

Research Proposal

Examining Physician Qualification of Racial Minority Skin Conditions

Kyla M. Sumter

The University of Alabama

May 4, 2022

Author Note

Kyla M. Sumter, Department of Health Science, The University of Alabama.

This research was completed for academic purposes at the request of Dr. Melanie Tucker
HHE 506: Techniques of Research.

Correspondence concerning this article should be addressed to Kyla Sumter, Department
of Health Science, University of Alabama, Tuscaloosa, AL 35487.

Contact: kmsumter@crimson.ua.edu

Table of Contents

Author Note	1
Abstract	3
Introduction	4
Methods	5
Sample	5
Design.....	5
Materials	6
Procedures	7
Results	8
Discussion	9
References	10

Abstract

The lack of diversity in the dermatological field is speculated to be linked to an array of health disparities attributed to several skin conditions. The purpose of this study is to establish whether skin specialty medical personnel have insufficient training (academically and/or professionally) to identify and treat patients of color. Utilizing a mixed method research design, the goal is to administer a Qualtrics survey to approximately 321 current and prospective medical personnel to gauge their current level of understanding about skin of color. Validity and reliability of survey data will be established using the IBM SPSS Amos 26 to analyze Principal Components Analysis and Confirmatory Factor Analysis. Furthermore, an interview with two specialties in skin of color will help to identify the causative agent behind the disparity of care. Results will be determined by using a Compare Mean test and a chi-square test determine the presence of a relationship. Should the alternative hypothesis proven to be true it will show that the current medical training practices need to be modified to incorporate people of color.

Keywords: Dermatology, African American, People of Color, Physician Qualification

Introduction

Dermatology is the second to least racially/ethnically diverse medical specialty (Akhiyat 2020). This lack of diversity is hypothesized to be linked to an array of health disparities attributed to several skin conditions in African Americans and other people of color.

In the United States, African American children are 1.7 (n=1,464) times more likely to develop a chronic inflammatory skin condition called atopic dermatitis (AD) than their white counterparts (n=6,770) (Shaw et al). According to most literature and medical forums, the condition is often characterized by red, itchy, and/or bumpy patches of skin that appear primarily on the face, hands, and neck. However, this description fails to encompass the appearance of AD on individuals with darker skin tones, in which eczema patches appear multicolored and darkened (i.e., deep brown, purple, and ashen grey) with skin prone to hardening and thickening (Wall, 2021).

Likewise, similar discrepancies appear in medical literature neglecting the appearance of other common African American skin conditions such as acne, contact dermatitis and other eczema, dyschromia, alopecia (Alexis, 2007), psoriasis, melasma, hyperpigmentation, and keloids. Furthermore, a lack of diversity in literature (University of British Columbia, 2018) limits dermatologist and other medical personnel from receiving adequate training on identifying the physical characteristics attributed to the conditions, possibly increasing the likelihood of misdiagnosing or downplaying severity of symptoms (Perlman et al 2020), and ultimately worsening the disorders and/or decreasing patients' quality of life.

Currently, there is a paucity on scientific literature analyzing the accuracy of current and prospective medical professionals' ability to diagnose minority dermatological conditions. As such this study aims to examine primary (and specialty) care physicians' ability to accurately

identify dermatological conditions in African Americans and other people of color, compared to European American patients. The null hypothesis is that there will be that physicians will diagnosis patients of color patients skin conditions similar accuracy as white patients, while the alternative is that physicians will misdiagnosis patients of color (specifically African Americans) with less accuracy than their white patients.

Methods

Sample Population

The targeted population for this study is current physicians, physician assistants, and nurses (both general and specialty practitioners) in Georgia. Exclusion criteria for participation include not being affiliated with Emory University and/or Emory Healthcare and non-healthcare personnel. Inclusion criteria included the following: affiliation with Emory University and/or Emory Healthcare, general and specialty direct healthcare practitioners, and being 18 years or older. Current and past affiliates of Emory University and/or Emory Healthcare will be able to participate. There will be no intentional recruitment of individuals belonging to vulnerable populations such as minors, pregnant women, or the homeless.

