British Journal of Medicine & Medical Research
12(8): 1-10, 2016, Article no.BJMMR.22169
ISSN: 2231-0614, NLM ID: 101570965

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Perception and Attitude towards Wearing White Coats in Public Places among Dental Undergraduates and Postgraduates of Davangere City, India

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Authors' contributions

This work was carried out in collaboration between all authors. Authors RR and PGNK designed the study and wrote the protocol. Authors GMP and SVH supervised the work. Authors MI, SNM and SB administered the questionnaire and performed statistical analysis. Author RR wrote the first draft of the manuscript. Author PGNK managed the literature searches and edited the manuscript.

Article Information

DOI: 10.9734/BJMMR/2016/22169
Editor(s):
(1) Emad Tawfik Mahmoud Daif, Professor of Oral & Maxillofacial Surgery, Cairo University, Egypt.
(2) Ibrahim El-Sayed M. El-Hakim, Ain Shams University, Egypt and Riyadh College of Dentistry and Pharmacy, Riyadh, Saudi Arabia.
Reviewers:
(1) Tunde Bamgbose, Bayero University, Kano, Nigeria.
(2) Luciana de Barros Corrreia Fontes, Universidade Federal de Pernambuco, Brazil.
(3) Neha Sisodia, Post Graduate Institute of Medical Education and Research, India.
Complete Peer review History: http://sciencedomain.org/review-history/12464

Original Research Article

Received 21st September 2015
Accepted 29th October 2015
Published 27th November 2015

ABSTRACT

Introduction: Wearing a white coat is an accepted part of medical and dental practice. The actual use of white coats and how often they are changed varies greatly among individuals and their specialties. There has always been some concern that white coats may actually play a part in transmitting pathogenic bacteria.
Objectives: To assess the perception and attitudes of dental undergraduates and postgraduates towards wearing white coats in public.
Methods: 1146 structured, closed ended questionnaires were distributed to all undergraduates and postgraduates of two colleges in Davangere. Chi-square test was used to test associations between the responses among the genders and the responses within the educational levels of the

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participants. Binary logistic regression models were fitted to the data to calculate odds ratios (OR) for the responses among the genders.
Results: A response rate of 88.74% was obtained, 93.5% of subjects had seen doctors wearing white coats in public, 24% of participants agreed that the lack of provision for storage of aprons could be the possible reason for wearing white coats outside the clinical setting. 52.5% of students believed that white coats are potential source for spreading infection.
Conclusion: The present study highlights the fact that white coats are potential source of cross infection. Strict audit process and protocols should be set in workplace for preventing cross-contamination from the white coats.

Keywords: Attitude; dental students; perception; white coats.

1. INTRODUCTION

A doctor's attire has always been considered as an important means of establishing a good relation and also the first impression in any doctor - patient interaction [1]. The white coat has always been a traditional symbol of medical profession since the late 19th century. It is a badge of perseverance, intelligence, empowerment and authority and is believed to be an essential part in developing a successful professional relationship [2-4].

White coats are primarily for identification of a doctor but there has always been some concern that they may play a part in transmitting pathogenic organisms in hospitals settings as it can be contaminated with pathogenic drug resistant bacterias [5,6].

Many articles of clothing and equipment such as neckties, stethoscopes, pens, identifying badges along with the doctors' coat have been noted to carry potential pathogens [7,8]. Since many medical institutions are attached to hospitals, students wear their white coats on to the college; even at non clinical and non-practical classes, library, cafeteria and resting areas. It is not uncommon to see white coats been left on chair or being carried around and outside the hospital premises [9].

Thus invariably when the topic of white coats comes up the issue of spreading infections is never far away. White coats may sometimes be a cringe, dental personals clothing and uniforms are spattered by blood, aerosol, saliva and they form a definite risk of infection with various transmissible agents [10].

There has always been dissensions regarding the restrictions of white coats only till clinical settings as dental operatory has always been in a high priority zone regarding the risk of infections [11,12]. However the white coats are an accepted part of medical and dental practise. The actual use of white coats varies greatly among the individual doctors and their specialities [6].

Thus due to lack of literature the interest of this study was to assess the perception and attitude of dental undergraduates and postgraduates in Davangere city, Karnataka, India towards wearing white coats in public places.

