

Original Research

Patients and Parents Prefer Scrubs: An Analysis of Pediatric Orthopaedic Physician Attire in the Post-COVID Pandemic Era

Nicolas Pascual-Leone, BA^{1,2}; Preston W. Gross, BS¹; Danielle E. Chipman, BS¹; Shevaun M. Doyle, MD¹; Peter D. Fabricant, MD, MPH¹

¹Hospital for Special Surgery, New York, NY; ²Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

Correspondence: Peter D. Fabricant, MD, MPH, Division of Pediatric Orthopaedic Surgery, Hospital for Special Surgery, 535 East 70th St., New York, NY 10021. E-mail: fabricantp@hss.edu

Received: July 27, 2022; Accepted: November 30, 2022; Published: February 1, 2023

DOI: 10.55275/JPOSNA-2023-552

Abstract

Background: Previous studies have demonstrated that dress style can influence a patient's impression of a physician's compassion, trust, and competency. The purpose of this study was to understand the preferences pediatric patients and their caregivers have towards physician attire in the orthopaedic outpatient setting. The authors hypothesized that patients and parents/guardians would have no preference regarding the use of white coats and would prefer scrubs over other attire options.

Methods: Between January and May 2022, patients aged 10 to 21 and their parents/guardians presenting to an outpatient orthopaedic office visit were approached to complete an anonymous, voluntary survey. The survey consisted of preference questions related to white coats, male physicians' attire, and female physicians' attire. Categorical variables were analyzed using Pearson Chi-Square with $p \leq 0.05$ used as threshold for statistical significance. A kappa analysis was performed to compare agreement between pediatric patients' and their respective parents/guardians' responses.

Results: A total of 200 participants' surveys were included in analysis: 100 patients and 100 parents/guardians. Patients had an average age of 14.1 ± 2.4 years and were 47.0% female, while parents/guardians had an average age of 47.3 ± 6.0 years and were 76.0% female. A total of 71.5% of participants felt neutral toward the use of white coats in the outpatient office. Although scrubs were the most preferred attire option for male and female physicians for both patients (male: 46%; female: 44%) and parents/guardians (male: 41%; female: 42%), there were significant differences in the overall preference profile (male: $p=0.027$; female: 0.032). There was discordance in responses between patients and their parents/guardians (kappa=0.15–0.28, none to minimal agreement), with patients more frequently preferring casual and parents/guardians more frequently preferring formal attire.

Conclusions: After analyzing 200 surveys, this study found that while the majority of pediatric patients and their parents/guardians felt neutral about their provider wearing a white coat, both groups were most likely to prefer both male and female physicians wear scrubs during outpatient orthopaedic office visits. With the greatest proportion of all participants preferring scrubs to other attire options, the authors suggest pediatric orthopaedic surgeons consider wearing scrubs during outpatient visits.

Level of Evidence: II

Key Concepts

- Pediatric patients and their parents/guardians preferred their provider wear scrubs during outpatient visits rather than other attire options.
- Pediatric patients and their parents/guardians felt neutral on if their provider wore a white coat.
- The greatest proportion of subjects felt neutral about their strength of preference in attire.

Introduction

With many outpatient orthopaedic visits being scheduled for 15 minutes, initial perceptions of the physician can dramatically shape the entire encounter. Previous studies have demonstrated that dress style can influence a patient's impression of the physician's compassion and trust, along with their competency.¹⁻³ Understanding the preferences of orthopaedic patients can therefore serve to aid in rapport building between patients and physicians.

Jennings et al. investigated whether physician attire influences an adult patient's perceptions in the inpatient and outpatient orthopaedic visits.^{4,5} In both settings, the patients' preferences were attributed to a perception of increased confidence, intelligence, trust, and safety in the physician. However, when focusing on the pediatric population, a large multicenter study determined that patients and parents do not have a strong preference towards a particular physician attire.⁶ With many physicians wearing scrubs at our institution since the start of the COVID-19 pandemic, understanding current patient and parent/guardian preference would be instrumental in continuing to build rapport with patients and their families.

