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Unbiased? Race, gender, and sport effects in university medical staff's perceptions of injured student-athletes

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ABSTRACT

Injured student-athletes rely on university medical staff personnel for care. Do these practitioners exhibit race and/or gender biases in their perceptions of injured student-athletes? While such biases have been widely documented in other medical practitioner populations, they have not been studied in the domain of college athletics. We use a survey experiment conducted on National Collegiate Athletic Association Division 1 medical staff to explore perceptions of an injured student-athlete (e.g. the likelihood of the student-athlete complying with treatment). We find little evidence of bias. We discuss why this population of medical practitioners may differ from others, and we offer suggestions for future work on medical treatment of student-athletes.


KEYWORDS

Sport injuries; NCAA medical staff; race bias; gender bias; medical treatment; ACL injuries; survey experiment; student-athletes

Injuries are an inherent part of sports. The central governing body for college athletics – the National Collegiate Athletic Association (NCAA) – tracks student-athlete injuries in an effort to minimize health risks (<http://www.ncaa.org/health-and-safety/medical-conditions/sports-injuries>). The primary caretakers for student-athletes are university athletic department medical staff. The welfare of injured student-athletes thus depends, in part, on the perceptions and decisions of these medical personnel. Do these caretakers exhibit race or gender bias in their treatment perceptions? For example, do they perceive an injured Black student-athlete as less likely to comply with medical advice than an injured White student athlete? Are they less comfortable treating female student-athletes than male student-athletes?

Addressing these questions is critically important since biased perceptions can affect treatment decisions. For example, if medical personnel view Black student-athletes as less compliant or are less comfortable treating women student-athletes, they may not perform a needed procedure (in anticipation of

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non-compliance or due to discomfort). Certain student-athletes, due to their race or gender, then may not receive the highest quality care. For college stakeholders, this would suggest the need for interventions aimed at vitiating race and gender bias in perceptions of injured student-athletes (e.g. programs that increase inter-racial personalized interactions; see Burgess, van Ryn, Dovidio, & Saha, 2007; Burgess, Warren, Phelan, Dovidio, & van Ryn, 2010; Zestcott, Blair, & Stone, 2016).

In what follows, we first review the literature that displays notable biases, particularly racial bias, in medical care. While such work is voluminous, NCAA sport medical personnel have not been studied (at least not so far as we are aware). We thus have little or no idea if biases persist in this domain. Moreover, as we discuss, there are plausible reasons why these caretakers may display less bias. We then present a large-scale vignette experiment conducted with NCAA Division 1 medical personnel. The experiment allows us to test for the presence of race and/or gender biases on various treatment perceptions, when it comes to treating an anterior cruciate ligament (ACL) injury (see, e.g. van Ryn & Burke, 2000). Put another way, the purpose of our paper is to explore whether the types of race and gender biases found in other medical practitioner populations appear among college medical personnel. It turns out that we find little evidence of bias. We conclude with a discussion of why college sports medical personnel may display scant bias (i.e. what lessons can be learned from this population), and directions for future research.

Evidence of bias

Ideally, medical practitioners engage in uniform (quality) medical care such that expectations and subsequent treatment hinge on the condition, and not the patient's socio-demographic status. Yet, as one group of authors summarize, "thousands of studies have demonstrated that Black adults and children are less likely to receive appropriate, guideline-concordant, and cutting-edge medical care than their White counterparts, independent of disease status and other clinically relevant factors" (van Ryn et al., 2011, p. 200). There is also "extensive evidence" of disparity in care based on gender (Williams et al., 2015, p. 758).

One study conducted a survey of physicians concerning treatment of coronary artery disease, focusing on physician reactions to treating particular patients of different races and income (van Ryn & Burke, 2000). They find significantly different patient expectations based on race: Blacks are seen as more likely to "fail to comply with medical advice" (42% of Blacks said to have no risk of non-compliance versus 57% of Whites), are seen as less likely to "participate in rehabilitation as proscribed" (34% of Blacks said to be very likely to participate in rehabilitation versus 47% of Whites), and are seen as having a higher risk of lacking social support (45% of Blacks as seen as not at all

likely to lack social support versus 63% of Whites) (also see Steele, 2010, p. 26). Another study explored the reactions of emergency medicine residents to hypothetical clinical vignettes about a male patient with chest pain (Green et al., 2007). The respondents were randomly assigned to conditions that showed a picture of the patient as being either Black or White. They found no explicit statement of racial prejudice; however, implicit (e.g. unconscious) measures revealed a preference for favoring White patients. There also was evidence of implicit stereotypes of Blacks as less cooperative with medical procedures and less cooperative in general. As those biases increased, there was an increased desire to want to treat White patients. These are just a few examples from the enormous literature on racial bias in healthcare settings (also see, e.g. Hall et al., 2015).

