



Physician attire in the intensive care unit in Japan influences visitors' perception of care☆☆☆



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ABSTRACT

Purpose: The objective of this study is to evaluate the impact of physician attire and behavior on perceptions of care by ICU visitors in Japan.

Materials and methods: Visitors were surveyed including 117 at a community hospital and 106 at a university hospital. Demographic data (age, gender, relationship to patient, length of stay) were collected. A seven-point Likert scale (1 = strongly agree, 4 = neutral, 7 = strongly disagree) was used to judge physician attire (name tag, white coat, scrubs, short sleeve shirts, blue jeans, sneakers, clogs), behavior (addressing a patient, carrying a snack) and overall effect on perception of care.

Results: There are no significant differences ($p > 0.05$) in demographics comparing the two ICUs, except for increased length of stay at the university ICU. Visitors scored the importance of a name tag (median 2, Interquartile Range 1–2), white coat [3,1–4], addressing the patient by last name [2,1–3], wearing scrubs [3,2–4], sneakers [4,3–5], clogs [4,4–5], short sleeves (4,3.5–5), blue jeans [5,4–6], and carrying a snack [6,5–7]. Visitors scored “attire affects perceptions of care” as [3,2–4].

Conclusions: Physician attire in the ICU affects perceptions of care. Implementation of attire guidelines which require clothing that does not meet visitor preferences should be accompanied by education programs.

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1. Introduction

The impact of physician attire on patient and family perceptions including trust, satisfaction and confidence has been studied [1]. A recent meta-analysis of 30 multi-national studies, including 11,533 patients, concluded that while many patients prefer formal attire, perceptions due to attire are affected by age, location, setting and context of care [2]. Based on a literature review, to our knowledge only one study has evaluated the impact of physician attire on perceptions of care in the intensive care unit (ICU) [3]. The ICU setting is different from most previous studies which are conducted in outpatient settings, as patients themselves cannot participate since many of them are sedated.

There are few previous studies of physician attire in Japan, all of which were conducted in outpatient settings. One study included 491 respondents in five pharmacies, and concluded that the white coat is important [4]. An earlier study from Japan in an outpatient clinic

found that patient satisfaction was not influenced by the presence of a white coat, although older patients tended to prefer the white coat [5]. Another study from Japan surveyed 2272 hospital outpatients [6]. The study reported that most outpatients prefer a white coat.

Issues regarding physician attire have recently come to the fore because of concern about infection control related to clothing. Investigators found that up to 60% of staff uniforms are colonized with potentially pathogenic bacteria, although the relationship of this to causality of infections has not been shown [7]. The United Kingdom Department of Health recommended that physicians not wear neckties [8]. They have also recommended that doctors wear short sleeve shirts and no wristwatches [9]. These regulations also ban the traditional white coat, which has led to acrimony among physicians, and must be considered in the context of patient perceptions [10]. In 2014, The Society for Healthcare Epidemiology of America (SHEA) writing group issued guidelines for healthcare personnel attire in non-operating room settings [11]. While patients were generally unaware of clothing as a potential vector for infection, they were willing to change their preferences after being educated.

To the best of our knowledge, there is only one study to date which evaluates the impact of physician appearance in the ICU [3]. There have

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been no studies to date conducted in Japan to evaluate the impact of physician appearance in any inpatient setting. We undertook this study to evaluate the impact of physician attire and behavior on perceptions of care by visitors of patients in the ICU in Japan.

2. Materials and methods

This study was conducted from June 2014–August 2014 in two mixed medical-surgical ICUs in Japan, including a 14 bed ICU at Jichi Medical University Hospital (a 1000 bed University teaching hospital in a rural setting) and a 12 bed ICU at the Jichi Medical University Saitama Medical Center, (a 608-bed community hospital, urban setting) in suburban Tokyo. This study was approved by the Institutional Review Boards at both hospitals. The need for informed consent by respondents was waived by the Institutional Review Board because of voluntary participation and anonymity of the data collected.

