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Workplace Discrimination and Short Sleep among Healthcare Workers: The Buffering Effect of People-Oriented Culture

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Abstract

Objective: Examine the association of discrimination and short sleep and the buffering effect of people-oriented culture in the workplace among nurses and patient care associates.

Methods: Used a mixed-methods design from the 2018 Boston Hospital Workers Health Study (N=845) and semi-structured interviews among nurse directors (N=16).

Results: We found that people-oriented culture reduced the odds of short sleep and slightly attenuated the association of discrimination and short sleep. People oriented culture did not buffer the effects of discrimination on short sleep. Qualitative findings showed that discrimination occurred between co-workers in relation to their job titles and existing support in the workplace does not address discrimination.

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Conclusions: Healthcare industries need to implement specific programs and services aimed at addressing discrimination which can potentially improve health outcomes among workers.

Keywords

discrimination; sleep; people-oriented culture; nurse; patient care associate

Introduction

Workers experience numerous types of psychosocial risks in the workplace. A significant form of risk that workers experience is discrimination.[1] Discrimination is defined as the unfair treatment and negative actions towards an individual or group based on their race, gender, age, disability, etc. [1] Institutional and organizational policies can also manifest discriminatory behaviors.[2] In 2017, the United States (U.S.) Equal Employment Opportunity Commission (EEOC) reported that at least 84,254 workplace discrimination charges were filed with the government agency.[3] Research suggest that these statistics are often underreported.[4,5]

With the aging of the Baby Boomer population, the U.S. is expected to have at least 1.05 million job openings for nurses by 2022 [6] suggesting a diversified workforce will fill the demand for professional nurses. Moreover, since the election of former President Donald Trump into office there has been an upsurge of discrimination-related occurrences toward minority groups in the U.S.[7] Thus, there is an increased possibility that minority healthcare workers will continue to experience workplace discrimination.

Discrimination in healthcare settings

Discrimination is prominent in healthcare settings.[8] Some healthcare workers experience discrimination from patients, patients' family members, and co-workers because of their race, ethnicity, skin color, accent, disability, gender, sexual orientation, low-wage job title – to name a few.[9–13] Healthcare workers who are discriminated because of their race are experiencing racism that is defined as a system that gives preferential advantage to the dominant racial group – white people.[14] While some may use discrimination and racism interchangeably, it is important to note that these two concepts are distinct from one another. These instances of discrimination are the outcome of an enduring history of discrimination in the U.S. that has permeated in many institutions including healthcare settings.[12]

This issue is crucial since marginalized groups make up most of the healthcare workers in the U.S.[15] In the American healthcare industry, womxn perform about 25 of the 30 health occupations.[15] While white healthcare workers represent most of U.S. healthcare workers, racial differences exist in specific occupations. Among registered nurses, 73.5% are white while 10.4% are Black, 8.4% are Asian, 5.7% are Latinx, 1.5% are multiple/other race, 0.4% are American Indian/Alaska native, and 0.1% are Native Hawaiian and other Pacific Islander.[15] People of color dominate most of the low-wage healthcare occupations (e.g. nursing aide, home health aide, and personal aide).[15] Immigrants are also a growing sector of the healthcare industry. A 2016 survey showed that 1 in 6 healthcare workers are non-U.S. born.[16] The substantial number of womxn and people of color who comprise

most of the low-wage healthcare occupation, suggest that these groups are susceptible to discrimination in the workplace. Discrimination is associated with negative health and well-being.[17] Therefore, healthcare workers at risk as recipients of discriminatory behaviors are also at risk for poor health. Such poor health outcomes include psychosocial stressors, high blood pressure, cognitive impairment, and poor sleep.[17] Within research among healthcare workers, the relationship of discrimination and poor sleep quality is an understudied topic.[18]

Association between discrimination and sleep

The U.S. population have been sleeping less in the last decade. According to the National Sleep Foundation (NSF), the recommended number of hours of sleep for adults is seven to eight hours.[19] The percentage of adults in the U.S. that reported short sleep duration, sleeping less than seven hours, increased from 30.9% in 2010 to 35.6% in 2018.[20] Glaring disparities among groups exists with short sleep duration highest among Blacks (45.5%), womxn (35.8%), the 45–65 year old age group (37.4%), and those with an education level less than a bachelor's degree (38.8%).[20] Notably, 45% of healthcare support workers and 36.3% of healthcare practitioners reported short sleep duration.[20]

Several factors may explain poor sleep quality among healthcare workers. Most healthcare settings operate in 24-hour shift schedules with variations in scheduling and control among workers.[21] A meta-analytic review of studies on permanent and rotating shifts found that workers with permanent schedules reported the highest frequency of sleep duration while those who work in rotating shifts reported the least number of sleep duration.[22] Economic pressure and low-wages may also lead some healthcare workers to work a second job which decreases the number of hours they sleep per day.[23] Discrimination is associated with poor sleep quality.[18] Discrimination affects sleep hygiene that may cause daytime sleepiness [24], poor sleep quality [25], insomnia [26], and fatigue.[27] These circumstances and experiences of discrimination in the workplace may provide insight of how discrimination is associated with sleep.

Several factors may explain the mechanisms in which experiences of discrimination influences poor sleep. Individuals who experience chronic discrimination may develop hypervigilance because of the constant anticipation of experiencing discrimination. This hypervigilant state may disrupt sleep and can increase high blood pressure,[18] placing individuals at higher risk for cardiovascular disease.[28]

Some individuals are ostracized because of identifiable characteristics related to their race, ethnicity, or culture. These discriminatory behaviors that engender feelings of exclusion have been associated with psychological distress that may affect sleep quality.[29] These experiences may affect the performance of healthcare workers in the workplace. Previous studies show that inadequate and inconsistent sleep among healthcare workers is associated with trouble communicating with co-workers [30], poor diet [31], obesity [32], increased work-family conflict [33], and functional limitation [34] that has been associated with increased risk for injuries and medical errors that can place the worker and patients at-risk [35,36].