There also is evidence of gender bias. One study showed that “after accounting for illness behavior differences and all other factors, the odds of prescribed activity restrictions among female patients of male physicians is four times that of equivalent male patients of those physicians” (Safran, Rogers, Tarlov, McHorney, & Ware, 1997, p. 711). Another study by Schulman et al. (1999) explored the reactions of clinical physicians to randomly assigned videos of a patient with cardiac symptoms – where the patient’s gender, race, and age were randomly varied (as were aspects of the medical condition). They report that men and White patients were significantly more likely to be referred for cardiac catheterization (a procedure used to diagnose and treat cardiovascular condition). Further, they find Black women, in particular, were significantly less likely to be referred for cardiac catheterization than white men. This latter finding suggests possible intersectional (i.e. gender X race) bias. The authors conclude (p. 618), “Our findings suggest that the race and sex of a patient independently influence how physicians manage chest pain.” As with race, there are many other studies that demonstrate gender bias: “Implicit gender bias among physicians may also unknowingly sway treatment decisions ... assumptions based on stereotypes that men are more stoic than women or more likely to engage in rigorous activities ... [may] adversely influence the care of individual patients” (Chapman, Kaatz, & Carnes, 2013, p. 1507). Yet, no work of which we know has explored whether college sports medical staff display race and/or gender biases.

Present study

In light of all this evidence, one might assume biases exist in the domain of college athletic medicine. If so, this would be particularly problematic given many student-athletes are entirely dependent (i.e. have scant choice) on the medical staffs available to them at their schools. Indeed, student-athletes sit in an ambiguous position; Staurowsky (2014, pp. 23–24) explains:

In the netherworld that has existed for college athletes between bona fide workers and students, their ability to access their rights becomes more difficult ... The lives of

college athletes are routinely regulated in ways that distinguish them from their colleagues in the general student population ...

If there are biases, then, it would be particularly important – for the well-being of student-athletes – to proceed with interventions to minimize them.

Yet, we know of no evidence of persistent biases among college sports medical staff. Moreover, there are some reasons that such biases may be less present. Sports medical staff work in relatively diverse environments and in settings where discussions about race and gender (e.g. Title IX) are frequent. They also have frequent contact with men and women from varied ethnic and racial backgrounds. These factors can often minimize implicit biases (e.g. Burgess et al., 2007). We put this possibility to the test by implementing a vignette experiment with college medical sports personnel. In so doing, we follow some studies from the aforementioned literature (Bachmann et al., 2008; Green et al., 2007; Haider et al., 2011; Hébert, Meslin, & Dunn, 1992) by randomly exposing respondents to a hypothetical scenario that, in our case, involved a student athlete who had injured his or her ACL. We then asked the practitioner respondents for their perceptions of the injured student-athlete (e.g. how he/she would do with regard to aspects of treatment). Each respondent received one of eight possible scenarios that randomly varied the race (Black/White), gender (male/female), and sport (basketball/soccer) of the injured student-athlete. Since respondents are *randomly* assigned to a single vignette, we can compare whether the race and/or gender (or sport) of the student-athlete affects the practitioner's response – that is, evidence of a race/gender/sport bias.

We included the sport treatment (i.e. the student-athlete plays basketball or soccer) due to the racialized nature of sport domain. Basketball is stereotypically Black but soccer is not, and this is particularly true when it comes to college sports. Even objectively speaking, Blacks making up a majority of student-athletes in basketball while being a clear minority in soccer. NCAA data from 2014 to 15 show that 9.8% and 6.4% of Division 1 soccer players are Black males and Black females, respectively. For basketball, the analogous figures are 58.3% and 51.0% (NCAA, 2016). Manipulating the sport domain in the context of college athletics, thus, allows us to examine how respondents perceive Black and White athletes in stereotypically Black or non-stereotypically Black domains. If assumptions about Blacks generalize to “Black sports” – in this case, basketball – then it could be that White basketball players are perceived more favorably than White soccer players.

