



A Comparison between Greek and Danish Citizens' Perceptions of the Nursing Uniform and the Impact on Patients' Health

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Abstract

Background & Objectives: Since the 1800s, when nursing attire appeared, it has undergone many changes to offer greater practicality and flexibility during nursing tasks. The study aims to identify and compare Greek and Danish citizens' perceptions of the nursing uniform and the impact it may have on patients' health. **Methods:** A questionnaire was designed with a total of 33 items. Convenience sampling was used. The total sample (n=1008) included Greek (nG=469) and Danish citizens (nD=539). Results were analysed using the statistical program SPSS24. **Results:** The white nursing uniform prevalent in current hospitals does not negatively affect patient's health (p<0.05), and specifically does not cause patients' symptoms such as anxiety (p<0.05), fear (p<0.05), increased heart rate (p<0.05), tendency to faint (p<0.05), sweating (p<0.05), shortness of breath (p<0.05) and panic attacks (p<0.05). **Conclusions:** A large percentage of citizens believe that nursing attire should differ in clinics that accommodate children and patients with mental illnesses.

Keywords: Nursing uniform, citizens, Greece, Denmark.

Introduction

Nurses' uniforms have undergone many changes since they first appeared in the 1800s. From the days when the uniform consisted

of a gown and an apron to today with the variety of colourful clothing, uniform design has changed based on professionalism, functionality, and the overall role of the nurse. Prior to the establishment of modern medical facilities in the 19th century,

caring for the sick was mainly the responsibility of the family. Care centres at the time were monasteries and thus the early nursing uniform was very similar to a nun's dress. Nurses wore a long dress, hat, mask and possibly gloves while the colours were usually dark such as grey, brown, and black ^[1].

Florence Nightingale's efforts during the Crimean War helped nursing gain educational status and in the late 1800s she founded the famous Nightingale School of Nursing in London. It was in fact one of Nightingale's students who designed the first original nursing uniform of that time, which included a long dress, with an apron, sleeves, and pockets ^[2].

After the war, nurses did not want to go back to the bulky dresses and headgear of the previous decade. A simple white dress down to the ankles replaced the 'heavy' dress of the past and formed the basis of the uniform as we know it today. In 1950 the hats worn by nurses in World War I were replaced by nursing caps ^[3], and in the 1960s washing machines made cleaning and washing uniforms easier. In 1970, nursing caps disappeared from uniforms altogether and buttoned-down shirts and trousers began to appear since more men entered the nursing profession ^[4]. In the 1990s, operating room nurses abandoned the white uniform. Today, the traditional nurse's uniform has been replaced in many European countries (e.g. Greece and Denmark) by a tunic and trousers, usually in white colour. This attire provides healthcare professionals with comfort and more mobility ^[5]. Finally, there is a variety of different colours and fabrics available to choose from and thus patients can only identify health care professional such as doctors, nurse and nursing assistants by their name tag.

The effect of the nursing uniform on patients' health

Although it may sound paradoxical, it has been scientifically documented that many patients exhibit high blood pressure at the mere sight of a nursing uniform ^[6]. Cold sweats, palpitations and nervousness are three of the symptoms, patients may experience when seeing a nurse ^[7]. Other common symptoms are tremor, tendency to faint, shortness of breath ^[8], sweating and panic attacks ^[9]. Individuals suffering from such psychosomatic symptoms exhibit fear and avoid undergoing necessary clinical tests, and when they do, they experience intense anxiety and feel very uncomfortable ^[10].

According to Pioli ^[11], the increase in blood pressure due to the 'white coat syndrome' may be an important indicator of hypertension. Specifically, Mancia, Bombelli and Facchetti ^[12] surveyed 1,400 individuals who were systematically followed for 10 years, found that individuals with hypertension caused by the sight of the nursing uniform had an increased likelihood of developing chronic hypertension and a poor cardiovascular prognosis. More recently, Mancia & Grassi ^[13] found that the causes of the 'white coat syndrome' is sensitivity of the sympathetic nervous system, leading these individuals to experience mild tachycardia.