According to the 2018 Robert Graham Center Research Report (Pettersen, 2018) the total number of primary medical personnel in Georgia is 5,993. Therefore, utilizing the Andrew Fisher's Formula calculation, to obtain a 95% Confidence Interval (CI) with +/-5% margin of error an optimum population size would be approximately 321 participants. Additionally, there will an interview with two dermatologists specializing in collaborating with patients of color.

Study Design

The study will follow a mixed method research design and utilize both quantitative and qualitative data derived from a surveys and interviews. The independent variables for both the

assessments and testimonials will be the questions aiming to determine if training or lack thereof (academic and/or practical) is the causative factors influencing an inaccurate dermatological diagnosis of people of color (dependent variable).

Materials

Participants will complete self-reported electronic Qualtrics survey. The survey will consist of a total of 67 questions (not including consent). Survey questions will ask for participants to respond to (3) demographic information on race, age, specified occupation (e.g., general practitioner, dermatologist, student, etc.); (32) identification of eight different dermatological conditions (e.g., acne, eczema, dyschromia, alopecia, psoriasis, melasma, hyperpigmentation, and keloids) over four different racial groups (e.g., White/European American, African American/Black, Asian or Pacific Islander, and Native American); and (32) questions on confidence of selected answer for identification (e.g., Very Confident, Confident, Neutral, Not Confident, Very Much Not Confident).

For this research data will be analyzed using IBM SPSS Amos 26 to perform multivariate analysis methods, such as regression, factor analysis, correlation, and variance analysis. To provide evidence of reliability and validity of survey measurements the study will employ the Principal Components Analysis and Confirmatory Factor Analysis, respectfully.

Principal Components Analysis (PCA) will maximize the variance of the survey, by summarizing the data into fewer dimensions. This will help researchers measure the correlation of individual items and “provide a mathematical basis for understanding latent or underlying relationships that may exist” (Heidel, n.d.). The interpretation of these results will be made by examining the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) (Sig. ≥ 0.6) and Bartlett's Test of Sphericity (p -values $\geq .05$; reject the null hypothesis that this is an identity

matrix) tables. “The total number of factors, the amount of variance each factor accounts for, and the final amount of variance accounted for by all factors with eigenvalues above 1.0” (Heidel) will be included in the final report.

Confirmatory Factor Analysis (CFA) is a statistical analysis technique which allows researchers to assess the hypothesis for a “relationship between the observed variables and their underlying latent construct(s)” (Suhr, 1999). CFA will either confirm or reject the PCA model as a theoretical construct by using a composite score for each subscale in the validation study (Heidel, n.d.). Models of fit will include the Root Mean Square Error of Approximation (RMSEA), the Comparative fit index (CFI), and depending upon the nested status, will also include the chi-square (χ^2) test or the Akaike Information Criterion (AIC) test.

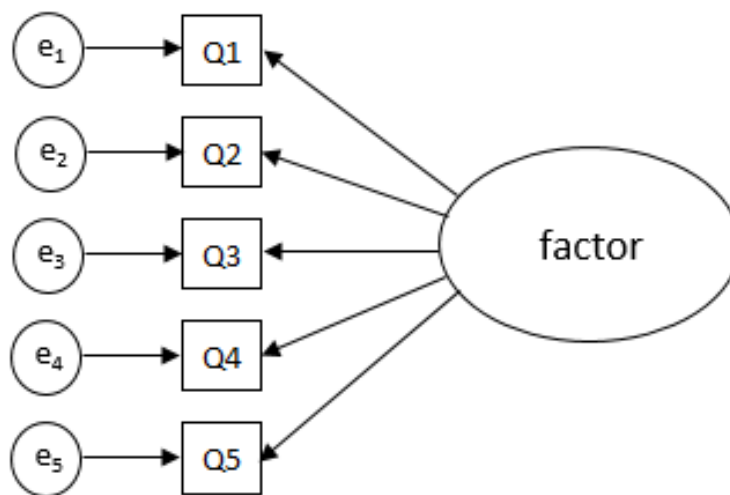


Figure 1: Confirmatory Factor Analysis. The image above shows a simplified CFA diagram in which 5 questionnaire items (labelled Q1 to Q5) are each measured with a component of error or uncertainty (labelled e1 to e5)” (Morrison, n.d.).