Vignette survey experiment

Our population is individuals on sports medical staffs of NCAA Division 1 schools. Details on how we obtained our sample are in the appendix; we ended up with 717 respondents. We focus on an ACL injury as it is relatively

common in college athletics (Agel, Rockwood, & Klossner, 2016). Our treatment involved a vignette, which we introduced by telling respondents that “... [w]hile the vignette is hypothetical, it reflects a common scenario that occurs with student-athletes such as the person described. When reading and thinking about it, try to imagine the specific case described...” The vignette read as follows:¹

NAME is an NCAA Division 1 **SPORT** player on an athletic scholarship. **He/she** is a sophomore who in a pre-season practice, made a sharp cut and ruptured **his/her** anterior cruciate ligament (ACL) (grade 3). **He/she** just received surgery. It was the first serious injury that **NAME** had experienced. Next we will ask you various questions about your thoughts about the injury and recovery process. In answering these questions, try to think about the specific situation just described.

We created eight possible conditions that varied race (Black/White), gender (male/female), and sport (basketball/soccer). We varied race and gender by male or female names (i.e. the “NAME” in the vignette) that are stereotypically Black or White (see Butler & Homola, 2017; Pager, 2007). The names used respectively for White male, White female, Black male, and Black female are: Dalton Wood, Shelbi Wood, Jabari Washington, and Eboni Washington (see the appendix for justification and validity evidence on these name choices). We varied sport by inserting soccer or basketball in the vignette (where “SPORT” appears in the text above); ACL injuries are relatively common in both sports (e.g. Hootman, Dick, & Agel, 2007).

To be clear, each respondent read one of the eight possible vignettes (via *random* assignment).² After reading the assigned vignette, respondents answered questions about themselves (e.g. demographics, backgrounds) and their perceptions/expectations about the student-athlete. In another paper (Druckman et al., 2017), we explore outcome variables related to pain perceptions. In that paper, we looked at four pain related outcome variables, finding a significant effect for one such that Black athletes and basketball players were perceived to feel less initial injury pain than White athletes and soccer players, respectively. This finding is in line with a sizeable literature on racial bias in pain perception (e.g. Hoffman & Trawalter, 2016; Trawalter, Hoffman, & Waytz, 2012). Our question here is whether this racial bias occurs in *treatment*-relevant perceptions (as opposed to perceptions of pain).

We list the treatment outcomes and measures on which we focus in the first two columns of Table 1. Four categories have been studied in prior work (e.g. van Ryn & Burke, 2000): (1) compliance (e.g. will the student-athlete comply with the treatment regime?); (2) oversight (e.g. will oversight be needed to ensure compliance?); (3) comfort (e.g. how comfortable is the provider in treating the student-athlete?); and (4) social support (e.g. will the student-athlete have adequate social support in recovery?) (see the appendix for precise questions).

Table 1. Measures and results.

Outcome Perception	Measure	ANOVA Result
Treatment Compliance Expectations	<ul style="list-style-type: none"> • Scale created from 7 items ($\alpha = .77$). These include: <ul style="list-style-type: none"> ○ Likelihood of the student-athlete following medical advice at 5 distinct phases of recovery. ○ Likelihood of the student-athlete participating in all prescribed activities. ○ Likelihood of the student-athlete failing to comply with medical advice at any stage. 	all $F_s \leq 1.21$, all $p_s \geq .271$.
Oversight Expectations	<ul style="list-style-type: none"> • Amount of oversight the student-athlete will need. • Likelihood of the student-athlete needing activity restrictions. 	<ul style="list-style-type: none"> • all $F_s \leq 2.21$, all $p_s \geq .138$. • for gender X sport, $F(1, 641) = 6.34$, $p = .012$ all other $F_s \leq 1.99$, all other $p_s \geq .159$ all $F_s \leq 3.20$, all other $p_s \geq .074$
Treatment Comfort	<ul style="list-style-type: none"> • Comfort of respondent in treating the student-athlete. 	all $F_s \leq 3.20$, all other $p_s \geq .074$
Social Support	<ul style="list-style-type: none"> • Likelihood of the student-athlete lacking social support (e.g. care in recovery). 	all $F_s \leq 2.53$, all $p_s \geq .112$.

The final column of [Table 1](#) displays the ANOVA results, which entailed 2 (target race: Black vs. White) X2 (target gender: male vs. female) X2 (target sport: basketball vs. soccer) ANOVAs on each outcome. Degrees of freedom differ slightly between analyses due to missing data; we report specific results only when they reached conventional statistical significance. We find only one significant effect across all variables: women soccer student-athletes are seen as needing greater activity restrictions.³ This is sensible (and non-stereotypic) given “soccer is one of the sports that have the highest risk of anterior cruciate ligament (ACL) injury [and] [f]emale soccer players are 2–3 times more likely to suffer ACL injuries compared to male soccer players” (Dai, Mao, Garrett, & Yu, 2014, p. 299). Thus, the greater concern of (re-)injury leads to precautions. Otherwise, the picture is one of little bias: we find no other significant results on any other variable for race, gender, or sport.