2. MATERIALS AND METHODS

A descriptive cross sectional questionnaire survey was carried out on undergraduates and postgraduates in dental schools of Davangere city, Karnataka, India from January to April 2014.

There are two dental schools in Davangere city with both undergraduate and post graduate courses. All the undergraduates and post graduates in both the dental schools were considered for the study.

A pilot study was done on 50 students (including undergraduates, interns and postgraduates) in order to ensure the level of validity and reliability of the questionnaire (Cronbach's α=0.81). The data from the pilot study was not considered as a part of the main survey and the subjects were excluded from the study.

Ethical approval was obtained from the institutional review board and ethical clearance committee of College of Dental Sciences, Davangere. Prior permissions were obtained from the concerned authorities of respective colleges to conduct the survey.

The total number of the participants in the study was 1196 which consisted of 1003 undergraduates and 193 post graduate students. All the students present on the day of survey

were included in the study. Verbal informed consent was obtained from all the participants before starting the survey.

A self-administered, structured, close ended questionnaire written in English was designed which consisted of two parts. The 1st part was to elicit the information regarding their age, gender, and level of education (demographic details), while the 2nd part consisted of 12 questionnaires to assess the perception and attitude of health care professionals towards wearing white coats in public places or outside the clinical setting.

The study participants were given the questionnaire on the day of visit by a single investigator. The participants were asked to respond each question according to the response format provided in the questions. The participants received full explanation on how to fill the questionnaire by the investigator. Answered questionnaires were collected back at the same time by the investigator.

2.1 Statistical Analysis

The data was compiled and tabulated in Microsoft excel spread sheet and was subjected to frequency distribution analysis using SPSS version 19.0 (SPSS Pvt ltd Chicago, IL, USA) Chi-square test was used to test associations between the responses among the genders and the responses between the educational levels of the participants. Binary logistic regression models were fitted to the data to calculate Odds Ratios (OR) and Confidence Interval (CI) for the responses among the genders. $p \leq 0.05$ was considered to be statistically significant.

3. RESULTS

Out of the 1146 questionnaire distributed a total of 1017 answered questionnaires were obtained back (Response Rate =88.74%).

The details of participating dental students according to the genders and the level of education are shown in Table 1. 40.5% and 59.4% of the study subjects were males and females respectively. Out of which 88.98% were undergraduates and 11.0% of the respondents were postgraduates.

In the present study majority of the study subjects (93.3%) have noticed health care professionals wearing white coats and roaming in public places (Fig. 1) and half of the respondents have frequently observed this practise among the doctors (Fig. 2). The places where often doctors were spotted wearing white coats apart from the workplace included bus stand/ railway stations (4.2%), streets (6.0%), automobiles (6.5%), temples (1.4%), market places (3.1%), parks (5.8%), and eating joints (12.2%). It was interesting to know that 60.1% or the respondents have seen doctors in professional attires at all of these places (Fig. 3).

49.9% of the respondents have frequently spotted females wearing white coats outside the hospital premises and 38.9% have observed this practice more prevalent in males while 11.11% have seen this practice common in both the genders (Fig. 4).

According to the respondents in the present study the possible reason for wearing white coats outside the work place may be the lack of provision for storage in hospitals and colleges (24.0%). While 28.9% respondents feel that the doctors are lazy to remove the white coats (Fig. 5).

About three fourth of the respondents think that wearing white coats in public places helps them to be identified as doctors while 71.9% of respondents feel that the health care professionals try to portray themselves superior by wearing white coats in public places. 38.3% of respondents agreed that wearing white coats in public places is violation of professional ethics but 62% think that white coats play an important role in maintaining public trust and confidence (Table 2).

Table 1. Distribution of the study subjects according to the gender and level of education

Characteristic		Number	Percentage
Gender	Male	412	40.5%
	Female	605	59.4%
Level of education	Undergraduates	905	88.98%
	Postgraduates	112	11.0%

Table 2. Perception and attitude towards wearing white coats in public places of the study participants

