



Description of Nurse Perceptions Regarding Anthropometric Shoes Based on Characteristics of Shoe Selection

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ABSTRACT

Work-related musculoskeletal disorders (MSDs) occur more frequently in nurses than other health workers. Choosing the right shoes is very important for nurses to reduce the risk of foot injuries and problems with the musculoskeletal system. This study aims to identify nurses' perceptions of anthropometric shoes based on the characteristics of shoe selection. Methods: The research design uses quantitative methods with quantitative descriptive research types. The population in this study was 135 nurses at Dr Hasan Sadikin General Hospital. Using a proportional stratified random sampling technique, a sample of 100 nurses was obtained. Results: Results of the study show the basic shape criteria were 93 nurses (93%) choosing the right size, judging by the comfort criteria, 80 nurses (80%) chose the light weight of the shoes, 80 nurses (80%) chose the shoes to fit in the shoe safety criteria, 73 nurses (73%) chose shoes that have a function in various weather conditions and shoe resistance during activities, shoes that can be used many times were chosen by 90 nurses (90%) on the criteria for environmentally friendly shoes and 68 nurses (68%) chose shoes with standard prices. Conclusions: Nurses' perceptions of anthropometric shoes are based on the characteristics of selecting nurse shoes based on basic shapes that fit are comfortable, lightweight, safe, function in various weather conditions, are resistant to various activities, can be used repeatedly, are environmentally friendly, and have affordable prices. Based on the characteristics of the shoes, most nurses choose the basic shape of the shoes that fit.

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Kata kunci:

Karakteristik pemilihan sepatu

Persepsi perawat

Sepatu antropometri

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ABSTRAK

Work-related musculoskeletal disorders (MSDs) banyak terjadi pada perawat dibandingkan tenaga kesehatan lainnya. Pemilihan sepatu yang tepat sangat penting dilakukan oleh perawat guna mengurangi resiko cedera pada kaki dan timbulnya masalah pada sistem muskuloskeletal. Penelitian ini bertujuan untuk mengidentifikasi persepsi perawat tentang sepatu antropometri berdasarkan karakteristik pemilihan sepatu. Metode: Rancangan penelitian menggunakan metode kuantitatif dengan jenis penelitian deskriptif kuantitatif. Populasi dalam penelitian ini adalah 135 perawat pelaksana RSUP Dr. Hasan Sadikin Bandung. Sampel 100 perawat diambil menggunakan teknik proporsional stratified random sampling. Hasil: Berdasarkan hasil penelitian menunjukkan kriteria bentuk dasar

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sebanyak 93 orang perawat (93%) memilih ukuran yang pas, dilihat dari kriteria kenyamanan sebanyak 80 orang perawat (80%) memilih berat ringannya sepatu, 80 orang perawat (80%) memilih sepatu harus fit/ pas dalam kriteria keamanan sepatu, sebanyak 73 orang perawat (73%) memilih sepatu yang memiliki fungsi pada kondisi beragam cuaca dan ketahanan sepatu saat beraktifitas, sepatu yang dapat digunakan berkali-kali dipilih 90 orang perawat (90%) pada kriteria sepatu ramah lingkungan dan 68 orang perawat (68%) memilih sepatu dengan harga standar. Kesimpulan: Persepsi perawat mengenai sepatu antropometri berdasarkan karakteristik pemilihan sepatu perawat berdasarkan bentuk dasar yang pas, nyaman, ringan, aman, berfungsi dalam berbagai kondisi cuaca, tahan terhadap berbagai aktivitas, dapat dipakai berulang kali, ramah lingkungan dan memiliki harga yang terjangkau. Berdasarkan karakteristik sepatu, sebagian besar perawat memilih bentuk dasar sepatu yang sesuai atau pas

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INTRODUCTION

Nursing services are integral to health services that are inseparable from services in and outside the hospital (Corley et al., 2016). Nurses are an important part of health care and the largest part of the health profession (Haddad & Toney-Butler., 2022). Nurses have an important role in improving health, comprehensively covering all aspects of the client's life (Almirza, 2016). In addition, the nurse's main role is as a nursing care provider, including nursing interventions, health education, and collaborating with other health professionals in client care (Wirentanus, 2019).

When nurses work, their mobility is high, and in the process, they often carry out activities such as lifting, moving, pushing, or pulling patients. In addition, nurses perform many activities in a standing or walking position for a long period of time. Long-standing and walking (up to 10 hours) are the main factors causing musculoskeletal disorders in the feet or ankles of nurses at work (Reed et al, 2014).

