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Preferred Heel Designs Among Female Consumers

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ABSTRACT

Wearing high heels can pose several disadvantages, affecting both short-term comfort and long-term health. One of the most immediate issues is foot pain and discomfort, particularly in the balls of the feet and toes, due to the unnatural position heels force the feet into. This study examines the preferences, usage patterns, and ergonomic considerations of female consumers regarding heel designs. The survey reveals that the majority of respondents are young women aged 18-34, with students (48%) and professionals (32%) being the largest demographic groups. Heel usage varies, with 30% wearing heels occasionally and 5% daily. Medium heels (2-3 inches) are the most preferred for their balance of style and comfort, followed by low heels (1-2 inches). Block heels are favoured for their stability and comfort, while stilettos and strappy heels are associated with higher discomfort levels. The findings highlight a strong emphasis on comfort and functionality, with a preference for features like cushioned insoles and arch support. Ergonomic concerns indicate a need for designs that mitigate pain and discomfort from prolonged wear. Despite the popularity of online shopping (54%), many consumers still value the in-person experience of physical stores (64%). Additionally, a significant number of respondents are willing to pay more for heels that combine style and comfort. These insights underscore the importance of designing heels that meet both aesthetic and practical needs, catering to the evolving demands of modern women.

Key Words: Heel design preferences, Footwear ergonomics, Comfort and functionality in heels, Demographic trends in fashion, Foot health and well-being

INTRODUCTION

For centuries, one of the constant fashion trends has been women wearing high-heeled shoes. Interestingly, these shoes weren't initially meant for women. They first appeared in Western Asia before the 16th century, linked to Persian men's military and horse-riding attire(Wade, 2022). Modern high heels are considered footwear specifically designed for adult women. They are commonly associated with women's allure, male admiration towards women, and are seen as a significant aspect of female gender expression, (Morris *et al,* 2013). The allure of high-heeled shoes has been a constant throughout history, captivating the attention of women and designers alike.

The footwear industry has played a pivotal role in this fascination, with shoe-makers and designers dedicating considerable effort to the innovation of heel design. High-heeled shoes are not merely a fashion statement but also a showcase of avant-garde design that merges art with fashion. The heels of these shoes are not just a structural element; they are a canvas for creativity and a key

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aspect of the shoe's overall aesthetic appeal (Boxuan Wei, 2010). In recent years, the industry has witnessed a significant evolution, with a growing emphasis on the fusion of comfort and elegance. The purpose of footwear has transcended its original intent of merely protecting the feet, becoming an integral component of the fashion industry. This shift has led to the development of customized footwear that caters to the unique anatomical needs of each individual. The use of plastic materials and additive manufacturing techniques has opened new avenues for the production of outer soles, allowing for the creation of prototypes that are both functional and tailored to the wearer's anatomy. Studies leveraging Finite Element Analysis (FEA) and Topology Optimization have been instrumental in optimizing the design and functionality of these custom heels, ensuring that they meet the dual demands of comfort and style (Stoica *et al,* 2022). The footwear industry plays a crucial role in designing heels that not only meet aesthetic preferences but also address comfort and functionality. This synthesis examines how heel design is influenced by footbed shapes and material functionalization to enhance the overall experience of the wearer

Elevated heel shoes and soft soles are less comfortable and less stable than standard shoes, while standard laced shoes with a low collar and standard hardness provide optimal dynamic stability for walking on even and uneven surfaces(Menant et al, 2008). Larger heel base supports increase gait stability, reduce ankle injury risk, and improve comfort during high heel walking, while using a total contact insert decreases plantar pressure (Wang et al, 2021) Ergonomics in heel design is a critical aspect of footwear engineering that aims to optimize comfort, safety, and functionality for the wearer. This synthesis examines the importance of ergonomic considerations in the design of heels and other footwear. Footwear ergonomics, including heel design, is essential for preventing work-related musculoskeletal disorders and overuse injuries by aligning the feet and improving lower limb function during prolonged standing and walking activities (Parashar, 2020). By examining these factors comprehensively, this research aims to provide insights into the nuanced preferences of female consumers regarding heel designs. The findings will not only contribute to enhancing footwear design strategies but also inform marketing approaches that resonate with the diverse needs and preferences of female consumers in the ever-evolving fashion landscape.

