Author’s response to reviews

Title: Impact of a narrative medicine programme on healthcare providers' empathy scores over time

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Version: 1 Date: 03 Dec 2016

Author’s response to reviews:

Dec 3, 2016

Editor

Dr. Christoph Nikendei, University Hospital Heidelberg, Germany

BMC Medical Education

Ms. Ref. No.: MEED-D-16-00604

Title: Impact of narrative medicine programme on healthcare providers' empathy: gender and seniority differences

Dear Professor Nikendei:

We respectfully submit our 2nd revised manuscript entitled “Impact of narrative medicine programme on healthcare providers' empathy: gender and seniority differences”. We thank the editor and reviewers for your very helpful comments and the revised manuscript has been markedly improved.
We have addressed each and every comment made by the reviewers. We have taken care to address all of the comments that we believe, enhance the quality of this manuscript. We hope the 2nd revised manuscript will finally meet the standards of the “BMC Medical Education“.

Again, we would like to express our gratitude for the critical review provided by the reviewers and editor and truly thank for their time and consideration. We look forward to hearing from you.

Sincerely yours,

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Reply to the reviewers’ comments (MEED-D-16-00604)

Original comments of the reviewer 1:

ABSTRACT:
Point #1: When writing 'competition program' choose programme to apply the term consistently.
Response:

We have revised the term consistently in this manuscript.

Point #2: Please provide the number of female participants in the abstract.

Response:

We have provided the number of female participants in the method section of the abstract. We have revised it through the paper in the method section of the abstract. “142 participants, (n=122 females)”

Point #3: When the authors write 'Empathy score increased after narrative medicine competition …' do they mean that physicians' empathy increased independent of subdivision (single vs. team group or overall empathy degree change of all participants)? Please state this more clearly.

Response:

We recognize and totally understand with reviewer’s confusion. We have revised and stated this more clearly in the Results. (p2, Results, line 3-12)

“Empathy score increased after narrative medicine programme and was sustainable for 1.5 years for all participants (from 111.1±15.0, n=110 to 116.2±16.1, n=100 and 116.0±15.2, n=90, p=0.025). Female participants had greater enhancement and sustainable on empathy (from 111.4±14.7, n=97 to 117.9±14.7, n=85 and 116.6±14.3, n=78, p=0.007), while the males had no significant difference. Most senior participants (114.7±14.9, n=58) had greater basal empathy scores than junior ones (105.5±14.8, n=42, p<0.005). Junior ones had immediate enhancement but less sustainability on empathy (from 105.5±14.8, n=42 to 115.9±16.1, n=41 and 108.3±16.2, n=33, p=0.010), while the most senior ones had sustainable effect on empathy although no statistic significance (from 114.7±14.9, n=58 to 118.2±16.8, n=45 and 119.4±12.7, n=51, p=0.225).”
BACKGROUND:

Point #4: The definition of physician empathy as a multidimensional concept involving cognitive and affective domains is written well. The authors describe that 'In a factor analysis study, 52% of the variance in patients' ratings of satisfaction with their medical care was accounted for by the physicians' level of interpersonal warmth and respect, which are among the features of physician empathy.' To link the statements, it might be worth including the specific domain of empathy (affective or cognitive?) of interpersonal warmth and respect.

Response:

We truly thank for the important and valuable criticisms by the reviewer. Empathy generally regarded as a multi-dimensional construct, comprising two main domains: an affective capacity to be sensitive to and concerned for another person; and a cognitive capacity to understand and appreciate the other person’s perspective. Interpersonal warmth and respect is more related to the affective capacity to be sensitive and concerned for others. We have revised our manuscript in the Background. (p4, 1st paragraph, line 17-18)

METHODS:

Point #5: Participants have been assigned into two groups (single vs. team), and the dependent variable (i.e. empathy) was measured over three time points (before, immediately after, 1.5 years after). Therefore, I think a Mixed Model ANOVA would be favorable over t-tests.