Survey forms collected demographic data (age, gender, patient age, relationship to patient, patient length of stay, number of times they have met the physician), asked survey questions regarding the importance of specific attire (white coat, nametag, scrubs, sneakers, clogs, short sleeve shirts and blue jeans) and behavioral items (addressing a patient by last name and carrying a snack/coffee) and finally to assess the impact of attire on overall perception of care. All survey responses were scored on a seven-point Likert scale with 1 = Strongly Agree, 4 = Neutral, and 7 = Strongly disagree. Surveys were placed in ICU waiting rooms with a sign explaining the survey. Participation by visitors was voluntary. Respondents took a survey form, and then placed it in a box after completing it. The process was not monitored. Completed surveys were collected periodically from a box. The surveys had no identifying information. Collected survey forms were aggregated and responses analyzed.

2.1. Statistical analysis

Demographic data were coded as categorical information and compared using a two-sided Chi squared test or Fisher's exact test, as appropriate. Data were analyzed for median and interquartile range of the scores on the seven point Likert scale with SAS (version 9.4, SAS Institute, Cary NC) using the Mann-Whitney *U* test for analysis by gender and the Kruskal-Wallis test for analysis by age, because the variables were not normally distributed. Survey results for the two sites were compared using the Mann-Whitney *U* test. A *p*-value of <0.05 was considered statistically significant.

3. Results

3.1. Respondent demographics

There were 117 surveys collected from the community (urban) hospital ICU and 106 from the university (rural) hospital ICU, for a total of 223 respondents. A difference in responses was anticipated for the two ICUs based on the populations served (urban vs. rural). Demographic data are shown in Table 1. Of the factors evaluated (respondent age, respondent gender, patient age, length of stay, relationship to the patient, and number of times they have met the physician), there was no significant difference in responses from the two ICUs ($p > 0.05$, χ^2 analysis), except for patient length of stay ($p < 0.001$, significantly longer stay in the university ICU). The data is combined and presented in aggregate for the two ICUs.

3.2. Responses to the survey

For each of the ten items in the survey, respondents used a seven point Likert scale (see Supplemental Files 1 (original Japanese) and 2 (English translation) for survey forms used), and grouped as “agree” [1,2 or 3], “neutral” [4], or “disagree” [5,6,or 7]. Responses to each of

Table 1
Demographics of survey respondents.

Item	Total sample (N = 223)
Respondent age	
<25 y	10 (5%)
25–50 y	97 (44%)
>50 y	116 (51%)
Respondent gender	
Male	83 (37%)
Female	140 (63%)
Patient age	
<25 y	7 (3%)
25–50 y	20 (9%)
>50 y	194 (89%)
Relationship	
Friend	1 (0.5%)
First-degree	117 (54%)
Distant	102 (46.5%)
Time in ICU	
<2 d	89 (42%)
2–7d	99 (48%)
>7 d	20 (10%)
Meet physician	
Never	78 (40%)
Once	63 (33%)
2–5 times	43 (22%)
Frequently	9 (5%)

Values shown are the number of respondents (%) (y: years).

the ten survey items are shown in Table 2, as combined data for the two ICUs with median scores and interquartile ranges. Table 2 also shows the responses for each item stratified by age. The number of missing values is shown in Supplemental Table 3. Of the ten survey items, there was a statistically significant difference in responses between the two ICUs (Supplemental Table 4) only for the question regarding short sleeve shirts, with more visitors at the university ICU scoring short-sleeve shirts as “disagree” ($p = 0.00$).

3.2.1. The doctor should wear a name tag

Responses to this question are shown in Fig. 1. A total of 91% of respondents agreed with this, and 5% were neutral, with no respondent disagreeing and 4% not answering this question. There were no statistically significant differences by age ($p = 0.10$, Kruskal-Wallis) or gender ($p = 0.88$, Mann-Whitney).

