CHAPTER 3
METHODOLOGY

The chapter deals with the information on various methodological aspects adopted for the research. The following steps discuss the detailed work plan sequentially.

3.1 Pilot Study

3.2 Research Design

3.3 Selection of sample

3.4 Documentation of present condition of woollen shawls

3.5 Analysis of present conservation practices adopted for woollen shawls

3.6 Practical approach to conservation of woollen shawl

3.1 Pilot Study

A pilot study is a preliminary study undertaken for the research. It generally creates the base on which further study can proceed. While conserving a few textiles at the Indian National Trust for Art and Cultural Heritage (INTACH) in the material heritage division, which included few Kalamkari textiles, thanka paintings, painted and dyed textiles on silk and cotton cloth, inspired me to gain more knowledge about the conservation of shawls. Masters in conservation, preservation and heritage management and working at INTACH involved the complexities of problems in the preservation of textiles attracted the interest of the investigator and fostered the research interest into the textile conservation.

Information on the topic was obtained during the hands-on training for the preservation and conservation of textiles. The researcher started the study by initiating a conversation with the guide, conservators, skilled workers and darners at the National Museum Conservation Laboratory, New Delhi. The researcher visited the textile laboratories in the country and conversed with museum professionals and conservators while consulting the literature of published works. The international directory of textile collections

compiled by the volunteers and staff of the Arthur D. Jenkins Library, The Textile Museum was referred. The museums were selected on the basis of the textiles collection especially the shawls collection in them. Further, their contact information was recorded and emails were sent to all the private and government museums mentioning the purpose of visit and to procure the information related to the research. A particular date was finalized to visit a museum at a time. It was dependent on the availability of the curators and conservators in the museum. The general information about the museum was also kept in mind as the different museums have different opening and closing days. The tickets via train and flight were planned accordingly. On the way, weavers' workshops were also visited and first-hand information regarding the preservation of the shawls and their present conditions which involved the problems faced by the weavers were also addressed. Conservation laboratories and private collectors were identified and the data regarding the woollen shawls conservation practices was procured from them. This preliminary survey equipped the researchers understanding of the existing methods of conservation practices of shawl collection in Indian museums and with the private collectors and individuals as well as the preservation of tradition from the weavers and their workshops.

The workshop on "Preventive Conservation of Textiles" from 9 to 11 September 2014 at INTACH Conservation Institute, Delhi was attended by the investigator during the course of study to get more familiarised with the defined, standardized methods and techniques of conservation, knowledge, skills and the materials used in the conservation of textiles.

3.1.1 Methods of data collection

Primary and secondary sources of information were used for collecting basic data for study in the present research. The original sources were ancient, medieval literary texts and records. The historical shawls were the specimens preserved in the museums. The records of field investigations and the photographic collections were studied. The articles published in Journals of Indian Art and Indian Textile History provided a lot of valuable information regarding the shawls. The Journals on Conservation and Preservation of Cultural Property with respect to textiles also provided information on the recent issues and problems in conservation of artworks.

The secondary sources were also used whenever necessary. These included survey reports, relevant research and review articles, newsletters, magazines, encyclopedia and history books. The second level of information was also collected from libraries. The investigator visited and collected literature from the institutions which have libraries such as National Museum, New Delhi; Crafts Museum, New Delhi; Baroda Museum, Vadodara; library of Museology Department, Faculty of Fine Arts, M.S. University, Vadodara; Shri Hansa Mehta Library, M.S. University, Vadodara; Indian National Trust for Art and Cultural Heritage (INTACH), New Delhi; Indira Gandhi National Centre for Arts (IGNCA), New Delhi; National Research Laboratory for Conservation of Cultural Property (NRLC), Lucknow; Delhi Public Library, Connaught Place, New Delhi and the library at the Dept. of Clothing and Textiles, Faculty of Family and Community Sciences, of M.S. University, Vadodara. Another important source of information was the internet.

Published and unpublished information residing in archives was assessed. Listing by topic (conservation, shawls, wool, woollen artefacts, preservation, preventive conservation, degradation, textiles, deterioration) from various web directories was searched and information from original and secondary sources was yielded in the form of documents, articles, and photographs.

3.2 Research Design

The research design was framed with the main aim to take up an intensive study on the present status of the conservation practices. The research and development were formulated by keeping in mind the consideration of time frame, resources, labor, cost and specific objectives of the study. The exploratory plus experimental research design was employed along with the multi-methodological approach for research.

