PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Is an Obesity Simulation Suit in an Undergraduate Medical Communication Class a valuable teaching tool? A cross-sectional proof of concept study
AUTHORS	Herrmann-Werner, Anne; Loda, Teresa; Wiesner, Lisa; Erschens, Rebecca; Junne, Florian; Zipfel, Stephan

VERSION 1 – REVIEW

REVIEWER	Dr. Robert Kushner Norhwestern University Feinberg School of Medicine, Chicago, IL USA
REVIEW RETURNED	02-Mar-2019

GENERAL COMMENTS	1. According to the manuscript, the Objective of the study was to "…protect patients from stigmatizing experiences and also to reduce prejudices among students" (page 2), while the Aim of the study was to "evaluate the influence of an OSS worn by an SP on perceived degree of reality in a doctor-patient simulation." (page 6). These are a bit different, and suggest that the objective and aim coincide. After reading the paper, the primary outcome was to assess the feasibility and reality of using an OSS during a simulated encounter. 2. If the authors were interested in evaluating stigmatization, a major concern about this study is the lack of a control non-obese group, use of pre- and post-exposure questionnaires, or longer-term follow up. Alternatively, they could have presented two patients with diabetes, one with obesity and one that was normal weight. Since none of these conditions were presented, the study is best suited to only assess the functionality of an OSS. A more interesting study design would have been comparing an encounter with a SP with obesity (true obesity) versus the OSS (simulated obesity). Did the authors consider this design? 3. Under Procedures (page 8), please clarify in more detail what the student assignment was for the simulated

	encounter. What information was given about the patient, e.g., chief complaint, medical history, medications, age, BMI, etc.). Were they asked to focus on the History of Present Illness (HPI) and specifically told to 'explore psychosocial factors related to the diabetes?' What was the time length of the encounter? Since the primary aim of the study was on obesity, why did the SP present with diabetes, and the students were instructed to "…take the SPs medical history and explore psychosocial factors related to the diabetes"? Why didn't the authors have the SP simply present with obesity and have the students focus on taking a weight history and psychosocial factors related to obesity? It seems to me that would have more directly addressed possible stigmatization. 4. Under Sample (page 10), line 10, it is meaningless to include the mean age of the entire sample since there are 3 distinct groups included. Would delete. 5. Page 11, line 17, suggest using a qualitative design to categorize the 'text questions' responses from the students, teachers and SPs. Were there general themes that emerged, number of responses that supported the themes, differences between the 3 groups? 6. Table 2 (page 13). Would include legend for Likert scale again to help interpret the scores (M) in the table. 7. I would recommend that the authors consider including a short discussion and references regarding the presentation of other disabilities in the simulated environment and student perceptions/empathy, such as SPs with blindness, paralysis, stroke, etc. This would provide a more general context for the paper. 8. The limitations section should also included the differences in study design that were not chosen (see #2), and future questions that need to be addressed regarding an OSS.

REVIEWER	Ruchi Doshi Duke University Hospital, United States
REVIEW RETURNED	19-Mar-2019

GENERAL COMMENTS	Overall this was a proof of concept, cross sectional study in which the authors placed standardized patients in obesity simulation suits and had them conduct an encounter regarding type 2 diabetes and obesity management with medical students. The goals of the study were to (1) assess the degree of reality of the encounter with the SP wearing the OSS and (2) evaluate students' awareness and prejudice against patients with obesity through the encounter. The