Response:

We recognize and totally agree with reviewer’s important concern. A mixed model ANOVA was used to compare continuous variables and statistical significance over three time points (before, immediately after, and 1.5 years after). Unpaired t-tests were used to compare corresponding variables. We have reanalyzed and revised the results in Results section and Table 2-4. The p values from ANOVA are added in the revised version. (p12, Data Analysis, line 1-3, p12 Statistical analysis, line 2-4)
Point #6: Which was the dose of Narrative medicine competition programme? (how many times? daily? Once per week? For how long?) Please state more detailed the application of the treatment programme.

Response:

The dose of narrative medicine programme was a continuous course for 2 months. The aim of the programme is for helping doctors and other paramedics to integrate the medical humanities into the medical environment, which they were familiar with, and for encouraging the medical staff of different specialties to learn and exchanging knowledge from each other in order to achieve the teaching effectiveness of holistic health care. (p7, 3rd paragraph, line 2-3)

Point #7: Please state the number of female participants in the 'Study Participants' Section.

Response:

We have stated the number of female participants. (p7, Methods, ‘Study participants’, line 1)

“142 participants, (n=122 females) ---“

Point #8: What was the group size of 'team groups'? Please state this more clearly.

Response:

They were divided into single (n=58, F: 50 females) and team groups (n=84, 72 females) for a period of 2 months. (p7, Methods, ‘Study participants’, line 5)

Point #9: Which was the number of junior, moderate seniority and most seniority participants?

Response:

The participants were also classified by seniority. The seniority was classified as junior [seniority less than 5 years, before the programme (n=58), immediately after the programme (n=45), and
one and a half years after the programme (n=51)] moderate seniority [seniority between 6-10 years, before the programme (n=10), immediately after the programme (n=14), and one and a half years after the programme (n=6)] and most seniority [seniority more than 10 years, before the programme (n=42), immediately after the programme (n=41), and one and a half years after the programme (n=33)]. (p11, 2nd paragraph, line 5-12)

Point #10: The narrative medicine competition programme is written well.

Response:

Thank you for reviewer’s comment.

Point #11: Which was the average age (SD) of physicians? Due to the fact that empathy increases with age (Ze O, Thomas P, Suchan B. Cognitive and affective empathy in younger and older individuals. Aging Ment Health. 2014;18(7):929-935.), the authors should provide the average age and standard deviation of the participants. If this is not possible, then I think this is a limitation of the study.

Response:

We truly thank for the important and valuable criticisms by the reviewer. This study did not record the actual ages of participants, only with the years of participants’ experience in medical education. We add the point as a limitation of this study. (p22, 1st paragraph, line 4-7)

“Thirdly, we only evaluate the seniority according to the years of participants’ experience in medical education, not the actual ages of the participants. Due to the fact that empathy increases with age [41], the factor of seniority on empathy changes in this study is limited.”
RESULTS:

Point #12: "However, statistically significant changes of empathy scores were only noted immediately after the competition in team group (p=0.048)." This appears to be the main finding of the paper?

Response:

The result section has been revised to orient the readers with headings. Please see the result section in p12–p15.

Point #13: Why did the authors not report test-statistics? In this section as well as in tables, the authors should report test statistics (i.e. F-value, p-value, Mean (SD). Please state the results in more detail.

Response:

The test-statistics are added and state the results in more detail. (p12–p15 Result section)

Point #14: To orient the readers it might be worth to introduce a further heading (e.g. 'Overall empathy degree change of participants' and 'Changes in empathy: gender and seniority differences.