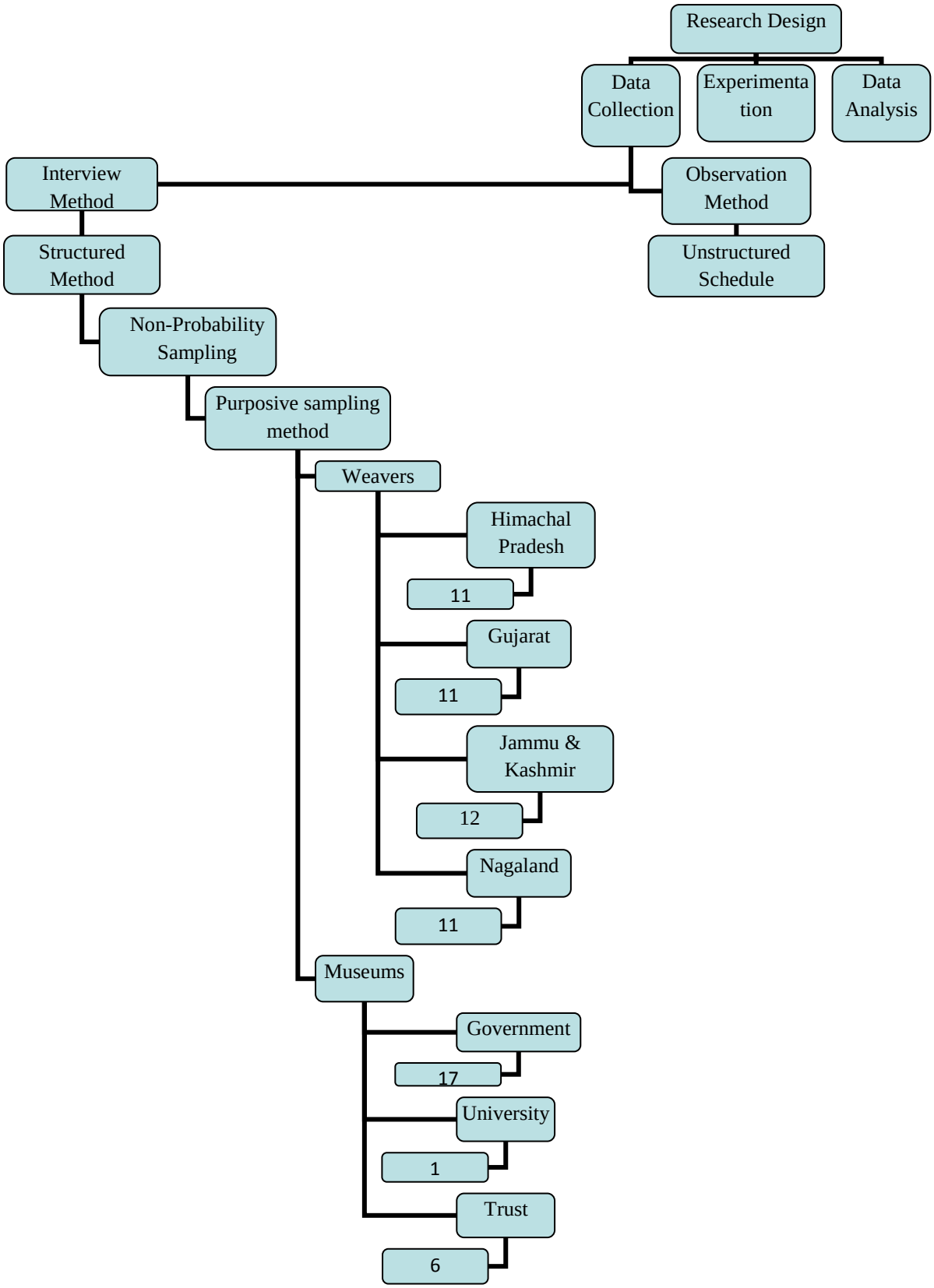