	study found that students, teachers, and SPs found the encounter realistic, and that students had a higher anti-fat bias compared to teachers and SPs. Overarching suggestions: - You use a lot of language like “seems” and “appears” rather than definitive statements; would recommend more decisive language throughout the manuscript - Make sure to use patient centered language – you use “obese patient” rather than “patient with obesity” a few times - You have not clearly defined your primary and secondary goal (I assumed those were the goals stated above). Please do so clearly. - It is unclear how much value the SP perspective adds on; I am unsure what to make of the physical strain results and how this clarifies your aims/goals, I don’t know why it matters what the SP estimates the BMI of the suit to be. - The paper has value in discussing that using an SP and an OSS is a good way to expose students to realistic encounters with patients with obesity while sparing real patients from negative experiences, and being the first paper of it’s kind to discuss this. Would be improved in discussing using SPs without an OSS, or looking at bias before and after the OSS encounter, or discussing more specifically what the “didactic profit” is etc. Those scales are not clarified in enough detail to repeat the study. In addition, the SP scenario is not clarified enough to repeat this study. - I agree with the final conclusion that using OSS with an SP could be useful - May want to make this a “proof of concept” study – more valuable using it in that context Minor details: Abstract - Objective: Suggestion: “With the growing prevalence of overweight and obesity, medical students should be prepared to engage in weight management and obesity-related communications in order to prevent patients from stigmatizing experiences. In addition, medical students should have training to reduce anti-fat prejudices.” - Outcome measures: please define what is the primary and secondary outcome. Is the primary outcome reality of the scenario? Is the secondary outcome to discuss their bias? Is it a change in bias from before vs after the scenario with the SP?

	- Results: “more” realistic perception compared to what? Was the AFAT prior to or after the SP? Did the SP change the results of the AFAT? - Conclusions: How does the obesity specific communication reduce stigmatization? This isn’t clear from your results. In addition, how does it ensure a high standard of medical care? This isn’t discussed. Cannot draw these conclusions from the results in the abstract. Article summary - Unclear what “didactic profit” means - Unclear why we need the difficulties in the perspectives of SPs - Uses “obese patients” rather than “patients with obesity” - Would add that this study is cross sectional and more proof of concept and not an RCT with students with SPs in OSS vs without OSS. Introduction - Paragraph one Sentence one: needs consistency with “50 percent” vs “23%” - Paragraph two sentence one: a run on and difficult to understand. I think you mean to discuss that the stigma against obesity is one of the few socially acceptable biases left and that we see it frequently, including job procurement and in healthcare. I would make this two sentences and would discuss the poor health outcomes, including doctor shopping, for patients with overweight and obesity. There are several articles by Gudzune and Hebl that discuss the doctor shopping and poor outcomes as well as difficulty with job procurement respectively. - Paragraph two sentence two: needs a difference when you say it is more difficult for people with obesity to seek and find help; in addition, I would delete the “implicit and explicit” phrase prior to consequences (unsure what an implicit consequence to health is) - Paragraph two sentence three: “obese patients” rather than “patients with obesity”; in addition, unclear what “disease issues” are, would consider using a phrase like “other potential causes” - Paragraph two sentence four: would rephrase to “This seems not only true for physicians, but also for health professionals from different fields specialized in treatment of obesity, including nursing, physiotherapy, and nutrition.” (the “average general physician” includes internal medicine and may offend) - Paragraph two sentence five: make more definitive. “It is crucial to make medical students aware of the stigma towards patients with obesity by health care providers and to prepare them for appropriate interactions towards this population.” - Paragraph three: the section about the ongoing discussion of an OSS for self-experience seems out of context; you

	state it is not relevant yourself in the introduction, and I would remove those sentences entirely. - Paragraph three: You have two sentences that start with "the aim" and then a furthermore sentence. Please clarify the primary and secondary goal of your study/primary and secondary aim of the intervention. Methods - This looks like a proof of concept study as well as a cross sectional one. May want to discuss. - You use "didactive profit" but I am unclear if this is a standardized scale. If so, please use a reference. If not, please explain how you came up with this scale and it's validity/reliability. Same with the simulated authenticity. You also may need to include these scales in an appendix or in the actual methods section. - Why did you not use the whole AFAT? Please explain. Also, this is a standardized tool everyone in the industry/research area uses, OK to put the questions in a supplement/appendix. Why did you choose to do the AFAT after and not before? Why not do it before and after? Please explain. - May want to further clarify what script the SP was following or include this in the appendix. - Why did you choose to replace missing data with the mean? These could have been skewed. Exactly what tests did you perform (you state "such as" – were there other ones? How could I replicate your findings?) Results - The SP being all female is a huge skew – may need to make sure this is discussed in results as we treat men and women with obesity very differently - May want to clean up the table to be N (% F) rather than female: male which may make people think ratios - Was there non participation? You mention it, but then say everyone participated. - What is the physical strain scale? Not mentioned in methods. Is this a validated/reliable scale? - What is the empathy scale used? What is the didactic value scale used? What was this out of? What are we comparing it to? - You mention "for some students" – give % values. Also discuss what reservations the students had. I wouldn't use modifiers such as "most" or "some" without putting a (%) beside the value. - The SP section seems like an entirely separate topic. May be addressed briefly in the discussion or at the end of the results, but I wouldn't make it a focus of your results/discussion as it isn't a primary aim/goal - Unclear if the SP accurately guessing a BMI has value

