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Peter Doshi, PhD
Associate Editor, *The BMJ*
University of Maryland School of Pharmacy
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Dr. Doshi,

Thank you for the opportunity to revise and resubmit our manuscript, “Excising the ‘Surgeon Ego’: Progress Made and Paths Forward for Enhancing the Culture of Surgery” for consideration in *The BMJ*. We appreciate the comments and suggestions from both the editorial team and the reviewers, and have incorporated this feedback into a revised version of the manuscript.

Below, we respond to each specific point raised in the editor and reviewer comments, and indicate where we have made corresponding changes to the manuscript. Overall, we found these comments incredibly helpful as we refined and strengthened the paper to better highlight this important topic.

We believe that in its revised form, the manuscript addresses the concerns shared in your letter, and we hope that you find this manuscript suitable for publication in *The BMJ*. Please let us know if we can offer any additional clarification or make any further edits to the manuscript to help strengthen it and better position its potential contribution to your readership.

Sincerely,

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Response to Editors' Comments

1) Editors thought your paper covered an important and interesting clinical topic. The comments here are intended to strengthen your argument and broaden the appeal to our international readership.

We appreciate this positive reaction to our work (both from the Editors and reviewers) and have endeavored to incorporate the constructive suggestions below to further strengthen our argument and appeal.

2) An overarching concern with the framing of the manuscript is that we did not understand whether it is reasonable to single out surgeons from all other healthcare specialties. Isn't ego everywhere? To support a focusing in on surgery, you need to make a far stronger case that this is a problem specifically for this specialty. We would like to see reference to credible studies that support the point. (Moreover, surgery itself is very broad - urological surgeons, obstetric surgeons, etc., some of which have very different gender compositions - and it is not clear to us that the various stereotypes apply to all surgery specialties.)

We thank the Editors for pushing us to clarify this point and strengthen our arguments for focusing on surgeons in particular. Though all physicians (and indeed, all professionals) are susceptible to the detrimental effects of ego, we focus in particular on surgeons in light of the evidence that ego (and related issues) are more prevalent in surgical specialties than in others. Moreover, in the spirit of avoiding sweeping generalizations (as noted in the Editors' comment below), we choose to focus our examples and discussion in one domain in order to help readers understand the boundaries and context of our arguments. We now cite additional literature to support this focus, and we have also incorporated your important point on specialty differences (though there is insufficient evidence available to provide a more thorough discussion of these differences due to small sample sizes in the few studies that have looked across sub-specialties[1]).

3) Another overarching concern was that the link between what you write and the data/ studies you cite does not always feel particularly tight - something that needs addressing.

> — For example, you write "For instance, in one study of the "dark triad" personality traits – narcissism (of which arrogance is considered a key component[10]), Machiavellianism, and psychopathy – among health care professionals, surgeons were found to have significantly higher levels of narcissism than their non-surgeon colleagues." If the only place surgeons stood out was on narcissism, then you should just discuss narcissism. The current way of writing suggests to readers that Machiavellianism and psychopathy might also apply to surgeons. If non-surgeons had higher Machiavellianism in this study, doesn't this undercut your argument?

Thank you for helping us see where we were unclear in our arguments – our goal in mentioning the other dimensions of the Dark Triad were simply to situate the findings in a broader understanding of the personality literature. Indeed, this is a nascent area of research, and so we draw on findings that have conceptualized these issues in different ways (i.e., in terms of ego, arrogance, disruptive behavior, etc.). We now draw more focused attention to the relationships between these different constructs (as suggested by one of the reviewers).

Regarding the specific question of the study raised here, we now report only the results related to narcissism, in order to maintain clarity and focus in our discussion and not confuse readers. It is worth noting, however, that surgeons also scored higher in primary psychopathy than those in other specialties in the study, but did not differ from other specialties in Machiavellianism.[1]

> — Another example: you write "Other research has found greater numbers of disruptive behaviors and patient complaints among surgeons than non-surgeons" However can't there be many non-ego explanations for this? If the studies indicate a clear ego-link, then change the framing, otherwise either soften the language or find more evidence.

We are grateful to the Editors and the reviewers for helping us be clearer about our reliance on different ways of interpreting ego-oriented behavior. As we now note more clearly, there are certainly non-ego explanations for differences in disruptive behaviors, however given the paucity of research directly examining ego among surgeons (and non-surgeons), we draw on these broader findings regarding disruptive behavior to help support our assertions. We have softened the language in this specific instance, while also more clearly articulating how the various sources of evidence we cite taken together allow a reader to draw reasonable conclusions about the prevalence and nature of surgeon ego.

