

Study of surgical uniform trends in medical colleges in Saudi Arabia

Estudio de tendencias uniformes quirúrgicas en facultades de medicina en Arabia Saudita

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Abstract

The surgical uniform (scrubs) plays a significant role in the quality of medical staff performance. Nowadays, medical and other health college students, use this uniform as their daily outfit. This paper aims at studying the characteristics of the surgical uniform used by female health college students; its merits and downsides. One hundred twenty female health college students were enrolled at Princess Nourah Bint Abdulrahman University. The participants were requested to complete a questionnaire that addressed the students' thoughts concerning the surgical uniform. Close observation was conducted to ensure accurate data recording. Results show that the majority of the study sample prefer wearing the surgical uniform as their daily outfit to the university. Reasons for this preference were listed as comfort, freedom in movement and feeling of belonging. The paper concludes with a recommendation to design a surgical uniform for the university students that is comfortable, beautiful and modest.

Keywords: surgical, uniform trends, medical schools, design, fashion, white medical robe.

Resumen

El uniforme quirúrgico (matorrales) juega un papel importante en la calidad del desempeño del personal médico. Hoy en día, los estudiantes de medicina y otras facultades de salud usan este uniforme como atuendo diario. Este trabajo tiene como objetivo estudiar las características del uniforme quirúrgico utilizado por las estudiantes universitarias de salud; sus méritos y desventajas. En la Universidad Princess Nourah Bint Abdulrahman se matricularon 120 estudiantes universitarias de salud. Se pidió a los participantes que completaran un cuestionario que abordaba los pensamientos de los estudiantes sobre el uniforme quirúrgico. Se realizó una observación minuciosa para asegurar un registro de datos preciso. Los resultados muestran que la mayoría de la muestra del estudio prefiere usar el uniforme quirúrgico como atuendo diario en la universidad. Las razones de esta preferencia se enumeraron como comodidad, libertad de movimiento y sentimiento de pertenencia. El trabajo concluye con la recomendación de diseñar un uniforme quirúrgico para los universitarios que sea cómodo, bonito y modesto.

Palabras clave: quirúrgico, tendencias uniformes, facultades de medicina, diseño, moda, bata blanca médica.

Introduction

Throughout history, uniforms have expressed the identity and profession of individuals. Doctors are distinguished by their white robes and surgical uniforms (scrubs). In the past, the use of scrubs was limited to surgeons and anesthetists in the operating rooms; however, these outfits are recently being used

outside the surgical context¹. Surgical uniforms play a significant role in the quality of performance of the medical staff. Therefore the designer of such outfits should bear in mind the work requirements of the medical professional who wears it² as well as the cosmetic aspects of the uniform. Different studies have shown that the uniform a

doctor wears affects the manner in which patients assess their physicians. However, there is disagreement in different specialty regarding the type of clothes doctors' wear that leads to patients trust and confidence in doctors³.

Fashion design is the process of invention, innovation and development of ideas through the utilization and organization of cloth, accessories and decoration, to reach the desired beauty effect that fits an individual's body⁴. Gaith and Karableh⁵ define fashion design as the process that meets its purpose and is composed through the process of innovatively expressing a given idea. Design is the invention and creation of art which introduces beautiful, practical products. It is the essential treatment performed on textile, color and design lines, which leads to creating artwork in implementing a new uniform idea or concept. Fashion design is the entity that reinvents lines, colors, materials through which modern trends can develop performance. Fashion design is an addition meant to create something new and innovative⁶. Surgical uniforms enforce confidence in the profession and help identify the accountability inside the hospital.

Many factors affect fashion design such as religion, traditions, customs, natural environment, diaspora, economic condition, politics and profession⁷. Some colleges and universities mandate specific uniforms for the students depending on the nature of their majors, especially in the medical and science fields. Adopting such uniforms by the students is dependent on their major⁸.

Surgical outfit is the uniform consisting of two pieces that medical staff wear while in the operating room. However, it has become recently popular outside the operating room especially among doctors and nurses on duty as well as medical students in some universities. Surgical uniform replaced the one-piece nurse uniform to meet the requirements for controlling infection and maintaining professionalism. Wales was the first country to adopt such a move and was then followed by everyone working in the medical field⁹. Some studies discussed the surgical uniform used in the medical context inside and outside the operating room as part of everyday work including administrative and educational task, raising concerns about possible contamination¹⁰. Finn's study suggests that students' uniform and surgical uniform are the same in the educational context except in the case of doctor recall¹¹.