	- Great table with the AFAT! Discussion - Good introduction sentences to the discussion! Although again, don't know how the SP statement helps with your aims/goals. - You discuss gain/value from wearing the suit after stating in your introduction that it isn't a focus and you wouldn't discuss this. Would not put it in the discussion after that, and given students didn't wear the suits, wouldn't keep it in at all. - You didn't discuss why the students seemed to have more prejudice than the teachers. Is this an age or experience thing? Why do you think this happened? - You mention several instruments and studies that say we need to work on de-stigmatization; unfortunately, your study doesn't actually address this. Your study noted that students do have bias and that they find the OSS realistic, but does not address if the OSS reduces bias after the encounter. You need to mention this as a limitation and find another way to mention these anti-bias studies

VERSION 1 – AUTHOR RESPONSE

Reviewer 1:

Overarching suggestions:

- You use a lot of language like "seems" and "appears" rather than definitive statements; would recommend more decisive language throughout the manuscript

Thank you very much for this valuable suggestion. We have gone through the manuscript and changed language to a more decisive style.

- Make sure to use patient centered language – you use "obese patient" rather than "patient with obesity" a few times

Thank you for your valuable comment. We have changed the language to the patient-centered version throughout the manuscript.

- You have not clearly defined your primary and secondary goal (I assumed those were the goals stated above). Please do so clearly.

We apologize for not clearly stating the goals. We have clarified them in the article summary as well in the introduction. Hopefully this helps the reader to follow the content more easily.

- It is unclear how much value the SP perspective adds on; I am unsure what to make of the physical strain results and how this clarifies your aims/goals, I don't know why it matters what the SP estimates the BMI of the suit to be.

As the primary outcome measure if this study was the evaluation of an OSS as teaching tool, we do think that it is important to get an impression from all perspectives. This information is also important to potential curriculum designers. We have added an explanatory sentence in the discussion.

- The paper has value in discussing that using an SP and an OSS is a good way to expose students to realistic encounters with patients with obesity while sparing real patients from negative experiences, and being the first paper of it's kind to discuss this. Would be improved in discussing using SPs without an OSS, or looking at bias before and after the OSS encounter, or discussing more specifically what the "didactic profit" is etc. Those scales are not clarified in enough detail to repeat the study. In addition, the SP scenario is not clarified enough to repeat this study.

Thank you very much for your general appreciation. We have taken up on your suggestions and discussed further possible study settings as well as clarified the didactic profit. We have also added further information in the methods on the items used as well as the SP scenario. Hopefully, this helps in terms of possibilities of reproduction.

- I agree with the final conclusion that using OSS with an SP could be useful

Thank you very much for this statement. We absolutely came to appreciate our teaching with the OSS.

- May want to make this a “proof of concept” study – more valuable using it in that context

We highly appreciate this valuable suggestion and have included it in the title as well as throughout the manuscript where applicable.

Minor details:

Abstract

- Objective: Suggestion: “With the growing prevalence of overweight and obesity, medical students should be prepared to engage in weight management and obesity-related communications in order to prevent patients from stigmatizing experiences. In addition, medical students should have training to reduce anti-fat prejudices.”

We have changed the sentence accordingly.

- Outcome measures: please define what is the primary and secondary outcome. Is the primary outcome reality of the scenario? Is the secondary outcome to discuss their bias? Is it a change in bias from before vs after the scenario with the SP?