4) As you revise, please do so aware of how you might lose readers (and thus the potential for your article to have impact) if your characterizations seem too sweeping or broad.

We appreciate this advice and have revised our writing to substantiate each assertion and keep our focus clear. We have taken care not to generalize far beyond the data available, while also (as noted above) taking care to articulate how we have compiled multiple streams of disparate evidence to arrive at the arguments we make.

5) We would like the piece should to also discuss - and with reference to studies/data - gender, macho culture, ethnic diversity, etc. which it would seem very relevant to this topic. For example, see this research paper on outcomes related to surgeon gender from 2017: https://www.bmj.com/content/359/bmj.j4366

We have taken this suggestion by the Editors and now discuss the relationship of our constructs of interest with gender and the notion of masculine culture in surgery. At the same time, we have tried to be mindful of the point raised by the Editors above about not making sweeping generalizations, so we have kept this section relatively brief and focused, given that direct evidence linking surgeon ego, gender, and outcomes is scarce, and so our arguments are pieced together from evidence of each of these sub-components.

We thank the Editors again for their constructive feedback and suggestions for improving this work.

Response to Reviewer Comments

Reviewer 1 (Burns)

This is a really exciting and interesting article to read. It is appealing as it is written from a medical experience and reflection rather than from an external observational perspective. Often times patients and their families find the lack of "normal" interaction with surgeons and them and their families very distressing. This article is useful in identifying reasons why the communication skills are poor and the distinction between arrogance and confidence is well defined.

The issues addressed in this paper are important and relevant to patients and the public for a number of reasons. In the first instance it addresses perceptions that ordinary people hold- surgeons are arrogant and have big egos. It also clarifies that not all surgeons are not like this and it identifies an existing culture in the medical space which contributes to this type of behaviour. Most significantly it addresses what is being done to change the culture.

Thank you for these positive comments and reactions to our article. We appreciate you highlighting the strengths of the work regarding our nuanced interpretation of surgeon ego and have endeavored to maintain and strengthen these elements in our revised manuscript.

It would be useful to have in addition to the high profile cases included in the article any research that shows the effect of patients recovery time, engagement with after care, etc. if they have had a positive or negative experience with a surgeon.

We appreciate this suggestion to expand our discussion of the implications of these behaviors. Though research in this area is nascent, and we were unable to locate any specific research addressing these topics, we have expanded our call for research to also include of patient perceptions of these attitudes and behaviors.

Some more depth into how these changes in behaviour are being embedded- is it sufficient to make changes in the curriculum in regard to communication skills and professionalism or do the changes have to take place in the workplace. Whilst similarities are drawn from different industry sectors it would be useful to evaluate the level of enforcement and change.

Thank you for these suggestions. We certainly agree that change will need to take place not only in how surgeons are trained, but also in the actual dynamics of the workplace. We have added some additional detail and clarification in our concluding sections to call for inter-professional approaches to addressing these issues in the workplace, alongside training efforts (e.g., interpersonal skills simulations).

If a patient has a poor experience with an arrogant surgeon will this prevent the patient from being "honest" about their recovery experience? Post-operative pain or discomfort may be minimised due to a reluctance to engage with the surgeon or the medical community again. When people are sick they are vulnerable, when people need surgery they are really vulnerable and usually terrified. Being exposed to an arrogant surgeon and the team they are bullying can add to the trauma and impact on recovery. If it were possible to include this type of research it would be helpful.

This is a fascinating hypothesis, and we would broadly agree that surgeon attitudes and behaviors likely impact how patients choose to report and interact with their care team. Though we could not find empirical work directly addressing this topic, we continue to rely on the examples of patient reactions provided in studies that examine related topics such as disruptive behavior.[2] If the review team is aware of any additional work that can or should be cited in this area, we would be glad to incorporate it.

This paper discusses problems associated with provision care and identifies areas that need to be changed but it does not identify which policies or public guidelines should be developed or influenced to do this. This paper is useful in many ways, in order to make it more useful for health professionals perhaps guidance on how to better communicate, or how to address surgeons who are unprofessional and what areas are available to redress this.

These are important points related to the implementation of improvements to address the issues of 'surgeon ego.' Our goal in this manuscript was to raise awareness of this important issue and integrate the nascent research (across multiple domains) to create a solid foundation for work that could begin developing and testing specific interventions. Given that goal and the limitations of space, scope, and breadth available in this sort of article, we do not directly address issues of policy or guidelines - though we welcome future research exploring these issues. To seed this future work, we have provided some

examples of possible avenues forward in our concluding paragraphs in order to point readers to existing resources and tools.