To the authors knowledge, no such study has been performed in the pediatric population since the COVID

pandemic began. The purpose of this study was to understand the preference patients and their parents/guardians have towards a physician's attire in the pediatric orthopaedic outpatient setting. The authors hypothesized that patients and parents/guardians would have no preference for white coats and would prefer scrubs over other attire options.

Materials and Methods

Between January 2022 and May 2022, after receiving institutional review board approval, patients aged 10 to 21 and their parents/guardians presenting to an outpatient orthopaedic visit at a tertiary hospital were approached in the waiting room to complete an anonymous, voluntary survey (Appendix) prior to any interaction with the physician. A total of 244 participants' surveys were collected. Surveys were excluded if either the patient or parent/guardian did not complete the entire survey or if the patient was roomed prior to completing the survey (N=44).

The survey consisted of basic demographic information, along with preference questions related to white coats, traditional male physicians' attire (male attire), and traditional female physicians' attire (female attire) (Figure 1). For male and female attire, participants were also asked how strongly they felt about their attire



Figure 1. Examples of attire options. A demonstrates male physician attire examples, while B demonstrates female attire examples. Images were presented in black and white covering all exposed skin to eliminate the possibility of racial bias in subject responses.

preference (strength of preference). Parents/guardians were asked an additional set of questions to understand their preferences prior to the COVID-19 pandemic using the same images as Figure 1.

All categorical data was analyzed using Pearson Chi-Square for homogeneity with two-tailed $p \leq 0.05$ used as threshold for statistical significance. Chi-Square tests investigated the existence of distribution-level

differences in the attire preferences of patients compared to parents/guardians. When Chi-Square tests showed statistical significance, z-tests with p-values adjusted using the Bonferroni method were performed to determine differences in the ratios of patient-to-parent responses for each attire option. Additionally, post hoc one sample binomial tests with associated p-values were conducted to determine pairwise differences between pooled patient and parent responses for each attire option. A kappa analysis was performed to quantify the pairwise agreement between patients' and their respective parents/guardians' responses. Level of agreement was classified by kappa value as none (0-0.20), minimal (0.21-0.39), weak (0.40-0.59), moderate (0.60-0.79), strong (0.80-0.90), or almost perfect (>0.90).^{7,8} Statistical analysis was performed using IBM SPSS Statistics Version 22 for Windows (SPSS, Inc., Armonk, NY).

Results

A total of 200 participants' surveys were included in the analysis: 100 patients and 100 parents/guardians. Patients had an average age of 14.1±2.4 years and were 47.0%

female, while parents/guardians had an average age of 47.3±6.0 years and were 76.0% female (Table 1).

A total of 71.5% of participants felt neutral towards the use of white coats in the office (Figure 2). There was no significant difference in the strength of preference for white coats between patients and parents/guardians (p=0.741).

Scrubs were the most preferred attire option for male physicians for both patients (46%) and parents/guardians (41%). When evaluating the overall distribution of responses, patients were twice as likely to prefer casual attire compared to parents/guardians while parents/guardians demonstrated a greater preference for formal attire (see superscripts in Table 2, p<0.05). Most patients selected a neutral preference in male attire, while parents/guardians were most likely to have a moderate preference (p=0.097).

With respect to female physician attire, similar patterns were noticed. While scrubs were the most preferred attire by patients (42%) and parents/guardians (44%), patients

Table 1. Demographic Data for Patients and Parents/Guardians

Demographic	Patients (n=100)	Parents/Guardians (n=100)
Age (years)	14.1 ± 2.4	47.3 ± 6.0
Sex		
Male	50	24
Female	47	76
Other	2	0
Prefer Not to Answer	1	0
Race		
White	76	73
Black/African American	8	9
American Indian/Alaska Native	0	0
Asian	6	6
Other	3	6
Prefer not to Answer	7	6
Ethnicity		
Non-Hispanic	68	70
Hispanic	13	11
Other	10	10
Prefer Not to Answer	0	9