Response:

The headings are added. (p12–p15 Result section)

Point #15: Why did the authors report only the total score? Why did the authors not provide results related to the different domains of empathy? I think it is important to distinguish between affective and cognitive empathy as the authors do in the background section. The authors should report if physicians increase their empathy in the cognitive or affective domain (or in both of them?).
Response:

We thank the reviewer for this well taken point. Empathy has been described as a multidimensional construct, comprising two main domains: an affective capacity to be sensitive to and concerned for another person; and a cognitive capacity to understand and appreciate the other person’s perspective. The JSE was developed to measure physicians’ empathy toward their patients. The scale is directed toward measuring the cognitive dimension of empathy. This is considered to be a weak point in using this scale to measure empathy. We have added the point into our study limitation. (p22, Line 7-15)

“Finally, we only report the total scores of JSE and did not provide the different domains of empathy, such as cognitive and affective domains. Empathy has been described as a multi-dimensional construct, comprising two main domains: an affective capacity to be sensitive to and concerned for another person; and a cognitive capacity to understand and appreciate the other person’s perspective [11]. The JSE was developed by Hojat [22, 42] to measure physicians’ empathy toward their patients, directing toward measuring the cognitive dimension of empathy. This is considered to be a drawback in using this scale to measure empathy. Thus, we could not really distinguish the change of empathy mostly related which domain is.”

DISCUSSION:

Point #16: 16) 'For medical students, although there may be increased empathy during early school years, significant declines are noted as well after entering the clinical phase when they have direct interact with patients.' There is some newer evidence: Roff S. (2015) Reconsidering the "decline" of medical student empathy as reported in studies using the Jefferson Scale of Physician Empathy- Student version (JSPE-S). Please adjust.

Response:

We greatly appreciate the valuable comment. We adjust and revise the description. (p15, 3rd paragraph, line 4-7, p16, 1st paragraph, line 1-9)

This is a valuable result to support some newer evidence [27] since most previous studies demonstrate significant downward trends in self-assessed empathy on residents in their clinical training [12]. For medical students, although there may be increased empathy during early school
years, significant declines are noted as well after entering the clinical phase when they have direct interact with patients [28, 29]. However, a newer literature research was conducted on MEDLINE in mid-2014 to identify studies reporting administrations of the Student version of JPSE (JSPE-S). The means of these studies from a dozen countries outside the USA consistently cluster round 75% out of the possible maximum of 140 unlike the early Jefferson studies (although the later Jefferson means are also<120) [27]. These observations may support Costa et al.’s [30] contention that “a latent growth model suggests that empathy of medical students does not decline over time”– or at least not significantly.

However, a newer literature research was conducted on MEDLINE in mid-2014 to identify studies reporting administrations of the Student version of JPSE (JSPE-S) from a dozen countries outside the USA, reconsidering the "decline" of medical student empathy as reported in studies using the JSPE-S [27]. Under the discrepancy, this is the theoretical base for the 18-month follow-up for empathy change post the programme. (p20, 2nd paragraph, line 9-13)

Point #17: There is evidence that females record higher scores on self-report measures of empathy. The authors should include this in the discussion section (e.g. Baron-Cohen S. Zero Degrees of Empathy).

Response:
We have added this reference in this discussion section in p19, 1st paragraph, line 1-2.

There is also evidence that females record higher scores on self-report measures of empathy [34].

Point #18: The authors should distinguish the different domains of empathy and report/ discuss the results correspondingly.

Response:
We thank the reviewer for this well taken point. Empathy has been described as a multi-dimensional construct, comprising two main domains: an affective capacity to be sensitive to and concerned for another person; and a cognitive capacity to understand and appreciate the other person’s perspective. The JSE was developed to measure physicians’ empathy toward their patients. The scale is directed toward measuring the cognitive dimension of empathy. This is
considered to be a weak point in using this scale to measure empathy. We have added the point into our study limitation. (p22, 1st paragraph, line 7-15)

Point #19: The authors cite Neumann et al. in order to demonstrate a significant downward trend in self-assessed empathy on residents in their clinical training. However, there is contradicting evidence (Roff S. (2015).