The effect of the nursing uniform on children is also important. From the earliest stages of life, a child can distinguish between what can be harmful and considered a threat, and what can be beneficial. A child's stay in a hospital clinic surrounded by nursing staff is a potentially traumatic experience. Nurses' uniforms particularly in paediatric hospitals, have a significant emotional impact on children and parents during their hospital stay ^[14]. Feelings of fear and insecurity at the sight of a nursing uniform can have a negative effect on a child's prognosis and may cause unpleasant symptoms ^[15]. Matziou ^[16] demonstrated that nurses'

uniforms should be specially designed and colourful for such clinical settings.

Existing studies from the international literature mainly associate the 'white coat syndrome' with hypertension and examine the impact uniforms have on children's emotional state. In Greece, apart from the research mentioned above, no similar studies have been conducted. Similarly, in Denmark there is also a lack of research studies on the topic.

The role of communication in the nurse-patient relationship

In recent years it has been confirmed that communication between healthcare professionals and patients has a profound effect on patient health outcomes ^[17]. The main goals of communication are to establish a good interpersonal relationship, exchange information and make clinical decisions regarding treatment and care ^[18]. The nurse's image within the workplace also plays an important role in order to establish and maintain a therapeutic relationship based on communication, between the nurse and the patient. In recent years the image of the nursing profession has improved compared to the past. Nursing attire is both practical and stylish offering a variety of choices and combinations. However, sometimes because of this variety and the presence of identical uniforms among health professionals, patients often find it difficult to identify nurses. This can create a problem in the patient-nurse relationship as the patient may not feel safe and confident in identifying the nurse and thus, unable to communicate and collaborate ^[19].

The National Health System in Greece and Denmark

Greece

The National Health System in Greece was established in 1983 as part of the reform for public health care services. The purpose of the system was to provide medical and nursing care to meet the needs of the Greek population and those residing in Greece through the provision of free services ^[20]. Health care facilities are divided into two main sections: health centres focusing on prevention, treatment and rehabilitation and hospitals for inpatient care. Nowadays, Greek hospitals are mainly funded by the government. Hospitals are the cornerstone of the health care system offering secondary and tertiary health care by providing medical and nursing services ^[21]. The private sector consists of hospitals, diagnostic centres, laboratories, and private doctors and is financed by direct patient payments and to a lesser extent by private health insurances. Hospitals and health centres are financed by the government and employees are paid a salary ^[22].

Denmark

Denmark's healthcare system is described as universal and based on the principles of free and equal access to healthcare for all citizens. The Ministry of Health is responsible for setting the general framework for the provision of health services and care for the elderly ^[23]. All residents in Denmark have access to the public healthcare system and most services are provided free of charge. National legislation ensures that diagnosis and treatment are offered within a specific time frame and patients are able to choose the hospital they want to visit for their care ^[24]. If the region cannot ensure that treatment will start within 30 days, patients have the right to claim, 'extended free choice of hospital'. This means that

patients can choose to go to a private hospital within Denmark and their health care costs will be paid for by the government.

Primary care services are mainly provided by general practitioners (GPs). Citizens are entitled to free medical care from GPs and the right to free medical care from specialist private practitioners if referred by their GP [25]. All citizens are also entitled to free home care when prescribed by a doctor or hospital, based on an individual needs assessment [26]. Denmark is one of the Nordic countries where its hospitals are financed by regional and municipal taxes with continuous upgrading of resources and services at regional level. Hospitals are owned and managed by the Regions and funding is linked to productivity, with an emphasis on vulnerable groups, shortening patient waiting time and improving quality of care [23].

Materials and Methods

This descriptive comparative study was conducted during the months of January - March 2019. The purpose of the study was to identify and compare Greek and Danish citizens perceptions of the nursing uniform and the impact it may have on patients' health.

Data collection

Due to the limited research studies on the topic, a questionnaire with a total of 33 questions was designed. The first sections of the questionnaire included information regarding confidentiality, anonymity, and participants voluntary participation as well as completion guidelines. The second sections of the questionnaire included questions regarding citizens perceptions regarding the nursing uniform and its effect on patients' health. The final part of the questionnaire included questions regarding the participants demographic characteristics.

