JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

INNOVATIVE SUSTAINABLE SPONDYLOSIS NECK BAND FOR CORPORATE WOMEN

[1]Leelabai S S, [2]Nagaveni K

[1]Student, [2]Asst. Professor
[1]Department of Fashion Design,
[1]Ramaiah University of Applied Sciences, Bangalore, Karnataka, India.

Abstract: The design and creation of a sustainable spondylosis band for professional women is the main topic of this essay, which also discusses the usage of natural hemp, natural bamboo, and natural coloured cotton yarn. The goal is to produce a spondylosis band that is visually beautiful, comfortable, and ecologically sustainable. To accomplish this, a special spondylosis band was made using a blend of environmentally friendly materials and conventional colouring techniques. The spondylosis band passed tests for comfort, sturdiness, and breathability, and the results indicated that the design was appropriate for professional women. Also, the procedure uses natural colours that are safe for the environment and non-toxic. The results of this study may help designers create eco-friendly clothing for professional women.

Researching the many eco-friendly materials that may be utilised to make the spondylosis band, such as natural hemp, natural bamboo, and natural cotton yarn coloured in natural colours. knowing the advantages and disadvantages of each material's qualities. figuring out the ideal proportions of these components for the spondylosis band, as well as any other materials that could be required to provide a sturdy and attractive finished result. creating a spondylosis band with an appealing appearance and functionality that gives the wearer the support they require. This might consist of drawings, 3D models, and other visual examples of the product. creating a productive and economical production procedure for the spondylosis band. This might involve locating sustainable supplies, creating the product, packaging it, and distributing it. Evaluation of the spondylosis band's efficacy in corporate women utilising natural hemp, natural bamboo, and natural cotton yarn in addition to knitted cotton cloth with natural dyes. User testing, interviews, and surveys may be part of this. This will make it possible to improve the product and create marketing plans.

An unique approach to sustainable fashion is the creation and development of a sustainable spondylosis band for corporate women utilising natural hemp, natural bamboo, and natural coloured cotton yarn in addition to knitted cotton fabric with natural dyes. By employing eco-friendly materials, this product assists women in the workplace in terms of both their health and their appearance. It is certain to be a success with business ladies who want to look well and do good for the environment thanks to its elegant appearance and well-thought-out design.

Keywords **- Spondylosis band, knitted cotton fabric, hemp fiber, bamboo fiber, and cotton yarn.**

I. INTRODUCTION

Design and development of sustainable spondylosis band for corporate women is an innovative approach towards providing an easy and comfortable solution to an age-old problem of back pain, often caused due to extended hours of sitting. This unique design, which utilizes natural dyed knitted cotton fabric, natural hemp fiber, natural bamboo fiber and natural dyed cotton yarn, can provide aesthetic as well as health benefits to the corporate women. The design and development of this spondylosis band aims to reduce the excruciating pain and discomfort associated with spondylosis and to encourage the use of sustainable materials for the benefit of the environment. The phrase "cervical spondylosis" refers generally to issues with the neck's spinal discs brought on by incorrect neck movements and positions[1].

Even while it may not be used as frequently as the term "green," the word "sustainability" and its derivatives are nevertheless used pretty frequently. It is a favourite among marketers to highlight the benefits of their products. Environmentalists believe that the future is more promising because of its potential. The usage of the term in some areas may have trivialised the fact that few things are actually sustainable and diluted its meaning[2].

The protein fibres (wool, silk, skin, horn, and feathers) and the cellulosics are the two types of natural fibres that are ideal for yarn, piece goods, basketry materials, etc (cotton, linen, hemp, ramie, jute, and fibrous vegetable basketry materials). Proteins are long-chain amino acid polymers.[3].

Clothing can be made through many means, and one of which is crochet. Some of the other methods include weaving, bonding, and the one which is closely related to crochet, knitting, etc. Crochet has, however, evolved from the process of making just clothing to making other decorative stuff. This means that you might not want to wear just neckband, but you can actually decorate neckband with crochet stuff[4].