This study aims to 1) identify the reasons that affect health college students' choice of wearing the surgical uniform. 2) Identify the suitability of surgical uniforms to the nature of their study and training as well as its attractiveness and 3) assess the students' satisfaction with the surgical uniform in term of modesty, comfort, beauty, colour and sense of belonging to the students' colleges.

The Literature Review:

Theoretical Framework: Dress code has been used for centuries as a means for certain groups to highlight the ranks and quality of occupations and jobs for those groups. Uniforms encourage belonging, loyalty and duty, and represent the social behavior associated with it¹². Many factors affect the fashion and design such as the religious factor, that has influenced the design of the clothes in the Islamic society leading to a simpler and loose type of outfit to reflect reservation and cover the whole body in addition to headcovers. The impact of the environment is reflected in the design being light in the summer with light colors while in the winter, heavy material is adopted. The impact of the economic factor in fashion design in terms of the quality of raw materials and techniques used. In addition, each job and profession have a special uniform that accommodates the type of work and the requirements of the job. And the impact of the fashion of the displaced and settlers in the design of modern fashion⁷. Fashion design for medical personnel is important in the performance of the medical staff. When the uniforms are simple and consistent with the function, they inspire patients with confidence and comfort, and the importance of designing special costumes to work in protecting against risks in the work environment. Renbourn¹² functional and aesthetic performance standards must be available in the design of medical staff uniforms, which helps to control comfort, which in return gives a feeling of vitality while the medical staff are performing their job¹³. Furthermore, if the costumes are tight, they lead to impede movement and reduce thermal insulation where tightness leads to the expulsion of air between the layers of clothing and between the threads of clothing itself¹³ And achieving the ideal weight since the weight of light fabric provides freedom of movement in the performance of medical staff, and also the feature of porosity and absorption so that the fabrics used in the design of the uniform can absorb moisture and sweat. Furthermore, the durability of the costume which means the ability to keep the characteristics and qualities for a reasonable period and the aesthetic performance standards, including visible criteria such as colors and stability so that the consistency of colors must characterize medical clothing to look decent in appearance. Finally, the uniform must keep dimensional stability and non-contraction in case it is exposed to humidity¹³. In a study of Abd El-Hakem¹³, many obstacles hinder medical staff including nursing staff and doctors when using medical uniforms such as low quality in some raw materials used and inadequate colors and design for the nature of work.

Our current study aims to examine the use of medical clothes as well as to identify the standards of medical clothing as well as the methods used in raising the psychological state of doctors and nursing staff, which in return positively affects their performance. The actual results reached by the study is the design of a set of appropriate fashion for workers in the medical field. Shahin¹⁴ on trends youth adopts when selecting their clothes in the college of edu-

cation quality in the University Banha. Shahin selected a sample of 180 students following a descriptive-analytical methodology. Students trends were measured on a scale of seven dimensions: Conservation, decoration, fashion, self-satisfaction, belonging, punctuality and grabbing others' attention. Results show that the college students lean more toward being conservative taking into consideration social expectation and community values. Being conservative also provide protection when working in laboratories, thus minimizing body exposure to electrical devices or tools that demand flexibility of movement. The trends that the students adopt was divided into two directions: one of them is characterized as belonging to the social and religions teaching, and the call of individual freedom depicts the other. Another study⁸ was looking into the attitude of students toward wearing uniforms for Kufa students in Najaf province. This study differs from previous studies as it aims to identify the reasons that affected the wearing of surgical uniforms among students of health colleges. Results: Most respondents prefer to wear surgical uniforms throughout their time at the university.

To the authors' knowledge, no previous studies are investigating the use of surgical scrubs among health college students in Saudi Arabia nor reviews about the attitude toward the current use of the surgical scrubs among health college students in Saudi Arabia within the confines of university building during the school day.

The Study Participants

A prospective cross-sectional study was conducted between October 1, 2017 - July 1, 2018, at Princess Nourah bint Abdulrahman University. A sample of 120 students from the health colleges participated in this study. The participants were requested to complete a questionnaire that investigated the participants' current use of the surgical uniform (scrubs) and their attitude toward it. Our institutional review board approved the study prior to data collection.