Thank you again for these constructive comments and suggestions. They have helped us improve the quality of our manuscript, and we hope that our revisions have addressed your questions or concerns.

Reviewer 2 (Cooper)

This manuscript describes an analysis of the literature from surgical and organizational sciences describing recent efforts to promote professional behavior in the surgical community and the context in which these efforts are being developed and promulgated. The manuscript addresses an important topic that is likely to be of interest. The manuscript is generally well-written and describes an important topic. The authors do a nice job of considering the pertinent issues from multiple perspectives and provide a good description of current broad-based efforts to promote positive culture.

We are grateful for these positive comments and reactions to our manuscript.

My only concern is the narrow focus on surgeons--while the "What is the Problem?" section provides a reasonable defense for the focus on surgeons, the manuscript might be strengthened by bringing that point out earlier so that the reader can understand the reason for this particular focus.

Thank you for this suggestion. As noted in our response to the Editors, we have now strengthened our argument for focusing on surgeons, and as you have suggested, we moved this section earlier in the manuscript to improve clarity.

One additional area of focus that might strengthen the manuscript's message would be to address the role that health care systems and leaders have in creating the necessary infrastructure to support professionalism and accountability.

This is an excellent point, and we have revised our concluding section to incorporate more examples of efforts implemented in health systems to support professionalism. We have also revised our language to emphasize the role of leaders in creating this infrastructure.

We appreciate your constructive suggestions and positive reactions to our manuscript, and hope that with these revisions, we have addressed the concerns raised.

Reviewer 3 (Shapiro)

This topic is extremely important, and the authors have done a good job in arguing for why that is so. While many studies have shown that disruptive behavior on the part of healthcare team members poses a patient safety risk, there has been less attention paid specifically to disruptive behaviors on the part of surgeons.

Thank you for these positive comments and reactions to our work.

My concern with the paper is that it refers to multiple types of behaviors and underlying motivations without defining and making clear distinctions or connections between these various concepts. The following are some of the many concepts mentioned:
arrogant behavior, ego-driven disruptive behavior, overconfidence, ego-oriented behaviors, disruptive behaviors, disruptive ego, captain's ego, unprofessional behavior, ego-oriented surgical culture, bad behavior, problematically arrogant, narcissism and counterproductive behaviors, (lack of) humility, disrespectful surgeon.
Some of this is likely due to what my writing professor termed "elegant variation" where the author keeps substituting different words for the same concept; she warned us against this because it is distracting. For example, is arrogance the same as narcissistic or egotistical? But in this paper, I believe there is also something else at play that is important and needs to be more clearly sorted out: what is the relationship between disruptive behaviors and arrogance? Is arrogance the cause of disruptive behaviors or does it result in specific types of disruptive behaviors?

Thank you for encouraging us to be clearer in our articulation of these related – but distinct – concepts. To preview the changes we've made to address this issue, we now include a clearer articulation of these different topics, as well as a new figure, to help organize the extant literature in this domain, highlighting connections between disruptive behavior, ego, narcissism, arrogance, etc.

Though some of our different terminology could certainly be attributed to "elegant variation" as you note, much of our language was chosen in order to match the specific terminology or topic of study in the research we referenced. Thus, the variety in language reflects the somewhat scattered state of research in this domain, rather than a purely stylistic consideration.

This point actually helped us recognize an opportunity to add further value with our manuscript, by integrating and organizing some of these disparate streams of research and providing a conceptual framework for relating them to one another. We have addressed this with the inclusion of Figure 1, and welcome any additional feedback or further suggestion from the review team on how to strengthen both our articulation of these important arguments and resolve the discrepancies in terminology used across existing studies.

With regard to interventions, the paper would be improved by some discussion or reference to established interventions directed to physicians.

Thank you for this suggestion – we have expanded on our discussion of existing interventions in the concluding paragraphs of our manuscript, specifically noting well-established programs targeting physicians.

I think the authors should be given the opportunity to rewrite this important paper in order to improve its clarity and impact.

We appreciate your positive reaction to our work and your constructive feedback. We hope that our revised manuscript has addressed the concerns noted.

References

1. Bucknall V, Burwaiss S, MacDonald D, et al. Mirror mirror on the ward, who's the most narcissistic of them all? Pathologic personality traits in health care. Can Med Assoc J 2015;**187**:1359–63.

2. Cooper WO, Guillamondegui O, Hines OJ, *et al.* Use of unsolicited patient observations to identify surgeons with increased risk for postoperative complications. *JAMA Surg* 2017;**152**:522–9.