The sustainable spondylosis band for corporate women is a wellness initiative designed to help improve the health and wellbeing of working women. The project aims to reduce the risk of spondylosis, a condition which causes pain and stiffness in the lower back and

neck, through a series of lifestyle interventions. The initiative involves the development of a band, made from sustainable and medical grade materials, which is worn by female workers during the day. The band is designed to provide support for the lower back and neck whilst also promoting healthy posture. The band is adjustable and can be worn either under or over clothing, depending on the user's preference. It is made from medical grade materials and is designed to be comfortable and supportive throughout the day. The material used is also sustainable, meaning it can be reused and recycled, reducing waste and its impact on the environment. In addition to the band, the initiative also involves an educational component. This component provides information to women on how to reduce their risk of spondylosis. This includes advice on how to maintain good posture, how to exercise safely, and how to manage stress. The initiative also provides resources on how to access medical advice and support if needed. Overall, the Sustainable Spondylosis Band for Corporate Women is an important initiative that seeks to improve the health and wellbeing of female workers. By providing support and education, it aims to reduce the risk of spondylosis and improve the lives of those affected by the condition. It is a simple yet innovative way to help women maintain their health and wellbeing whilst also helping to reduce environmental waste.

II. METHEDOLOGY

2.1 Dyeing of cotton knit fabric using Eucalyptus Leaves

The first step is to create a mordant by combining alum and warm water. Soak the textile material in the solution, mix it for 20 to 25 minutes to ensure material mobility, and then soak the sample for 45 minutes. Instead of washing, drain the alcoholic beverage and gently compress the mordanted material. Pick eucalyptus leaves off the tree, wash them twice to clean them, then dry them under the sun to extract the dye. Make little bits out of the leaves. 45 minutes later, pour boiling water to the chopped leaves. Bring the solution's temperature up to 80 C. Place the cloth in the dye solution and swirl it continually in both clockwise and anticlockwise directions for 20 to 25 minutes. Next, stir it randomly every 15 minutes for the next two hours. Empty the alcohol, then give the coloured material a gentle squeeze. After washing the coloured material in plain water, it is treated at 60°C with 0.5 gpl of non-ionic detergent. Drain the solution, give the material a light squeeze, and then rinse it in plain water until all of the detergent has been removed. Dry in the shade.

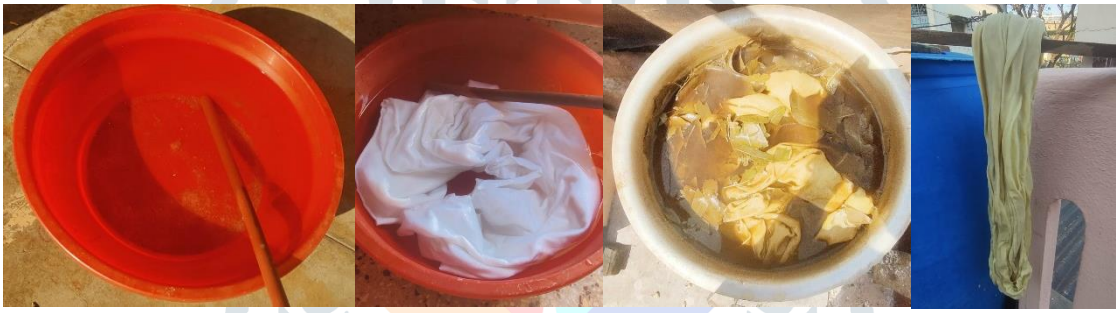
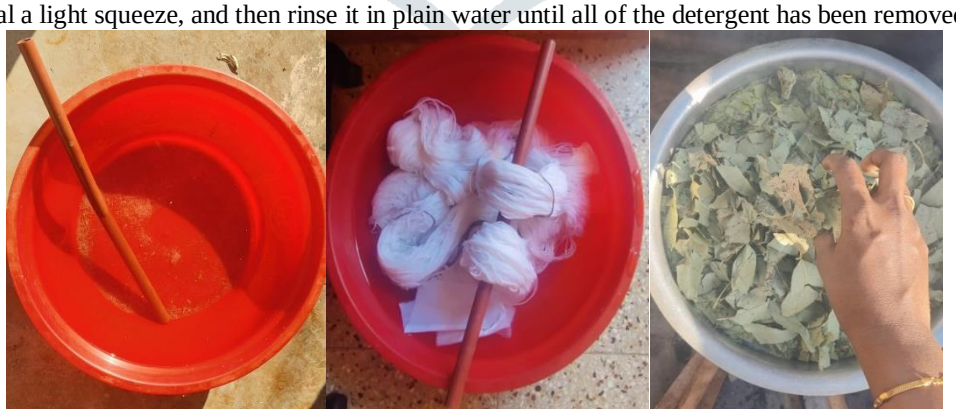