White Coat Preference

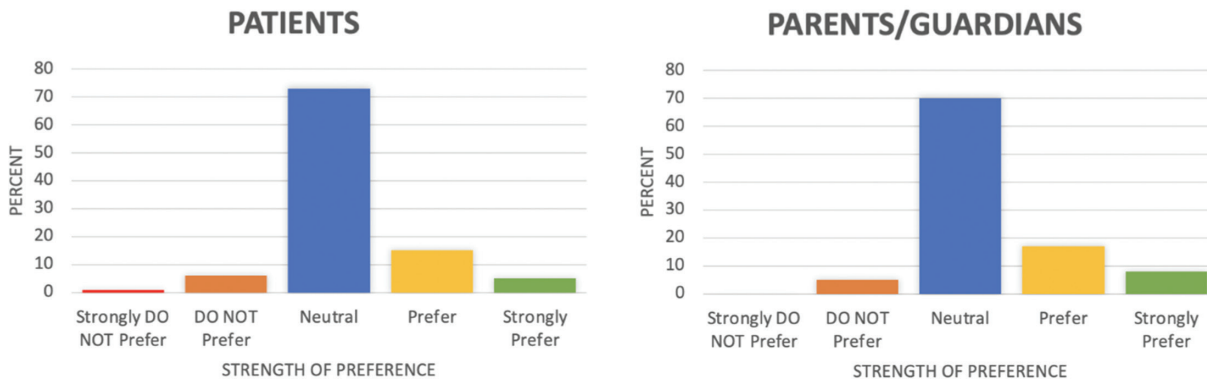


Figure 2. White coat preference for patients and parents/guardians. Chi-square between groups resulted in $p=0.741$.

Table 2. Male and Female Attire Preference and Strength of Preference Breakdown by Participant Cohort

Male Physician					
Attire					
Participant	Formal	Business Casual	Casual	Scrubs	P-value
Patient	1 ^a	32 ^a	26 ^b	41 ^a	0.027*
Parent/Guardian	7 ^b	34 ^a	13 ^a	46 ^a	
Strength of Preference					
Participant	Strong	Moderate	Mild	Neutral	P-value
Patient	6	25	28	41	0.097
Parent/Guardian	14	31	27	28	
Female Physician					
Attire					
Participant	Formal	Business Casual	Casual	Scrubs	P-value
Patient	1 ^b	33 ^a	24 ^b	42 ^a	0.032*
Parent/Guardian	7 ^a	37 ^a	12 ^a	44 ^a	
Strength of Preference					
Participant	Strong	Moderate	Mild	Neutral	P-value
Patient	7	24	26	43	0.077
Parent/Guardian	15	32	24	29	

Values are presented as number (percentage). Overall statistically significant differences in column values indicated by “*”. Superscript letters a and b denote columns whose row proportions do not differ significantly from each other at the 0.05 level (i.e., a column containing a,b suggests differences between patient and parent/guardian responses).

Table 3. Post Hoc Analysis Showing Absolute Effect Sizes for Attire Preferences

Absolute Effect Sizes For Male Physician Attire Preferences					
	Formal	Business Casual	Casual	Scrubs	P-value
Formal	x	58 (p<0.001)*	31 (p<0.001)*	79 (p<0.001)*	<0.001*
Business Casual	x	x	27 (p=0.011)*	21 (p=0.106)	
Casual	x	x	x	48 (p<0.001)*	
Scrubs	x	x	x	x	
Absolute Effect Sizes For Female Physician Attire Preferences					
	Formal	Business Casual	Casual	Scrubs	P-value
Formal	x	62 (p<0.001)*	28 (p<0.001)*	78 (p<0.001)*	<0.001*
Business Casual	x	x	34 (p=0.001)*	16 (p=0.230)	
Casual	x	x	x	50 (p<0.001)*	
Scrubs	x	x	x	x	

*P-values in parentheses are reported for one-sample binomial tests. The p-values for one sample Chi Square tests are reported in the rightmost column. * indicates p≤0.05.*

again were more than twice as likely to prefer casual attire in female physicians and parents/guardians were more likely to prefer formal attire (see superscripts in Table 2, p≤0.05). Patients did not feel strongly about this preference, with 43% selecting a “neutral” preference, but parents/guardians were most likely to have a moderate preference (p=0.077).

