Author’s response to reviews

Title: Evaluation of Constructing Care Collaboration - Nurturing Empathy and Peer-to-Peer Learning in Medical Students who participate in Voluntary Structured Service Learning Programmes for Migrant Workers

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Author’s response to reviews:

Please kindly also refer to "Reply to Reviewers CCC 3_5_19" Document

Date 1/5/19

Dr Maureen E Kelly

BMC Medical Education

Dear Editor

Re: Review of manuscript “Evaluation of Constructing Care Collaboration - Nurturing Empathy and Peer-to-Peer Learning in Medical Students who participate in Voluntary Structured Service Learning Programmes for Migrant Workers”

On behalf of the co-authors, we are grateful to you and the reviewers for their kind review and critique of the manuscript. We have revised it and our responses to each of the comments are indicated in purple. Non-edited text is left in black.
Editor Comments:

1. Your manuscript addresses topics of relevance and importance: Service learning is a tool that can help medical schools to develop socially accountable medical students and future doctors; Migrant workers represent a vulnerable and marginalised community in many health care jurisdictions; Developing empathy and cultural competence are two important aspects of a medical students’ training, and Peer Assisted Learning is a very valuable pedagogy in medical education, both at undergraduate and post-graduate settings. Therefore your research should be of interest to a wide audience.

Theoretical background. In order to position this manuscript within the service learning literature I suggest that a more comprehensive summary of the literature on service learning is required in the introduction.

We thank you for the kind comments. We have revised our introduction to reference literature on service learning more comprehensively. In particular, Please see paragraph 2 of the introduction and references 3, 7, 8, 9, 10

“There are numerous structured volunteering programmes worldwide. These programmes when intentionally paired with learning or experiential objectives can be classified as service learning and yield benefits in medical education. While there are many forms of service learning, they generally share common traits of community service or experiential learning paired with some form of reflection.[3] In the healthcare setting, volunteering not only allows medical students to learn[4] and cultivate ideals like altruism[5], it also ignites interest in engendering a culture of community outreach[6, 7]. Following such programs, participants report positive changes in attitude toward patients eg older adults. [8] Several reports on service learning programs attribute these benefits to the nature of service learning programs such as exposure to a culturally different community that they otherwise would not have interacted with,[9] paired with allocated time for reflection.[10] Such experiences may hence prepare medical students for work in culturally diverse settings [11].”


2. At times there was inconsistency between terms - such as using volunteering (or volunteers for medical students) and service learning. There are important conceptual differences between service learning activities that receive academic credit and are part of a structured course, and student volunteering. The authors need to be clear on the meaning of the different terms and use them consistently throughout. This is important because one of the key aims of the study (page 7) is to explore how beneficial CCC was as a service learning platform.

For our manuscript, we describe volunteering programs when intentionally paired with learning or experiential objectives can be classified as service learning. We have clarified the status of CCC in our revised manuscript. CCC is a student led initiative. Medical student who volunteer do not receive any academic credits for their service.

In particular please refer to introduction (logistics)

“(introduction – Logistics) CCC is a student initiative by an Asian undergraduate medical school, the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine). All medical students from NUS Medicine including pre-clinical (years 1-2) and clinical (years 3-5) are invited to volunteer for CCC. Volunteers are selected to achieve a clinical to pre-clinical student ratio of roughly 1:1-2 and are paired in such a ratio. In the case of an overwhelming response, volunteers are selected at random. In NUS, each medical year consists of 300 students. Out of this, an estimate of about 60-80 volunteer for CCC (as of 2017). The number of volunteers are following an increasing trend. As CCC is a student led initiative, volunteers do not receive any academic credits for their service.
All volunteers are briefed on the workflow of the clinic and the structure of the program before each cycle begins. Equipment such as stethoscopes, torches, sphygmomanometers and clerking sheets are often brought by volunteer students or doctors. Transport to and from the clinics are self-arranged and paid for by volunteers.”

3. The aim of the study is very broad reaching and as currently worded is not strictly met by the study methods, as the data collection is really of student’s perceptions and self-evaluations of how the CCC impacted on their empathy, communication and peer to peer teaching skills. This is listed as a study limitation, but it may be better to re-consider this in the wording of the aims, so that what was actually done in the study is clear to the reader from the outset.