Figure 2.1: Stage-wise dyeing of cotton knit fabric using eucalyptus leaves.

2.2 Dyeing of cotton yarn using Eucalyptus Leaves

The first step is to create a mordant by combining alum and warm water. Soak the textile material in the solution, mix it for 20 to 25 minutes to ensure material mobility, and then soak the sample for 45 minutes. Instead of washing, drain the alcoholic beverage and gently compress the mordanted material. Pick eucalyptus leaves off the tree, wash them twice to clean them, then dry them under the sun to extract the dye. Make little bits out of the leaves. 45 minutes later, pour boiling water to the chopped leaves. Bring the solution's temperature up to 80 C. Place the cloth in the dye solution and swirl it continually in both clockwise and anticlockwise directions for 20 to 25 minutes. Next, stir it randomly every 15 minutes for the next two hours. Empty the alcohol, then give the coloured material a gentle squeeze. After washing the coloured material in plain water, it is treated at 60°C with 0.5 gpl of non-ionic detergent. Drain the solution, give the material a light squeeze, and then rinse it in plain water until all of the detergent has been removed. Dry in the shade.



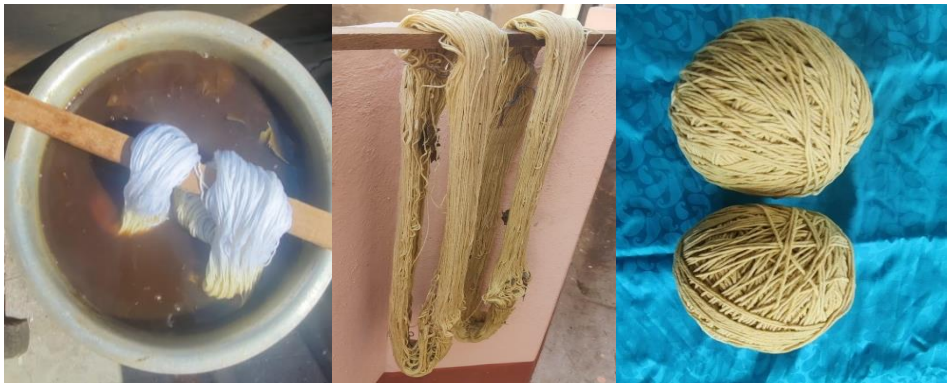


Figure 2.2: Stage-wise dyeing of cotton yarn using eucalyptus leaves.