Organizational policies and practices as buffers from discrimination

Some forms of discrimination in the workplace are bullying and discourtesy. The phrase "nurses eat their young" has plagued the nursing profession for decades, depicting that older and more experienced nurses tend to bully and instigate incivility or rudeness toward young and newly hired nurses.[37] Therefore, a workplace environment that fosters a people-oriented culture can potentially alleviate the effects of incivility and discrimination in the workplace. Job resources like organizational policies and practices can potentially act as a buffer from the effects of discrimination. Buffering has been used in health and social science research as a factor that protects or lessens the negative effects of another factor such as a stressful event. [38]

People-oriented culture pertains to the customs and practices in the workplace environment that develops cooperation and trust among the administrative staff and workers, involves workers in the decision-making process, and maintains transparency through open communication.[39] People-oriented culture has been examined in healthcare settings and has demonstrated that healthcare workers who perceive lower people-oriented culture in their workplace are associated with obesity [32] and poor sleep quality [40] among workers while high perceptions of people-oriented culture are associated with less psychological distress and mental health expenditures.[41] Because previous studies demonstrate that healthcare workers experience discrimination from patients and their co-workers alike [9–11], the role of people-oriented culture among colleagues can potentially assuage the effects of discrimination. However, it is also possible that people-oriented culture can also exacerbate short sleep as associated with discrimination especially in workplace settings where workers have low inter-cultural training and understanding. This has been found as a barrier to building trust and communication in the workplace.[42] The healthcare setting in the U.S. is becoming more diversified with respect to race, gender, and immigration status, which can be a deterrent to developing a people-oriented culture working environment if workplace settings are not adopting practices that are inclusive of a diversified workforce.

Current study

While discrimination and poor sleep quality among healthcare workers have been examined separately, there is little research that specifically examines how discrimination experienced by the healthcare worker population is associated with poor sleep quality. Moreover, little is known about how the workplace environment can buffer the effects of discrimination to improve sleep quality outcomes within this population. The purpose of this article is to 1) evaluate the associations of discrimination and short sleep duration among healthcare workers and determine if people-oriented culture buffers poor sleep outcomes, 2) identify how discrimination manifests and who are the perpetrators in the healthcare worker environment, and 3) appraise how people-oriented culture is constructed and the extent to which it addresses discrimination and the effect of discrimination on short sleep duration among healthcare workers. Study results can help healthcare administrators understand how discrimination in the workplace environment can affect sleep outcomes. Furthermore, these results can help inform the development of people-oriented culture programs and resources that address discrimination in the workplace.

Methods

Participants

This study employed a mixed-methods approach using an explanatory sequential design. Quantitative data was first collected and analyzed which informed the objectives of the qualitative data to help further understand the findings of the quantitative results.[43]

For the quantitative portion of the article, we used the 2018 data from the Boston Hospital Workers Health Study (BHWHS), a prospective cohort study that was established in 2006 to examine the working organization and condition, behaviors, and health outcomes among healthcare workers from two large hospitals in the same health system in Boston, Massachusetts.[44] The study's participants are nursing directors, assistant nursing directors, clinical nurse managers, staff nurses, and patient care associates (PCA). The 2018 data surveyed about 2,000 workers and had a 55% response rate. The initial sample was N=1,101. After eliminating observations with missing data on key variables short sleep (n=41), discrimination (n=92), and people-oriented culture (n=123), our final sample size for this study was N=845.

For the qualitative portion of the study, we conducted 16 semi-structured interviews of unit nurse directors.

Instrumentation

Data Collection—The quantitative data was collected by using employee databases from BHWHS. The surveys were collected periodically and linked at the individual worker level. Employees who are categorized as "patient care service" workers were automatically registered in the study ensuring 100% participation until employment termination occurred. Participants received a $10 gift card for participation.

Data collection for the qualitative data was informed by the 2018 study data. Using the results from the 2018 study, we took the mean people-oriented culture score among all individuals in the hospital units who responded to the survey; the study included workers from 25 units. Using this aggregated data, we determined which nine units had the highest mean people-oriented culture scores and which nine units had the lowest mean scores. Eight nurse directors from units with the highest people-oriented culture score and eight from units with the lowest people-oriented culture score were recruited for the study. Two nurse directors were managing units that scored both high and low in people-oriented culture. Two trained researchers conducted semi-structured 30-minute interviews using an audio recorder. Interviews took place in private offices of nurse directors in their units from April through May 2019. Participants were asked questions about unit-level scheduling of workers, breaks, social support and resources, and abuse and harassment. Interviews were transcribed and de-identified. Analysis of the data focused on data relevant to discrimination and people-oriented culture in relation to short sleep duration. Participants received a $50 gift card for participation.

Operational Instruments

Demographic data including age, gender, race, immigrant status, job title (1 = nurse; 2 = PCA; 3 = Other [e.g., nursing director, clinical nurse manager, etc.]), and number of hours worked per week were obtained from the self-reported surveys disseminated from BHWHS. The demographic data were used as covariates for the models.

The outcome variable of interest is short sleep duration derived from one of the items of the Pittsburgh Sleep Quality Index (PSQI).[45] The PSQI measure is a self-rated questionnaire that evaluates sleep quality in the past month. The BHWHS only used three items from the measure and this study only used the short sleep duration item. To measure short sleep duration, responses were dichotomized categorizing 6 hours of sleep or less as “Yes” and more than 6 hours of sleep as “No.” This cutoff is consistent with previous studies.[33,34]

Discrimination, the primary independent variable, was measured using five questions from the Job Discrimination scale.[46] This instrument has a Cronbach’s alpha of 0.79 for internal consistency. Participants were asked about experiences of discrimination and self-reported using a five-point Likert scale with responses from never to once a week or more. We calculated the mean average scores of the five items. Participants who answered “a few times a year” to at least one of the questions in the discrimination measure were then asked, “What do you think is the main reason for these experiences?” Participants were instructed to only choose one category (e.g., ancestry or national origins, gender, age, etc.).

People-oriented culture was used as the buffering measure for the study using four questions from the Organizational Policies and Practices questionnaire.[39] This instrument has a Cronbach’s alpha of 0.82 for internal consistency. Participants were asked about cooperation within a workgroup and self-reported using a five-point Likert scale with responses from strongly disagree to strongly agree. We calculated the mean average scores of the four items.

Statistical Analyses

Univariate analysis examined the descriptive distribution of the variables. We then compared the variables by short sleep duration using chi-square tests and t-tests. Four models are presented using logistic regression to examine the odds of reporting short sleep duration in association with perceived reception of discriminatory behaviors and controlling for the variables of interest in the subsequent models. Interactions between perceived discriminatory behavior and people-oriented culture were examined to determine if people-oriented culture moderated the effects of discrimination on short sleep duration. Observations are non-independent since workers are clustered within units, so we accounted for this clustering by including hospital units as random effects using the “vce (cluster)” command which allows units to correlate. Missing cases were handled using listwise deletion. Data was analyzed using Stata 15 SE.