There was a statistically significant preference for scrubs compared to formal attire (male attire: effect size = 39, p<0.001; female attire: effect size = 78, p<0.001) and casual attire (male attire: effect size = 48, p<0.001; female attire: effect size = 50, p<0.001) when patients and parents/guardians responses were pooled (Table 3). Although scrubs were the most popular choice, there were no statistically significant differences between the preference of scrubs and business casual (male attire: effect size = 19, p=0.106; female attire: effect size = 4, p=0.230).

Table 4 highlights the degree of agreement in responses by patients and their respective parents/guardians. While all analyses were statistically significant, the kappa value ranged from 0.15 – 0.28.

Table 4. Level of Agreement Between Patients and Their Parents/Guardians, Showing No to Minimal Agreement Among Dyads

Variable	Kappa Value
White Coat Preference	0.15
Male Attire	0.28
Male Strength of Preference	0.23
Female Attire	0.26
Female Strength of Preference	0.20

Discussion

This study sought to understand the preferences of patients and their parents/guardians at outpatient orthopaedic visits following the COVID-19 pandemic. Through the use of an anonymous survey, it was found that while patients and parents/guardians felt neutral regarding the use of white coats, both patients and their parents/guardians prefer male and female physicians to wear scrubs. While the greatest proportion felt “neutral” about these preferences, these findings can still be used to help guide physicians as they continue to navigate how

to best build rapport with patients and their families in the endemic era.

A recent U.S. multicenter study demonstrated that 90% of participants believed it was appropriate to wear scrubs during outpatient encounters.⁶ However, a separate study of outpatient orthopaedic visits demonstrated that patients would be more likely to discuss personal information if the surgeon was wearing a white coat or scrubs.⁴ In the current study, when asked about a preference for white coats, 73% of patients said they felt neutral. When pressed to choose between scrubs, casual, business casual and formal attire, 42% of patients selected scrubs. With the greatest proportion of patients selecting scrubs for both male and female physicians, the authors of this study recommend physicians wear scrubs during outpatient pediatric orthopaedic office visits. These findings suggest that in order to build greater rapport with pediatric patients, physicians may seek to wear less formal attire, such as scrubs or business casual attire.

Successful pediatric patient care also includes building rapport with parents and guardians. Previous studies have found that parents did have a preference for white coats.⁶ The current study found that 70% of parents/guardians felt neutral towards the use of white coats. Similar to patients, parents/guardians were also most likely to prefer scrubs. Preference for casual attire was not as common while formal attire was more common in parents/guardians than in patients. Furthermore, parents/guardians were mostly like to have a moderate strength of attire preference.

Overall, physician attire preference was found to be significantly different between patients and parents/guardians. Casual attire preference was twice as common for patients than for parents/guardians and formal attire was 1/7 as common. The level of agreement between patients and their parents/guardians was minimal for male attire ($k=0.28$) and female attire ($k=0.26$). This adds a level of complexity to the attire decision-making conundrum.

The present study has several limitations. As this survey had to be handed out in person, the participants were

approached by an investigator in a certain dress attire. This may have influenced the responses. In order to limit potential biases associated with experimenter attire, once the participant began the survey, the investigator waited outside of view. Furthermore, patients were approached prior to seeing the physician to limit the influence of the physician's attire on the participant's responses. It is possible that patients being seen for follow-up appointments may have preconceived opinions on their physicians' attire and this may have influenced their responses, as well as, unconscious or conscious bias. Additionally, since the current study was conducted at a single institution, the results may not be generalizable to orthopaedic hospitals in other geographic regions. Finally, the man and woman wearing the various attire options in the survey only represent how a single person looks in each attire. In order to eliminate any potential for racial bias, each image was edited to block any exposed skin.