2.3 Concept Generation

Selected design through ethnography study.
Design 1

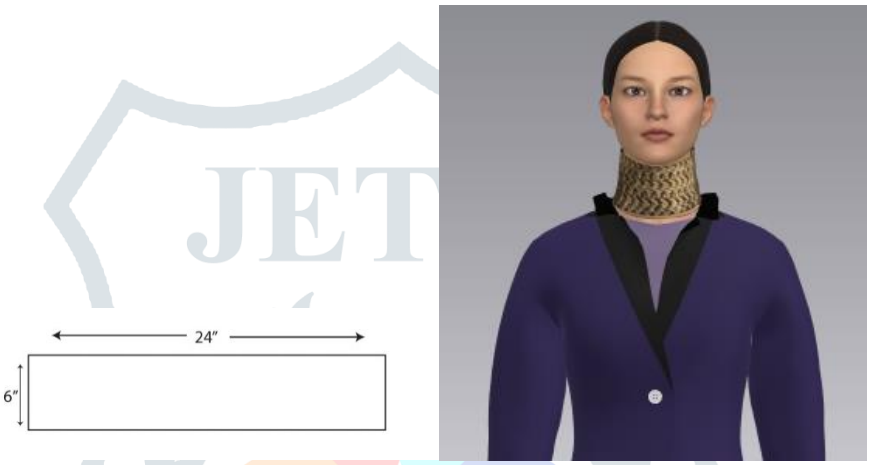
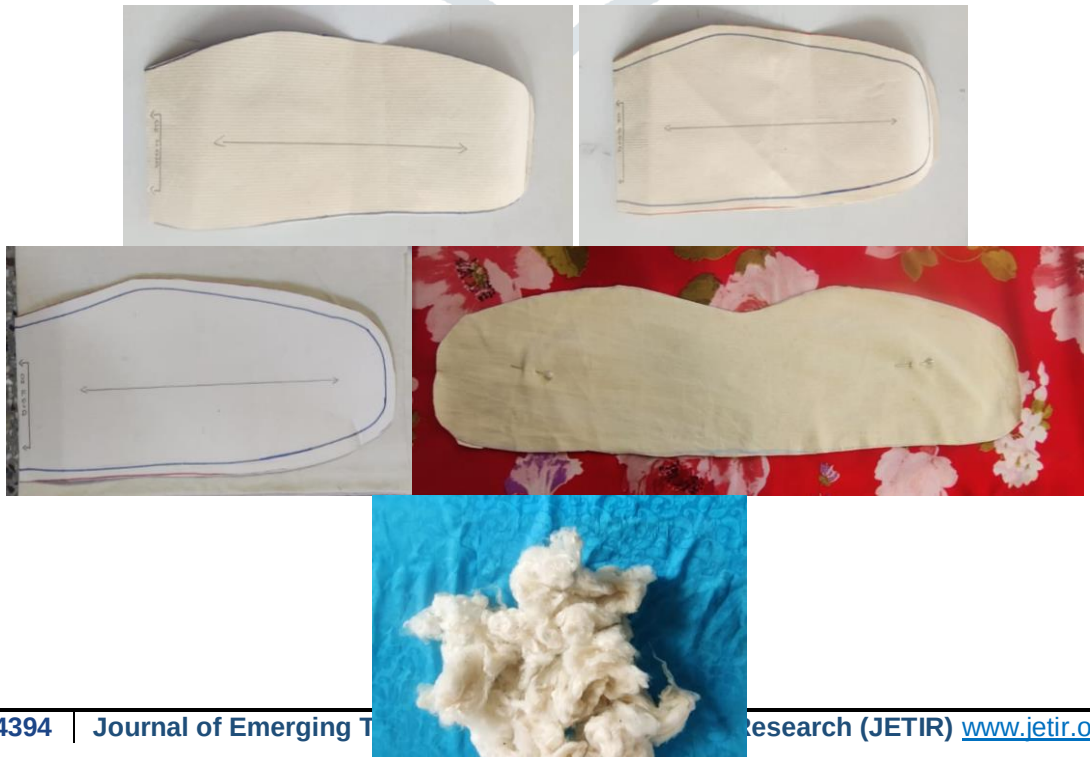


Figure 2.3: Selected design for crochet product development.

2.4 Product construction

First draft the pattern, add seam allowance for the drafted pattern. Place the pattern on fabric and trace the pattern on dyed fabric. Cut the fabric for 2 products. Stitch 2 layers around and reverse the fabric. Loosen up the natural fiber and Stuff the natural fiber (cotton and bamboo) inside the fabric. Stitch Velcro and give a top stitch to hold the fiber stiff.