Various response scales were used such as, 'yes-no', a five-point scale (ranging from 'regularly' to 'not at all') and multiple-choice questions. The questionnaire was given to a panel of expert to establish elements of validity (structure, questions, content). The panel consisted of three nurses (a university professor and two clinical nurses with postgraduate degrees) with clinical experience and relevant research interests. The research team, following the committee's comments, modified items and drafted the final questionnaire. The research team decided that because people in

Denmark speak English very well, the questionnaire would be distributed in English. The questionnaire was translated into English using the forward and backward translation method, specifically, the research team translated the questionnaire from Greek to English. Then a backwards translation was then performed, from English to Greek, carried out by an experienced English teacher, fluent in both languages, who confirmed that the translation was correct. The final version of the English questionnaire was ready for use by the Danish participants of the study.

Procedure

The survey was conducted among citizens of all ages in two large cities, Patras (Greece) and Aarhus (Denmark). Written informed consent was provided to citizens and after agreeing to participate, they filled out the questionnaire. Anonymity was emphasized as well as voluntary participation. Completion time was on average 7-9 minutes. The study received ethical approval by the institutional review board of the University of Patras (Greek registration number: 3648).

Sample

Convenience sampling was used in this study. The research team approached citizens in central locations within the cities (such as squares, shopping malls) and asked the participants to fill out the questionnaire. A total of 1008 questionnaires were completed in both countries.

Statistical analysis

Descriptive analysis was used to describe the samples and non-parametric analysis was employed to test the existence of statistical differences among the subset groups. A confidence level $p < 0.05$ was set for the analysis of the data. Data were analysed using SPSS v.24.0.

Results

Based on the Non-parametric test (One Sample Kolmogorov-Smirnov Test) used for the analysis, the data presented normal distribution ($p < 0.05$). Regarding the sample, 46.5% were Greek citizens ($nG=469$) and 53.5% ($nD=539$) were Danish citizens.

Table 1: Demographic characteristics: Greece – Denmark

	Greece			Denmark		
Age	18-85 years	x=42.3 years		19-80 years	x=37.8 years	
Gender	Male (38.7%)	Female (61.3%)		Male (24.2%)	Female (75.8%)	
Profession	Civil servant (55%)	Students (18.1%)	Private Sector Employee (11.3%)	Civil servant (72.3%)	Students (23%)	Private Sector Employee (3.9%)
Monthly income	1-500€ (30.6%)	501-1000 € (60.9%)	1001-2000 € (6.9%)	1-500€ (17.2%)	501-1000 € (64.1%)	>2001 € (13.9%)
Family status	Married (56.5%)	Single (41.7%)		Married (28.9%)	Single (67.6%)	
Place of residence	Urban Area (74.4%)	Rural Area (16.3%)		Urban Area (83.6%)	Rural Area (16.4%)	

The majority of the Greek sample were women (61.3%), aged 18-85 years (average age of 42.3 years), civil servants (55%), with a monthly income of 501-1000 Euros (60.9%), married (56.5%) while living in an urban area (74.4%). As regards to the Danish

sample, the majority of the sample were female (75.8%), aged 19-80 years (average age 37.8 years), civil servants (72.3%), with a monthly income of 501-1000 Euros (64.1%), single (67.6%) while living in an urban area (83.6%).

Table 2: Crosstabs - Citizen's perceptions of the nursing uniform

Group Statistics					
	Country	N	Mean	Std. Deviation	Std. Error Mean
Which of the following do you prefer as the colour of the nursing uniform?	Greece	469	2,90	1,710	,079
	Denmark	539	2,91	2,045	,088
In your opinion what are the main functions of the nursing uniform?	Greece	469	3,00	1,587	,073
	Denmark	539	3,55	1,581	,068
Do you believe that it is necessary for nurses to wear a uniform while working in a hospital?	Greece	469	1,06	,242	,011
	Denmark	539	1,00	,061	,003
Do you believe that it is necessary for nurses to wear a uniform while working in a health care centre?	Greece	469	1,23	,545	,025
	Denmark	539	1,32	,603	,026
Do you believe that nurses' uniforms should be different in clinical settings accommodating patients with mental health illnesses?	Greece	469	1,29	,533	,025
	Denmark	539	1,31	,593	,026
Do you believe that nurses' uniforms should be different in paediatric clinical settings?	Greece	469	1,22	,456	,021
	Denmark	539	1,19	,534	,023
Do you believe that the white nursing uniform adds prestige to the nurse?	Greece	469	1,35	,608	,028
	Denmark	539	1,36	,492	,021
Do you believe that it would be best for nurses not to wear a uniform in clinical settings accommodating patients with mental health illnesses?	Greece	469	1,37	,615	,028
	Denmark	539	1,73	,695	,030
Do you believe that it would be best for nurses not to wear a uniform in clinical settings accommodating paediatric patients?	Greece	469	1,43	,605	,028
	Denmark	539	1,68	,707	,030