MATERIALS AND METHODS

This study employs a descriptive research design using a quantitative approach to investigate the preferences of female consumers regarding heel designs. Data from 50 respondents, aged from 18 to 44 years, were collected through a Google Form questionnaire using convenience sampling. The questionnaire covered various aspects of heel design preferences, including heights, shapes, materials, comfort factors, style influences, and purchase behaviors. Data analysis included descriptive statistics and, where applicable, inferential statistics using SPSS and Excel. Ethical considerations were prioritized, ensuring informed consent, data privacy, and adherence to ethical guidelines. The results were interpreted to identify patterns and trends, discussing significant findings, demographics-based differences, implications for the footwear industry, and recommendations for future research and practical applications.

FINDINGS AND DISCUSSION

Demographic Information

Age of the respondents

Based on the age distribution data of respondents in Table 1 it was evident that the majority of participants fall within the 18-34 yrs age range, with 36% in the 18-24 category and a significant 62% in the 25-34 category. This indicates a strong representation of younger demographics in the survey, reflecting a keen interest among younger women in heel designs. However, it's notable that only a small proportion, 10%, belong to the 35-44 age group, suggesting a potential shift in preferences or priorities in heel design as women age.

Table 1. Demographic Characteristics of the respondents

Sr.No	Demographic characteristic	Frequency	Percentage
1	Age (yr)		
	18-24	18	36
	25-34	31	62
	35-44	5	10
2	Occupation		
	Student	24	48
	Professional	16	32
	Homemaker	4	8
	Others	6	12
3	Frequency of use		
	Daily	5	10
	Several times a week	4	8
	Occasionally	30	60
	Rarely	11	22
4	Preferred heel height		
	Low (1-2 inches)	16	32
	Medium (2-3 inches)	25	50
	High (3-4 inches)	4	8
	Very High (4+ inches)	5	10
5	Preferred heel shape		
	Stiletto	1	2
	Block	18	36
	Wedge	15	30
	Platform	2	4
	Cone	3	6
	Kitten	1	2
	Other	6	12
6	Heel with additional features		
	Yes	21	42
	No	12	24
	Depends	17	34

Occupation

It was evident that a significant portion of respondents (48%) were students, highlighting their influence and interest in fashion trends, including footwear. Professionals constitute 32% of the respondents, indicating that working women also play a substantial role in shaping preferences for heel designs. The 8% of homemakers participating in the survey reflect a smaller but still notable segment, suggesting that heel design preferences are relevant across various lifestyles. The remaining 12% categorized as "Others" further diversify the participant pool, emphasizing the broad spectrum of occupations contributing to insights on preferred heel designs.

Frequency of use

The data (Table 1) revealed varied patterns. While a significant portion, 30%, use

heels occasionally, indicating a regular but not constant incorporation of heels into their attire, 11% use them rarely, suggesting a preference for more casual or practical footwear options. Interestingly, a small percentage of respondents, 5%, reported using heels daily, showcasing a dedicated segment that prioritizes heels as part of their daily attire.

Preferred heel height

The findings (Table 1) indicated a diverse range of preferences for heel height. The majority of respondents, comprising 25% of the sample, prefer medium heel heights ranging from 2 to 3 inches, highlighting a balance between style and comfort. Low heels, spanning 1 to 2 inches, were also favored by a considerable proportion, with 16% of participants opting for this height range, likely due to its practicality and ease of wear. On the other hand, higher heel heights were less popular, with only 4% preferring heights between 3 to 4 inches, and 5% opting for very high heels exceeding 4 inches. According to (Ko and Lee, 2013; Witana *et al*, 2009; (Emmanouil and Rousanoglou, 2018; Hapsari and Xiong, 2016) preferred heel height for balance and comfort is between 3 to 5 centimeters, with specific wedge angles associated with different heights for perceived feel, and that both very low and very high heels can negatively affect arch height and functional mobility.

Preferred heel shape

The findings (Table 1) regarding preferred heel shape among female consumers demonstrated a varied set of preferences. Block heels emerged as the most favored, with 18% of respondents choosing this style for its stability and comfort, aligning with trends emphasizing practicality in footwear choices. Wedge heels followed closely, preferred by 15% of participants for their combination of style and ease of walking. Other notable choices include cone heels (3%), platform heels (2%), and stiletto heels (1%), each catering to specific style preferences within the sample. Additionally, 6% of respondents opted for Other heel shapes, indicating a diversity of niche preferences not covered by the predefined categories.

Heel with additional features

The data (Table 1) showed that many women like heels with extra things like ankle straps or fancy decorations, with 21% of them preferring these features. However, about 17% said they only like these extras depending on how they're designed and if they're useful. Meanwhile, 12% prefer heels without any extra features. This tells us that while some women really like fancy heels, others prefer simpler ones, and some were in between liking extras.