Qualitative Analysis

Qualitative data was analyzed using grounded theory [47] and thematic analysis.[48] We employed solo coding by following Saldaña’s [48] recommendations that required consulting with another trained researcher during the progress of the data analysis to discuss, process,

and validate the findings. In addition, the coder also kept memos during data analysis. First the trained researcher began with open or initial coding of transcripts to generate a list of codes. Codes were analyzed and facilitated creating categories and sub-categories based on patterns from the data. The relationships between categories and sub-categories were assessed and established themes related to perceived experiences of discrimination in the workplace and the operationalization of people-oriented culture. Data was analyzed using Atlas.ti 8.0 which is a software that facilitates the organization and analysis of text, images, audio, and video data.

Point of Integration

The point of integration is when components of the quantitative and qualitative findings intersect or merge.[43] In this study, the point of integration occurred in its design and in the analysis. We used data from the qualitative findings to address gaps in the quantitative data concerning aspects of perceived discrimination that healthcare workers experienced and the extent to which people-oriented culture addressed discrimination and potentially influence sleep outcomes.

Results

Of the 845 workers in the sample 83.55% identified as white, 93.02% were womxn, 86.27% were nurses, 29.3% are within the ages of 30–39 years old, 84.85% are born in the U.S., and on average workers worked 36.81 (SD=8.08) hours per week (Table 1).

Eighty-one percent of the workers reported that they slept for six or more hours per night. On a scale of 1 (Never) to 5 (Once a week or more), the mean experiences of discrimination among workers was 1.57 (SD=.73). For people-oriented culture, on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree), the mean was 3.74 (SD=.70). Chi-square tests showed that race ($p<.006$) was significantly associated with short sleep duration. The t-tests showed that there were statistically significant differences between discrimination, people-oriented culture, hours worked per week, and short sleep duration.

Among healthcare workers that reported experiencing discrimination, the most prominent reason why they think they experienced discrimination is because of their education or income level (58%), age (16%), and sexual orientation (12%).

In Model 1 there is a significant positive association between experiences of discrimination (OR=1.48, 95% CI=1.23, 1.80) and short sleep duration meaning that a one unit increase in experiences of discrimination is associated with a 48% increased odds of short sleep duration. When adjusting for people-oriented culture (Model 2), experiences of discrimination was attenuated (OR=1.31, 95% CI=1.06, 1.63) and was statistically significant along with people-oriented culture (OR=.68, 95% CI=.53,.87) meaning that a one unit increase in experiences of discrimination is associated with a 31% increased odds of short sleep duration and a one unit increase in perceived people-oriented culture in the workplace is associated with a 32% decreased odds of short sleep duration.

When adjusting for socio-demographic variables (Model 3), experiences of discrimination were further attenuated and remained statistically significant (OR=1.25, 95% CI= 1.00, 1.56) in increased odds of reporting short sleep duration. People-oriented culture also had a significant OR of .66 (95% CI=.51-.85). In the fully adjusted model (Model 4) that included discrimination, people-oriented culture, socio-demographic, and hours worked per week variables, experiences of discrimination (OR=1.23, 95% CI=.98,1.54) were attenuated but no longer statistically significant. However, people-oriented culture continues to have a significant OR of .65 (95% CI=.50-.85), meaning that higher perception of people-oriented culture in the workplace has a significant association in reducing the odds of short sleep duration within the sample.

In the fully adjusted models, there was statistical significance in the association of workers racially categorized as Asian, Native American, and mixed race and short sleep duration (OR=2.46, 95% CI=1.03,5.83) compared with white workers. Similarly, individuals that worked more hours per week had increased odds of reporting short sleep duration (OR=1.04, 95% CI=1.01,1.06). This finding was statistically significant compared to their co-workers that worked less hours during the week (Table 2).

We tested the interaction between discrimination and people-oriented culture on short sleep duration (Table 3). While the main effects of discrimination (OR=1.30, 95% CI:1.02, 1.66) and people-oriented culture (OR=.69; 95% CI:.53,.88) were statistically significant, people-oriented culture did not moderate the effect of discrimination on short sleep duration (OR=.98, 95% CI= .79,1.20).

Qualitative results

Our quantitative findings show that the perception of discrimination is significantly associated with short sleep duration for all the models but Model 4, indicating that quantitative measurements of the relationship between discrimination and short sleep duration has its limitations. However, people-oriented culture did not buffer the effect of discrimination on short sleep duration, but the independent effect of the association of people-oriented culture and short sleep duration was statistically significant and showed that healthcare workers with perceived high people-oriented culture in the workplace had decreased odds of short sleep duration. In addition, people-oriented culture slightly attenuated the association of discrimination and short sleep duration. We also needed to further understand the mechanisms in which discrimination transpires and who executes these behaviors in the workplace. Moreover, while people-oriented culture is significantly associated with short sleep duration, we do not know why people-oriented culture did not moderate the effects of discrimination on short sleep. Thus, we want to examine how people-oriented culture is constructed and what it addresses in relation to discrimination to the extent that it can influence the quality of sleep among healthcare workers.

Discrimination

The unit nurse directors discussed many forms of violence that nurses and PCAs experience including abuse, harassment, bullying, and discriminatory behaviors from their co-workers,

patients, and patients' family members, however, our study aimed to focus on discrimination which is distinct from the other forms of violence mentioned.