Through the analysis of 200 surveys, this study found that while pediatric patients and parents/guardians felt neutral about the use of white coats, both groups were most likely to prefer both male and female physicians wear scrubs during outpatient orthopaedic office visits. With respect to the other attire options, pediatric patients and their respective parents/guardians were found to have minimal agreement in physician attire preferences. With greatest proportion of all participants preferring scrubs to other attire options, the authors suggest pediatric orthopaedic surgeons wear scrubs during outpatient visits.

Disclaimer

No funding was received. The authors have no conflicts of interest to report related to the subject matter.

References

1. Rehman SU, Nietert PJ, Cope DW, et al. What to wear today? Effect of doctor's attire on the trust and confidence of patients. *Am J Med.* 2005;118(11):1279-1286.
2. Lill MM, Wilkinson TJ. Judging a book by its cover: descriptive survey of patients' preferences for doctors' appearance and mode of address. *Br Med J.* 2005;331(7531):1524-1527.
3. Chung H, Lee H, Chang DS, et al. Doctor's attire influences perceived empathy in the patient-doctor relationship. *Patient Educ Couns.* 2012;89(3):387-391.

4. Jennings JD, Ciaravino SG, Ramsey FV, et al. Physicians' attire influences patients' perceptions in the urban outpatient orthopaedic surgery setting. *Clin Orthop Relat Res.* 2016;474(9):1908-1918.
5. Jennings JD, Pinninti A, Kakalecik J, et al. Orthopaedic physician attire influences patient perceptions in an urban inpatient setting. *Clin Orthop Relat Res.* 2019;477(9):2048-2058.
6. Bauer JM, Welling SE, Ross KE, et al. What should i wear to clinic? A national survey of pediatric orthopaedic patients and parents. *J Pediatr Orthop.* 2020;40(10):E1010-E1016.
7. McHugh ML. Lessons in biostatistics interrater reliability : the kappa statistic. *Biochem Medica.* 2012;22(3):276-282.
8. Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics.* 1977;33(1):159.

Appendix

Study ID #:

Date:

Physician attire study

1. Are you the parent/guardian or the patient for this visit?

- Parent/Guardian Patient

2. How old are you? (Please fill in the blank)

3. What is your sex?

- Male Female Other Prefer not to answer

4. With what race do you identify

- White Black/African American American Indian/Alaska Native
 Asian Prefer not to answer Other (please specify): _____

5. With what ethnicity do you identify?

- Hispanic Not Hispanic Prefer not to answer Other (please specify): _____

6. What is the primary language you speak at home? (Please fill in the blank)

7. Do you prefer your doctor to wear a white coat (see example right) at your visit?

- I strongly prefer a white coat
 I prefer a white coat
 I am neutral
 I prefer NO white coat
 I strongly prefer NO white coat



8. Which of the following do you prefer your male doctor to wear?



- Formal
 Business casual
 Casual
 Hospital scrubs

9. How strongly do you feel about your preference to question 8?

- I have a strong preference
 I have a moderate preference
 I have a mild preference
 I feel neutral

10. Which of the following do you prefer your female doctor to wear?



- Formal
 Business casual
 Casual
 Hospital scrubs

11. How strongly do you feel about your preference to question 10?

- I have a strong preference
 I have a moderate preference
 I have a mild preference
 I feel neutral

If you are the parent/guardian, please answer the following 5 questions:

12. Before the COVID-19 pandemic, did you prefer the doctor to wear a white coat at your visit?

- I strongly prefer a white coat
- I prefer a white coat
- I am neutral
- I prefer NO white coat
- I strongly prefer NO white coat



13. Before the COVID-19 pandemic, which of the following did you prefer your male doctor to wear?



- Formal
- Business casual
- Casual
- Hospital scrubs

14. How strongly do you feel about your preference to question 13?

- I have a strong preference
- I have a moderate preference
- I have a mild preference
- I feel neutral

15. Before the COVID-19 pandemic, which of the following did you prefer your female doctor to wear?



- Formal Business casual Casual Hospital scrubs

16. How strongly do you feel about your preference to question 15?

- I have a strong preference I have a moderate preference I have a mild preference I feel neutral