Thank you for pointing out this unclear definition. We have added sections on the goals in the article summary as well as in the introduction.

- Results: “more” realistic perception compared to what? Was the AFAT prior to or after the SP? Did the SP change the results of the AFAT?

Sorry, this choice of word was misleading. We have deleted it.

- Conclusions: How does the obesity specific communication reduce stigmatization? This isn’t clear from your results. In addition, how does it ensure a high standard of medical care? This isn’t discussed. Cannot draw these conclusions from the results in the abstract.

You are absolutely right that without the main body of the text these conclusions seem unrelated to what was described before. Particularly in line with our rewording of the aims, we have also changed the whole conclusions section in the abstract accordingly.

Article summary

- Unclear what “didactic profit” means

We have explained the item more clearly in the method section.

- Unclear why we need the difficulties in the perspectives of SPs

As the primary outcome was the evaluation of an OSS as a teaching tool, we do think that it is important to get an impression from all perspectives. We have added an explanatory sentence in the discussion.

- Uses “obese patients” rather than “patients with obesity”

As stated above, we have changed the language to the patient-centered version throughout the manuscript.

- Would add that this study is cross sectional and more proof of concept and not an RCT with students with SPs in OSS vs without OSS.

We have never claimed it to be an RCT. However, it might lead to confusion or wrong expectations with the reader. Thus, we have added the terms throughout the manuscript where applicable.

Introduction

- Paragraph one Sentence one: needs consistency with “50 percent” vs “23%”

We have corrected this.

- Paragraph two sentence one: a run on and difficult to understand. I think you mean to discuss that the stigma against obesity is one of the few socially acceptable biases left and that we see it

frequently, including job procurement and in healthcare. I would make this two sentences and would discuss the poor health outcomes, including doctor shopping, for patients with overweight and obesity. There are several articles by Gudzune and Hebl that discuss the doctor shopping and poor outcomes as well as difficulty with job procurement respectively.

Thank you for this valuable suggestion. We have restructured the sentence and also included reference as suggested.

- Paragraph two sentence two: needs a difference when you say it is more difficult for people with obesity to seek and find help; in addition, I would delete the "implicit and explicit" phrase prior to consequences (unsure what an implicit consequence to health is).

Unfortunately, we do not entirely understand what the first part of the sentence means. If this were a crucial point, could you please further clarify what we were supposed to change? We have deleted the bit about "implicit and explicit", though.

- Paragraph two sentence three: "obese patients" rather than "patients with obesity"; in addition, unclear what "disease issues" are, would consider using a phrase like "other potential causes"

As requested earlier, we have changed the language to a more patient-centered version throughout the manuscript. We have also changed the term to "other potential causes" as suggested.

- Paragraph two sentence four: would rephrase to "This seems not only true for physicians, but also for health professionals from different fields specialized in treatment of obesity, including nursing, physiotherapy, and nutrition." (the "average general physician" includes internal medicine and may offend)

Done.

- Paragraph two sentence five: make more definitive. "It is crucial to make medical students aware of the stigma towards patients with obesity by health care providers and to prepare them

for appropriate interactions towards this population."

Done.

- Paragraph three: the section about the ongoing discussion of an OSS for self-experience seems out of context; you state it is not relevant yourself in the introduction, and I would remove those sentences entirely.

Good point. We have deleted it accordingly.

- Paragraph three: You have two sentences that start with "the aim" and then a furthermore sentence. Please clarify the primary and secondary goal of your study/primary and secondary aim of the intervention.

We apologize for not clearly stating the goals. We have clarified them in the article summary as well in the introduction. Hopefully this helps the reader to follow the content more easily.

Methods

- This looks like a proof of concept study as well as a cross sectional one. May want to discuss.

Thank you for this comment. We have added the study type in this part of the manuscript, too.

- You use "didactive profit" but I am unclear if this is a standardized scale. If so, please use a reference. If not, please explain how you came up with this scale and it's validity/reliability. Same with the simulated authenticity. You also may need to include these scales in an appendix or in the actual methods section.