Discrimination transpired among co-workers because of job titles.—Participants discussed that discrimination occurs due to hierarchy among co-workers in relation to their job titles. The quantitative results showed that 58% of nurses and PCAs reported experiencing perceived discrimination due to their education or income level reflected in their job titles. These job titles entail varying responsibilities, demands, and prestige in how they are perceived by others. Thus, sentiments of feeling disrespected occur particularly among PCAs who may feel undermined because of their job status. Several unit directors shared that the hospital recently conducted a hospital-wide survey and found that PCAs do not feel respected:

> …we actually just did a PCA survey and part of what they expressed was not feeling as respected as a role group, as nursing does, which I can see. So we try to include them and to make sure that when it's a nursing – I address them as a team and everyone together, but I know that they definitely don't feel entrenched in that nursing culture the way that the nurses do. (#8, high in people-oriented culture)

Feeling disrespected may be a result of lack of knowledge of the demands that healthcare workers experience which are not being communicated to their co-workers. Unit nurse directors shared that many of the workers in their units are inundated with their own job responsibilities and at-times are not able to verbalize to their co-workers their own professional expectations or tasks that they need to be completed. In turn, co-workers discriminate against one another in relation to the duties associated with their job titles:

> … the nurses feel that the PCAs can help more with toileting the patients, so that they don't fall. And that – and then the PCAs feel that the nurses can help them more instead of calling them for every toileting and for every patient call. If they're like just in the computer like sitting down, they should also be helping more. And then, the unit coordinators feel that the nurses talk to them in an unprofessional way and the nurses feel that the unit coordinators just sits down and they have more – they have more abilities to help out more. (#2, high in people-oriented culture)

While nurses and PCAs shared their own feelings of being discriminated, unit nurse directors also internalize discriminating thoughts about their co-workers that may affect how they interact with PCAs. Unit nurse directors expect a sense of professionalism from their co-workers. This expectation leads them to assume that the background of some of their workers do not equip them with professional skills:

> One of the things that I think is just – and I hate to even say it, but it's the truth and this is what it is. And I think, a lot of times, folks who come into those career PCA roles are not always coming from environments that are professional environments. A workforce – a household that comes from a professional environment. So they just sometimes are lacking some of those professional behaviors. (#3, high in people-oriented culture).

Chronic experiences of discrimination may have a long-term effect specifically among PCAs who may begin internalizing these experiences of discrimination which can influence their overall health and well-being. A unit nurse director discussed how one of the PCAs in their units shared with her how they feel about themselves, "…they feel like just because they're poor, they're Black and they're immigrants – they feel that they're marginalized. That's how they feel." (#2, high in people-oriented culture).

People-Oriented Culture

Numerous resources are available for healthcare workers but these resources do not specifically address discrimination.—The unit nurse directors identified these resources that respond to the various needs of healthcare workers ranging from professional training, health and mental health resources, and team building activities. One unit established a series of programs to address the mental health of the workers in their units and to develop camaraderie with one another through storytelling:

> And then we've also implemented quiet time in the flight decks. So there's a room up there where it's quiet time, people shouldn't be on their phones, computers or watching TV in that room from 2:00 to 4:00 a.m. and p.m., giving them – the staff two hours where they can go and just kind of just close their eyes, nap, meditate, whatever they want to do but it's got to be quiet – no one's talking. And then we encourage storytelling among them to help them bond and hopefully do some learning about how you took care of a patient or something humorous that happened that just it helps them bond, and then the fourth thing we're doing is tea for the soul, and we do that once a month for the day and night teams when we have our staff meetings. (#13, low in people-oriented culture).

While these programs address mental health and relationship building among healthcare workers, they do not address resources directed at addressing discriminatory behaviors that can potentially influence other health outcomes including sleep quality. Interestingly, only one unit nurse director specifically discussed a resource that focused on inclusivity to mitigate discrimination; however, due to scheduling conflicts, this program was difficult for healthcare workers to attend:

> … I think if it's a culture for the hospital to have everyone attend effective communication…like the Unconscious Bias – which I think is good. I think it would be helpful. But…they don't have it on a monthly basis…and they don't have the schedule far enough that we can schedule everyone in. (#2, high in people-oriented culture).

Instead, conflict among co-workers that may be related to discrimination in the workplace seems to be managed interpersonally by unit nurse directors:

> If someone is having a bad day and they talk curtly to a peer, that could be a situation. They might come to me and say "I had this interaction with so-and-so today." We do like a little role play of how can you now react to that person? "So let's talk about what you're going to do." We talk all about how it's important not to react in the moment. You know take a deep breath and "maybe talk to them in

the next day or later on in the shift, off the unit, in a conference room," that kinda thing. (#15, low in people-oriented culture).

The integration of quantitative and qualitative findings suggests that although people-oriented culture focuses on aspects of health and well-being among co-workers, resources and programs that promote inclusivity related to experiences of discrimination are limited despite the existence of a positive relationship between perceived discrimination and short sleep duration, a construct that influences health and well-being.

Discussion

Our mixed-methods analysis evaluated the buffering effect of people-oriented culture on short sleep duration. We found that experiences of discrimination among healthcare workers are associated with increased odds of reporting reduced hours of sleep for all the models but the fully adjusted model. However, people-oriented culture did not moderate the effect of discrimination on short sleep duration. Organizational culture, specifically, people-oriented culture among co-workers, slightly attenuated the association between experiences of discrimination and odds of short sleep duration. The qualitative findings show that co-workers experience discrimination vertically because of their job titles. The resources that promote people-oriented culture in the unit seems to address other aspects of the health and well-being of healthcare workers, but there are limited resources available that address discrimination which can potentially influence the sleep quality of healthcare workers.

All models but the fully adjusted model show that experiences of discrimination are associated with increased odds of short sleep duration. This finding is consistent with previous studies on discrimination and poor sleep quality.[18,49] After adjusting for hours worked per week, experiences of discrimination were no longer a significant predictor, however, hours worked per week remained as a statistically significant predictor in the full model. A potential explanation is that working longer hours per week and the perception of discrimination are correlated. A study among physicians found that frequent experiences of discrimination are associated with burnout.[50] Studies also found that working longer hours per week also increases the likelihood of burnout among workers.[51] Both of these factors may have a similar impact on sleep quality.

The quantitative findings also show that over half of reported experiences of discrimination among nurses and PCAs are related to their education or income level which correspond to the job titles of workers. Previous studies found that job prestige plays a role in influencing discrimination in the workplace between co-workers.[52] The qualitative data helps us understand the quantitative findings by confirming that discrimination is related to the job titles of healthcare workers, specifically targeting low-wage workers such as career PCAs. In addition, the qualitative findings also explain our understanding of how discrimination transpires in the workplace between co-workers which was not captured perhaps due to the measures used in the quantitative data. While the interviews did not discuss how discrimination may influence poor sleep quality, studies on discrimination and sleep [18] suggest that these experiences may have an effect on short sleep duration among healthcare workers, particularly PCAs. Moreover, since most career PCAs are from minority

groups, chronic experiences of discrimination in relation to race has been associated with the development of racism-related vigilance [53] and increased levels of stigma consciousness [54] that are associated with poor sleep among people of color. Thus, discrimination experienced by PCAs from their co-workers suggest that future studies need to further understand how discrimination affects PCAs and how it affects their health, including their sleep quality.