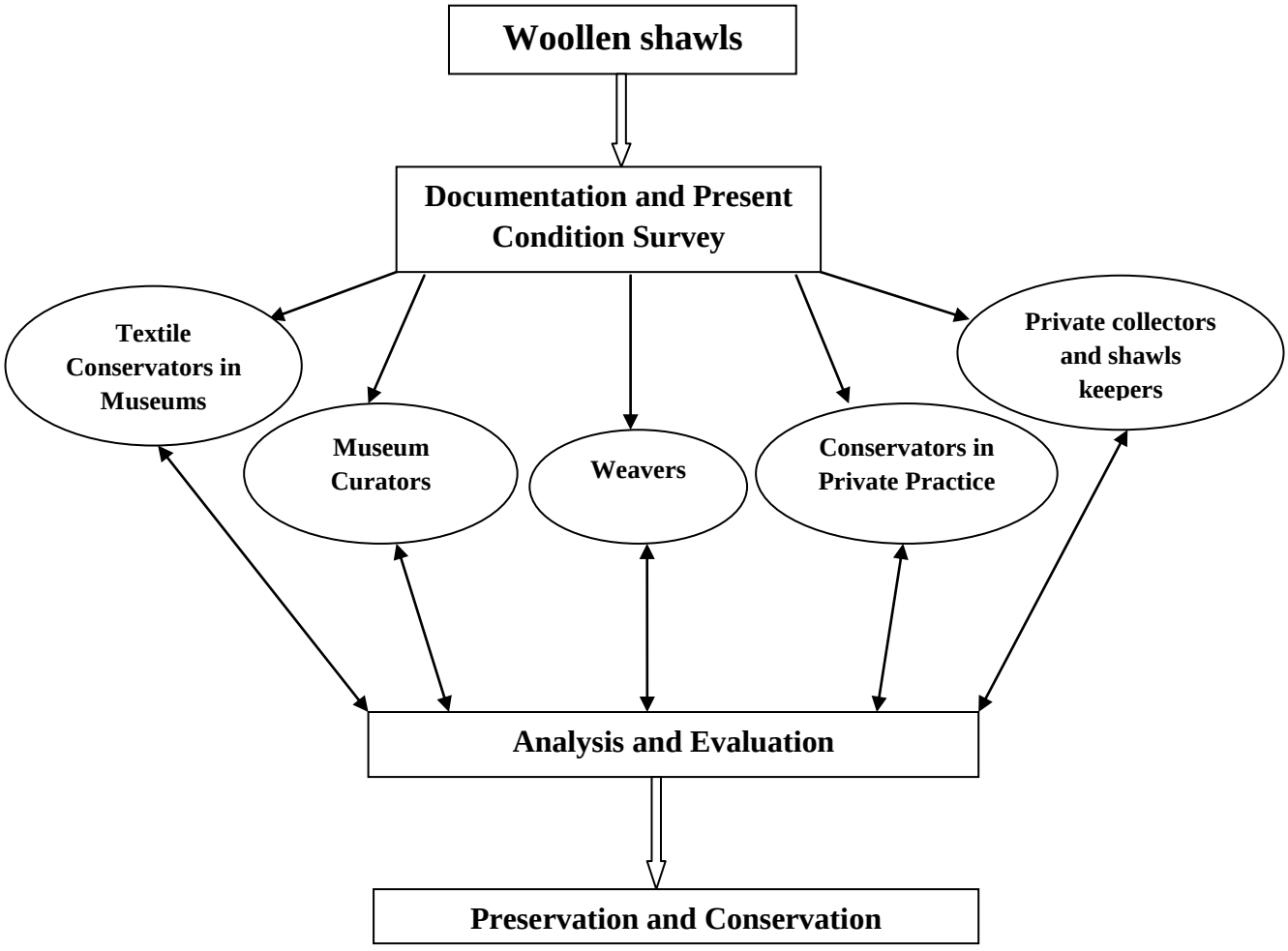