We are grateful for this question as it showed us further clarification is needed. We have added the questions used in the method section. The scales used are not officially validated ones. However, we did a pretest before the actual study and the scales showed sufficient reliability (Cronbach's alpha = .636).

- Why did you not use the whole AFAT? Please explain. Also, this is a standardized tool

everyone in the industry/research area uses, OK to put the questions in a

supplement/appendix. Why did you choose to do the AFAT after and not before? Why not

do it before and after? Please explain.

As already outlined in the manuscript, we wanted to focus on cognitive attitudes as this is best in line with the aims of this study. We have rephrased the existing sentence and hope that now it gets clearer. Additionally we wanted to only use the minimum necessary number of items.

We do appreciate the idea of having the AFAT in the appendix. However, as we have described all items in our actual methods section including reliability of the scale, we would consider it a bit redundant.

It is absolutely right that the AFAT could have been done at different points of time or as a follow-up. However, as this was not an intervention study, and we were primarily looking at a general attitude when facing an SP with the OSS, we decided to only measure it once after the simulation situation.

- May want to further clarify what script the SP was following or include this in the appendix.

Thank you very much for the valuable comments on the SP case. We have added an explanatory section in the methods to give a better impression of the SP encounter.

- Why did you choose to replace missing data with the mean? These could have been skewed.

Exactly what tests did you perform (you state “such as” – were there other ones? How could

I replicate your findings?)

Thank you for this suggestion. We decided to replace the missing data with the mean as we had less than five missing sets as commonly done in statistics (Bühner & Ziegler, 2009).

Results

- The SP being all female is a huge skew – may need to make sure this is discussed in results as we treat men and women with obesity very differently

We absolutely agree that gender differences play an important role in the therapy of patients with obesity. For the purpose of the study, we didn't want to add this level of complexity and thus only engaged female actors. We have added a respective sentence in the discussion to make readers aware of this potential bias.

- May want to clean up the table to be N (% F) rather than female: male which may make people think ratios.

We have changed this according to your suggestion.

- Was there non participation? You mention it, but then say everyone participated.

Sorry for this misunderstanding.

- What is the physical strain scale? Not mentioned in methods. Is this a validated/reliable scale?

Sorry for this mistake. We added the item used in methods as well as an explanatory sentence about the features of the OSS. Hopefully, this makes it clearer why we wanted to include the physical strain item.

- What is the empathy scale used? What is the didactic value scale used? What was this out of? What are we comparing it to?

We do apologize again for this misunderstanding and our misleading choice of words. We have changed "scale" to "item" and described the items used.

- You mention "for some students" – give % values. Also discuss what reservations the students had. I wouldn't use modifiers such as "most" or "some" without putting a (%) beside the value.

We have added the percentages and illustrated the reservations in results.

- The SP section seems like an entirely separate topic. May be addressed briefly in the discussion or at the end of the results, but I wouldn't make it a focus of your results/discussion as it isn't a

primary aim/goal

We are not sure if we completely understand the comment about an SP "section". Do you mean their respective results? Anyway, as this study mainly aimed at the OSS as a teaching tool, we consider perspective of all parties involved to be crucial.

- Unclear if the SP accurately guessing a BMI has value

Again as mentioned above we do think that it is important to get an impression of the OSS as a teaching tool with all its implications from all perspectives. We have added an explanatory sentence in the discussion.

- Great table with the AFAT

Thank you.

Discussion

- Good introduction sentences to the discussion! Although again, don't know how the SP statement helps with your aims/goals.

Thank you for this appreciation. With regards to the SP, we stick to our comments above.

- You discuss gain/value from wearing the suit after stating in your introduction that it isn't a focus and you wouldn't discuss this. Would not put it in the discussion after that, and given students didn't wear the suits, wouldn't keep it in at all.

We completely agree with what you say and have deleted this bit out of the discussion.

- You didn't discuss why the students seemed to have more prejudice than the teachers. Is this an age or experience thing? Why do you think this happened?

Thank you very much for this great suggestion. This is a very interesting point that we included in the discussion.