Thank you for highlighting this to us. The authors agree that determining changes in the volunteers perceptions and views towards migrant workers, communication skills and peer to peer teaching are in line with our studies aims rather than a study limitation

“This study aims to both quantitatively and qualitatively explore, through participants’ self evaluation and reflection, if and how CCC was beneficial as a service learning platform, in developing student participants’ empathy, social and cultural awareness, communication skills and peer-to-peer teaching skills. This study also aims to evaluate how CCC may inculcate students with a holistic and global perspective of serving other underprivileged sectors of society, beyond the local population in Singapore.”

4. It would also be important to provide more information about the CCC module itself for the reader – it appeared to be optional- but did it receive academic credit in any way? How was it assessed, if at all? How many hours duration was each session? How was the reflection conducted? And how was it recorded? Were the student peer leaders trained? Did the senior student work one a one to one, or one to two basis with junior students, or were their small groups? Was any member of medical school staff involved in over-seeing the module?

Medical student who volunteer do not receive any academic credits for their service. Each session last roughly 3 hours…. At the end of every session, group leaders lead a sit down discussion on the sessions' focus, sharing on volunteers’ experiences as well as teach relevant medical knowledge. Volunteers are selected to achieve a clinical to pre-clincial student ratio of
roughly 1:1-2 and are paired in such a ratio. No Medical school staff over-see this program but there are always fully registered volunteer doctors present who run the clinic present.

“(Program description) Migrant workers may start taking queue numbers from noon, Clinics begins at 3pm and stop giving queue numbers after 5pm. At the end of every session, group leaders lead a sit-down discussion on the sessions' focus, sharing on volunteers’ experiences as well as teach relevant medical knowledge… … (Logistics) Volunteers are selected to achieve a clinical to pre-clinical student ratio of roughly 1:1-2 and are paired in such a ratio. In the case of an overwhelming response, volunteers are selected at random. In NUS, each medical year consists of 300 students. Out of this, an estimate of about 60-80 volunteer for CCC (as of 2017). The number of volunteers are following an increasing trend. As CCC is a student led initiative, volunteers do not receive any academic credits for their service.

5. More information on the mixed methods study design and choice of design is required. I refer the authors to one of the standard texts on Mixed Methods Research (such as Creswell, John W., and Vicki L. Plano Clark. Designing and conducting mixed methods research. Sage publications, 2017) for further information.

Thank you for your recommendation of texts! We have elaborated further on our mixed methods study design and choice of design in our revised manuscript.

“In reference to the method of thematic analysis as outlined by Braun and Clarke,[17] we employed thematic analysis to make sense of our qualitative data set. We reviewed our transcribed interviews and generated codes for both the surface and underlying meanings relevant to the role of service learning in volunteer development and medical education. We then derived broader themes based on these codes. To cite examples of how we went about with our thematic analysis, we noted that participants reported that they saw benefits of peer to peer teaching such as it being a platform for (1) knowledge consolidation, (2) knowledge reinforcement, and (3) the promotion of a culture of peer to peer teaching in the service learning project. These codes were then categorised under the theme of peer to peer teaching. In a similar vein, we noted that participants reported that this service learning project (1) enhanced their understanding of the Migrant Workers’ lives, and (2) provided them with a platform to practice empathy. These codes were then categorised under the broader theme of empathy, helping us to make sense of how a service learning project like ours could nurture empathy in our participants (Refer to Table 4, below).”
6. More information is required on the participants. Were those who completed the questionnaire, also interviewed? They need not necessarily be, but the reader needs to know. Reviewer 1 has made some further points re recruitment. More information is required re the interviews- who conducted them, how long did they last, were they in person, who coded them? Please reference the thematic analysis technique you used.

Participants who were interviewed also completed the questionnaire. Participants were interviewed by the authors of this article (SYE, TCLT, TCK, SJS). Each interview was conducted face to face in person in a private environment, with each interview lasting approximately 30 minutes. The interviews were then coded by the authors of this articles.

“(from Methods – Qualitative interviews) Participants whom were interviewed also completed the quantitative questionnaires. Participants to be interviewed were selected to ensure adequate representation of volunteers from pre-clinical and clinical years. Participants shared their experience about the processes and takeaways in CCC. Their perspective on whether and how they felt CCC benefited them were also explored. Participants were interviewed by the authors of this article (SYE, TCLT, TCK, SJS). Each interview was conducted face to face in person in a private environment, with each interview lasting approximately 30 minutes. The interviews were then coded by the authors of this articles. Interviews were transcribed for later analysis.”