People-oriented culture did not modify the negative influence of discrimination on short sleep duration. Existing research that used the concept of people-oriented culture to assess worker's health and well-being have not examined its influence on discrimination.[55,56] However, people-oriented culture has been associated with improved sleep.[40] The qualitative findings show that while people-oriented culture may focus on other aspects of the working environment and worker's health, the programs and resources implemented related to people-oriented culture do not specifically address discrimination which in turn may influence poor sleep among workers. However, people-oriented culture may indirectly address discrimination as supported by our quantitative results that showed that people-oriented culture slightly attenuated the association of experiences of discrimination and short sleep duration even when we controlled for our covariates. Past studies found that workplace settings that encourage respect and support among workers mitigate the likelihood of discrimination among minority groups in the workplace.[57,58] Sleep quality among marginalized groups may improve by implementing numerous initiatives and programs that focus on inclusivity in the workplace. [59–61] The only program mentioned in the qualitative interviews that targeted discrimination is the availability of unconscious bias training in the hospital. However, a single episode of unconscious or implicit bias training has been found to be ineffective in reducing biases.[62] Scholars argued that in order to change oppressive systems, oppressive structures and systems must be named – racism, sexism, classism, homophobia, transphobia, etc.[63] Perhaps workplace settings can consider offering and mandating on-going trainings that discuss racism and other forms of oppression and establish tangible changes in organizational policies and practices to shift the culture of the workplace to promote inclusivity.

Limitations and strengths

A limitation of the study is that experiences of discrimination is self-reported which may indicate potential bias and inaccurate introspection. However, experiences of discrimination are subjective; therefore, self-report is an appropriate method of measuring discrimination.[64–66] Another limitation is that while our sample is representative of the socio-demographic make-up of nurses in the U.S., it does not reflect the full diversity of nurses and PCAs. Qualitative interviews were conducted among unit nurse directors which limits direct understanding of experiences of discrimination based on recipients' perceptions that excludes the experiences of nurses and PCAs. The qualitative interviews also did not explicitly ask questions regarding experiences of discrimination and how healthcare workers perceive people-oriented culture. This limited our understanding of how these constructs transpired; however, the use of grounded theory in the qualitative analysis permitted for themes related to discrimination and people-oriented culture to emerge. Finally, while the study is longitudinal, the 2018 wave was the first time that discrimination was measured

in the survey instrument. Thus, this study is cross-sectional in nature and cannot explain causality.

The study has several strengths. Previous studies have analyzed the influence of discrimination on sleep quality and outcomes separately within the healthcare worker population: this study is one of the few that specifically examines the impact of discrimination on a particular sleep outcome, short sleep duration, among healthcare workers. It also assesses the mitigating influence of people-oriented culture in the workplace to diminish the influence of discrimination. A notable strength of the study is our use of a mixed-method approach that permits the triangulation of data to gain a more in-depth understanding of the findings. While discrimination has been ever present in society, the increasing reports of explicit forms of discrimination in the U.S. will continue to affect the health and well-being of marginalized groups.

Conclusion

This paper found that discrimination is associated with short sleep duration among healthcare workers. Perceived discriminatory behaviors are experienced via a hierarchy among co-workers and are related to their job titles. Although people-oriented culture may address aspects of the health and well-being of healthcare workers and the environment, our study has shown the inability of people-oriented culture to mitigate the effects of discrimination on sleep quality.

These findings have some implications on policy and practice. Healthcare settings need to implement programs and resources that are targeted towards identifying discriminatory and oppressive structures in the workplace and promoting inclusivity through demonstrable changes in the workplace structure which in turn can improve the sleep quality of healthcare workers. Through these practices, the health and well-being of healthcare workers may improve and result in decrease in medical errors and enhanced patient safety.

Future studies should consider examining specific forms of discrimination and a broader demographic of healthcare workers to evaluate how organizational policies and practices influence the impact of discrimination on their employees' sleep quality, and in turn, their employees' general well-being. Addressing experiences of discrimination in the workplace can help alleviate some of the negative health effects experienced by healthcare workers.