Figure 3.1: Research Design

3.2.1 Conceptual framework

The study on shawl collections included:

- condition survey
- analyzing the reason for deterioration and factors responsible for decay and their present condition
- conserving the woollen shawl and providing appropriate treatment
- providing the preventive care to save the object from further decay and enhancing the life expectancy of the object.



- Recording the conservation practices of shawl collections
- Conservation treatment of woollen shawl of 20th century A.D.

Figure 3.2: Conceptual Framework

3.3 Selection of sample

Samples were collected during the course of study by consulting the related literature and museum professionals.

3.3.1 Locale of the study

Museums from all over India were selected on the basis of shawl collections in them. The museums were selected from the different states. The data as mentioned in the pilot study revealed the total numbers of museums having textile collection in the country out of which those the museums which have shawl collections were selected purposively for the present study.

The colder regions especially the northern region of India was first selected from where the researcher started the research process by interviewing the weavers for gaining the information on shawl weaving and its impact on the preservation and conservation. The detailed methodology was followed to gather information from the master craft persons, individual artisans, designers, and NGOs. The one on one interview method was used to collect information. Since the present study was aimed to understand the mechanism of shawl weaving in different regions of Himachal Pradesh, Gujarat, Jammu & Kashmir, and Nagaland. To make it possible the explanatory exploration was carried out. A semi-structured interview schedule was also framed in order to get an insight into the demographic details, weaving process, looms used, the raw materials, yarns, colours, designs and motifs as well as production and marketing details of the end product. The purposive sampling method was used to record the data. The personal field visits were made to meet the artisans and organizations working in this area. The study was conducted to make people aware of the crafts, techniques so that they can compete with the modern world through various processes of artefact variegation and help to preserve this art of shawl weaving for the future generations.

The study of the literature revealed that Kashmir shawls were among most beautiful and unique in their process of making with respect to their designs, motifs and pictorial representations. The private collectors from all over India were searched through the referencing materials and only those collectors were selected who wanted to share the information regarding their collection. Most of the museums and private collectors had the Kashmiri shawl collections.

The conservators in private practice were mainly selected from the Metropolitan region and Capital of India. It was observed that textile conservation is still a lagging field in India. The conservators were contacted for the information on shawls conservation practices by emphasizing on the woollen shawls conservation in India.

3.3.2 Sampling design

On the basis of the preliminary survey as was mentioned in the international directory and by consulting museum professionals on the field a list of museums from all over India was made. These museums were selected from the following states:

Delhi, Gujarat, Haryana and Punjab, Himachal Pradesh, Jammu and Kashmir, Maharashtra, Nagaland, Rajasthan, Telangana, Uttar Pradesh, and West Bengal.

The list of selected museums for the study is mentioned in the following table along with the interviewed personnel.

Table 3.1: Selected Museums and the interviewed personnel

S. No.	State	Name of the Museum	No. of curators interviewed	No. of conservators interviewed	Name of curator and Designation	Name of the conservator and Designation
1.	Haryana and Punjab	Government Museum and Art Gallery, Chandigarh	1	1	Megha Kulkarni Curatorial Assistant	Devender Ghavre Assistant Chemit
2.	Himachal Pradesh	Himachal State Museum, Shimla	1	2	Hari Chauhan Curator	Gagan Khanna Preservation Officer
						Vikas Banyal Thakur Preservation Assistant
3.	Himachal Pradesh	Bhuri Singh Museum, Chamba			Hari Chauhan Curator	
4.	Himachal Pradesh	Kangra Art Museum, Dharamshala	1	1	Ritu Malkotia Curator	Ripu Dhaman Shah Preservation Assistant
5.	Gujarat	Baroda Museum and Picture Gallery, Vadodara	1	2	Vijay Patel Curator	S. R. Gajjar Chemist
						Dr. Y. G. Dave Senior Chemist

6.	Gujarat	Kutch Museum, Bhuj	1		Shefalika Awasthi Curator	Dr. Y.G. Dave Senior Chemist
7.	Delhi	National Handicrafts and Handlooms Museum, Delhi		2		Sudhir Chatterpal Preservation Assistant Mohmmad Sahil Ansari Technician
8.	Delhi	National Museum, New Delhi	2	3	Anamika Pathak Deputy Curator Zahid Ali Ansari Assistant Curator	Anand Kumar Assistant Conservator Mahesh Kumar Assistant Conservator Mohan Museum Preparator
9.	Uttar Pradesh	Bharat Kala Bhavan, Varanasi	2		Rajendra Prasad Singh Consultant Shri. Kunal Curator	
10.	Uttar Pradesh	State Museum, Lucknow	1	1	Dr. Chandra Mohan Verma Curator	Miss Khemka Curator
11	Uttar Pradesh	Allahabad Museum		1		Rajesh Chandra Mishra Head, Conservation Department
12	Nagaland	State Museum, Directorate of Art and Culture, Government of Nagaland	1		Shingato Curator	
13	Maharashtra	CSMVS, Mumbai	2	2	Manisha Abhay Nene Assistant Director (Collection Management)	Anupam shah Director Conservation

					Miss Divya Assistant curator	Prajakta Jadhav Conservation assistant (Textiles)
14	West Bengal	Indian Museum, Kolkata	1	1	Nita Sengupta Curator	R. P Savita Conservation (Consultant)
15	Rajasthan	City Palace Museum, Jaipur	2		Pankaj Sharma Senior Curator Shefalika Awasthi Collections Manager	
16	Rajasthan	Albert Hall Museum, Jaipur	1		Mr. Rakesh Chholak Curator	
17	Telangana	Salarjung Museum, Hyderabad	1	2	Dr. G Kusum Curator	Kalpana Awasthi Vidhyadhar Conservators
18	Jammu and Kashmir	Dogra Art Museum, Jammu		1		Kirpal Singh Conservator
19	Jammu and Kashmir	Shri Pratap Singh Museum, Srinagar	2		Mtr Rabia Qureshi Curator Mtr Ulfat Museum Assistant	