In Greece, the majority of the sample prefer the colour of the nursing uniform to be white (26.2%) or shades of blue (26.2%), consider that the main function of the uniform is recognition (35.6%) and practicality (19.8%) and that nurses should wear a uniform in all health care settings (hospitals and health care centres, 94.4% and 82.7% respectively). They also believe that nurses uniforms should be different in clinical setting accommodating patients with mental health illnesses (74.4%) and children (79%). Notably, 72% of the participants support that hospital attire adds prestige to the nursing profession.

In Denmark, the majority of the sample prefers the colour of the nursing uniform to be white (43.9%) or shades of blue

(30.3%), consider that the main function of the uniform is recognition (27.4%), practicality (17.8%) and professionalism (12.9%). They also believe that nurses should wear a uniform in all health care settings (hospitals and health centres, 100% and 74.8% respectively) and that hospital attire should be different in clinics accommodating patients with mental health illnesses (76.4%) and children (88.9%). Notably, 63.7% of the participants support that hospital attire adds prestige to the nursing profession.

Statistically significant differences between the samples from both countries (table 3) were found using a parametric test (Independent Samples Test).

Table 3: Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Nurses uniform and stress	266,206	,000	-8,105	1006	,000	-,214	,026	-,266	-,162
			-7,939	849,478	,000	-,214	,027	-,267	-,161
Nurses uniform and fear	771,697	,000	-11,588	1006	,000	-,262	,023	-,306	-,217
			-11,100	655,614	,000	-,262	,024	-,308	-,215
Nurses uniform and confidence	11,228	,001	9,849	1006	,000	,297	,030	,238	,356
			9,872	994,704	,000	,297	,030	,238	,356
Nurses uniform and safety	113,885	,000	5,889	1006	,000	,177	,030	,118	,236
			5,932	1004,779	,000	,177	,030	,118	,236
Nurses uniform and increased heart rate	120,389	,000	-5,334	1006	,000	-,122	,023	-,167	-,077
			-5,222	844,241	,000	-,122	,023	-,168	-,076
Nurses uniform and tendency to faint	285,816	,000	-7,556	1006	,000	-,096	,013	-,121	-,071
			-7,048	468,000	,000	-,096	,014	-,123	-,069
Nurses uniform and sweating	130,236	,000	-5,444	1006	,000	-,093	,017	-,127	-,060
			-5,255	720,922	,000	-,093	,018	-,128	-,058
Nurses uniform and shortness of breath	236,029	,000	-6,985	1006	,000	-,083	,012	-,107	-,060
			-6,515	468,000	,000	-,083	,013	-,108	-,058
Nurses uniform and panic attacks	214,954	,000	-6,801	1006	,000	-,123	,018	-,158	-,087
			-6,532	678,025	,000	-,123	,019	-,160	-,086

Which age group is most affected by the appearance of healthcare professionals wearing a uniform?	29,515	,000	-1,932	1006	,044	-,183	,095	-,369	,003
			-1,947	1005,247	,052	-,183	,094	-,368	,001
Does the white nursing uniform negatively affect patients' health?	163,647	,000	-5,051	1006	,000	-,188	,037	-,261	-,115
			-4,936	827,803	,000	-,188	,038	-,263	-,113

Participants aged 19-30 years old prefer white coloured uniforms, compared to citizens belonging to the older age group who prefer blue coloured uniforms ($F=29.555$, $df=1006$, $p<0.05$). Also, the white nurses uniform prevalent in today's hospitals does not negatively affect patients' health ($F=163.647$, $df=1006$, $p<0.05$), and specifically does not cause patients anxiety ($F=266.206$, $df=1006$, $p<0.05$), fear ($F=771.697$, $df=1006$, $p<0.05$), increased heart rate ($F=120.389$, $df=1006$, $p<0.05$), tendency to faint ($F=285.816$, $df=1006$, $p<0.05$), sweating ($F=130.236$, $df=1006$, $p<0.05$), shortness of breath ($F=236.029$, $df=1006$, $p<0.05$) and panic attacks ($F=214.954$, $df=1006$, $p<0.05$). The nurses uniform inspires confidence ($F=11.228$, $df=1006$, $p<0.05$) and safety ($F=113.885$, $df=1006$, $p<0.05$) in Danish citizens rather than in Greeks.