Questionnaire and Data collection

A newly developed questionnaire was used in this study. The questionnaire included investigating the student's current use of the surgical uniform, including how frequently the student wears it and in what places, the number of uniforms the student has the uniform cost, and source, reasons behind choosing to wear the surgical uniform, the type of uniform the student wears, the suitability of the surgical uniform to the kind of work and its attractiveness, the suitability of the surgical uniform to the student: in term of modesty, privacy, comfort, beauty, color and sense of belonging to the students' colleges. The questionnaire was pilot-tested on a sample of 30 students of the target population; The Persistence Coefficient based on the Cronbach's Alpha equation (described in table 2) was ranging from 0.721 to 0.767.

Statistical Analysis

Repetition and percentage describing the study sample. - Arithmetic mean and standard deviation to measure the response of participants

Table 1. The arithmetic mean and standard deviation to measure the response of participants

Level of Suitability	Median
Suitable	3-2.34
Somewhat Suitable	2.33-1.67
Unsuitable	1.66-1

Consistency

The stability of the tool was calculated using Cronbach's Alpha equation, as shown in the table (2).

Table (2) illustrates the value of persistence coefficient for each axis in the questionnaire

Axis	Persistence Coefficient
Suitability of Surgical Uniform	0.767
Second Axis	0.721

Table 2 shows that the persistence coefficient levels are high, which means that the questionnaire is of high stability.

The accuracy of internal consistency

To ensure the coherence of the phrases used in the questionnaire in comparison to the axis they belong to, the consistency of the tool was measured against the response of the participants through calculating correlation coefficients between individual phrases and overall axis they belong to.

Table (3): Correlation axis for individual phrases and overall axis they belong to

Section	Correlation Axis
Level of surgical uniform suitability in regard to modesty	0.719**
Level of surgical uniform suitability in regard to the privacy	0.754**
Level of surgical uniform suitability in regard to comfort and freedom to move	0.707**
Level of surgical uniform suitability in regard to beauty	0.692**
Level of surgical uniform suitability in regard to color	0.397**
Level of surgical uniform suitability in regard to a sense of belonging	0.529**

(**) signifies level 0.01

Table 3 shows that all correlation axis statistically signifies level 0.01, which suggests coherence between axis phrases and overall axis.

Research Sample Data

Table (4): The distribution of the research sample in regard to college, type of uniform and time of wearing.

The distribution of the sample in regard to colleges		
College	Consistency	Percentage %
College of Nursing	12	10
College of Pharmacy	6	5
College of Health and Rehabilitation Science	13	10.8
College of Dentistry	29	24.2
College of Medicine	60	50
Total	120	100
The distribution of the sample in regard to surgical uniform (custom tailored V.S. pre-tailored)		
Response	Consistency	Percentage %
Designed by the student	7	5.8
Pre-tailored	102	85
Pre-tailored & designed by student	11	9.2
Total	120	100
The distribution of the sample in regard to preference of wearing surgical inform V.S. everyday outfit		
Response	Consistency	Percentage %
Prefer surgical uniform	99	82.5
Prefer everyday outfit	2	1.7
Both surgical uniform and everyday outfit	19	15.8
Total	120	100

Table (4) shows that 50% of the research sample were from the college of medicine, 24.2% are from the college of dentistry, 10.8% are from the college of health & rehabilitation sciences, 10% are from the college of nursing and 5% are from the college of pharmacy.

As for the type of uniform, (pre-tailored V.S. designed by student), 85% of the research sample stated that the uniform is was pre- tailored, 9.2% stated that they design their own uniform and also buy pre -tailored while 5% stated that they design their uniforms.

As for preference between wearing surgical uniform or everyday outfit, 82.5% prefer to wear surgical uniform, 15.8% prefer wearing both surgical uniform and everyday outfit, and finally 1.7% only prefer everyday outfit.