3.2.2. Patients should be addressed by their last (family) name

Responses to this question are shown in Fig. 2. A total of 73% of respondents agreed with this, 22% were neutral, with 1% of respondents disagreeing, and 4% not answering this question. There were no statistically significant differences by age ($p = 0.14$, Kruskal-Wallis) or gender ($p = 0.53$, Mann-Whitney).

3.2.3. The doctor should wear a white coat

Responses to this question are shown in Fig. 3. A total of 59% of respondents agreed with this, 35% were neutral, with 1% of respondents disagreeing, and 4% not answering this question. There were no statistically significant differences by gender ($p = 0.12$, Mann-Whitney). However, statistically significantly more respondents under age 25 selected “agree” than respondents older than age 25 ($p = 0.03$, Kruskal-Wallis).

3.2.4. Scrub clothing is acceptable for a doctor to wear in the ICU

Responses to this question are shown in Fig. 4. A total of 51% of respondents agreed with this, 41% were neutral, with 4% of respondents disagreeing, and 4% not answering this question. There were no statistically significant differences by age ($p = 0.09$, Kruskal-Wallis) or gender ($p = 0.50$, Mann-Whitney).

Table 2
Responses to survey items.

Item	Total sample (N = 223)	Age < 25 y (N = 10)	Age 25–50 y (N = 97)	Age > 50 y (N = 116)	p-Value
Name tag is important	2 [1, 2]	1 [1, 1]	1 [1, 2]	2 [1, 2]	0.10
Address patient by last name	2 [1, 3]	1 [1, 3]	3 [1, 4]	2 [1, 3]	0.14
White coat is important	3 [1, 4]	1 [1, 3]	3 [2, 4]	3 [1, 4]	0.03
Scrubs are acceptable	3 [2, 4]	5 [2, 5]	4 [2, 4]	3 [2, 4]	0.09
Short Sleeve Shirts are acceptable	4 [3.5, 5]	5 [4, 6]	4 [4, 5]	4 [3, 5]	0.46
Blue jeans are acceptable	5 [4, 6]	6 [6, 6.5]	5 [5, 6]	5 [4, 7]	0.08
Sneakers are acceptable	4 [3, 5]	4 [3, 6]	4 [3, 4]	4 [3, 5]	0.22
Clogs are acceptable	4 [4, 5]	6 [4, 7]	4 [3, 4]	4 [4, 5]	0.05
Coffee/snack are acceptable	6 [5, 7]	7 [4, 7]	6 [5, 7]	6 [5, 7]	0.55
Appearance is important	3 [2, 4]	3 [2.5, 3.5]	3 [2, 4]	4 [3, 4]	0.08

Values shown are the median [Interquartile range: 25%ile, 75%ile], on a scale from 1 (strongly agree) to (4 = neutral), 7 (strongly disagree). (y: years). Data for the three age categories were analyzed using the Kruskal-Wallis test, and reported as p-values.

3.2.5. Short sleeve shorts are acceptable for the doctor to wear in the ICU

Responses to this question are shown in Fig. 5. A total of 25% of respondents agreed with this, 37% were neutral, with 35% of respondents disagreeing, and 4% not answering this question. There were no statistically significant differences by age ($p = 0.46$, Kruskal-Wallis) or gender ($p = 0.86$, Mann-Whitney). Significantly more respondents at the rural university hospital scored this as “disagree” compared to the urban community hospital ($p = 0.00$).

3.2.6. Blue Jeans are acceptable for a doctor to wear in the ICU

Responses to this question are shown in Fig. 6. A total of 10% of respondents agreed with this, 19% were neutral, with 65% of respondents disagreeing, and 5% not answering this question. There were no statistically significant differences by age ($p = 0.08$, Kruskal-Wallis) or gender ($p = 0.14$, Mann-Whitney).

3.2.7. Sneakers (Tennis shoes) are acceptable for a doctor to wear in the ICU

Responses to this question are shown in Fig. 7. A total of 32% of respondents agreed with this, 39% were neutral, with 24% of respondents disagreeing, and 4% not answering this question. There were no statistically significant differences by age ($p = 0.22$, Kruskal-Wallis) or gender ($p = 0.38$, Mann-Whitney).

