Author’s response to reviews

Title: Student centered curricular elements are associated with a healthier educational environment and lower depressive symptoms in medical students.

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Author’s response to reviews: see over
Dear Editor,

Thank you for your communication. The following is a point-by-point response to the reviewer’s comments specifying the changes made in the manuscript.

**REVIEWER ONE:**

1. **Introduction:**

   **Reviewer’s comment:**
   
   It was reported that at least 12% of medical students have severe depression on the Beck Depression Inventory (BDI) at three measuring points during their first three years compared with a rate of 3% to 4% observed among the general population. 10, 11 - reference no 10 and 11 are quite old, 1978 and 1988 respectively. Perhaps the authors should cite more recent evidence on this topic for e.g. an article entitled "The impact of medical education on psychological health of students: A cohort study" published in 2013 by Psychology Health & Medicine reported similar finding.

   **Response:**
   
   Suggestion accepted. Six new references added in introduction line 17 page 4 and in reference list (reference nos. 10-15) in response to comment of reviewer 1 to provide more recent references on the topic.

2. **Method:**

   **Reviewer’s comment:**
   
   How do authors determine sample size? What sampling method used? It seems that one group had double number that other (as reported in table 1).

   **Response:**
   
   As the whole student population enrolled in years one and two in the traditional and new curricula were invited to participate in the study, therefore, no sampling method is mentioned in manuscript. Clarification regarding this aspect has been added under header of Participants lines 20-21, page 7.

3. **Discussion:**

   **Reviewer’s comment:**
   
   Another recent study entitled "Mental health of medical students before and during medical education: A prospective study.", done in system-based curriculum, found males are more depressed than female. Perhaps this could support the result found.

   **Response:**
Suggestion accepted. Reference regarding finding of more depressive symptoms in male than female students suggested by reviewer 1 added in discussion section line 22, page 12 and in reference list (reference no. 50) to support the findings of the current study.

REVIEWER TWO:

Reviewer’s comment 1: The authors need to be more clear about the distinction between depressive symptoms as measured by a questionnaire and a diagnosis of depression. The BDI measures only the former.

Response 1: The changes were done all over the manuscript, the words depressive symptoms were used in place of the word depression. The word depression was replaced in line 17, page 12.

Reviewer’s comment 2: Similarly, they need to distinguish between depressive symptoms, stress and burnout that may be related to educational stress, from depression as a clinical diagnosis that occurs in medical students as it does in anyone, and has nothing to do with educational stress.

Response 2: The reasons were discussed in the discussion section, page 11, lines 9-11. Also, please see the introduction 3rd paragraph, 13-16.

Reviewer’s comment 3: For those not familiar with the DREEM Inventory, there should be a brief description of the 5 subscales and the domains they measure.

Response 3: A brief description was added in the methodology section under outcome variables, line 18-22, page 6 and line 1-4, page 7.

Reviewer’s comment 4: There appears to be a near doubling of the class from 2007/08 and 2010/11 and a major change in gender mix. These changes need comment, especially in light of the gender-specific results.

Response 4: Added on Page 5, method section, Study setting and the curriculum, lines 19-22.

Reviewer’s comment 5: The authors note that the purpose of the study was revealed in the cover letter and invitation to participate. This has the potential of introducing serious contamination by telling students that educational environment might be linked to stress and depressive symptoms.

Response 5: Explanation of this issue was added in the data collection section, lines 6-9, page 8.
**Reviewer’s comment 6:** There needs to be more description of the two curricula with regard
to grading systems. Prior studies have shown more association between grading systems
(grades vs. pass-fail) than other aspects of the environment.

Response 6: The description of the grading system in the two curricula was added under the
method section, the traditional curriculum versus the SBC, lines 3-5 and 11-13, page 6.

**Reviewer’s comment 7:** Using means as a method of comparison is not appropriate for
measures that are not normally distributed, as these are not.

Response 7: We agree that the non-parametric tests should be used if the data/measures
are not normally distributed. However, the mean was used here because the sample size
was relatively large and our statistician had performed a histogram on the DREEM data and
it showed normal distribution. Furthermore, for the sake of comparison, we used the mean
and the effect size as they are commonly used in the medical education literature.

**Reviewer’s comment 8:** A 3-point difference in BDI-II mean may be statistically significant
but is not a minimal clinically important difference. A difference of at least 5 points is the
minimum difference of importance and some studies suggest 10 points to be truly
important.

Response 8: We agree with this point. After revising the calculations, we found that the
effect size is negligible, see Table 2.

**Reviewer’s comment 9:** The authors show 458 students participating from the traditional
curriculum, but BDI results for only 294 are shown in Table 4. What happened to the
others?

Response 9: Added under the results section, demographics, lines 21-22, page 8 and lines 1-
5, page 9.

**Reviewer’s comment 10:** The most fundamental weakness of the analysis is that the
authors missed the key finding that BDI score changed only for female students from
traditional to system-based, not for male students. This is actually the most interesting
part of the entire study. What is there about female students who are more affected by a
change in EE than are male students? The only reason there is a change in BDI-II score
between curricula is because of the change in women.

Response 10: Added under discussion, lines 15-23, page 11.

**REVIEWER THREE:**

**Reviewer’s comment 1:** The language needs improvement as there are places where the
sentences are incomplete or there are grammatical errors (e.g., Traditional versus System
based curricula in Methods section Line no 5 to 7 on page 3; Last sentence pertaining to
data analysis - Line no.5 on Page 5 Data was analyzed...; last two sentences on Page 5 in
the Results section about Traditional versus System based curricula)

Response 1: These are appropriate comments and relevant changes have been made in the
manuscript.
Reviewer’s comment 2: **While the study mentions about IRB approval, it doesn’t mention about informed consent being obtained from students for participation.**

Response 2: Informed verbal consent was taken with assurance of confidentiality. This information has been reworded on page 8, line 4-5.

Reviewer’s comment 3: **Under data collection methods, I am not clear as to which three questionnaires were used. The two that I could make out were: DREEM and BDI-II.**

Response 3: The third separate questionnaire was related to the demographic characteristics of the participants. This has now been clarified in the data collection section, page 8, line 1.

Reviewer’s comment 4: **There seems to be some discrepancy in numbers of students and their gender esp when we look at the Tables 1, 3 and 4 and compare the figures given in these tables.**

Response 4: This point has been clarified in results section on line 21-22, page 8 and lines 1-5, page 9.

Reviewer’s comment 5: **Words and phrases like “interesting,” “good news” are best avoided in the Discussion section in manuscript. This could sound like a prejudiced mind or biased researcher. The sentences that question the association of female gender with type of curriculum remain unanswered. [The female students performed well in the system based curriculum. So the question “Is it healthier for the female students”? “Do female students prefer PBL style of learning?”]**

Response 5: Point well taken and relevant change made in discussion section on page 10.

Reviewer’s comment 7: **Though the authors admit that there were “some” limitations, they stop at that. They do not mention any more limitations other than that use of self-administered inventories. Limitations should be clear, precise and still concise. The authors also suggest a Qualitative study, though this could have planned beforehand or could be taken up as a follow up.**

Response 7: The limitations have been rewritten in the light of the reviewer’s comments, lines 8-15, page 13.

In conclusion, we are grateful for the useful comments and advice of the reviewers.

Best Regards,

Dr Naghma Naeem  
(Corresponding Author)