Title: Perceived stress and gastrointestinal symptoms in nursing students in Korea: A cross-sectional survey

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Author's response to reviews: see over
Dear Appleford-Cook,

We are submitting a revised manuscript entitled “Perceived stress and gastrointestinal symptoms in nursing students in Korea: A cross-sectional survey.” for your reconsideration as an article in the BMC Nursing.

We have addressed all of the concerns expressed by the reviewers and we believe that this revision has greatly improved the manuscript. We hope that with these modifications our manuscript is now acceptable for publication. A point-by-point response to the reviewers’ comments is attached.

Thank you very much for your attention, and I look forward to your reply.

Sincerely yours,

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Title: Perceived stress and gastrointestinal symptoms in nursing students in Korea: A cross-sectional survey

Sincerely, thank you for very careful and kind comments. Replies for your comments and suggestions are as follows:

Author response to Reviewer

[ Editorial Office ]

Comment 1:

Ethics - Experimental research that is reported in the manuscript must have been performed with the approval of an appropriate ethics committee. Research carried out on humans must be in compliance with the Helsinki Declaration (http://www.wma.net/en/30publications/10policies/b3/index.html), and any experimental research on animals must follow internationally recognized guidelines. A statement to this effect must appear in the Methods section of the manuscript, including the name of the body which gave approval, with a reference number where appropriate.

Informed consent must also be documented. Manuscripts may be rejected if the editorial office considers that the research has not been carried out within an ethical framework, e.g. if the severity of the experimental procedure is not justified by the value of the knowledge gained.

Response: We added ethical consideration in the method and documented informed consent (page 5, line 108-111).
[Reviewer #1]

Comment 1:

A major drawback of the manuscript pertains to its narrow scope. In short, the authors merely report on a symptom but do not address prevention or treatment. In my opinion, in order to advance our knowledge the authors need to suggest innovative ways in which the emotional and physical wellbeing of students can be promoted within schools of nursing. In other words, what seems to be contributing to student stress within their context? What measures can be taken to prevent this disorder or to assist learners who report symptoms? Although it is well established that student nurses experience stress, more information is required regarding proactive measures.

Response: Thank you for your insightful comments. As you suggested, we suggested implementation for emotional and physical wellbeing of students based on the findings (page 12, line 285-290).

Comment 2:

Finally, the authors are encouraged to ensure that their work is carefully edited prior to formal submission. In its current form, there are missing words along with several spelling and grammatical errors.

Response: We carefully reviewed the manuscript and then corrected spelling and grammatical errors.

[Reviewer #2]

Comment 1:

The students come from one Korean college. This raises questions relating to the representativity of this college: Is this college similar to or comparable to other colleges with nursing students? Do nursing students at this particular college have better or poorer health than other nursing students or other student groups? Is there reason to believe that this student sample is biased? Please add details where
possible and discuss more thoroughly potential issues relating to generalizability to other nursing students within and outside Korea.

Response: Thank you for your comments. Since the Korean Council for University Education introduced nursing education accreditation in 1997, the curriculums of nursing programs in Korea have been standardized. Thus, the college of nursing participated this study was similar to other colleges with nursing students (page 5, line 105-108). As you pointed out, however, a convenience sampling might influence the generalization of research findings. Thus, it was documented in the limitations in the discussion (page 12, line 272-274).

Comment 2:

What about other factors affecting health and well-being of students? Typically, the student years involve many life events which may be partly linked to student reports of stress and health problems. Often too, problems in the educational setting are related to problems outside the educational setting (e.g. life in general, friends, family, partners and so on). Why do the authors not include all data available in the statistical analyses: For instance, the conclusions would be strengthened if data relating to life outside nursing school was included. Here it is possible to investigate potential cross-sectional effects of PSS and SRH but also of living with parents vs. other living arrangements, and other health-related factors (e.g. drinking alcohol or not; BMI) on GI. Are these other factors unrelated to GI? If yes, please clarify. Otherwise an more detailed analysis is recommended.

Response: For assessing the association between perceived stress and GI symptoms, we modified data analysis. Based on results from chi-square tests, we found a confound factor, subjective health status. We estimated the crude association between perceived stress and GI symptoms, and then conducted multiple logistic regression analysis adjusted for subjective health status (page 7, line 152-157; page 8 line 188-193; page 9 line 200-208; page 11 line 254-262).

Comment 3:

There were only 68 men in the sample. This means that the results hold for women only. Comparing groups of women and men will be problematic due to issues relating to sample size and statistical power! With only 68 men, it is unlikely to have any statistical effects. Why not exclude the men altogether to avoid “error variance” relating to the fact that male students are a small group. Such an exclusion of men is supported by research showing that men in women-oriented education and work have other difficulties, possibilities and consequently may have other stress and health problems than do their women colleagues. This holds for educational contexts too.
Response: Gender difference is not our major interest. But we want to stress that carefully monitoring is needed for male nursing students. We rewrote this issue in the discussion (page 11, line 268-271).

Comment 4:

Problems and pitfalls relating to cross-sectional research and statistical analysis based on self-reports only are not addressed in the Discussion. The shared variance between measures is likely to increase due to the fact that all data were collected at one point in time and that all questions relate to stress and health problems.

Response: It was documented in the limitations in the discussion (page 12, line 274-277).

Comment 5:

Apart from the last sentence being loosely attached to the reasoning and abstract conclusions, the abstract is concise and well-written. However, as regards the final sentence, it is unclear how the results form the present study support a biopsychosocial model. Please rewrite the final sentence.

Response: We replaced the last sentence in the abstract based on your suggestion (page 2, line 51-54).

Comment 6:

It would be good to provide a definition of GI early on in the Introduction. For instance, such a definition can be added to the 2nd paragraph detailing prevalence figures.

Response: As you suggested, we added the information about prevalence of GI symptoms (page 3, line 66-73).

Comment 7:

Data were collected after the final exam period. Why was this time period chosen? Is the timing of the data collection related to the study findings? Is yes, why and in what ways? If no, why?
Response: Data was collected at the end of the semesters’ final exams. During final exams, students may perceive high stress that may relate to GI symptoms. Immediately after the final exams’ times are convenient to take survey questions for students. We added this information (page 5, line 111-113).

Comment 8:

The PSS asks questions relating to the overall life situation and is not specific for the educational context. This means that the stresses and strains reported by students may relate to issues outside college. Thus the Authors need to provide a rationale for why the PSS is linked to the educational context and academic demands (and not to other aspects of life).

Response: Although we focus on educational setting, we know that nursing students expose various stressors from academic demands as well as their life events. The perception of threat arises when the demands are perceived to exceed students’ ability to cope, irrespective of the source, the intensity or the number of stressful events. Thus, recently, perceived stress that appears as threatening is considered to be the most predictive factor for GI symptoms. PSS is a scale with established reliability and validity and examined the relationship with biological or verified disease outcomes. Thus we rewrote the introduction (page 4, line 87-91).

Comment 9:

In view of the time period (3 months) and GI symptoms included in the measure, it is perhaps normal that 65% of the students experienced more than one GI symptom? Is this so? Are the students having health problems or are they, in fact, fairly healthy?

Response: Yes, 65% of the students experienced more than one GI symptom. It is similar to other reports (page10 line222-228).

Comment 10: There are a number of minor grammatical errors and misspellings in the paper.

Response: We carefully reviewed the manuscript and then corrected spelling and grammatical errors.