The overall null results regarding race starkly contrast with the previously discussed work that shows medical personnel view Black patients as being less likely to comply with medical advice, requiring greater oversight, lacking social support, and being less preferable when it comes to treatment (e.g. Green et al., 2007; van Ryn & Burke, 2000). The lack of gender results also differs from prior work, which suggests female student-athletes will be less motivated to partake in a recovery routine and therefore exhibit lower levels of compliance, require more oversight, and thus less desirable to treat (e.g. Green & Pope, 1999; Safran et al., 1997; Torres et al., 2013; also see Stålnacke, Lehti, Wiklund, Wiklund, & Hammarström, 2015). The lack of a sport by race interaction also suggests that even basketball, where stereotypes about Black athletes are common, does not prime racial biases (Stone, Peny, & Darley, 1997).

Discussion

Our results paint a picture of university athletic personnel as being unbiased when it comes to treatment perceptions of injured student-athletes. Why do our results differ from so much other evidence of race and/or gender bias in medical treatment? It could be that our name manipulation failed – although the pain perception result from the other noted paper and our activity restriction result (and pre-testing; see the appendix) suggest that is not the case. Another possibility is that the results reflect a slow evolution towards lessening racial biases: a recent study looking at cardiac decision-making by medical students reported “no evidence in the overall sample of racial bias in clinical decision-making ... [and] no evidence in our overall sample of clinical decision-making bias related to patient gender” (Williams et al., 2015, p. 763). The authors (2015, p. 765) suggest their results give “reason for cautious optimism that racial bias in clinical decision-making may be less common in the future [but] [m]uch work still needs to be done ...”

It could be that there has been a slow evolution towards less bias, although we also suspect our results reflect the unique population under study. Indeed, we earlier posited that sports medical staff work in unique settings. First, the training and experiences of many NCAA medical personnel differs from that of other medical populations insofar as it focuses squarely on athletes. It may be that this facilitates perspective taking such that medical personnel more ably envision the viewpoint of their patients. This has been shown to mitigate bias (Chapman et al., 2013, p. 1508). Second, relatedly, NCAA medical staff have considerable contact with Black student-athletes and women student-athletes; we queried this in our survey, and the average percentage of time spent with Black student-athletes was 48% and with women student-athletes was 59%. Favorable contact at this level decreases bias (e.g. Burgess et al., 2007, p. 883; van Ryn et al., 2015, p. 1754).⁴

Third, our sample was fairly experienced in the field, having worked in athletic medicine for an average of 11 to 12 years (see the appendix). Some work suggests that experience in the medical field can work to decrease implicit racial bias (van Ryn et al., 2015). Fourth, on an institutional level, race is a widely discussed issue in college sports (e.g. Harper, 2016; <http://www.tidesport.org/college-sport.html>). While much of this discussion points to vast inequities (e.g. in graduation rates, hiring), it is possible that the attention prompts practitioners to be aware of potential racial biases and actively aim to correct them (e.g. Chapman et al., 2013; Green et al., 2007; Pope, Price, & Wolfers, 2014).

Which, if any, of these processes are at work is a topic for further investigation. One should be cautious in interpreting our results, but at the same time, understanding what may make this population relatively unbiased could be a pathway to implementing programs to reduce bias in other populations (i.e. other medical practitioners such as those studied in the previously discussed

research). Future work might seek to exploit variations in the aforementioned possible causes of “de-biasing,” including perspective taking, contact, experience, and race/gender discussion. We additionally encourage scholars to study sports medical personnel by exploring different injuries, sports, and outcome variables including actual treatment decisions. It may be that biases emerge in distinct scenarios, or perhaps there are other types of biases based on factors such as socioeconomic status (Williams et al., 2015). Such further study is critical for college stakeholders who want to ensure the well-being of student-athletes.

Notes

1. See the appendix for a detailed rationale of design specifics as well as some pre-test results regarding the vignette.
2. Due to random assignment, we are in a strong position to make causal inferences about the impact of race, gender, and sport since, on average, the groups assigned to different vignettes should differ only in terms of variations in what their vignette describes.
3. The mean score, on a 4-point scale (with higher scores indicating the need for more restrictions), for women soccer players is 3.23 (std. dev. = .69; $N = 155$). The mean score for all others is 3.07 (.70; 494) ($t_{647} = 2.58$; $p \leq .01$ for a two-tailed test).
4. The average combined percentages exceed 100% since we did not confine respondents to come to a 100% total.

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