3.2.8. Clogs are acceptable for a doctor to wear in the ICU

Responses to this question are shown in Fig. 8. A total of 24% of respondents agreed with this, 41% were neutral, with 31% of respondents disagreeing, and 3% not answering this question. These results approached a statistically significant difference for age ($p = 0.05$, Kruskal-Wallis) but not for gender ($p = 0.07$, Mann-Whitney).

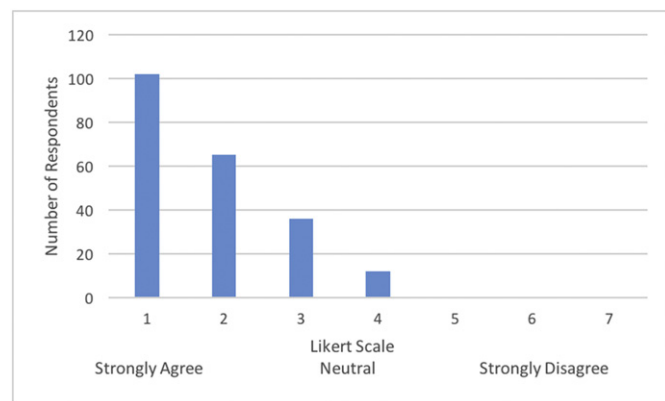


Fig. 1. Responses to the statement “The doctor should wear a name tag”. This histogram shows the distribution of responses from visitors to two intensive care units, asked to score as 1 = strongly agree, 4 = neutral and 7 = strongly disagree.

3.2.9. Doctors can hold a cup of coffee or snack while seeing a patient in the ICU

Responses to this question are shown in Fig. 9. Just 7% of respondents agreed with this, 9% were neutral, with 81% of respondents disagreeing, and 2% not answering this question. There were no statistically significant differences by age ($p = 0.55$, Kruskal-Wallis) or gender ($p = 0.88$, Mann-Whitney).

3.2.10. Doctors' appearance influences my opinion of patient care in the ICU

The final question asked about the impact of physician attire on the overall perception of care. These results are shown in Fig. 10. Only 8% of respondents disagreed that attire impacts overall perception of care, while 36% were neutral, and 50% scored “agree”. The results were not statistically significantly different when stratified by age ($p = 0.08$, Kruskal-Wallis) or gender ($p = 0.12$, Mann-Whitney).

4. Discussion

There have been a number of studies of opinions regarding physician attire, but few in the ICU. Since many patients in the ICU are not conscious, this survey was conducted among visitors of patients in the ICU. This survey shows that a majority of visitors agreed with the statements “the doctor should wear a white coat”, “patients should be addressed by their last (family) name” and “the doctor should wear a nametag”. Fewer respondents scored “agree” for items related to wearing scrubs, sneakers, clogs and short sleeve shirts, and these items had more “neutral” responses. For wearing blue jeans or carrying a snack, a majority of respondents scored “disagree”. Overall, 50% of visitors

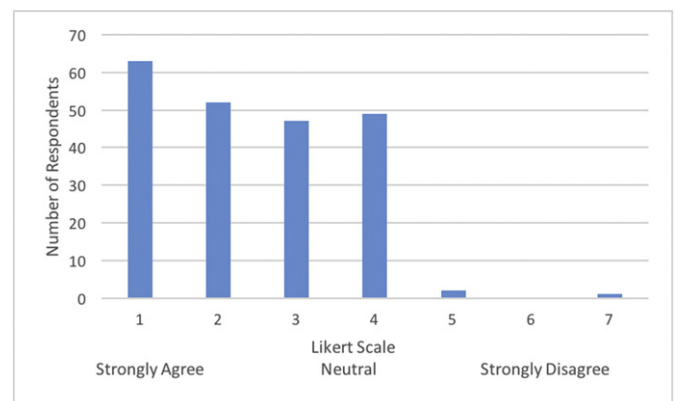


Fig. 2. Responses to the statement “Patients should be addressed by their last (family) name”. This histogram shows the distribution of responses from visitors to two intensive care units, asked to score as 1 = strongly agree, 4 = neutral and 7 = strongly disagree.