Surgical uniform used inside operation rooms

Design preference of the surgical uniform inside and outside the operation room		
Response	Consistency	Percentage %
Yes	40	33.3
No	24	20
I have never walked into a surgery room due to my early school year	56	46.7
Total	120	100
Wearing a different surgical uniform when entering the operation room		
Response	Consistency	Percentage %
No	37	36.6
Yes	19	18.8
Yes, and bringing one from home	15	14.9
Yes, and bringing one from the operation room	30	29.7
Total	101	100
wash the surgical uniform when entering and when leaving the operation room while		
Response	Consistency	Percentage %
Yes	88	91.7
No	8	8.3
Total	96	100
Wearing «h» white robe over the surgical uniform when entering labs		
Response	Consistency	Percentage %
Yes	101	84.2
Most of the time	12	10
Rarely	2	1.7
No	5	4.2
Total	120	100
Preference between wearing surgical uniform or white robe outside the operation room		
Response	Consistency	Percentage %
White robe	35	29.2
Surgical uniform	10	8.3
Both	75	62.5
Total	120	100

Table (5): Research sample distribution of preference in regard to wearing surgical uniform outside or inside operation rooms and laboratories, washing before entering the operation room and wearing a surgical uniform or white robe outside the operation room.

Design preference of the surgical uniform inside and outside the operation room is 46.7% for students who have never walked into the operation room due to being freshmen 33.3% wear the same surgical uniform everywhere inside the university, and 20% of the sample do not wear the same surgical uniform inside and outside the operation room.

In regard to changing the surgical uniform when entering the operation room, 36.6% of the sample participants expressed that they do not modify the uniform, 29.7% do change the uniform with another one from the operation room. 18.8% of the participants change the uniform when entering the operation room, while 14.9% change it with another one they brought from home.

The questionnaire also shows that 91.7% of the sample wash the surgical uniform when entering and when leaving the operation room while 8.3% of them do not wash

their surgical uniforms when entering or leaving the operation room.

As for wearing surgical uniforms during laboratory work, 84.2% of the research sample wear a white robe over the surgical uniform, 10% of them wear the white robe over the surgical uniform most of the time while 4.2% never wear white robes over the surgical uniform and the rest (1.7%) rarely wear the white robe over the surgical uniform when performing inside laboratories.

Finally, 62.5% prefer wearing the white robe or the surgical uniform during work hours outside the operation room. While 29.2% prefer wearing white robe outside the operation room, 8.3% prefer wearing the surgical uniform outside the operation room.

Appropriateness of the surgical uniform regarding modesty, privacy, comfort, beauty, color and sense of belonging

Table (6): the appropriateness of the surgical uniform in regard to modesty, privacy, beauty, comfort, color and the sense of belonging

Level	Phrase		Level of Appropriateness			Median	Standard Deviation	Rank
			Appropriate	Appropriate to some extent	Inappropriate			
1	Suitability in regard to modesty	# of participants	84	28	8	2.63	0.607	6
		Percentage %	70	23.3	6.7			
2	Suitability in regard to privacy	# of participants	94	17	9	2.71	0.600	4
		Percentage %	78.3	14.2	7.5			
3	Suitability in regard to comfort and freedom to move	# of participants	102	15	3	2.83	0.443	1
		Percentage %	85	12.5	2.5			
4	Suitability in regard to beauty	# of participants	86	27	7	2.66	0.587	5
		Percentage %	71.7	22.5	5.8			
5	Suitability in regard to color	# of participants	95	17	8	2.72	0.579	3
		Percentage %	79.2	14.2	6.7			
6	Suitability in regard to the sense of belonging	# of participants	104	12	4	2.83	0.455	2
		Percentage %	86.7	10	3.3			
Median= 2.73			Standard deviation= 0.399					

The median of appropriateness in regard to comfort and freedom of movement was (2.83), which means that the surgical uniform is appropriate. The median of decency in relation to the sense of belonging was (2.83), which means that the surgical uniform is appropriate. The median of propriety regarding color was (2.72), which means that the surgical uniform is appropriate. The median of appropriateness about privacy was (2.72), which means that the surgical uniform is appropriate. The median of appropriateness in regard to beauty was (2.66), which means that the surgical uniform is appropriate. The median of appropriateness concerning modesty was (2.63), which means that the surgical uniform is appropriate. The overall median (2.73) suggests that phrases in this axis are appropriate.