Comfort and Functionality

The survey findings revealed that respondents prioritize comfort and functionality, such as ease of walking and stability, when making heel purchases. Specifically, participants prefered heels that offer features like cushioned insoles or arch support, which enhance comfort and stability during wear. This emphasis on practical aspects highlights a consumer preference for heels that not only look stylish but also provide a comfortable and supportive experience, aligning with the growing trend of prioritizing footwear that promotes foot health and overall well-being.

Ergonomic Considerations

The findings from the survey indicated that users often experience pain and discomfort after wearing heels for extended periods, particularly throughout the day. Reported issues include pain in the little finger, shoe bites commonly associated with stilettos and strappy heels, as well as pressure and discomfort in various parts of the foot. From an ergonomic standpoint, these findings highlighted the need for footwear designs that prioritize both style and comfort, incorporating features such as adequate cushioning, arch support, and materials that reduce friction and pressure points. Addressing these ergonomic concerns can contribute significantly to improving the overall wearing experience of heels and reducing the risk of discomfort and pain associated with prolonged use.

Rating of heel designs based on Pain Assessment chart

The pain assessment study, conducted using a 6-point scale ranging from No Pain to Hurts Worst, with scores 1-No Pain, 2-Hurts a

Table 2. Rating of heel designs based on Pain Assessment chart

Heel design	Weightage score	Mean
Stiletto	194	3.88
Block	112	2.24
Wedge	96	1.92
Platform	136	2.72
Cone	193	3.86
Kitten	176	3.52

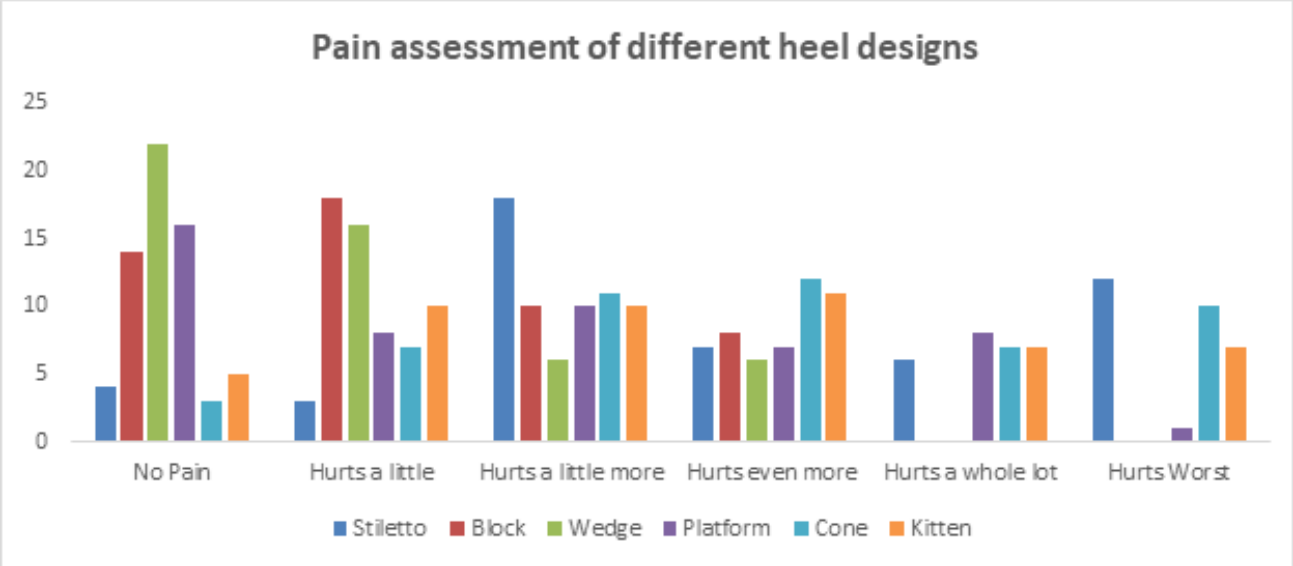

Fig 1. Rating of heel designs based on Pain Assessment chart

little, 3-Hurts a little more, 4-Hurts even more, 5-Hurts a whole lot and 6-Hurts Worst yielded insightful findings regarding the discomfort levels associated with different heel types (Table 2, Fig 1) . The mean scores indicate that stiletto heels have the highest average discomfort level at 3.88, followed closely by cone heels at 3.86 and kitten heels at 3.52. These findings suggested that users generally experience moderate to significant discomfort when wearing these styles. In contrast, block heels showed the lowest average discomfort level at 2.24, followed by wedge heels at 1.92 and platform heels at 2.72. This indicated that users tend to experience lower levels of discomfort with these styles compared to stilettos, cones, and kitten heels.