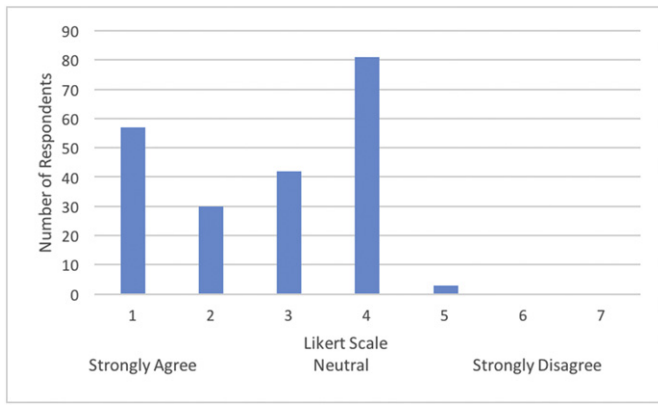


Fig. 3. Responses to the statement “The doctor should wear a white coat”. This histogram shows the distribution of responses from visitors to two intensive care units, asked to score as 1 = strongly agree, 4 = neutral and 7 = strongly disagree.

scored “agree”, that physician attire affects their overall perception of care, and 36% scored “neutral” with just 8% scoring “disagree”.

Although it has been suggested that authority and trust are opposing factors, the importance of the white coat has long been recognized, and a white coat is superior to casual attire as judged by patient perceptions [1]. Despite the homogeneous culture in Japan, however, studies have had differing results. While two studies of outpatient opinions in Japan [4,6] showed that patients prefer a white coat, a study from 1999 [5] showed that Japanese outpatients do not feel that a white coat affected their perception of care. In the present study, a majority of respondents agreed that the doctor should wear a white coat. When results were stratified by age for this question, the white coat was preferred by statistically significantly ($p = 0.03$) more people less than 25 y old than those >25 y old.

The survey item regarding carrying food in public was prompted by a consideration of social norms in Japan where carrying food in public is almost never done. Visitors may be more permissive toward busy physicians on this point of etiquette, however a majority (182/218) of respondents scored this as 5–7, indicating “disagree”. Similarly, 146/218 visitors “disagree” that blue jeans are acceptable. This survey was conducted in summer, when the Japanese government officially sanctions short-sleeve shirts (“Cool Biz”), which may have affected the results for that survey item.

Perceptions of physician attire have been studied in many locales. In Hawaii, respondents prefer casual dress rather than a white coat [12]. In Italy, respondents prefer formal attire and a white coat [13]. In Saudi Arabia, respondents prefer formal attire, but their physicians’ external

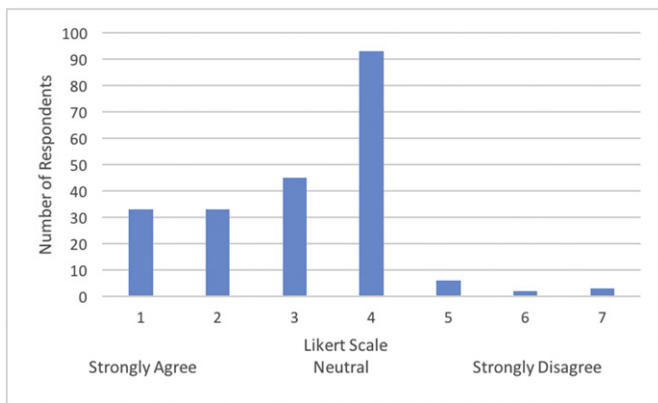


Fig. 4. Responses to the statement “Scrub clothing is acceptable for a doctor to wear in the intensive care unit”. This histogram shows the distribution of responses from visitors to two intensive care units, asked to score as 1 = strongly agree, 4 = neutral and 7 = strongly disagree.