The private collectors and Private museums taken up for the study have been mentioned in the **Table 3.2.**

Table 3.2: The private organizations and interviewed personnel

S. No.	Name of the organization	Owner of the collection	Care taker of the organization	No. of Persons interviewed
1.	Calico Museum of Textiles, Ahmedabad, Gujarat	Sarabhai Foundation	Sarabhai Foundation	1
2.	Shreyas Folk Museum, Ahmedabad, Gujarat	Shreyas Foundation	Meena Rajput	4
3.	Ahmedabad Trunk- House of M.G., Ahmedabad, Gujarat	Abhay Mangaladas	Manoj Pandaey	1
4.	Tapi Collection, Surat, Gujarat	Praful and Shilpa Shah	Kaushik Gajjar	2
5.	Sanskriti Kendre Museum, Delhi	O.P. Jain	Mrinmoy Das	2
6.	Arts and Crafts Museum, Gandhi Smriti, Bhavnagar	Gandhi Smruti Trust	N.A.	0
7	Living, learning and design centre, Shrujan Campus, Bhuj	Shrujan Trust	Shrujan trustees	1

The conservators in private practice interviewed during the course of study were: Deepshikha Kalsi, Textile conservator, New Delhi; Garima Singh, from INTACH, Delhi; Mamoona Nargis, Jaipur and Sagarika Ghosh, New Delhi.

The museum curators and conservators were selected purposively for the present study. The criteria being only textile curators and textile conservators were established for the research. Names and designation of curators and conservators is subjected to change in different museums. The personal interviews of curators and conservators were conducted separately in order to procure the information regarding the conservation practices of shawl collections. The museum galleries were visited in each museum and empirical data was collected through observation method. The weavers were interviewed wherever there was the possibility to find them. The weaving cooperative societies were also visited. It was done on the basis of the chain-referral sampling method. The deliberate sampling method was used for the selection of conservators in private practice. The data was collected on the basis of their willingness to share information on conservation practices of woollen shawls. Private collectors were selected by using the snowball technique.

The total numbers of weavers interviewed were 45; the total numbers of curators and conservators in museums interviewed were 40 and the total numbers of private collectors and conservators in private practice were 15.

3.4 Documentation of present condition of woollen shawls

For the collection of information, the investigator personally visited all the selected states in India. Personal Interviews and observation method were used for the data collection. To collect information on various aspects of conservation and preservation, the structured interview schedules for the museum curators, museum conservators, private collectors and conservators in private practice were made separately (Annexure-I, II, III, IV). These were prepared based on a preliminary survey. The semi-structured interview schedule (Annexure-V) was made for the weavers to get an insight into the shawls weaving and its present trends. All the schedules were prepared and structured to gain information on conservation practices of shawl collections in India which included various aspects of the display, handling and storage methods as well as the causes of damage to shawl collections. Pertinent questions were formed to facilitate discussion and informal discussions concerning the indigenous and manmade conservation methods were also asked among the chosen individuals.

The observation method was employed to understand the methods and materials for conservation as well as display, handling, and storage methods in museums. The investigator also cross-examined the information provided by the respondents.

The photographs were taken wherever the administration allowed. The digital camera bearing the resolution of 8.0 megapixels was used for photography. Extreme care was taken to collect the reliable information.

3.5 Analysis of present conservation practices adopted for woollen shawls

To expatiate on the existence of conservation practices, the generated collected data from the field and desk research was done through a qualitative and quantitative method in the form of observation notes, verbal responses, conversation documents, and the photographs were synthesized employing descriptive, documentary, content and trend analysis.