Work-related musculoskeletal disorders (MSDs) occur more frequently in nurses than in other health workers (Yasobant et al., 2014). These complaints mostly consist of feeling pain in the lower back (86.7%), ankles (86.7%), neck (86.0%), shoulders (85.0%), lower legs (84.7%), and upper back (84.3%) (Krishnan et al., 2021). Work-related musculoskeletal disorders are not disorders that occur due to work accidents or negligence at work but are caused by repeated actions, fatigue, or reactions of a person's body (Tariah et al., 2020). Many efforts have been developed to overcome this by using safe and comfortable footwear to reduce fatigue and discomfort in the lower extremities, namely shoes (Chiu et al., 2007).

The selection of shoe characteristics is believed to affect one's health. In general, shoes are used as footwear for foot support and ventilation. Footwear with a curved design can support the longitudinal arch of the foot, minimize plantar aponeurosis strain, and positively affect plantar fasciitis and abnormal arch diarthrosis (Hillstrom et al., 1996; Kogler et al., 1996; Burgess et al., 1997). Midsole and outsole settings can be considered to reduce pressure, friction, and impact on the feet when walking. Using materials and adjusting the thickness of the shoe sole is very important to increase the effectiveness of shock absorption on the feet (Basford & Smith, 1988). Presentation of forms according to anatomies, such as instep height, toe box depth, forefoot width, and heel height, will affect comfort, foot tension, and pressure

distribution by affecting ankle movement and muscle activation (Stefanyshyn et al., 2000; Sekizawa et al., 2001). The shoe model needs to be designed in a stable model because it can increase stability during standing and walking, increase extrinsic leg muscle activity, increase static balance, increase strength in the joints of the lower extremities, knees, and lower legs, and reduce complaints of pain in the lower back (Vieira & Brunt, 2016).

Poorly designed or ill-fitting shoes can cause foot problems such as pain, discomfort, and foot deformity. Shoes that do not fit that are too tight or loose, can affect the comfort of feet. Thus, tight shoes can cause tissue pressure, and larger shoes can cause slippage or friction (Hajaghazadeh, Minaei, & Allahyari, 2018). The background information above shows that choosing the right shoes is crucial for nurses to reduce the risk of foot injury. This study aims to identify nurses' perceptions of anthropometric shoes based on the characteristics of the shoes used by nurses.

METHODS

The research design consists of quantitative methods with quantitative descriptive research types. The population in this study was nurses at Dr Hasan Sadikin General Hospital, where the HR Director selected, 135 nurses. Samples were taken using the proportional stratified random sampling technique to obtain a sample of 100 nurses (44 men and 56 women) aged between 26 and 56. This research was conducted for 1 month (September - October 2022). This research received ethical permission from the Padjadjaran University Ethics Commission with letter no. 1063/UN6.KEP/EC/2022. This study applies four research ethics, namely, autonomy, justice, beneficence and confidentiality. In this study, data processing and analysis were carried out with the help of the SPSS data processing application and Microsoft Excel.

RESULTS AND DISCUSSION

Table 1 shows the results of research regarding the characteristics of the shoes chosen by nurses based on the 6 main criteria for shoes in Yang and Deng's study (2022)³⁴. Based on table 1, it can be seen from the basic shape criteria

that 93 nurses (93%) chose the right size, judging by the comfort criteria, 80 nurses (80%) chose the light weight of the shoes, 80 nurses (80%) chose the shoes to fit. In the shoe safety criteria, 73 nurses (73%) chose shoes that function in various weather conditions and shoes' durability during activities. These shoes can be used many times and were chosen by 90 nurses (90%) on the criteria for environmentally friendly shoes, and 68 nurses (68%) chose shoes with standard prices.

Table 1.
Characteristics of Nurse Shoe Selection

Characteristics	Frequency (f)	Percentage (%)
Basic Shapes		
Perfect size	93	93
Color	41	41
Fashionable	30	30
Form	49	49
Select all (4 references)	23	23
Convenience		
Is it easy to put the foot into the shoe	75	75
Lightweight shoes	80	80
Soft shoes	62	62
Select all (3 references)	53	53
Security		
The outside of the shoe protects the foot	74	74
Feet must fit	80	80
Not easily slippery	70	70
Select all (3 references)	59	59
Shoe Function		
It can be used in various weather conditions	73	73
Resistance of shoes during activities	73	73
Shoe resistance to rough surfaces	58	58
Durability	58	58
Select all (4 references)	41	41
Environmentally friendly		
Requires only a few materials	17	17
It can be used many times on 1 occasion	95	95
Shoes can be recycled	25	25
Choose all (3 references)	11	11
Price		
Standard Price	68	68
High prices according to quality	32	32

DISCUSSION

Healthy feet are key factors in improving nurses' workability and general well-being (Stolt, Miikkola, Suhonen, & Leino-Kilpi, 2018). Nurses require a long period of time standing, so they are prone to musculoskeletal disorders in the feet, which, if left unchecked, can lead to chronic problems such as joint degeneration and chronic venous disease (Halim & Omar, 2011; Meijssen & Knibble, 2007; Bergan et al., 2006). Footwear or shoes worn by nurses is very important in improving overall health, reducing the prevalence of musculoskeletal disorders. In addition, inadequate shoes can increase the risk of foot disorders in nurses (Sánchez-Sáez et al., 2019). Various studies have stated the efficacy of interventions from

wearing shoes on the health of nurses' feet (Reed et al., 2014; Tojo et al., 2018). This research, therefore, has important implications for the design and manufacturing of footwear for nurses.