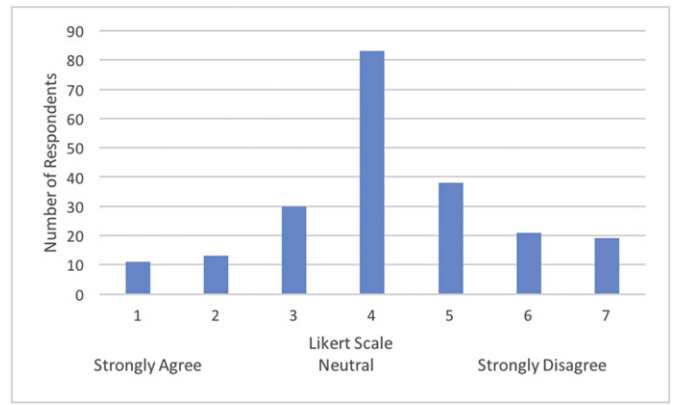


Fig. 5. Responses to the statement “Short sleeve shorts are acceptable for the doctor to wear in the ICU”. This histogram shows the distribution of responses from visitors to two intensive care units, asked to score as 1 = strongly agree, 4 = neutral and 7 = strongly disagree.

appearance did not affect their confidence in the physician [14]. In a study of 500 respondents in the United States, a survey was completed after viewing photographs of physicians in a variety of outfits [15]. Respondents overwhelmingly favor the white coat, which also influenced trust and confidence levels. A decline in the popularity of the white coat was noted in another study, although the authors noted that this is age related with younger individuals being more accepting of more casual attire [16]. A correlation between formal attire and patient trust and confidence was also found in a survey of 1280 patients in Australia [17]. In a recent meta-analysis of 30 studies involving 11,533 patients from 14 countries, investigators found that the white coat was preferred in 18/30 studies [2]. Only 3/12 studies reviewed that patients surveyed after a clinical encounter found that attire influenced perceptions of care. They found a greater preference for formal attire among older patients and patients in Europe and Asia. The study concludes that perceptions of attire are influenced by age, locale and context of care.

In a study conducted in the United States among surgical inpatients using a similar survey instrument, patients responded similarly to the present study that a white coat with nametag and use of a patient’s last name are important. However, while scrubs were acceptable, blue jeans, clogs and sneakers were not [18]. In a study of resident attire while seeing patients in an outpatient Obstetrics/Gynecology clinic, patients surveyed reported after examining a series of photographs of doctors dressed in different ways, that a white coat and scrubs are the preferred clothing [19]. The data in the present study shows results similar to previous studies of patient opinions. The importance of the relationship between the physician and family members of patients in the

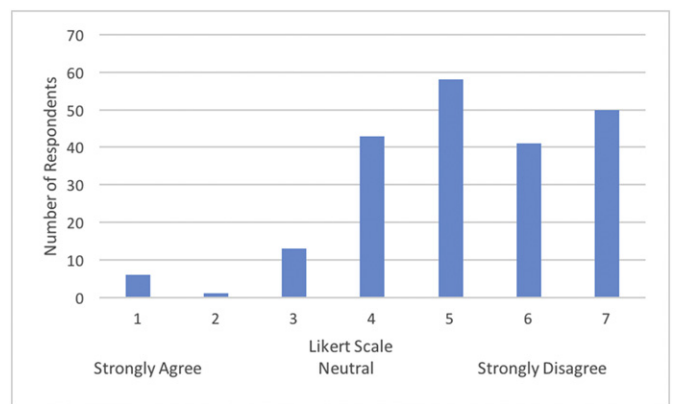


Fig. 6. Responses to the statement “Blue Jeans are acceptable for a doctor to wear in the ICU”. This histogram shows the distribution of responses from visitors to two intensive care units, asked to score as 1 = strongly agree, 4 = neutral and 7 = strongly disagree.