7. I also agree that the qualitative data could have been presented more interestingly in a narrative format, supported by the table.

As recommended by the editor and both reviewers, we have integrated and the qualitative date into a narrative format and have indeed found it to be a more interesting and engaging read.

From (Discussion):

“Improved Empathy and Minimising costs

The benefits from volunteering in CCC described by participants through the FIPSE highlights the extent that CCC succeeds as a service learning initiative. As a student led initiative that leverages and seeks to enhance ongoing community clinics, the reported benefits were achieved
at minimal financial (mainly transportation costs borne by participants) and manpower cost. The utilisation of volunteer manpower is consistent with other studies in maintaining low cost while ensuring effectiveness of their programs and benefit for all stakeholders. [18, 19] Similar to findings on medical students hospice volunteers, CCC provides additional benefit to the institution/community clinics as they provide a steady stream of volunteers without the cost of the necessary outreaching and community recruitment.[20] Hence, by linking to pre-existing community clinics, CCC is highly replicable in many countries with accessible clinics for both patients and participants. From both the quantitative and qualitative data, there are promising results that support that participation in CCC improved volunteers’ empathy. For example, one of our participant reported that participating in CCC “... taught (him) to be a better listener and … not to have any pre-formed judgments, so that (he could) take in not just what their medical complaints are but also their stories, and so ... absorb the migrant mentality better.” (Quotation 2, also refer to Quotations 1-3 in Table 4) This is in line with similar studies of structured continuous service learning, which demonstrated that such models can improve empathy (defined by willingness to serve underprivileged communities). For example, in a study by Jones et al, participants’ willingness to serve underprivileged communities increased to from 34% to 70% compared to the batch before them. [21]. We similarly hope that by nurturing empathy, a culture of service can be inculcated and reinforced in our participants.

Improved FIPSE and Communication Skills

We compared CCC to other studies- a local service-learning program on health screenings, and another on community medicine in Taiwan [16], in which participants reported marked benefit from the FIPSE Survey instrument ability scale. CCC FIPSE scores are comparable or even higher than another local service learning program that has fared well. [12] This could be due to a CCC’s emphasis on structured reflection, discussion and learning, as other studies conducted reflection on an ad hoc basis.

Participants in CCC also reported increased confidence levels and improved communication skills in talking to strangers and patients, with one of our participants reflecting that CCC has taught her to “(find) ways to explain things in a very simplistic manner, … (and) to be creative”. Our participants employed various strategies to enhance communication, through “(drawing) … on a piece of paper”, “changing… tone”, “code (switching)”, and “breaking down ... questions into simple words”. (Quotations 12-14, Table 4). Both this study and the service-learning program in Taiwan attributed the immersive nature of exposure, interaction with their communities and structured tasks as key reasons for improved communication skills. Communication, essential in the therapeutic relationship, increases patient satisfaction [22]. However, populations with limited English-speaking abilities, can receive compromised care
because of English-predominant conversation, highlighting healthcare providers’ decreased awareness of the language barrier [23]. CCC was able to overcome such barriers as volunteers tailored verbal and non-verbal communications toward the migrant population.

Improved Cultural Awareness

In addition, since construction workers also come from different cultures, CCC provided the platform for them to develop cultural sensitivity and appreciation for differing health seeking behaviours. One male participant reported that he realised that many migrant workers “(came) to get medical services from CCC, because they feel that they are unable to get good medical services from their company doctor, … And so in the future, when (he treats) migrant workers, when (the patient) is very anxious, (he wouldn’t) think that he is trying to get out of work”, as he “(knows) where this anxiousness comes from, why he feels that the company doctor can't relate to him, that his company doctor isn't treating him well.” (Quotation 8, also refer to Quotations 4-10 in Table 4) If local healthcare providers have can increase their understanding of the migrant workers’ culture and health seeking perspectives, this could improve the care migrant workers receive [24].