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References

1. Okechukwu CA, Souza K, Davis KD, de Castro AB. Discrimination, harassment, abuse, and bullying in the workplace: contribution of workplace injustice to occupational health disparities. Am J Ind Med. 2014;57(5):573–586. doi:10.1002/ajim.22221 [PubMed: 23813664]
2. Bobbitt-Zeher DGender discrimination at work: Connecting gender stereotypes, institutional policies, and gender composition of workplace. Gend Soc. 2011;25(6):764–786. doi:10.1177/0891243211424741
3. U.S. Equal Employment and Opportunity Commission. EEOC Releases Fiscal Year 2017 Enforcement And Litigation Data. U.S. Equal Employment Opportunity Commission. Published 2018.https://www.eeoc.gov//eeoc/newsroom/release/1-25-18.cfm
4. Phillips JP. Workplace Violence against Health Care Workers in the United States. N Engl J Med. 2016;374(17):1661–1669. doi:10.1056/NEJMra1501998 [PubMed: 27119238]
5. Nadal KL, Davidoff KC, Fujii-Doe W. Transgender Women and the Sex Work Industry: Roots in Systemic, Institutional, and Interpersonal Discrimination. J Trauma Dissociation. 2014;15(2):169–183. doi:10.1080/15299732.2014.867572 [PubMed: 24313294]
6. Snavely TMBT-NE. A brief economic analysis of the looming nursing shortage in the United States. 2016;34(2):98+. https://link.galegroup.com/apps/doc/A452050018/AONE?u=mlin_m_bostcoll&sid=AONE&xid=db626ff0
7. Wray-Lake L, Wells R, Alvis L, Delgado S, Syvertsen AK, Metzger A. Being a Latinx adolescent under a trump presidency: Analysis of Latinx youth's reactions to immigration politics. Child Youth Serv Rev. 2018;87:192–204. doi:10.1016/j.childyouth.2018.02.032
8. Baptiste MM. Workplace Discrimination: An Additional Stressor for Internationally Educated Nurses. Online J Issues Nurs. 2015;20(3). doi:10.3912/OJIN.Vol20No03PPT01
9. Eliason MJ, DeJoseph J, Dibble S, Deevey S, Chinn P. Lesbian, Gay, Bisexual, Transgender, and Queer/Questioning Nurses' Experiences in the Workplace. J Prof Nurs. 2011;27(4):237–244. doi:10.1016/j.profnurs.2011.03.003 [PubMed: 21767821]
10. Neal-Boylan LJ, Guillett SE. Nurses with disabilities: Can changing our educational system keep them in nursing?Nurse Educ. 2008;33(4):164–167. doi:10.1097/01.NNE.0000312194.89438.62 [PubMed: 18600157]
11. Wheeler RM, Foster JW, Hepburn KW. The experience of discrimination by US and Internationally educated nurses in hospital practice in the USA: a qualitative study. J Adv Nurs. 2014;70(2):350–359. doi:10.1111/jan.12197 [PubMed: 23782320]
12. Travers JL, Teitelman AM, Jenkins KA, Castle NG. Exploring social-based discrimination among nursing home certified nursing assistants. Nurs Inq. 2019;0(0):e12315. doi:10.1111/nin.12315
13. Squillace MR, Remsburg RE, Harris-Kojetin LD, Bercovitz A, Rosenoff E, Han B. The National Nursing Assistant Survey: Improving the Evidence Base for Policy Initiatives to Strengthen the Certified Nursing Assistant Workforce. Gerontologist. 2009;49(2):185–197. doi:10.1093/geront/gnp024 [PubMed: 19363014]
14. Wellman DT. Portraits of White Racism. Cambridge University Press; 1993.
15. U.S. Department of Health and Human Services, Health Resources and Services Administration, National Center for Health Workforce Analysis. Sex, Race, and Ethnic Diversity of U.S. Health Occupations (2011–2015).; 2017. https://bhw.hrsa.gov/sites/default/files/bhw/nchwa/diversityushealthoccupations.pdf
16. Patel YM, Ly DP, Hicks T, Jena AB. Proportion of Non–US-Born and Noncitizen Health Care Professionals in the United States in 2016Non–US-Born and Noncitizen Health Care Professionals in the United States, 2016Letters. JAMA. 2018;320(21):2265–2267. doi:10.1001/jama.2018.14270 [PubMed: 30512091]
17. Williams DR, Mohammed SA. Racism and Health I: Pathways and Scientific Evidence. Am Behav Sci. 2013;57(8):1152–1173. doi:10.1177/0002764213487340
18. Slopen N, Lewis TT, Williams DR. Discrimination and sleep: a systematic review. Sleep Med. 2016;18:88–95. doi:10.1016/j.sleep.2015.01.012 [PubMed: 25770043]
19. Hirshkowitz M, Whiton K, Albert SM, et al. National Sleep Foundation's updated sleep duration recommendations: final report. Sleep Heal. 2015;1(4):233–243. doi:10.1016/j.sleh.2015.10.004

20. Khubchandani J, Price JH. Short Sleep Duration in Working American Adults, 2010–2018. J Community Health. 2020;45(2):219–227. doi:10.1007/s10900-019-00731-9 [PubMed: 31489537]
21. Savic M, Ogeil RP, Sechtig MJ, Lee-Tobin P, Ferguson N, Lubman DI. How Do Nurses Cope with Shift Work? A Qualitative Analysis of Open-Ended Responses from a Survey of Nurses. Int J Environ Res Public Health. 2019;16(20):3821. doi:10.3390/ijerph16203821
22. Pilcher J, Lambert B, Huffcutt A. Differential Effects of Permanent and Rotating Shifts on Self-Report Sleep Length: A Meta-Analytic Review. Sleep. 2000;23:155–163. doi:10.1093/sleep/23.2.1b [PubMed: 10737332]
23. Caruso CC. Negative impacts of shiftwork and long work hours. Rehabil Nurs. 2014;39(1):16–25. doi:10.1002/rnj.107 [PubMed: 23780784]
24. Alcántara C, Patel SR, Carnethon M, et al. Stress and Sleep: Results from the Hispanic Community Health Study/Study of Latinos Sociocultural Ancillary Study. SSM - Popul Heal. 2017;3:713–721. doi:10.1016/j.ssmph.2017.08.004
25. Majeno A, Tsai KM, Huynh VW, McCreath H, Fuligni AJ. Discrimination and Sleep Difficulties during Adolescence: The Mediating Roles of Loneliness and Perceived Stress. J Youth Adolesc. 2018;47(1):135–147. doi:10.1007/s10964-017-0755-8 [PubMed: 29164378]
26. Greenberg JLosing Sleep Over Organizational Injustice: Attenuating Insomniac Reactions to Underpayment Inequity With Supervisory Training in Interactional Justice. J Appl Psychol. 2006;91(1):58–69. 10.0.4.13/0021-9010.91.1.58 [PubMed: 16435938]
27. Grandner MA, Hale L, Jackson N, Patel NP, Gooneratne NS, Troxel WM. Perceived Racial Discrimination as an Independent Predictor of Sleep Disturbance and Daytime Fatigue. Behav Sleep Med. 2012;10(4):235–249. doi:10.1080/15402002.2012.654548 [PubMed: 22946733]
28. Doyle CY, Ruiz JM, Taylor DJ, et al. Associations Between Objective Sleep and Ambulatory Blood Pressure in a Community Sample. Psychosom Med. 2019;81(6). https://journals.lww.com/psychosomaticmedicine/Fulltext/2019/07000/Associations_Between_Objective_Sleep_and.9.aspx
29. Huynh VW, Gillen-O'Neel C. Discrimination and Sleep: The Protective Role of School Belonging. Youth Soc. 2013;48(5):649–672. doi:10.1177/0044118X13506720
30. Ovayolu Ö, Ovayolu N, Karadag G. Workplace Bullying in Nursing. Workplace Health Saf. 2014;62(9):370–374. doi:10.3928/21650799-20140804-04 [PubMed: 25102477]
31. Sorensen G, Nagler EM, Hashimoto D, et al. Implementing an Integrated Health Protection/Health Promotion Intervention in the Hospital Setting: Lessons Learned From the Be Well, Work Well Study. J Occup Environ Med. 2016;58(2):185–194. doi:10.1097/JOM.0000000000000592 [PubMed: 26849263]
32. Nelson CC, Wagner GR, Caban-Martinez AJ, et al. Physical Activity and Body Mass Index: The Contribution of Age and Workplace Characteristics. Am J Prev Med. 2014;46(3, Supplement 1):S42–S51. doi:10.1016/j.amepre.2013.10.035 [PubMed: 24512930]
33. Jacobsen HB, Reme SE, Sembajwe G, et al. Work-Family Conflict, Psychological Distress, and Sleep Deficiency among Patient Care Workers. Workplace Health Saf. 2014;62(7):282–291. doi:10.1177/216507991406200703 [PubMed: 25000547]
34. Buxton OM, Hopcia K, Sembajwe G, et al. Relationship of sleep deficiency to perceived pain and functional limitations in hospital patient care workers. J Occup Environ Med. 2012;54(7):851–858. doi:10.1097/JOM.0b013e31824e6913 [PubMed: 22796931]
35. Weaver MD, Vetter C, Rajaratnam SMW, et al. Sleep disorders, depression and anxiety are associated with adverse safety outcomes in healthcare workers: A prospective cohort study. J Sleep Res. 2018;27(6):e12722. doi:10.1111/jsr.12722 [PubMed: 30069960]
36. Patterson PD, Weaver MD, Frank RC, et al. Association between poor sleep, fatigue, and safety outcomes in emergency medical services providers. Prehosp Emerg Care. 2012;16(1):86–97. doi:10.3109/10903127.2011.616261 [PubMed: 22023164]
37. Sauer PDo Nurses Eat Their Young? Truth and Consequences. J Emerg Nurs. 2012;38(1):43–46. doi:10.1016/j.jen.2011.08.012 [PubMed: 22079647]
38. Cohen S, Wills T. Stress, Social Support, and the Buffering Hypothesis. Psychol Bull. 1985;98:310–357. doi:10.1037/0033-2909.98.2.310 [PubMed: 3901065]

