Assessing White Coat Maintenance among UMKC School of Medicine Physicians and Students: A Comparative Analysis of Race, Gender, and Healthcare Experience

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Introduction

- A physician's attire can influence a patient's first impression of a physician. In a cross-sectional survey from Airedale General Hospital, patients were asked about the most important feature in a physician's appearance. It was found that 46% of patients responded with "daily laundered clothing" or cleanliness as the most important, followed by "a white coat worn at all times" by 18% of the patients.[2] Due to this ranking, there is the possibility for change in favor of cleanliness.
- White coats are known vehicles for disease dissemination. A 2012 study took swabs from the collar, pocket, sides, and lapels of the white coats of medical students. The white coats were discovered to have "high rates of bacterial contamination."[1] This study found high contamination rates among all the white coats, "irrespective of the time gap since the last wash." [1] The most commonly isolated pathogen was *Staphylococcus aureus*. The gram-positive cocci that were isolated during this study were resistant to penicillin, erythromycin, and clindamycin which is "consistent with...the pattern of similar organisms...from suspected nosocomial infections" within the connected hospital. [1]
- The aim of this study is to assess the maintenance of the white coat among UMKC students and physicians. We compared maintenance between subjects of different genders, races and levels of experience.
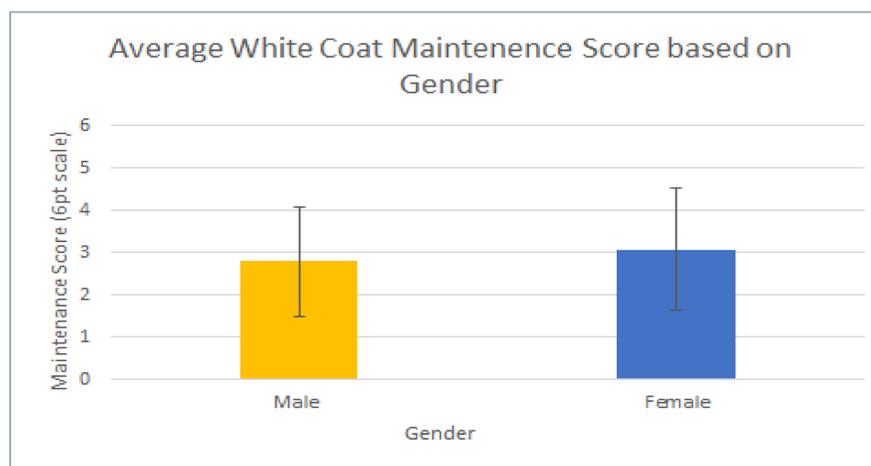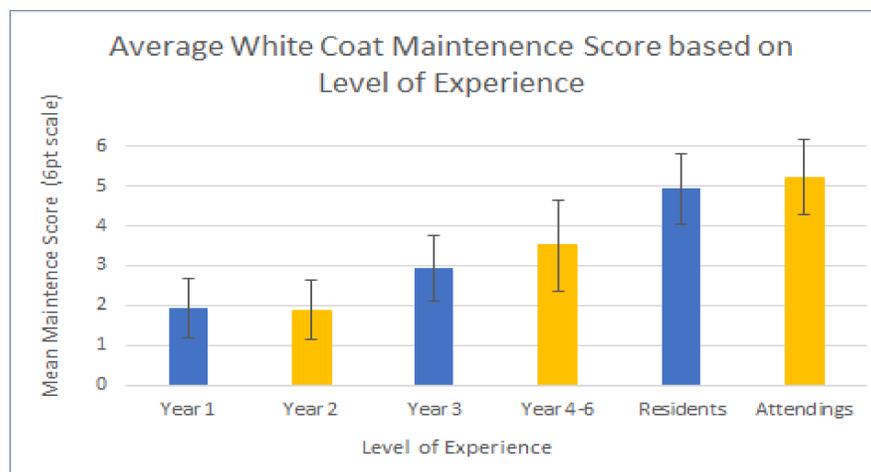
Methods

- Three questions asked about the subject's gender, race, and position. The University of Missouri-Kansas City School of Medicine has a 6-year BA/MD program. Years 1-2 medical students are considered preclinical, and Year 3 medical students have early continuity clinic experience. Years 4-6 participate in clinical rotations and continuity clinic experience. Residents were PGY-1, PGY-2, PGY-3 UMKC internal medicine residents.
- Three questions asked about the subject's gender, race, and position.
- Four questions asked about subject's personal upkeep of their white coat. This category encompasses: (1) number of white coats, (2) rotation frequency, (3) washing frequency, and (4) purchase frequency.
  - This was evaluated on a 6 point scale.
- The data was analyzed using T-tests, ANOVA with LSD post-hoc, ANOVA with Tukey HSD post-hoc, repeated measures ANOVA, Wilks-Lambda with paired samples, and internal consistency reliability. Cronbach's Alpha was used to test for reliability.

Data and Analysis

	N	Mean+	Standard Deviation
Gender			
Female	256	2.7893	1.30449
Male	136	3.0735	1.44077
Race			
White	154	3.0758	1.42557
Asian	202	2.8414	1.33759
URM**	33	2.3333	1.08259
Level of Experience			
Year 1	95	1.9278	0.74040
Year 2	79	1.8914	0.73520
Year 3	91	2.9331	0.82580
Year 4-6	78	3.5032	1.13711
Residents	37	4.9346	0.88015
Attending	17	5.2206	0.93909

+Maintenance score was measured on a 6 point scale,
**URM(Underrepresented minorities) refers to American Indian/Alaskan Native, Black/African American, Hispanic/Latino, Native Hawaiian or Other Pacific Islander

Average White Coat Maintenence Score based on Level of Experience

Average White Coat Maintenence Score based on Gender

Conclusion

- Males' and females' maintenance of the white coat was compared. The results were statistically significant (p= 0.049)
- Different races' (White, Asian, underrepresented minorities (URM)) maintenance of the white coat was compared. All values were statistically significant. Maintenance Score of the white coat by Asian individuals was not significantly different than that of White individuals (p= 1.07) or that of underrepresented minorities (p=0.046). Maintenance score of the white coat by White individuals was significantly different than that of underrepresented minorities (p= 0.032).
- White coat maintenance was compared between subjects with different levels of experience. All values were statistically significant (p<0.001). All comparisons were statistically significant with a p value <0.001, except Year 1 vs. 2 medical students (p=1.000) and resident vs. attending physicians (p=1.000).

Limitations

- There was a bigger sample size among Years 1, 2, and 3 compared to Years 4-6, residents and attendings.
- There was a disproportionate amount of White and Asian students and physicians compared to URM students and physicians.
- Some subjects only owned one white coat and, therefore, were excluded when considering rotation of white coat.

Future Directions

- Investigators would, in the future, assess the microbial content of white coats from students and physicians. We would assess the microbial capacity in various locations of the coat.
- We would want compare microbial content of the white coat between people with varying maintenance scores and between various demographic categories.

References

1. Mahoney, S. (2018, July 31). The white coat: Symbol of professionalism or hierarchical elitism? Retrieved from https://news.aamc.org/patient-care/article/white-coat-symbolism/
2. Mclean, M., & Naidoo, S. S. (2007). Medical Students Views on the White Coat: A South African Perspective on Ethical Issues. *Ethics & Behavior,17*(4), 387-402. doi:10.1080/10508420701519536

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