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Design and Development of Multifunctional Women's Wear with Fragrance Finish for Professional Workspaces and Gym

Duppala Krishna Priya[1] Dr Mamatha G Hegde[2]

[1] *Undergraduate Student, B.Des in Fashion Design, M S Ramaiah University of Applied Sciences*

[2] *Assoc Professor and HoD, B.Des in Fashion Design, M S Ramaiah University of Applied Sciences*

Abstract — **The present study focuses on the design and development of multifunctional women's wear integrated with fragrance finishing, suitable for professional workspaces and gym environments. With the increasing demand for versatile clothing in modern lifestyles, there is a need for garments that combine comfort, functionality, and aesthetic appeal while reducing the need for multiple outfit changes. This research aims to bridge the gap between formal office wear and activewear by creating garments that can seamlessly transition between both settings. A user-centered approach was adopted, incorporating both primary and secondary research methods. A survey was conducted among urban women to analyze preferences related to clothing, comfort, fabric selection, sweat management, and fragrance acceptance. Based on the findings, suitable fabrics such as Lycra blends and structured knits were selected, and multiple garment designs were developed. Fragrance finishing was applied using a binder-based dip method, and fabric swatches were tested for wash durability and moisture activation. The results indicated that the fragrance was retained after washing to a certain extent and was effectively reactivated in the presence of moisture. The developed garments successfully combined professional aesthetics with functional performance, demonstrating the potential of multifunctional clothing integrated with fragrance finishing.**

Index Terms- Multifunctional Clothing, Office-to-Gym Wear, Fragrance Finishing

I. INTRODUCTION

The changing lifestyle of modern working women has created a demand for clothing that is versatile, comfortable, and suitable for multiple environments. With increasing work pressure and time constraints, individuals often transition directly from professional settings to fitness activities, creating a need for garments that can adapt to both conditions. Traditional office wear lacks flexibility and comfort, while activewear does not meet the aesthetic requirements of professional environments.

Multifunctional clothing has emerged as a solution to this problem by combining features of different garment categories into a single design. In addition to comfort and flexibility, odor control and freshness have become important considerations, especially in garments used for extended periods and physical activity. Fragrance finishing in textiles offers a potential solution by enhancing the sensory experience and maintaining freshness.

This study focuses on the design and development of multifunctional women's wear that integrates fragrance finishing to improve comfort, usability, and overall performance. The research explores fabric selection, design development, fragrance application techniques, and testing methods to create garments suitable for both office and gym environments.

II. LITERATURE REVIEW

Multifunctional clothing has gained importance in modern fashion due to the need for versatility and efficiency. Studies indicate that consumers prefer garments that combine comfort, flexibility, and professional appearance. The rise of athleisure has further blurred the boundaries between workwear and activewear.

Fabric selection plays a crucial role in multifunctional garments, with stretchable and breathable materials such as Lycra blends, cotton-spandex, and ponte knit being widely used. Sweat management and moisture control are essential factors influencing comfort during extended wear.

Fragrance finishing in textiles has been explored as a method to enhance freshness and reduce odor. Techniques such as spray application, dip method, and binder-based finishing are commonly used for fragrance application. However, limited research exists on the integration of fragrance finishing in professional multifunctional clothing, which forms the basis of this study.

III. Methodology

The research adopts a mixed-method approach combining survey analysis, fabric selection, design development, fragrance finishing, and testing.

A. Survey Analysis

A survey of approximately 50 respondents was conducted to analyse preferences related to clothing, comfort, fabric, and fragrance.

B. Fabric Selection

Fabrics such as Lycra blends, cotton-spandex, and structured knits were selected based on stretchability, comfort, and suitability for fragrance finishing.

C. Design Development

Multiple design concepts were created, and final garments were selected based on functionality and aesthetics.

D. Fragrance Finishing

A binder-based dip method was used to apply fragrance onto fabric swatches.

E. Testing

- Wash durability test
- Moisture activation test

Fig no. 1 Fragrance Finish Application

Fig no. 2 Finalised Design made using Procreate

Fig no. 3 Finalised Design made using Procreate

Fig no. 4 Fabric Wash Test

Fig no. 5 Moisture Test on Fabric

IV. RESULTS/FINDINGS

The results of the study are based on the analysis of survey data collected from approximately 48–52 respondents, primarily urban women. The findings indicate a strong preference for multifunctional clothing, with about 82% of respondents expressing interest in garments that can transition between office and gym environments. This highlights the growing need for versatile clothing that supports modern lifestyles and reduces the need for multiple outfit changes.

Comfort and fabric performance were identified as key factors influencing clothing choices. Around 88% of respondents preferred stretchable and breathable fabrics, while 76% favored wrinkle-resistant materials suitable for professional settings. In terms of design, 79% preferred relaxed or wide-leg trousers, and 71% showed interest in sleeveless or lightweight tops, indicating a demand for garments that combine ease of movement with a polished appearance.

Sweat and odor management were major concerns among users, with approximately 84% reporting discomfort due to sweat during extended wear. Additionally, 81% expressed the need for odor control features in clothing. The acceptance of fragrance finishing was notably high, with about 86% of respondents open to fragrance-integrated garments, and 78% preferring mild floral or citrus fragrances that are suitable for both office and gym environments.

Table No 1. Wash Test Results

No. of Wash Cycles	Fragrance Intensity (Before Wash)	Fragrance Intensity (After Wash)	Observation
0 (Initial)	Very Strong	Very Strong	Fresh and clearly noticeable fragrance
1 Wash	Very Strong	Strong	Slight reduction in intensity
2 Washes	Very Strong	Moderate	Noticeable fragrance retained
3 Washes	Very Strong	Mild	Reduced but still detectable
5 Washes	Very Strong	Very Mild	Minimal fragrance present

Table No 2. Moisture Test Results

Condition	Fragrance Intensity	Observation
Dry Fabric	Mild	Low fragrance intensity in dry state
Slightly Moist (Water Spray)	Strong	Fragrance intensity increases upon moisture exposure
Fully Moist	Very Strong	Maximum fragrance release observed
After Drying Again	Mild	Fragrance returns to lower intensity

V. CONCLUSION

The study demonstrates that multifunctional women's wear integrated with fragrance finishing can effectively meet the needs of modern working women. The garments provide a balance between professional appearance and active comfort while enhancing freshness through fragrance finishing. The research highlights the potential for innovation in functional fashion design and opens opportunities for further development in textile finishing and multifunctional apparel.

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