The distribution of participants regarding the number of uniforms, cost and availability

Table number (7): the distribution of participants in regard to the number of uniforms, cost and availability		
Number of uniforms worn		
Response	Consistency	Percentage %
One uniform in a year	13	10.8
Two uniforms in a year	48	40
Three uniforms in a year	30	25
Four uniforms in a year	13	10.8
More than four uniforms in a year	16	13.3
Total	120	100
Cost of uniform		
Median	Highest	Lowest
342.005 SAR	SAR 2000	SAR 70
Uniform market availability		
Response	Consistency	Percentage %
Yes	87	72.5
No	18	15
To some extent	15	12.5
Total	87	72.5

As for the number of surgical uniforms that students own, table (7) shows that 40% of participants have two uniforms, 25% have three uniforms, 13.3% have more than four uniforms while 10.8 % have only one. The median cost for the surgical uniform was 342.05 Saudi riyals (SAR) with 2000 SAR being the highest and 70 SAR as the lowest. Moreover, 72.5% of the participants expressed that surgical uniforms are sufficiently available in the market, while %15 said that it is not available all the time. The rest (12.5%) thought that surgical uniforms are available to some extent.

Time in which the surgical uniform is used

Table (8): The distribution of participants in regard to wearing medical uniforms most of the time and reasons behind this response.		
The length in which the surgical uniform was used inside the university in a week		
Response	Consistency	Percentage %
Most of the time	115	95.8
Sometime	4	3.3
Rarely	1	0.8
Total	120	100
Reason for using the medical uniform most of the time		
Response	Consistency	Percentage %
Looks nice	1	0.8
Gives the impression that I work in the medical field	9	7.5
Sufficient- no need for an everyday outfit	9	7.5
Saves time on choosing what to wear in the morning	28	23.3
Cost effective	1	0.8
Very practical and comfortable	72	60
Total	120	100

As for the usage, table (8) suggests that 95.8% of the participants expressed that they wear a surgical uniform most of the time inside the university, while 3.3% wear them sometimes. The remaining 0.8% said that they rarely wear surgical uniforms.

The percentage of participants wearing surgical uniforms for the reason of practicality was the highest, scoring 60%. Other participants reaching a rate of 23.3% expressed that wearing surgical uniforms save them time in considering what they should wear in the morning. The impression that a particular individual is working in the medical field was the reason chosen by 7.5% of the participants. The same percentage of participants (7.5%) believe that wearing medical uniforms replaces having to wear other everyday clothes. As for beauty, 0.8% of the participants expressed that the surgical uniform is beautiful and at the same percentage of participants think surgical uniforms are cost-effective.

Appropriateness of the medical uniform concerning the nature of the job and attractiveness

Response	Consistency	Percentage %
Yes	86	71.7
No	15	12.5
To some extent	19	15.8
Total	120	100

Table (9): the distribution of the participants in regard to practicality and attractiveness of the medical uniform

Table (9) shows that 71.7% of the participants prefer that surgical uniforms are both practical and attractive, while 15.8% desire that the uniforms are functional and attractive to some extent. The remaining 12.5% do not prefer the surgical uniform to be both practical and attractive.

T

his paper has discussed current surgical uniform trends for medical students, its appropriateness, price, types and usages.

The paper showed that the majority of participants prefer wearing medical uniforms as their daily outfit to the university. Participants also prefer wearing a white robe and surgical uniform while working outside the operation room. As for reasons behind their preference, the majority expressed that wearing surgical uniforms liberates movement and provides a feeling of comfort. The second reason is that wearing surgical uniforms enhances a sense of belonging to the medical profession. The preference of the uniform's color (blue) comes as the third reason while the feeling of privacy ranks as a fourth reason. The beauty of the surgical uniform and modest rank as fifth and sixth reasons subsequently. The response by the participants agrees with what Brindley⁹ have expressed, stating that the surgical uniform provides a sense of belonging to the medical profession. Moreover, Alkaabee⁷ seconds the participant's response of the appropriateness of the surgical uniforms to the nature of the job while still being beautiful and attractive, stating that the nature of the profession mandates a proper outfit. This paper clearly indicates that medical students have a positive attitude regarding surgical uniforms wearing it the majority of time in the university building and expressing their desire that the uniform should be appropriate to the nature of the profession while, at the same time, looking beautiful and attractive.

This study recommends providing further support to research in the field of fashion design and its relation to health professions. Also, the paper suggests designing and developing surgical uniforms that are appropriate in various aspects such as comfort, beauty, modesty and sense of belonging and patriotism. Finally, more attention should be paid to unified uniform designs based on specific criteria and conditions.

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