39. Amick BC, Habeck RV, Hunt A, et al. Measuring the Impact of Organizational Behaviors on Work Disability Prevention and Management. J Occup Rehabil. 2000;10(1):21–38. doi:10.1023/A:1009437728024
40. Sorensen G, Stoddard AM, Stoffel S, et al. The role of the work context in multiple wellness outcomes for hospital patient care workers. J Occup Environ Med. 2011;53(8):899–910. doi:10.1097/JOM.0b013e318226a74a [PubMed: 21775897]
41. López Gómez MA, Sabbath E, Boden L, et al. Organizational and Psychosocial Working Conditions and Their Relationship With Mental Health Outcomes in Patient-Care Workers. J Occup Environ Med. 2019;61(12). https://journals.lww.com/joem/Fulltext/2019/12000/Organizational_and_Psychosocial_Working_Conditions.20.aspx
42. Chua RYJ, Morris MW. Innovation Communication in Multicultural Networks: Deficits in Inter-Cultural Capability and Affect-Based Trust as Barriers to New Idea Sharing in Inter-Cultural Relationships. Harvard Bus Sch Organ Behav Unit Work Pap. 2009;09–130. doi:dx.doi.org/10.2139/ssrn.1403944
43. Creswell JW. A Concise Introduction to Mixed Methods Research. SAGE Publications Inc; 2015.
44. Sabbath EL, Hashimoto D, Boden LI, et al. Cohort profile: The Boston Hospital Workers Health Study (BHWHS). Int J Epidemiol. 2018;47(6):1739–1740g. doi:10.1093/ije/dyy164 [PubMed: 30107500]
45. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh sleep quality index: A new instrument for psychiatric practice and research. Psychiatry Res. 1989;28(2):193–213. doi:10.1016/0165-1781(89)90047-4 [PubMed: 2748771]
46. Sternthal MJ, Slopen N, Williams DR. RACIAL DISPARITIES IN HEALTH: How Much Does Stress Really Matter?Du Bois Rev Soc Sci Res Race. 2011;8(1):95–113. doi:DOI: 10.1017/S1742058X11000087
47. Strauss AL, Corbin JM. Grounded Theory in Practice. Sage Publications; 1997.
48. Saldaña J. The Coding Manual for Qualitative Researchers. Sage; 2009.
49. Slopen N, Williams DR. Discrimination, Other Psychosocial Stressors, and Self-Reported Sleep Duration and Difficulties. Sleep. 2014;37(1):147–156. doi:10.5665/sleep.3326 [PubMed: 24381373]
50. Hu Y-Y, Ellis RJ, Hewitt DB, et al. Discrimination, Abuse, Harassment, and Burnout in Surgical Residency Training. N Engl J Med. 2019;381(18):1741–1752. doi:10.1056/NEJMsa1903759 [PubMed: 31657887]
51. Cheung F, Tang CSK, Lim MSM, Koh JM. Workaholism on Job Burnout: A Comparison Between American and Chinese Employees. Front Psychol. 2018;9:2546. doi:10.3389/fpsyg.2018.02546 [PubMed: 30618967]
52. Kossek EE, Lautsch BA. Work–Life Flexibility for Whom? Occupational Status and Work–Life Inequality in Upper, Middle, and Lower Level Jobs. Acad Manag Ann. 2017;12(1):5–36. doi:10.5465/annals.2016.0059
53. Hicken MT, Lee H, Ailshire J, Burgard SA, Williams DR. “Every Shut Eye, Ain’t Sleep”: The Role of Racism-Related Vigilance in Racial/Ethnic Disparities in Sleep Difficulty. Race Soc Probl. 2013;5(2):100–112. doi:10.1007/s12552-013-9095-9 [PubMed: 23894254]
54. Ong AD, Cerrada C, Lee RA, Williams DR. Stigma consciousness, racial microaggressions, and sleep disturbance among Asian Americans. Asian Am J Psychol. 2017;8(1):72–81. doi:10.1037/aap0000062
55. Sabbath EL, Sparer EH, Boden LI, et al. Preventive care utilization: Association with individual- and workgroup-level policy and practice perceptions. Prev Med (Baltim). 2018;111:235–240. doi:10.1016/j.ypmed.2018.03.013
56. Biswas A, Severin CN, Smith PM, Steenstra IA, Robson LS, Amick BC III. Larger Workplaces, People-Oriented Culture, and Specific Industry Sectors Are Associated with Co-Occurring Health Protection and Wellness Activities. Int J Environ Res Public Health. 2018;15(12):2739. doi:10.3390/ijerph15122739
57. Ruggs EN, Martinez LR, Hebl MR, Law CL. Workplace “trans”-actions: How organizations, coworkers, and individual openness influence perceived gender identity discrimination. Psychol Sex Orientat Gend Divers. 2015;2(4):404–412. doi:10.1037/sgd0000112