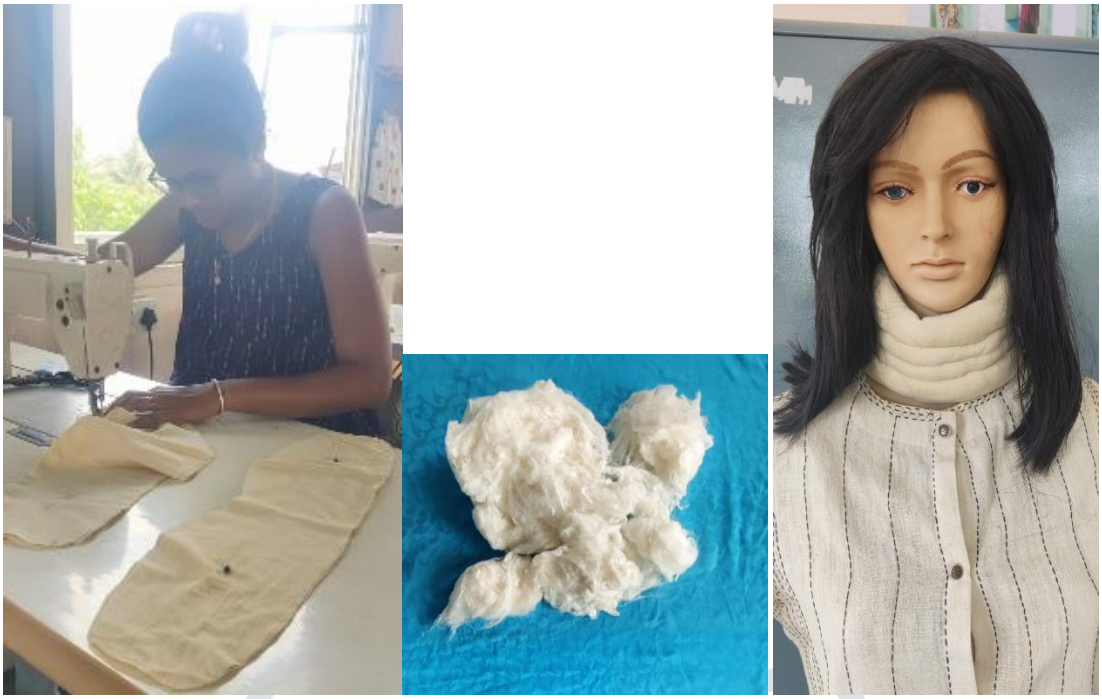
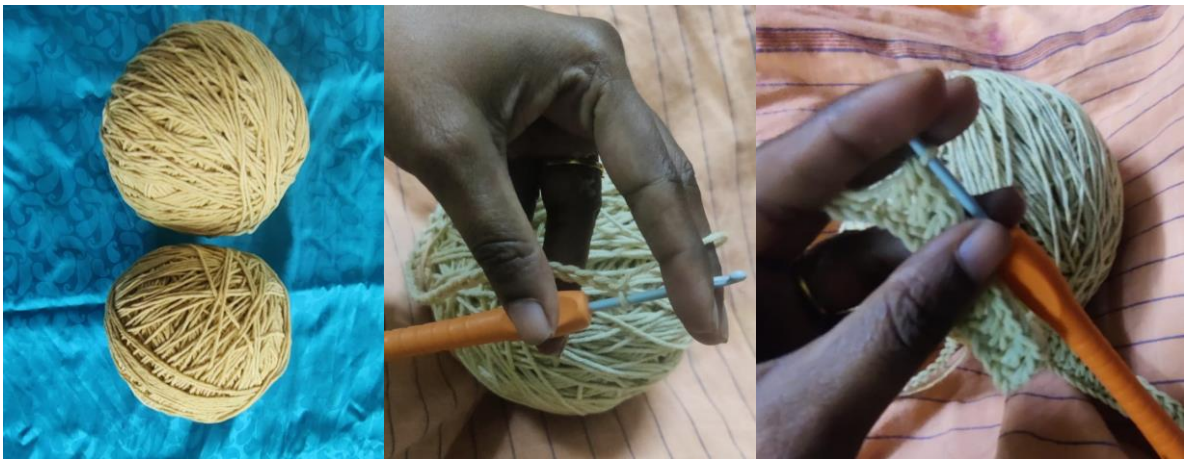


Figure 2.4: Stage-wise product development.