For the interview portion of the study, interview participants will be asked questions designed to investigate how the severity, treatment, perspectives, and training of healthcare professionals to eczema vary based on racial groupings by analyzing responses to six questions relating to: duration of time spent in the dermatology field, academic and practical training on

working with patients of color, discrepancies in identifying skin conditions in patients of color, type and amount of medications prescribed to patients of color, effectiveness of treatments, and suggested healthcare improvements/prospective studies.

Procedures

For the survey, participants will be recruited via their official Emory University and/or Emory Healthcare electronic mailing address and Emory University Newsletter. After receiving the email, participants will be prompted to complete the Qualtrics survey, which should take no more than 30 minutes to 1 hour. Survey will be asked to answer the 32 multiple-choice questions from the survey, where they will identify the type of skin condition by looking at a picture. Following each identification question, they will be asked about their level of confidence on their provided answer. Measurements will be taken based on participant response upon completion and submission of survey.

For the interview portion of the research two Georgia based dermatologist specializing in skin of color will be directly contacted over the phone for an in-person interview. Participants will be asked to answer the six questions outlined in the previous section. Interviews should take between 30 minutes to 1 hour to complete. Evaluation responses will be after the interview concludes.

Results

The use of comparative statistics will be necessary for this research as analysis of survey data will require a comparison of averages (mean) based on the racial demographics of the physicians and patients (photos with different racial groupings). For that reason, a Comparison Mean test, which summarizes and compares the differences in descriptive statistics (mean, median, and mode) across multiple categorical variables (age, race, and physician occupation),

will work best. The level of measurement being analyzed are nominal and ordinal data and will use a chi-square test with an alpha significance of 0.05 ($\alpha = 0.05$) to determine whether the difference between observed and expected data is by chance or indicative of a relationship between variables. If the alternative hypothesis is supported the chi-square test will have a significance of $\alpha \leq 0.05$, meaning that medical personnel have an overall lower mean when identifying skin conditions in people of color compared to non-people of color.

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Mile time * Are you an athlete? * Gender	383	88.0%	52	12.0%	435	100.0%

Report

Mile time

Are you an athlete?	Gender	Mean	N	Std. Deviation	Minimum	Maximum
Non-athlete	Male	0:07:48	91	0:01:36.116	0:05:05	0:12:21
	Female	0:10:06	130	0:01:41.347	0:06:56	0:14:02
	Total	0:09:09	221	0:02:00.024	0:05:05	0:14:02
Athlete	Male	0:06:46	90	0:00:48.962	0:05:03	0:08:56
	Female	0:07:00	72	0:00:48.770	0:05:16	0:08:41
	Total	0:06:52	162	0:00:49.253	0:05:03	0:08:56
Total	Male	0:07:17	181	0:01:22.439	0:05:03	0:12:21
	Female	0:09:00	202	0:02:04.103	0:05:16	0:14:02
	Total	0:08:11	383	0:01:58.036	0:05:03	0:14:02

Figure 2: Compare Means Example- Two Layer; Case Processing Summary (top) and report (bottom)

Discussion

Results of this research stand to greatly influence the qualification of healthcare professionals when working with patients of color. If the alternative hypothesis is supported, it will implicate thousands of prospective and current healthcare as having insufficient training and/or background to properly identify skin conditions attributed to people of color and require medical institutions to completely rethink training and course content (e.g., textbooks, lessons, etc.). Furthermore, this data stands to officially recognize that there is a disparity in physician attentiveness and training when it comes to collaborating with patients of color and serve as the catalyst for a wide range of comparative studies seeking to evaluate the health disparities created by physician oversights.