SL/no	Questions	Response			Gender		Level of education	
		Yes	No	Don't know	χ^2	p value	χ^2	p value
1	Wearing white coats helps them to be identified as doctors	747(73.4%)	188(18.4%)	82(8.0%)	23.417	**0.000****	10.183	0.037*
2	White coats play an important role in maintaining public trust and confidence	631(62.0%)	114(11.2%)	272(26.7%)	1.167	0.558	32.408	0.000**
3	Students try to portray themselves superior by wearing white coats in public places	732(71.9%)	281(26.6%)	4(0.3%)	3.127	0.209	15.148	0.004**
4	Wearing white coats in public is violation of professional conduct	390(38.3%)	303(29.7%)	324(31.8%)	1.997	0.368	41.054	0.000**
5	Female doctors get the benefit of overcoming eve teasing by wearing white coats in public places	468(46.0%)	195(19.17%)	354(34.8%)	4.096	0.129	13.886	0.008**
6	White coats are potential risk of spreading infection	534(52.5%)	208(20.4%)	275(27.0%)	0.434	0.805	60.667	0.000**
7	Dental health care professionals form a potential source of spreading infections	550(54.0%)	207(20.3%)	260(25.5%)	2.591	0.274	33.241	0.000**

p≤0.05 significant, ** p≤0.01 highly significant

In response to the question that "Do female doctors get the benefit of overcoming eve teasing by wearing white coats in public places?" 46% answered YES while 34.4% were not sure (Table 2).

It was interesting to know that 52.5% of the doctors were aware that white coats are potential source of spreading infections and 54% agreed that dentist do form a potential source for spreading infections by wearing white coats in public places (Table 2). When compared between the participants educational levels almost all the responses differed significantly ($p \leq 0.05$) (Table 2).

In binary logistic regression analysis odds of males answering "yes", if white coats helps them to be identified as doctors was 3 times higher than the other responses (OR= 3.10; CI= 1.91-5.03) while in females it was 2.5 times (OR= 2.58; CI= 1.49-4.47) which was statistically highly significant in both the genders ($p \leq 0.001$). The odds of males believing that wearing white coats is violation of professional conduct is 0.70 times (OR= 0.70; CI= 0.50-0.99) which was statistically significant. While the odds of males and females believing that dental health care professionals form a potential sources of spreading infection was 1.28 times (OR= 1.28; CI= 0.90-1.83) and 1.47 times (OR= 1.47; CI= 0.95-2.28) respectively (Table 3).

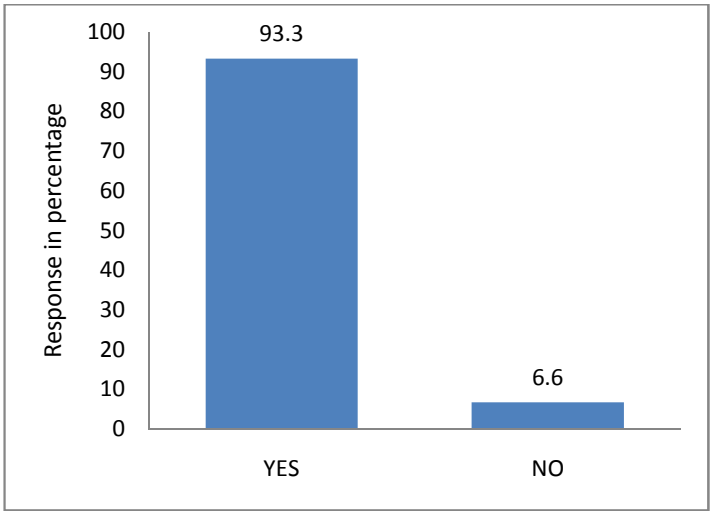

Fig. 1. Responses if the study subjects had seen doctors wearing white coats and roaming in public