Response:
We greatly appreciate the valuable comment. Under the discrepancy, this is the theoretical base for the 18-month follow-up for empathy change post the competition. We adjust and revise the description as Point #16. (p15, 3rd paragraph, line 4-6; p16, 1st paragraph, line 1-9; p20, 2nd paragraph, line 9-13)

GENERAL RECOMMENDATION: Good points of the manuscript are the repeated measurements in order to observe the changes later on. However, there are some major revisions in methods and statistics as described above. The authors should analyze the data again using adequate statistical methods.

Response:
We greatly appreciate the valuable general comments and try the best to make the improvement. We have revised our manuscript as your points.

Original comments of the reviewer 2:

Point #1: A short description of teaching programmes other than the narrative medicine programme would be interesting.

Response:
We thank the reviewer for comments. We have revised Narrative medicine programme in more detail in p7 Narrative medicine programme section.
Methods

Point #2: The participants are of different health care professions, which is nevertheless an inhomogeneous group.

Response:

We truly thank for the important and valuable criticisms by the reviewer. A total of 142, including (n=122 females) participants consisting of physicians, traditional Chinese physicians, dentists, nurses and paramedical workers including pharmacists, medical technologists, physical therapists, respiratory therapists, and nutritionists of Chang Gung Memorial Hospital volunteered to attend the narrative medicine programme. This is an inhomogeneous group. The theoretic basis for dividing participants was based on inter-professional education [20]. (p7, Study participants section)

Point #3: The number of females is much higher than that of males, which is significant for the statistical comparison.

Response:

We recognize and totally agree with reviewer’s important concern. Most of the participants are female. However, I did not directly compare the difference between males and females. We used the mixed model ANOVA to compare continuous variables and statistical significance over three time points (before, immediately after, and 1.5 years after). We mainly survey the longitudinal empathy changes rather than direct comparison of empathy levels in different gender. However, this is a study limitation. We mention it in this discussion section. (p21, 2nd paragraph, line 1-8)

“Our study has several limitations. First, the subjects of our study are all self-selected and the number of females is much higher than that of males. In contrast with the general health professional population, they may in fact be more interested in reflection and empathic communication and may be more receptive to an empathy education programme. Thus, the changing trends of empathy we have observed may not represent that of general medical and health professional staffs. Additional studies are needed to explore a larger, non-volunteer and gender-balance sample of participants. In addition, matched comparison groups with real-life healthcare providers are also needed to detect more powerful differences.”
Point #4: A control group without intervention is missing.

Response:
This is a voluntary narrative medicine competition programme. A control group without intervention is missing. This is a study limitation. We mention it in this discussion section. (p21, 2nd paragraph, line 7-8)

In addition, matched comparison groups with real-life healthcare providers are also needed to detect more powerful differences.

Point #5: It is unclear how the decision was made for participating in single or team group.

Response:
This is a voluntary narrative medicine programme. Single or team group is in voluntary base.

Point #6: It would be valuable to include an example of a narrative case for the single and/or for the team group.

Response:
We have included an excerpt of a narrative medicine case. (p9-10)

When the beginning life meets the end

Excerpt:
“It was an ordinary day, like any other day. Mums’ crying due to the labour pain came out of the labour room from time to time. Patients who were scheduled for cesarean section surgeries were sent down from their ward one by one. Some pregnant women were waiting at the nursing station for check-up. The attending physicians came to do the ward round … after taking over the shifts, various kinds of staff (ward clerks, assistants, doctors, and nurses …) dashed to their
destinations like well-trained fighter planes. A busy day started. At that time, a man was pushing a wheelchair where was seated a pregnant mum with a big belly and painful expression on her face. “My wife seems going to deliver.” Our colleagues approached them, asked her the child-bearing history, and led the husband to help his wife have the exam on the exam table … “Head Nurse, could you help me check the heartbeat? I couldn’t find it.” The colleague came over here from the exam room. I went to assist but still could not hear the heartbeat, so I comforted the Mum who was having the labour pain by saying, “Please hold on for a second. We are asking the doctor to come here.” And then the Chief Resident and the attending physician came one after another in a hurry and they checked by ultrasound. “Indeed there’s no heartbeat!” Suddenly the exam room went into the silence. The mum and the husband also felt the unusual atmosphere, “What? What happened? What happened to my baby?” The attending physician replied difficulty, “Mum, the child has no heartbeat. It was gone.” … “How is this possible? I was feeling her moving this morning. She was kicking me. It’s impossible. Doctor, please have the operation right now. Have the operation and rescue the baby. Please hurry up … ” And then I heard the crying. “Mum, she has had no heartbeat. It’s impossible to rescue her by having the operation.” The attending physician tried to let the Mum realise that the fetus was dead in her womb. “Impossible! Daddy, how is this possible? How is this possible?” The husband seemed to understand the doctor’s explanation. “Mummy. It’s okay. It’s okay.” At that moment, we circled around the Mum, held her, and comforted her. However, all the way from the exam room to the labour room, she was still having the emotional breakdown and crying very hard …”