References

- Akhiyat, S., Cardwell, L., & Sokumbi, O. (2020). Why dermatology is the second least diverse specialty in medicine: How did we get here. *Clinics in dermatology*, 38(3), 310–315. <https://doi.org/10.1016/j.clindermatol.2020.02.005>
- Alexis, A. F., Sergay, A. B., & Taylor, S. C. (2007). Common dermatologic disorders in skin of color: a comparative practice survey. *Cutis*, 80(5), 387–394.
- Buster, K. J., Stevens, E. I., & Elmets, C. A. (2012). Dermatologic health disparities. *Dermatologic clinics*, 30(1), 53–viii. <https://doi.org/10.1016/j.det.2011.08.002>
- Columbia Southern University (CSU). (2017, August 17). Continuing education: why it's worth it. *The Link*. Retrieved from <https://www.columbiasouthern.edu/blog/blog-articles/2017/august/are-continuing-education-classes-worth-it/>
- Filipe, H. P., Silva, E. D., Stulting, A. A., & Golnik, K. C. (2014). Continuing professional development: best practices. *Middle East African journal of ophthalmology*, 21(2), 134–141. <https://doi.org/10.4103/0974-9233.129760>
- Heidel, E. (n.d.). Psychometrics: principal components analysis (PCA). *Scale Statistics*. Retrieved from <https://www.scalestatistics.com/principal-components-analysis.html>
- Heidel, E. (n.d.). Psychometrics: confirmatory factor analysis (CFA). *Scale Statistics*. Retrieved from <https://www.scalestatistics.com/principal-components-analysis.html>
- Kaufman, B. (2021, February 15). Eczema in skin of color: What you need to know. National Eczema Association. Retrieved from <https://nationaleczema.org/eczema-in-skin-of-color/>
- Marks, K., W. (2021, June 3). Medical definition of hippocratic oath. *MedicineNet*. Retrieved from https://www.medicinenet.com/hippocratic_oath/definition.htm
- Morrison, J. (n.d.) Assessing questionnaire validity. Retrieved from
- Perlman, K. L., Klein, E., Park, J. (2020). Racial disparities in dermatology training: the impact on Black patients. *MDedge*. Retrieved from <https://www.mdedge.com/dermatology/article/233023/diversity-medicine/racial-disparities-dermatology-training-impact-black>
- Raingruber, B. (2009). Health promotion theories. Jones and Bartlett, LLC. Retrieved from 28123_CH03_Pass2.pdf (jpub.com)
- Petterson S, McNellis R, Klink K, Meyers D, Bazemore A. (2018). The State of Primary Care in the United States: A Chartbook of Facts and Statistics. Retrieved from <https://www.aafp.org/dam/rgc/documents/publications-reports/reports/StateFactSheetReport.pdf>
- Suhr, D., D. (1999). Exploratory or confirmatory factor analysis. *University of Northern Colorado*. Retrieved from <https://support.sas.com/resources/papers/proceedings/proceedings/sugi31/200-31.pdf>
- Sumter, K. M. (2021). The influence of race and socioeconomic status on healthcare of eczema patients. [Unpublished manuscript]. The University of Alabama.
- University of British Columbia. (2018, March 1). More diversity needed in medical school textbooks. *ScienceDaily*. Retrieved May 2, 2022, from [Assessing Questionnaire Validity - Select Statistical Consultants \(select-statistics.co.uk\)](https://www.sciencedaily.com/releases/2018/03/180301125038.htm)
- Wall, A. (2020, September 16). Eczema on the rise in the african american community—along with unequal care. *Health Grades*. Retrieved from <https://www.healthgrades.com/right->

[care/eczema/eczema-on-the-rise-in-the-african-american-community-along-with-unequal-care](#)

Wenghofer, E. F., Marlow, B., Campbell, C., Carter, L., Kam, S., McCauley, W., & Hill, L. (2014). The relationship between physician participation in continuing professional development programs and physician in-practice peer assessments. *Academic medicine: journal of the Association of American Medical Colleges*, 89(6), 920–927.
<https://doi.org/10.1097/ACM.0000000000000243>