finishing agent.

**Delimitations:**

1. Only nine knitted fabrics were used in this study.
2. Study was limited to three resins viz. DMDHEU, acrylic emulsion and silicone.
3. Effect of resins on specific properties like elongation/recovery, shrinkage, stiffness, drapability, pilling and bursting strength necessarily limited the results to these properties.