Purchase Preferences

The findings highlighted a mix of online and offline shopping behaviors. While online retailers were favored by a majority at 54%, indicating a significant preference for the convenience and accessibility of online shopping platforms, physical stores such as malls and boutiques remain popular with 64% of respondents. This suggested that despite the rise of e-commerce, many consumers still value the experience of in-person shopping and the ability to try on shoes before making a purchase. Department stores and specialty shoe stores each garnered 16% and 12% of preferences, respectively, indicating a notable but smaller segment of consumers who prefer these shopping environments. Interestingly, footpaths, typically associated with street vendors or informal sellers, also received a 12% preference rate, underscoring the diversity in shopping preferences among respondents. It was also found that majority of respondents will to pay more for heels that are designed for both style and comfort.

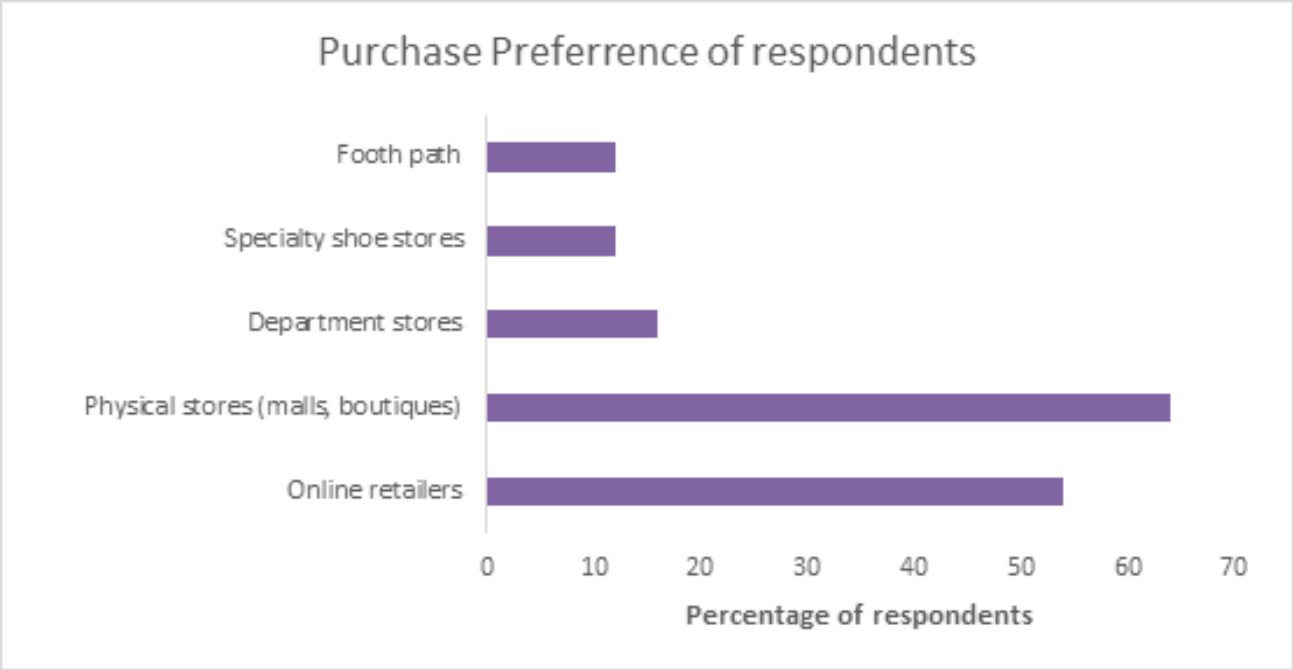

Fig 2. Purchase Preferrence of respondents

CONCLUSION

The survey revealed key insights into women's preferences and usage patterns for heel designs. The majority of respondents were young women aged 18-34, with students and professionals being the largest groups. Heel usage varies, with occasional use being the most common (30%), and a small group (5%) wearing heels daily. Medium heels (2-3 inches) were the most preferred for their balance of style and comfort, followed by low heels (1-2 inches). Block heels were favored for their stability and comfort, while stilettos and strappy heels were associated with higher discomfort. Comfort and functionality were top priorities, with a preference for features like cushioned insoles and arch support. Ergonomic concerns highlight the need for designs that reduce pain and discomfort from prolonged wear. While online shopping was popular (54%), many still prefer the in-person experience of physical stores (64%). A significant number were willing to pay more for heels that combine style and comfort. Overall, the findings emphasize the importance of designing heels that prioritize both aesthetics and practical features to meet the diverse needs of modern women.

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