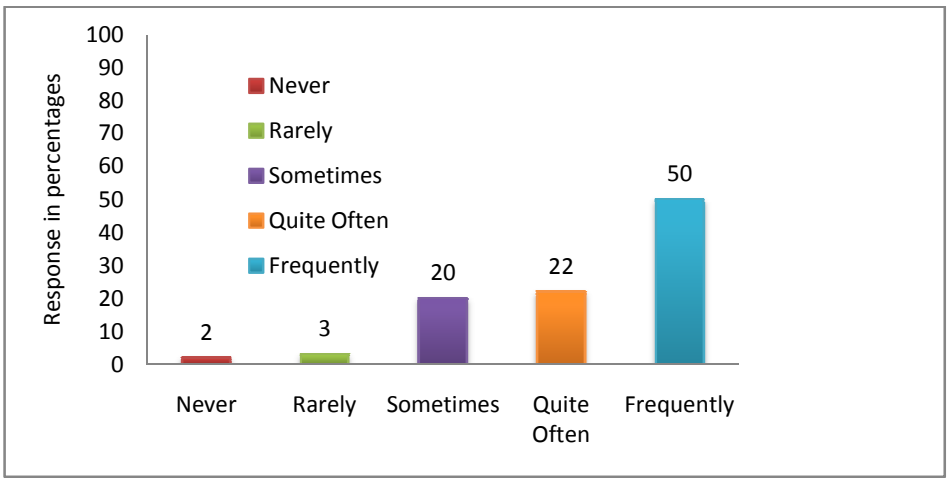

Fig. 2. Responses regarding the frequency of spotting students wearing white coats outside hospital premises

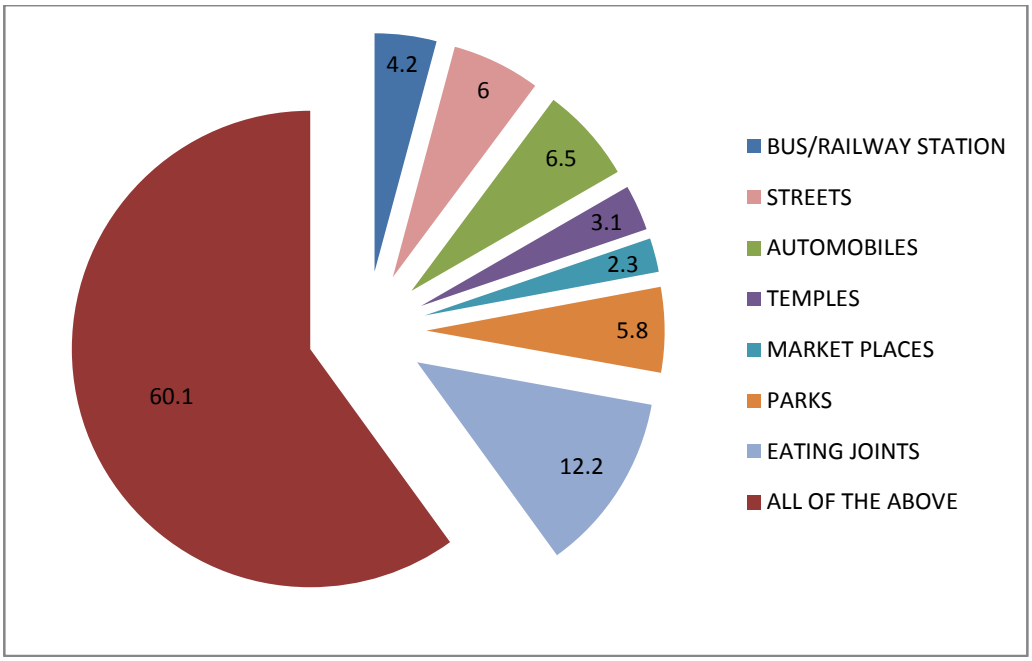

Fig. 3. Distribution of places where the respondents have noticed doctors wearing white coats outside the hospital premises