Discussion

Nursing attire has been established worldwide in the nursing workplace. The present survey found that the majority of people in Denmark and Greece believe that the main functions of the nursing uniform are recognition, practicality and professionalism. This view has been prevalent since the late 1960s when nursing became a recognised and respected profession. Over the years, there was a need to separate healthcare professionals from patient carers, which made the hospital uniform a sign of the profession. Slowly, the nurses' uniform was modified enough to become practical and facilitate the nurse's work [27].

This study showed that the majority of the sample, in both countries, prefer a white coloured nursing uniform, while blue was the second most preferred choice. A similar survey conducted among parents and children in Greece had reported that they preferred the colour red [16]. It seems that the colour white and blue (particularly for operating room staff), has become engrained in people's minds as the colour of the nursing uniform and therefore claim to prefer it or perhaps are used to it.

The results of this study are interesting in terms of the effect of the white nursing uniform on patients' health. Citizens from both countries stated that the nursing uniform does not have a negative effect on patients' health. Higher percentages of Danes ($p<0.05$) claim they feel safety and confidence inspired by the uniform worn by nurses. The "white coat syndrome" has been documented in the international literature [28], especially regarding the complications experienced by patients [11]. However, the present study showed that citizens, in both countries, believe that the white nurses' uniform does not cause anxiety, fear, increased heart rate, tendency to faint, sweating and shortness of breath. It seems that patients are more interested in the communicative relationship between patients and nurses than in the colour of their hospital uniform.

Open and constructive communication between the nurse and the patient can override any negative feelings that hospital attire and the hospital setting may cause the patient [6]. The nurse occupies the position of a caregiver as he/she is responsible for restoring the patient's health. For the best nurse-patient relationship, the patient should be fully informed and in agreement

with the treatment methods to achieve the best possible outcome. Only through communication and trust will the patient be able to acclimatise quickly to the hospital setting and thus to the hospital attire [17].

In addition, the results showed that the age groups most affected by health professionals' clinical attire are children and the elderly. Children are the ones most affected as they are not mature enough to perceive the uniform health status and thus cooperate [29]. Therefore, they need special treatment to overcome their fear. This can initially be achieved by changing the image of the clinic that accommodates children as well as the appearance of health professionals. Thus, the uniform could be more cheerful with the use of colours and designs and the display of children's drawings and use of bright colours can make the clinical setting a child-friendly environment [5].

Lastly, although the vast majority of the sample in both countries agree that nursing attire should be applied in all health care settings (hospitals, health centres), a large percentage of citizens believe that nursing attire should differ in clinics that accommodate children and patients with mental illnesses. This is because both social groups are identified as vulnerable, and it would be better to avoid any emotional disturbances that could be caused by hospital attire that could perhaps negatively affect the course of their health. That is why participants of this study suggest that the uniform should not be worn in the above-mentioned health care settings.

Limitations

The main limitation of the present study was the small sample size. Although the research provided important data on Greek and Danish citizens perceptions of the nursing uniform and the impact on patients' health, it is necessary to use a larger sample from more cities as to compare findings on a greater scale.

Conclusions

Nurses' hospital attire does not seem to cause symptoms such as anxiety, panic attacks, fear, tachycardia, tendency to faint and shortness of breath. On the contrary, the nurses uniform inspires confidence and professionalism. Both Greeks and Danish citizens recognize the necessity of the nursing uniform since it offers professional recognition within the clinical setting.

Data Availability

The Data can be accessed after request to the corresponding author.

Conflict of interest

The Author(s) declare(s) that there is no conflict of interest.

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Authors contributions

Conception: NB, FS, MS,TF,EM,GV,PA,NF

Design: NB, FS, MS,TF

Execution: FS, MS,TF

Analysed data: GV, NB

Interpretation of the study: EM, PA,NF

Writing manuscript: NB, FS, MS,TF,EM,GV,PA,NF

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