58. Stainback K, Ratliff TN, Roscigno VJ. The Context of Workplace Sex Discrimination: Sex Composition, Workplace Culture and Relative Power. Soc Forces. 2011;89(4):1165–1188. doi:10.1093/sf/89.4.1165

59. Phillips BN, Deiches J, Morrison B, Chan F, Bezyak JL. Disability Diversity Training in the Workplace: Systematic Review and Future Directions. J Occup Rehabil. 2016;26(3):264–275. doi:10.1007/s10926-015-9612-3 [PubMed: 26519035]

60. García Johnson CP, Otto K. Better Together: A Model for Women and LGBTQ Equality in the Workplace. Front Psychol. 2019;10:272. 10.3389/fpsyg.2019.00272 [PubMed: 30842747]

61. Szeto ACH, Dobson KS. Reducing the stigma of mental disorders at work: A review of current workplace anti-stigma intervention programs. Appl Prev Psychol. 2010;14(1):41–56. doi:10.1016/j.appsy.2011.11.002

62. Lai CK, Skinner AL, Cooley E, et al. Reducing implicit racial preferences: II. Intervention effectiveness across time. J Exp Psychol Gen. 2016;145(8):1001–1016. doi:10.1037/xge0000179 [PubMed: 27454041]

63. Bassett MT. Public Health Meets the Problem of the Color Line. Am J Public Health. 2017;107(5):666–667. doi:10.2105/AJPH.2017.303714 [PubMed: 28398798]

64. Pascoe EA, Smart Richman L. Perceived discrimination and health: a meta-analytic review. Psychol Bull. 2009;135(4):531–554. doi:10.1037/a0016059 [PubMed: 19586161]

65. Williams DR, Yan Y, Jackson JS, Anderson NB. Racial differences in physical and mental health: socio-economic status, stress and discrimination. J Heal Psychol. 1997;2. doi:10.1177/135910539700200305

66. Williams DR, Neighbors HW, Jackson JS. Racial/Ethnic Discrimination and Health: Findings From Community Studies. Am J Public Health. 2003;93(2):200–208. doi:10.2105/AJPH.93.2.200 [PubMed: 12554570]

Table 1.

Demographic characteristics of sample. (N=845) [SD=standard deviation].

	Observations (%) or Mean ± SD	Observations of Short Sleep Duration Yes (%)	Observations of Short Sleep Duration No (%)	p[a]
Short Sleep				
No	686 (81.18)			
Yes	159 (18.82)			
Discrimination (1=5; higher=more frequent)	1.57 ± .73[b]	1.57 ± .87	1.53 ± .68	<.001
People Oriented Culture (1=5; higher=better)	3.74 ± .70[b]	3.54 ± .74	3.79 ± .69	<.001
Age				.894
<30	246 (29.11)	46 (18.70)	200(81.30)	
30–39	247 (29.23)	48 (19.43)	199 (80.57)	
40–49	144 (17.04)	24(16.67)	120 (83.33)	
50+	208 (24.62)	41(19.71)	167(80.29)	
Gender				.756
Men	59 (6.98)	12(20.34)	47(79.66)	
Womxn	786 (93.02)	147(18.70)	639(81.30)	
Race				<.01
White	706 (83.55)	118(16.71)	588(83.29)	
Black	65 (7.69)	19(29.23)	46(70.77)	
Latinx	35 (4.14)	10(28.57)	25(71.43)	
Other	39 (4.62)	12(30.77)	27(69.23)	
Immigrant Status				.228
U.S. Born	717 (84.85)	130(18.13)	587(81.87)	
Non-U.S. Born	128 (15.15)	29(22.66)	99(77.34)	
Job Title				.343
Nurse	729 (86.27)	135(18.52)	594(81.48)	
PCA	79 (9.35)	19(24.05)	60(75.95)	
Other (e.g. nursing director)	37 (4.38)	5(13.51)	32(84.49)	
Hours Worked Per Week	36.81 ± 8.08[b]	38.79 ± 8.70	36.35 ± 7.86	<.001

[a] P-values of Chi-square for categorical variables and t-tests for continuous variables.

[b] Mean values for respective variables.

Table 2.

Logistic regression modeling of relationship of workplace discrimination and short sleep duration. [OR=odds ratio; 95% CI= 95% confidence interval.]

	Model 1 **OR(95% CI)**	**Model 2** **OR(95% CI)**	**Model 3** **OR(95% CI)**	**Model 4** **OR(95% CI)**
Discrimination (1=5; higher=more frequent)	1.48(1.23,1.80) ***	1.31(1.06,1.63) *	1.25(1.00,1.56) *	1.23(.98,1.54)
People Oriented Culture (1–5; higher=better)		.68(.53,.87) **	.66(.51,.85) ***	.65(.50,.85) ***
Age (ref <30)				
30–39			.96(.57,1.60)	1.05(.63,1.76)
40–49			.73(.45,1.20)	.90(.54,1.49)
50+			.95(.58,1.55)	1.03(.63,1.68)
Gender (ref Men)				
Womxn			1.02(.57,1.84)	1.15(.63,2.08)
Race (ref White)				
Black			2.20(1.01,4.80) *	2.08(.93,4.63)
Latinx			2.01(.83,4.87)	1.79(.72,4.47)
Other			2.53(1.06,6.02) *	2.45(1.03,5.83) *
Immigrant Status (ref U.S. Born)				
Non-U.S. Born			.94(.51,1.74)	.88(.46,1.67)
Job Title (ref Nurse)				
PCA			.85(.47,1.53)	.84(.46,1.54)
Other (e.g. nursing director)			.55(.25,1.21)	.47(.22,.97) *
Hours Worked Per Week				1.04(1.01,1.06) **

* p < .05

** p < .01

*** p < .001

Table 3.

Interaction terms between discrimination and people-oriented culture. [OR=odds ratio; 95% CI= 95% confidence interval.]

	OR(95% CI)
Discrimination	1.30(1.02,1.66)**
People Oriented Culture	.69(.53,.88)*
Discrimination x People Oriented Culture	.98(.79,1.20)

* p < .05

** p < .01

*** p < .001