Point #7: Maybe add the JPE score as supplement?

Response:

The data are kept at the Chang Gung Medical Education Research Center, Chang Gung Memorial Hospital, Chang Gung University College of Medicine, Taipei, Taiwan. Any questions or requests regarding the data can be addressed to Chien-Da Huang (cdhuang@adm.cgmh.org.tw). (p24 Availability of data and materials)

Results

Point #8: 142 participants were noted but even before the intervention only 110 are scored. What happened to the other 32?
There are 142 participants for narrative medicine competition. There are 110 participants complete the JPE scales in voluntarily and anonymously. The response rate for the questionnaire was 77% (110/142). (p11 2nd paragraph)

Point #9: Female and male group are of quite different numbers, therefore statistical comparison should be made with limitation. The same applies to the numbers of the seniority groups.

Response:
We recognize and totally agree with reviewer’s important concern. Most of the participants are female. However, I did not directly compare the difference between males and females. We used the mixed model ANOVA to compare continuous variables and statistical significance over three time points (before, immediately after, and 1.5 years after). We mainly survey the longitudinal empathy changes rather than direct comparison of empathy levels in different gender. However, this is a study limitation. We mention it in this discussion section. (p21, Study limitations, 2nd paragraph, line 1-8)

The same applies to the numbers of the seniority groups. Junior ones had immediate enhancement but less sustainability on empathy (from 105.5±14.8, n=42 to 115.9±16.1, n=41 and 108.3±16.2, n=33, p=0.010), while the most senior ones had sustainable effect on empathy although no statistic significance (from 114.7±14.9, n=58 to 118.2±16.8, n=45 and 119.4±12.7, n=51, p=0.225).” We have revised it. (Abstract, p3, 1st paragraph, line 3-6)

Discussion
Point #10: The authors mention studies about loss of empathy during clinical work. It seems rather difficult to compare studies, which involve either medical students or doctors to the rather inhomogeneous group of different health care workers.
Response:

We truly thank for the important and valuable criticisms by the reviewer. A total of 142, including 122 female participants consisting of physicians, traditional Chinese physicians, dentists, nurses and paramedical workers including pharmacists, medical technologists, physical therapists, respiratory therapists, and nutritionists of Chang Gung Memorial Hospital volunteered to attend the narrative medicine programme. This is an inhomogeneous group. The theoretic basis for dividing participants was based on inter-professional education [20]. (p7, Narrative medicine programme)

Point #11: Different group numbers between female and male participants and groups of seniorities are important to mention in the discussion.

Response:

We discuss the different group numbers in Discussion as a limitation. Our study has several limitations. First, the subjects of our study are all self-selected and the number of females is much higher than that of males. (p21, 2nd paragraph, line 1-2)

We also discuss the different group number of seniority. Interestingly, moderate seniority showed an immediate decrease in empathy after the competition, but a dramatic enhancement in empathy one and a half years later. However, the uneven distribution of group number in seniority is noted. Different group numbers between groups of seniorities may be important factors to affect the dramatic enhancement in empathy. (p18, 2nd paragraph, line 10-14)