For museum curators the structured interview schedule was made to furnish information regarding the preventive measures taken in the museum. The information collected was analyzed under the following heads:

A. General Information about the Museum
B. Textiles Collections and Documentation
C. Museum Exhibition and Display
D. Storage
E. Preventive conservation
   a. Light
   b. Relative Humidity
   c. Biological growth and disinfection
   d. Handling, storage, and housekeeping
   e. Display of textiles
   f. Museum activities
   g. Disasters

The structured interview schedule was made to furnish information regarding the private collection of textiles from private collectors and private museums. The information collected was analyzed under the following heads:

A. General Information about the organization
B. Textiles Collections and Documentation
C. Museum Exhibition and Display
D. Storage
E. Preventive conservation
   a. Light
   b. Relative Humidity
   c. Biological growth and disinfection
   d. Handling, storage, and housekeeping
   e. Display of textiles
   f. Activities
   g. Disasters
   h. Conservation and Preservation

- Analysis of the conservation practices adopted by museum conservators was done in terms of staff availability, conservation documentation, deterioration of shawls/textiles, threats to shawls/textiles, bleaching method on shawls, conservation methods, scientific methods and examination techniques, preservation methods, materials used for conservation, code of ethics for conservation, dyes used for restoration and inspection of textile galleries and stores.

- Analysis of the conservation practices adopted by private conservators was done in terms of conservation documentation, deterioration in shawls/textiles, threats to shawls/textiles, bleaching method on shawls, conservation methods, scientific methods and examination techniques, preservation methods, materials used for conservation, code of ethics for conservation and dyes used for restoration.

For the condition of woollen shawls in museums and with the private museums and collectors: The condition was examined on the basis of the extent of deterioration in three categories as mentioned in the table below by the investigator based on the knowledge and experience.

Table 3.3: The extent of deterioration and their description

Extent of deterioration	Description
Good Condition	No visible damage on the shawl Displayed properly in the showcases Stored properly and kept as per the guidelines Conserved properly Preventive conservation guidelines are being followed properly in the organization
Slightly Damaged	Damages such as small holes, few losses, folds, tears, discolouration, creases and weakening of the structure of the fabric
Badly Damaged	The extremely fragile shawl i.e. which cannot be handled. The fabric which can be broken into pieces anytime. The unstable condition and vulnerable physical structure of shawl.

For museum conservators and conservators in private practice, the structured interview schedules were made to furnish information regarding the conservation practices of shawl collections. The information collected was analyzed in a descriptive manner.

Visual assessment cum observation method along with the photographic documentation was done to assess the present trends in shawls weaving and preservation of tradition by the weavers and the co-operative societies.

3.6 Practical approach to the conservation of woollen shawl

The conservation practices of shawl collections in India were documented. On analysis of these practices, it was found that our traditional woollen shawls were slowly damaging. Most of them, even those on display and storages, were in the very critical

condition. The conservation of deteriorated woollen shawls takes a lot of courage, patience and overall research and experimentation is required to understand the mechanism of the cleansing agents and protective coatings over the woollen fabric. It has been quite tough to secure the damages and to find out the trained textile conservator at the same time. Most of the museum still follow the same steps, same procedure and materials. There is still lack of research and laboratory analysis. Therefore, the researcher planned an experimental approach towards the conservation of woollen shawls along with the fabric samples' tests in order to procure the relevant data on cleansing agents and the usage of protective coatings over the woollen fabric samples.

3.6.1 Woollen samples

3.6.1.A. Test 1: Assessment of the sample test fabric for tensile strength, colorfastness properties, and visual characteristics by using *Sapindus mukorossi* and Synperonic 91/6 as cleansing agents for woollen fabric

For the cleaning of the woollen fabric: Washing of the fabric by using 5% *Reetha* solution and 5% Synperonic 91/6 (a non-ionic detergent).

Fabric: The pure woollen fabric of merino wool was used. The thread count of the fabric was of the 80s. The average 80s wool count is about 19-micron meters in diameter.

Ageing of the sample: Twenty samples were subjected to accelerated ageing as per the ageing standard as stated in American Association of Textile Chemists and Colorists (AATCC) Test Method 26-1994. The samples were kept in the preconditioned oven at 140^0C for approximately six hours. This ascertained that the samples became equivalent to approximately 20 years of ageing.

The cleansing agents used for testing were:

A. *Reetha* Powder as a natural agent for cleaning of wool fabric
B. Synperonic 91/6: a non-ionic surfactant for the cleaning of wool

Dyeing of the samples

Indigo as a vat dye, methyl orange as an acid dye and Procion Red M 25B was used as the reactive dye to dye the samples. For the analysis of colorfastness, the dyed samples were tested.