2.5 Crochet

Knitting and other more well-liked types of crafting frequently overshadow the handicraft art of crochet. It has been practiced as a craft for many years; the earliest records of it date to the early 19th century. The art of crocheting is very adaptable and may be used to make a variety of things, including apparel, blankets, and accessories. Fundamentally, crochet is a method of looping yarn to make cloth or lace. Hooks, which are available in a variety of sizes and shapes, and yarn or thread are the primary materials required for crocheting. The yarn or thread is first wrapped around the hook to form a single loop, and then the process is repeated. The loop is then expanded by pulling the hook through it. Once the necessary number of loops is produced, this process is repeated. From there, a number of stitches may be used to create patterns and designs. One of the charms of crochet as a craft is its adaptability. It may be used to make products for many different uses, including apparel and household furnishings. Moreover, a wide variety of designs and textures may be produced by combining the crochet stitches. For instance, a basic fabric may be made with just one crochet stitch, while beautiful lace can be made using more complicated stitches. Moreover, crochet may be used to create a broad variety of accessories, including hats, scarves, wallets, and even jewelry. Crocheting is a terrific stress-relieving exercise in addition to being versatile. It can assist to concentrate the mind and provide a sense of calmness as a form of meditation. Moreover, it can aid in lowering anxiety and raising mood. In addition, crochet may be used to make personalized presents for loved ones and friends or even to collect money for a good cause. In conclusion, crochet is a very adaptable art that can be used to make a variety of things. It is a fantastic method to unwind and lower tension. No of your level of experience, crochet is a fun and gratifying activity that can be used to create lovely and one-of-a-kind products. Few terminologies of crocheting are: Chain stitches (Abbreviation = ch) Chain stitches are the first crochet stitches you need to learn because they form the base for all other stitches. Double Crochet (Abbreviation = dc) Double crochet is the easiest crochet stitch to learn and one crocheter use most frequently, either on its own or in combination with other stitches[5].



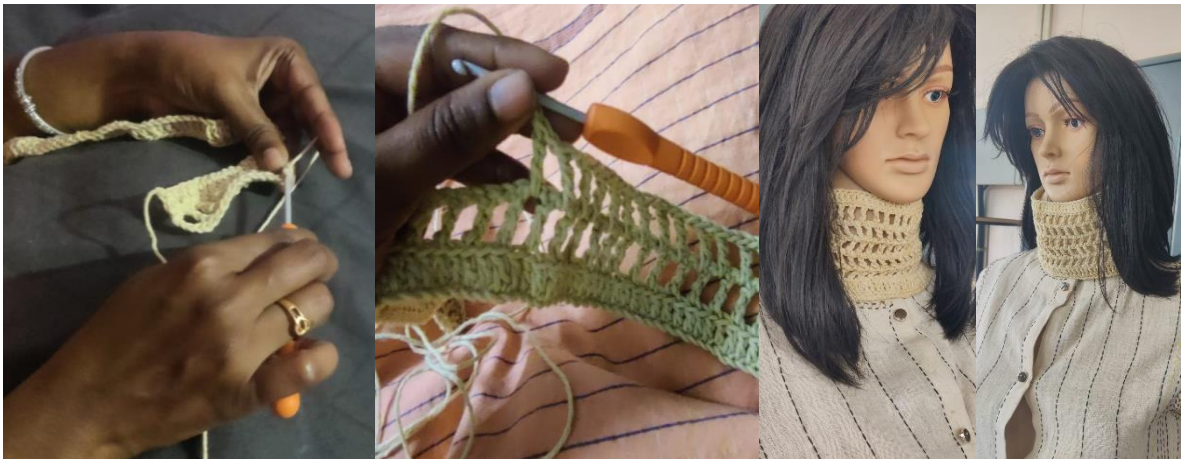


Figure 2.4: Stage-wise crocheting the naturally dyed yarn.

III. RESULTS AND DISCUSSION

3.1 Geometric properties tested both before and after dyeing the fabric.

Determination of GSM, thickness, bursting strength, count, tearing strength, tensile strength before and after dyeing as follows.