The foot is the only body part that is in contact with the ground when a person is standing. The pressure between the foot pad and the ground can cause a change in the shape of the foot. Changes in the foot's shape need to be supported by footwear which can influence the forces that work through the body's posture and movement and protect the feet against foot trauma and slipping (Anderson et al., 2016). Appropriate footwear is an internal supporting factor for foot health. In contrast, footwear that does not fit is an inhibiting factor for foot health, so footwear that does not fit can cause foot pain, fatigue, numbness, and toe deformities (Stolt et al., 2018). Shoes that fit / are appropriate, one of which is determined by the shoelaces. A strap that loosens easily will reduce the shoe's flexibility, so the shoe cannot fit properly on the foot and increases the risk of tripping (Yang & Deng, 2022).

In the study of Tojo et al. (2018), the comfort of shoes greatly influences the intensity of pain in the feet and ankles of nurses. Shoe comfort is one of the factors that cause foot and ankle pain in nurses, in addition to personal factors (age and body mass index) and psychosocial factors (low job control and high work stress) (Tojo et al., 2018). Another study by Deng (2022) stated that apart from functioning as foot protectors, shoes must be able to keep feet warm in winter, comfortable in summer, and protect the wearer from slipping when it rains.

Differences in the foot's shape from one foot to another are considered in providing footwear according to their shape. Differences in footwear design can positively affect fatigue and discomfort (Lin et al., 2007; Orlando & King, 2004), muscle activation and underfoot pressure (Chiu & Wang, 2007; Kersting et al., 2005). Changes to footwear or orthotic shoe designs can positively reduce pain, soreness, and fatigue in the feet (Chiu & Wang, 2007; Gell et al., 2011; Cambron et al., 2011).

Changes in foot temperature when wearing footwear need attention. High temperatures associated with heat can cause feet to sweat, create a humid microclimate in the shoes, cause discomfort and odour, and exacerbate the frictional forces that cause blisters (Irmanska et al., 2014). Furthermore, sweat on the feet causes the skin surface to become more alkaline, thus encouraging the development of pathogenic bacteria and fungi (Anderson et al., 2017). Therefore, maintaining a cooler temperature inside the feet can reduce the risk of foot problems, one of which is through shoe design. Open-back shoe designs can improve air circulation (Norlander et al., 2015).

Another factor that influences the selection of shoes by nurses is price. Production costs are higher for durable products of high quality. How manufacturers create shoes by considering the features of the footwear and its benefits and are comparable to the price. Individuals must prioritize finances to buy work shoes over recreational shoes (Norlander et al., 2015). In addition, the material used should be easy to clean. Shoe style needs to be considered on the level of comfort and looseness that suits the foot's shape. The choice of colors related to the visuals of shoes will convey perceptions of shoes and influence product purchases, so shoes should be designed with appropriate colors and attention to function, performance and ergonomic quality should be maintained (Crilly et al., 2004; Riddle et al., 2003).

Based on table 1, the characteristics of the selection of nurse shoes for the majority of 93 nurses (93%) were based

on the shape of the shoes that fit/appropriately. Nurses' perceptions in choosing shoes to wear while working depend on individual needs, age, experience, gender, attitudes, motives, interests and other subjective things. Perception is a stimulus received by the individual, organized and then interpreted so that the individual is aware of and understands (McDonald, 2011). Nurses' perceptions in choosing the characteristics of shoes in the form of a basic shape that fits are based on previous experience in choosing shoes so that they become a guide when choosing shoes for work. In addition, the nurse's interest in studying shoes based on their function is a guide, especially when they feel problems related to the musculoskeletal system while working, so there are efforts to find solutions so that the shoes they wear can support nurses' performance improvement.

CONCLUSIONS

Nurses need to pay attention to the criteria for shoes used when working. The criteria that need to be considered in choosing shoes are the basic shape, comfort, safety, function, environmentally friendly shoes, and prices that suit each individual. Nurses' perceptions of anthropometric shoes based on the characteristics of the nurse's selection mostly include the basic shape of the shoes that fit.

Conflict of Interest

The author declares that there is no potential conflict of interest in connection with the research, writing and or publication of this article

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Consent for Publication

All authors have agreed to publish the results of this study. This work is original and has not been published elsewhere, and is not currently being considered for publication elsewhere.

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