Results and findings were based on

1. Readings for the tenacity or the tensile strength of the fabric.

Tensile strength = Maximum load/ cross-sectional area. It is measured in N/sq.mm. American Society for Testing and Materials (ASTM) D5035-06 Standard test method for breaking force and elongation of textile fabrics (Strip Method) was done using the Instron Universal Strength Tester. The raveled strip measuring 18cm x 4.5cm was preconditioned at the temperature of 27^{o}C+-2, and 65%+-2 relative humidity for 24 hours. 15 specimens were prepared for testing. The strips were discarded as they broke close to jaws.

2. Readings for the colour strength or colorfastness to washing was tested by International Organization for Standardization (ISO) 105 C10 Test: 2, (50^{o}C). The size of the samples: 5"x5" inches

3. The visual analysis before washing and after washing of the fabric with *Reetha* and Synperonic 91/6 solution.

3.6.1.B. Test 2: Assessment of the sample test fabric for tensile strength, moisture regain, bending, stiffness and visual characteristics by using lanoline and glycerine as protective coatings over the woollen fabric.

Fabric: The pure woollen fabric of merino wool was used. The thread count of the fabric was of the 80s. The average 80s wool count is about 19-micron meters in diameter.

The agents used for testing were:

A. Lanoline

B. Glycerine

1. Assessment of the woollen fabric for tensile strength

It was done by treating the fabric sample with 1% lanoline, 1% glycerine, 2% lanoline, 2% glycerine and comparing it with the untreated sample of the woollen fabric.

2. Assessment of the woollen fabric for moisture regain

   Sample weight of the fabric for moisture regain values was 10 gm.

   ASTM standards designation D123 was used to determine the moisture regain percentage. The aluminium can of 100 ml capacity with a tight cover was used with the $CaSO_4$ as the dehydrating agent. The samples were preconditioned at the 105^oC to 110^oC. Moisture regain was done by calculating the weight of the original fabric samples and oven-dry mass of the fabric sample. The reading was taken at 60%-65% R.H. The calculation was done as Moisture regain percentage = 100 (A-B/B)

3. Assessment of the woollen fabric for bending and stiffness was done through visual analysis
4. Assessment of the wool fabric samples for visual analysis in terms of transparent and translucent properties

3.6.2 Woollen shawl

After analyzing and documenting the conservation practices in different museums of the country, it was observed that there is still a need for the curative conservation approach which is lacking. Woollen shawls are quite interesting in their making and design. There are a number of shawls in the museum which are waiting to get conserved. The researcher found that shawls conservation is still a new term for few collectors and conservators who are new to join this field. Therefore, an experimental set-up was made for the conservation of shawl.

1. The selection of the material

   The shawl was selected on the basis of the type of fiber, degree/ extent of damage and period of the shawl. The shawl which was 50-60 yrs old was undertaken up for the conservation process.

2. The examination method of the material

   Examination of the shawl was done prior to the treatment. The examination was done on the basis of the condition report. A condition report was prepared by the investigator on the basis of primary and secondary sources by keeping in mind the following heads.

   These are as follows:

- Description of shawls
- Construction details
- Type of damages
- Damage description (as stated in table 3.4)
- Extent/degree of damages (as stated in table 3.3)
- Condition rating (as stated in table 3.5)
- Treatment priority (as stated in table 3.6)

The investigator further classified the types of damages based on the information as mentioned in the literature review for the better understanding the category of damages.

Table 3.4: Types of damages and their description

Type of Damage	Damage Description
Physical Damage	areas of loss, missing parts, tears/cuts, creases, fold marks, opening of seams, distortion of the fabric, holes or dents, loosening of joints/stitching, split up, abrasion marks, pilling, frayed edges and untwisting of yarns.
Chemical Damage	powdering of threads, discolouration, staining, brittleness due to acidity, fading of dyes and adhesive residues
Biological Damage	Spots, mould and mildew attack, insect attack, pests damage, rodents, irregular sizes of holes, abrasion and erosion

The condition rating codes and treatment priority codes were used for the documentation of shawl collections in order to classify the shawls for the priority based conservation treatment to be given sequentially.

Table 3.5: Condition rating codes

S. No.	Rating codes	Condition
1	Good	object is stable, can be handled, exhibited with care and transported
2.	Fair	object may be damaged and is vulnerable to further damage, must be handled with caution and may need remedial attention.
3.	Poor	object is seriously compromised i.e. the state at which one should or shouldn't go for further treatment.
4.	Do not handle	object is extremely fragile and vulnerable.

Table 3.6: Treatment priority codes

S. No.	Treatment Priority	Description
1.	Urgent	requiring an immediate conservation treatment or removal from present conditions.
2.	High	object is actively deteriorating. Needs attention
3.	Medium	may be damaged but is not actively deteriorating. May need remedial treatment.
4.	Low	proper storage and care will ensure preservation.