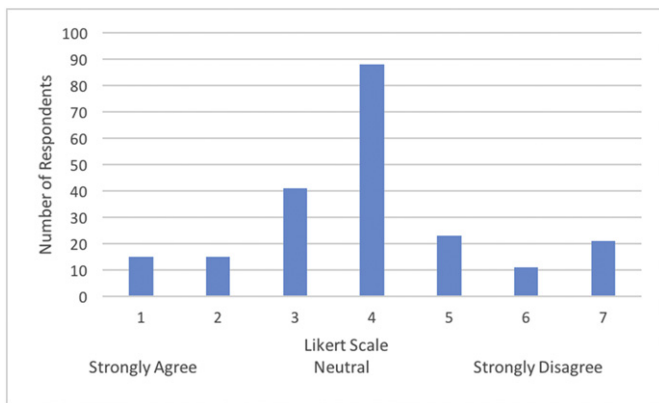


Fig. 7. Responses to the statement “Sneakers (Tennis shoes) are acceptable for a doctor to wear in the ICU”. This histogram shows the distribution of responses from visitors to two intensive care units, asked to score as 1 = strongly agree, 4 = neutral and 7 = strongly disagree.

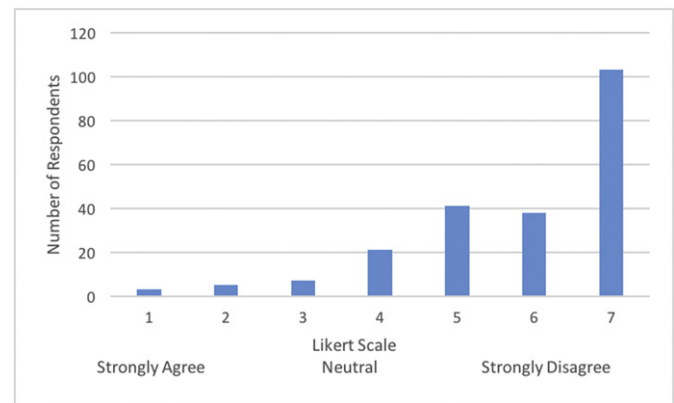


Fig. 9. Responses to the statement “Doctors can hold a cup of coffee or snack while seeing a patient in the ICU”. This histogram shows the distribution of responses from visitors to two intensive care units, asked to score as 1 = strongly agree, 4 = neutral and 7 = strongly disagree.

ICU has been studied extensively, and the opinions of family members in the care of the ICU patient are important in the therapeutic relationship [20]. The opinions of visitors regarding physician attire are of significance.

Investigators in the one previous study in an ICU made important observations [3]. Their study asked written questions of ICU visitors, and found that while a nametag was desired by a majority (77%), a minority of visitors (32%) wanted the doctor to wear a white coat, in contrast to the results of the present study. When shown a panel of pictures, however, respondents selected traditional appearance with a white coat most commonly (52%) followed by scrubs (24%) as desirable. ICU visitors have a preference for a white coat or scrubs, which serve as an identifying uniform. The study concluded that no matter what attire, professionalism and a nametag (as in the present study) are perceived as requisites by patient families [3].

There has been concern that health care worker's clothing may be a vector for infections. The British National Health Service has mandated a policy of “bare below the elbows” starting in January 2008 [10]. The policy bans wristwatches, the traditional white coat, and mandates short-sleeve shirts. It is recommended that neckties are not worn during direct contact with patients [9]. A study in 2011, found that up to 60% of health care workers clothing is colonized, but this does not necessarily mean it is pathogenic [7]. The SHEA guidelines were published in 2014, and also included a review of existing literature [11]. The guidance statement concludes the importance of well-designed studies in the future, recommends voluntary compliance with the following: “bare below the elbows” with short sleeve shirts and no watches/jewelry (similar to regulations in Britain), frequent laundering of white coats

and removal of white coats before direct patient contact. They make no specific recommendations about neckties. In a study of 432 outpatients in family practice offices, while an initial survey showed that 16% of patients thought no necktie was acceptable, after reading a passage about the necktie as a possible vector of infection, 41% of patients felt that no necktie is acceptable [21]. This suggests that patient opinion can be changed with education about infection risks and clothing [11,21].