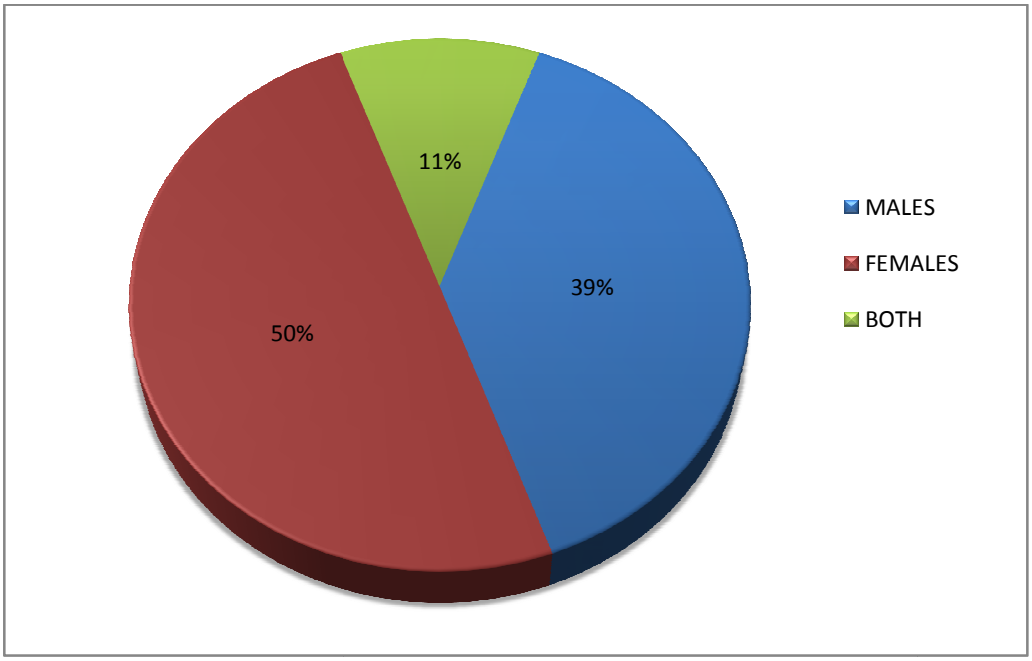

Fig. 4. Frequency distribution of wearing white coats among genders

4. DISCUSSION

The relation between the doctor and his patient is purposeful; not social, casual or random. The white coat is the reflection of doctor's attitude; its additional practical virtues are being identifiable, easily laundered and to be readily changed if accidentally soiled [13].

In the present study 93.6% of the subjects have noticed doctors wearing white coats in public places and more than half of the respondents

feel that they may form a potential source of infection if such practises are encouraged; several studies have documented bacterial contamination of both white coats of doctors and uniforms of paramedical staff suggesting potential risk [6,14-17]. Fifty four percent of the respondents expressed their view that specifically dental professionals can lead to spread of infections if the white coats are not just restricted to the clinical setting as the contamination of the clothing by "splashes", touch and aerosols is practically unavoidable in the dental setting [7,17].

61.5% of the respondents feel that wearing white coats in public is not any violation of the professional conduct or they were unaware of professional ethics, such ignorance may be attributed to unawareness regarding risk factors for transmitting hospital acquired infections [14].

There are different prospective on the significance of uniforms in conveying identity and its importance to both patients and doctors, in the present study 73.4 % of the subjects feel that wearing white coats helps them to be identified as doctors while 62% feel it helps in maintaining public trust and confidence. These findings were similar to the study conducted by Craik, 2005 which stated that "uniforms are extreme effective indicators of the codification of appropriate rules of conduct and in their internalization [18]. In the present study 71.9% of the respondents feel that students try to portray themselves superior by wearing white coats outside clinical setting. According to HP Loveday et al. [18] a uniform enables a group to carry out legitimate activities associated with the occupation. The current wave of public opinion and dissatisfaction associated with healthcare staff wearing their uniforms outside the clinical setting and public places is an example of what the public consider to be unacceptable behaviour and undermines patient's confidence in those delivering patient care.

All most half of the respondents agreed that female doctors get the benefit of overcoming eve teasing by wearing white coats in public places as it portrays the image of a doctor in the hospital, they may be easily recognised and to emphasise the "doctor status" [19]. This can be again a probable reason that the female doctors were spotted more frequently (50%) than males (39%) according to the respondents in the present study [19-23].

Table 3. Binary logistic analysis of responses among the genders

Variable	Gender	β (Regression coefficient)	Odds ratio	p value	95% confidence interval
Wearing white coats helps them to be identified as doctors	Males Females	1.131 0.951	3.100 2.589	0.000** 0.001**	1.91-5.03 1.49-4.47
White coats play an important role in maintaining public trust and confidence	Males Females	0.135 0.033	1.145 1.034	0.381 0.889	0.84-1.55 0.64-1.65
Students try to portray themselves superior by wearing white coats in public places	Males Females	-20.911 -20.795	0.000 0.000	0.999 0.999	- -
Wearing white coats in public is violation of professional conduct	Males Females	-0.346 -0.282	0.707 0.755	0.045* 0.120	0.50-0.99 0.52-1.07
Female doctors get the benefit of overcoming eve teasing by wearing white coats in public places	Males Females	0.312 0.096	1.366 1.100	0.040* 0.618	1.01-1.83 0.75-1.60
White coats are potential risk of spreading infection	Males Females	-0.184 -1.167	0.832 0.846	0.308 0.446	0.58-1.18 0.55-1.30
Dental health care professionals form a potential source of spreading infections	Males Females	0.253 0.392	1.288 1.479	0.158 0.077	0.90-1.83 0.95-2.28