Table.3.1 GSM, thickness, bursting strength, count, tearing strength, tensile strength before and after dyeing

Tests conducted	Before Dyeing		After Dyeing	
GSM	109		112	
Thickness	39		46	
Bursting strength	7.31		6.31	
Pilling	3		3	
	Warp	Weft	Warp	Weft
Count	52	16	52	16
Tearing strength	41	44	41	44
Tensile strength	0.0010	0.0015	0.0010	0.0015

The GSM, thickness, bursting strength, pilling before dyeing the fabric and after dyeing the fabric increased the fabric property after dyeing as shown in Table 3.1. The count, tearing strength, and tensile strength conducted before dyeing the fabric and after dyeing the fabric did not affect the yarn count as shown in Table 3.1.

3.2 Geometric properties tested both before and after dyeing the yarn.

Determination of yarn count, yarn twist, yarn evenness before and after dyeing as follows.

Table.3.2 Yarn count, yarn twist, yarn evenness before and after dyeing

	Before Dyeing	After Dyeing
Yarn Count	2/5	2/5
Yarn Twist	5	5
Yarn Evenness	Even	Even

The yarn count test conducted before dyeing the yarn and after dyeing the yarn did not affect the yarn count as shown in Table 3.2. The yarn twist test conducted before dyeing the yarn and after dyeing the yarn did not affect the twist of the yarn as shown in Table 3.2. The yarn evenness test conducted before dyeing the yarn and after dyeing the yarn did not affect the evenness of the yarn as shown in Table 3.2.

3.3 Color fastness test for dyed fabric.

Determination of color fastness to rubbing and washing for dyed fabric as follows.

Table.3.3 Color fastness to rubbing and washing for dyed fabric

Colour fastness to rubbing		
Staining on Cotton	Dry	Wet
Warp	5	4
Weft	5	4
Colour fastness to washing		
Change in color	4	
Staining on Cotton	4-5	

The color fastness test conducted on the dyed fabrics gave the results as shown in Table 3.3. The sample had excellent dry fastness to rubbing and good fastness to wet rubbing. The change in color of dyed sample to wash test was poor until 3 washes after which the dyed fabric had a fastness rating of 4.

3.4 Color fastness test for dyed yarn.

Determination of color fastness to rubbing and washing for dyed yarn as follows.

Table.3.4 Color fastness to rubbing and washing for dyed yarn

Colour fastness to rubbing		
Staining on Cotton	Dry	Wet
Yarn	5	4
Colour fastness to washing		
Change in color	4	
Staining on Cotton	4-5	

The color fastness test conducted on the dyed fabrics gave the results as shown in Table 3.4. The sample had excellent dry fastness to rubbing and good fastness to wet rubbing. The change in color of dyed sample to wash test was poor until 3 washes after which the dyed fabric had a fastness rating of 4.

IV CONCLUSION

A fantastic method to give people with spondylosis a comfortable and fashionable choice is to create and build a sustainable spondylosis band for corporate ladies utilising natural cotton fibre, natural cotton yarn, natural bamboo fibre, and natural coloured cotton yarn for aesthetic using crochet technique. By using eco-friendly materials, this band will not only serve to alleviate the symptoms of spondylosis but also lessen its negative effects on the environment. The product is safe for the wearer and the environment thanks to the use of natural fibres and colours, and it is aesthetically beautiful thanks to the application of crocheting skills. This sustainable spondylosis band is a terrific method to provide spondylosis sufferers comfort, elegance, and sustainability.

V ACKNOWLEDGMENT

I would like to record my sincere gratitude and thanks to my academic mentor, Ms,Nagaveni K. Asst. Professor, Department of Fashion Design, for guidance and support throughout my research.

REFERENCES

[1] Raghvendra Kumar Mishra, Valentina Emilia E. Balas, Vijender Kumar Solanki (15 May 2020) An Industrial IoT Approach for Pharmaceutical Industry Growth. Elsevier Science.
[2] Tim Frick (23 August 2016) Designing for Sustainability. O'Reilly Media.
[3] J. N. Liles (1990) The Art and Craft of Natural Dyeing. University of Tennessee Press.
[4] Holly Arroyo (27 January 2022) Crochet Pattern Books. Youcanprint.
[5] Claire Montgomerie (6 August 2020) The Crochet Book. Dorling Kindersley Limited 3.