- You mention several instruments and studies that say we need to work on destigmatization;

unfortunately, your study doesn't actually address this. Your study noted that students do have bias and that they find the OSS realistic, but does not address if the OSS reduces bias after the encounter. You need to mention this as a limitation and find another way to mention these anti-bias studies

Thank you very much for this comment and we do apologize for the possibly misleading formulations. We have added this point into the limitations.

Reviewer 2:

1. According to the manuscript, the Objective of the study was to "…protect patients from stigmatizing experiences and also to reduce prejudices among students" (page 2), while the Aim of the study was to "evaluate the influence of an OSS worn by an SP on perceived degree of reality in a doctor-patient simulation." (page 6). These are a bit different, and suggest that the objective and aim coincide. After reading the paper, the primary outcome was to assess the feasibility and reality of using an OSS during a simulated encounter.

Thank you very much for your valuable comment. As already mentioned in some of reviewer one's comments above, we have extensively rewritten the manuscript in this regard and hope that now the aims and scope of our study are clearer.

2. If the authors were interested in evaluating stigmatization, a major concern about this study is the lack of a control non-obese group, use of pre- and post-exposure questionnaires, or longerterm follow up. Alternatively, they could have presented two patients with diabetes, one with obesity and one that was normal weight. Since none of these conditions were presented, the study is best suited to only assess the functionality of an OSS.

A more interesting study design would have been comparing an encounter with a SP with obesity (true obesity) versus the OSS (simulated obesity). Did the authors consider this design?

Thank you for these wonderful ideas that might actually be next steps. However, in this very first proof of concept study our focus was primarily on the OSS as a teaching tool. But we have added some information in an "outlook" section to give readers a perspective how to proceed.

3. Under Procedures (page 8), please clarify in more detail what the student assignment was for the simulated encounter. What information was given about the patient, e.g., chief complaint, medical history, medications, age, BMI, etc.). Were they asked to focus on the History of Present Illness (HPI) and specifically told to 'explore psychosocial factors related to the diabetes?' What was the time length of the encounter?

Since the primary aim of the study was on obesity, why did the SP present with diabetes, and the students were instructed to "…take the SPs medical history and explore psychosocial factors related to the diabetes"? Why didn't the authors have the SP simply present with obesity and have the students focus on taking a weight history and psychosocial factors related to obesity? It seems to me that would have more directly addressed possible stigmatization.

Thank you very much for the valuable comments on the SP case. We have added an explanatory section in the methods to give a better impression of the SP encounter. However, as the study primarily aimed to assess the OSS as a teaching tool, we didn't change the role content to obesity alone but left the basic role as set part of the mandatory communication class. We hope that our additional paragraph makes it clearer.

4. Under Sample (page 10), line 10, it is meaningless to include the mean age of the entire sample since there are 3 distinct groups included. Would delete.

You are absolutely right and it was nonsense to calculate it. We have of course deleted this bit.

5. Page 11, line 17, suggest using a qualitative design to categorize the 'text questions' responses from the students, teachers and SPs. Were there general themes that emerged, number of responses that supported the themes, differences between the 3 groups?

Despite of course having used appropriate methods of qualitative data analyses, this study was not meant to be a mixed-method one. We have described the emerging themes for each group thus only in an illustrational way to give an impression of underlying thoughts. However, it might be an interesting idea for further studies to focus more on a qualitative approach.

6. Table 2 (page 13). Would include legend for Likert scale again to help interpret the scores (M) in the table.

Done.

7. I would recommend that the authors consider including a short discussion and references regarding the presentation of other disabilities in the simulated environment and student perceptions/empathy, such as SPs with blindness, paralysis, stroke, etc. This would provide a more general context for the paper.

Thank you for the idea of making the scope broader and thus more of general interest. We wouldn't see obesity as a disability, but added a sentence on training programs for other disabilities in the simulated environment in the discussion.

8. The limitations section should also included the differences in study design that were not chosen (see #2), and future questions that need to be addressed regarding an OSS.

As laid out in #2, we have added some information in the discussion.