**p≤0.05 significant, ** p≤0.01 highly significant*

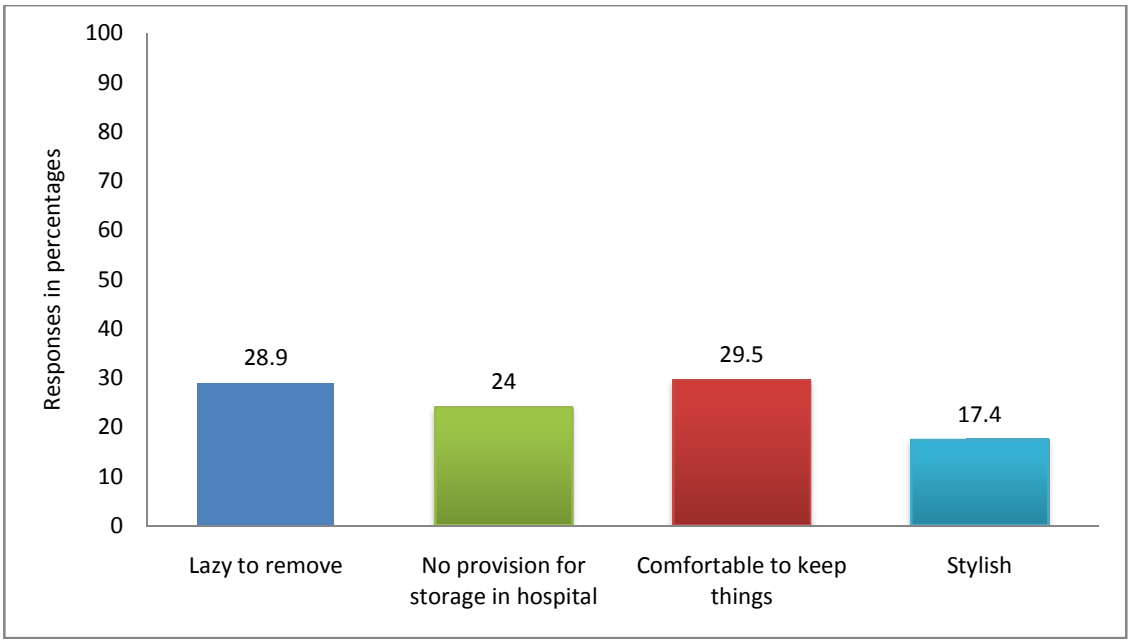

Fig. 5. Reason for wearing white coats outside hospital premises

In the present study the subjects stated that the probable reason for wearing white coats in public places may be because there was no provision for storage in hospitals (24%) or many a times doctors are lazy to remove their work wear (28.9%) similar finding were reported by Arun Babu T et al. [19].

The physician's dress should convey to even his most anxious patient a sense of seriousness of purpose that helps to provide reassurance and confidence that his or her complaints will be dealt with competently [24-26]. The white coat is not only a symbol of this attitude, but it has also the additional practical virtues of being identifiable, easily laundered, and more easily changed than street clothes if accidentally soiled. Casual or slovenly dress is likely to convey, rightly or wrongly, inattentive professional handling of their problem [27].

Although wearing white coats in public is not a crime, as there are no precise rules or regulatory guidelines regarding this issue, we feel it is completely unethical. The onus is upon the individual doctor or student to understand the legacy and dignity of these white coats and to decide how they want to project it.

5. CONCLUSION

The evidence though is not very conclusive but although the dental students are aware of the infectious potential of the doctors' attire still health care professionals continue to practice wearing white coats in public places. Safety concerns appear justified in the wake of the present study that has demonstrated that white coats may place patients and the professionals at risk of infections.

6. RECOMMENDATION

- Doctors are required to wear their coats whenever they enter the hospital, and take them off when they leave, even for a quick trip to the convenience store.
- The health professional should have two or more white coats available and have access to a convenient and economical means to launder white coats.
- Provision for storage of white coats should be present in the work area that would allow removal of the white coat before contact with patients or a patient's immediate environment.
- This issue should also be addressed while teaching medical ethics to undergraduate students.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
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