The condition of the shawl was assessed by using the following condition assessment report along with the treatment proposed for each shawl separately. The detailed conservation report was maintained by photographing each step of the analysis, testing methods and treatment given to the shawl.

Condition assessment report for shawl

1. Accession no.: Examiner:
2. Name of the shawl:
3. Owner:
4. Date of examination:
5. Provenance:
6. Date/ period:
7. Material:
8. Shape and size:
9. Colours visible:
10. Ornamentation:
11. Brief Description/ case history (if known):
12. Weave count:
13. Classification of shawls

Classification	
Woven shawl	

Embroidered shawl	
Dyed shawl	
Printed shawl/Painted shawls	
Any other	

14. Condition:

a. Physical damage
   i. front surface and encrustations:
   ii. back surface and encrustations:
   iii. tears/ cuts:
   iv. splits:
   v. holes/ dents:
   vi. loosening of joints/ stitching
   vii. opening of seams:
   viii. fold marks/creases:
   ix. missing part/ losses:
   x. pilling:
   xi. abrasion marks:

b. Chemical damage
   i. acidity:
   ii. powdering threads:
   iii. adhesive residues:
   iv. spots/stains:
   v. fading of dyes
   vi. discolouration
   vii. brittleness due to ageing:

c. Biological damage
   i. spots/stains:
   ii. mould and mildew attack:
   iii. insect attack:
   iv. pests damage :
   v. rodents:
   vi. holes:

d. Are the dyes fast to washing/ Fugitive dyes:

e. Does it require another support?

f. Can it take needle or thread?

15. Condition of ornamentation:

16. Previous restoration/ old repair:
   i. soiling:
   ii. stains:
   iii. dirt:
   iv. deposits:

v. discoloured adhesives:
vi. discoloration:
vii. fading:

17. Others recommendations:

18. Photographic record:
    i. diagrams
    ii. photographs locating the damage
    iii. photographs including the back and front view
    iv. details of damage
    v. before during after photos of the conserved areas
    vi. detail shots of the conservation treatment

19. Treatment proposed/planned:

20. Degree/Extent of damage:

21. **Condition rating**:
    i. good
    ii. fair
    iii. poor
    iv. do not handle

22. **Treatment priority**:
    i. urgent
    ii. high
    iii. medium
    iv. low

3.6.2.A Remedial conservation of woollen shawl

The analysis and evaluation of the treatment

Before conservation treatment, the efforts were made to examine each and every aspect of the shawl before starting any treatment over it. The certain types of equipment were required during the process such as 60x magnifying glass, camera, handheld microscope, thread counter, pick glass, hand gloves, and optivisor.

1. Checking for colorfastness and fixing the dyes

The coloured shawl was checked for the colorfastness. Each colour was checked separately by using cotton swabs. Fugitive dyes were fixed by the application of common salt (0.5%).

2. Cleaning process:

Mechanical cleaning of the shawl was done. The unwanted material such as dust, small particles of soiling and large contaminants were removed physically from the fabric by using tweezers. They were brushed off and removed with a vacuum cleaner. A net screen was placed on the artefact while using it. The brushes were used in the weaving direction to remove the contaminants. This artefact was dry cleaned by using proper solvent.

3. Stains removal

Vacuum suction table was used to reduce staining. Mudstain was cleaned mechanically with the help of the scalpel.

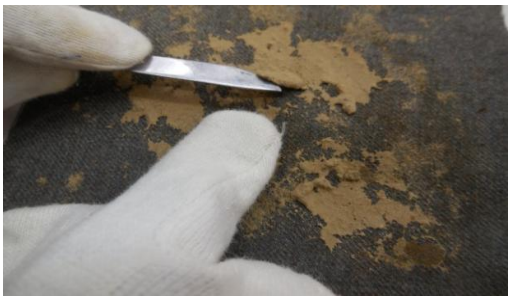


Plate 3.1: The removal of dirt mechanically with the help of scalpel

Plate 3.2: Brushing off the dust particles by using soft flat brush

4. Flattening of the textile

Flattening of the shawl was done by keeping the muslin cloth over it and providing the moisture by using the spray bottle. The iron was set on wool in order to provide it the required temperature.

5. Reinforcing or strengthening of shawl

It was done by using the stitching technique.

6. Rolling of the shawl

The poly vinyl chloride pipe and proper care was taken for the purpose of rolling of the shawl.