This study has acknowledged limitations. The study was performed in Japan, which has an almost unique culture, meaning the results may not be generalizable to other countries. Despite cultural difference, however, some results are similar to studies from other countries, especially with regard to white coats and name tags, highlighting their importance. The wording of the survey may have left descriptions open to interpretation by some respondents. Some respondents failed to answer all questions. The missing data that may have changed the results. Surveys were completed on a voluntary, unmonitored basis. In addition, we did not determine a response rate. We do not know how many people picked up a survey, but then failed to complete it. It is possible that people with disparate views simply chose not to participate. It is also possible that some respondents completed multiple surveys which could skew the results in either direction.

5. Conclusions

This study reports the results of a voluntary survey of visitors to the ICU conducted in two ICUs in Japan. A majority of visitors agree that

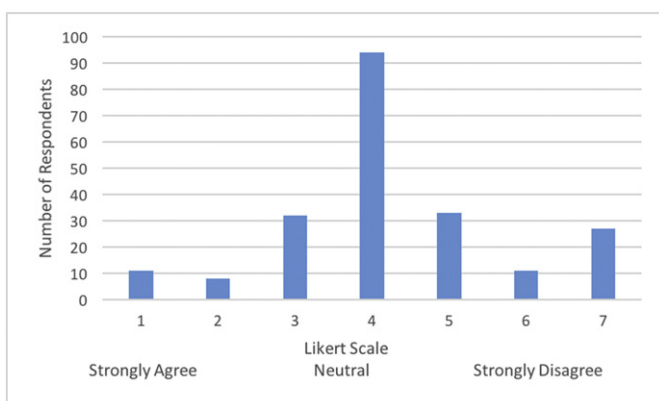


Fig. 8. Responses to the statement “Clogs are acceptable for a doctor to wear in the ICU”. This histogram shows the distribution of responses from visitors to two intensive care units, asked to score as 1 = strongly agree, 4 = neutral and 7 = strongly disagree.

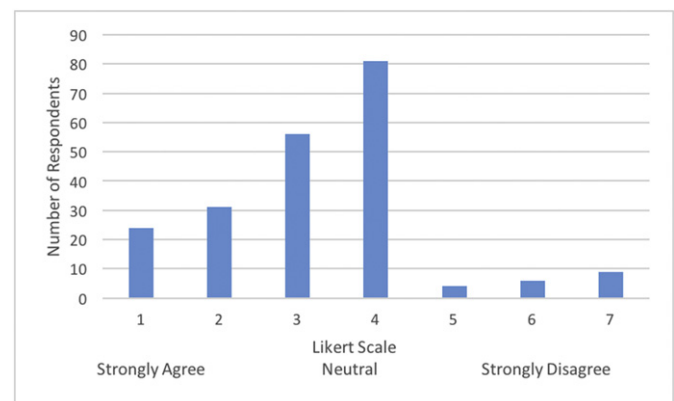


Fig. 10. Responses to the statement “Doctors' appearance influences my opinion of patient care in the ICU”. This histogram shows the distribution of responses from visitors to two intensive care units, asked to score as 1 = strongly agree, 4 = neutral and 7 = strongly disagree.

doctors should wear a white coat and name tag, and address the patient by last name. Fewer visitors agree that scrubs, short-sleeve shirts, sneakers and clogs are acceptable, with few visitors scoring “disagree”. A majority of visitors disagree that wearing blue jeans or carrying a snack on rounds are acceptable. There are initiatives in several countries to change health care workers' attire because of the risks of nosocomial infections. Visitors' overall perceptions of the health care received is affected by physician attire. If guidelines regulating attire are widely implemented, appropriate education must be given to hospital visitors to explain the changes in regulations for attire, since health care worker dress may differ from what is preferred by patients and visitors. Adherence to guidelines should not negatively influence perceptions of care.

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jcrc.2017.09.181>.

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