Improved Empathy

Participants also feel that CCC allowed them to practice empathy realistically. In many medical school, students practice of empathy with Simulated Patients (SP), which may be limited. By allowing students to interact with migrant workers, it bridges the gap between theory and practice. Empathy is not only positively associated with clinical competence [25], it also improves patient outcomes. Participants in CCC felt that from this exposure to an underprivileged population, they were more accepting and understanding of the migrant workers, and more aligned with the needs of the community. One participant commented that each CCC session allowed her to “(look) at the world from a very different point of view”, where she would “try to understand what (the migrant workers were) going through,… (and) try to put (herself) in their shoes and try to think how (she) would be like if (she) were in their position to work for such long hours, not having much freedom… Being away from family and so on” (Quote 1, Table 4) By forming bonds on the ground and emphasizing on the similarities rather than differences between the volunteers and the migrant workers, this could de-emphasize a sense of self-importance and build connection and understanding, which would greatly aid in developing empathy. Additionally, many participants were inspired by the seniors’ teaching and sharing of their own experiences. From this we have learnt that peer-to-peer teaching and learning can possibly also play a role in boosting empathy in medical students.
Improved Social Awareness

Participants in CCC have also developed a greater awareness of how social situations affect health. This was probably achieved through 2 mechanisms: a focus on social history taking in CCC, and an immersive environment of seeing first-hand the living conditions of these migrant workers and its impact on their health. One participant commented that CCC allowed him to “(humanize) a person or a certain stereotype that (he had). (He could) really do that when (he) actually (went) and (talked) to the person and (asked) them about their background, about their family, about things that (he could) identify with in (his) own life. When (he did) that, (he could see them)... as a brother, as a son, as a father, (which) really helps bridge that human connection,...” (Quotations 4-10, Table 4) Many participants have reflected that the migrant workers require a more personalised process of medical treatment, tailored to their social background and limitations on their lifestyles. A study in Germany by Keifenheim of 42 medical students in a peer-assisted history-taking course showed that interaction with a real patient, and taking history taking resulted in marked improvement in identifying and dealing with their emotional and social issues.[26] In our study, participants reflected for the need to have a deeper understanding and empathy for migrant workers, especially in the standard medical care system (eg. in hospitals and polyclinics), given their unique socio-economic circumstance. Both Keifenheim’s paper and CCC has shown that the 2 factors of having an immersive experience with a real patient, and a focus on social history taking has led to a greater awareness of social issues in relation to health.

Additionally, CCC has also shown to develop greater awareness of other underprivileged communities and deepen the participants’ understanding of society and varying worldviews. This was mainly achieved through allowing the participants to interact with the migrant community in a safe and natural environment, where both the participant and the migrant worker are both very willing to share their experiences with each other. The reflection participants did at the end of the session and by themselves after the interaction also contributed to the development of a greater awareness of the community and helped them translate it into greater awareness of other communities. Similarly, in a Pittsburgh study of occupational therapy students participating in a service learning project with marginalised communities, students who were given the opportunity to interact with and learn from an underprivileged community in a natural context were able to gain a deeper understanding of the community they served and practice it within and beyond the community.[27] Although this project had a longer time frame, and more sessions with the community they served, the factors identified contributing to the development of a larger worldview was that of the sharing of experiences by the community and the natural context the project was set in. This is similar to the experience the participants had at CCC. This will serve the participants well when they encounter other underprivileged communities in the future, as students or as medical professionals. Patients will also benefit from dealing with
healthcare professionals that have a deeper awareness of their situation, and hence be rendered more personalised and effective care.

Peer-to-peer teaching

Participants felt positively about peer-to-peer teaching and many felt this was a safe environment to do so. Seniors benefited by being able to consolidate their knowledge, add meaning to their experiences and clarify their own understanding. Juniors enhanced their knowledge and understanding through thematic and opportunistic discussions. Peer-to-peer teaching not only enhanced senior-junior interaction, but the learning of both parties involved. One participant reported that teaching helped her to “consolidate what (she) learned and (she thought was) also a good way to communicate with more juniors as well. (Teaching consolidated her) knowledge”, and being taught benefited her understanding as “both (were) both medical students. (Quotation 19, also Quotations 17-23) In a systematic review paper of peer-to-peer teaching in clinical education [27], it was found to be an effective educational intervention that aids learning. In our study, some seniors reported a sense of responsibility towards teaching their juniors when opportunities were presented to them, and juniors felt more motivated to teach their peers in the future. This creates a culture of collaboration and sharing of knowledge, enhancing each student's learning experience.”

Lorraine Mc Ilrath (Reviewer 1):

I greatly enjoyed reading this paper and believe that it is well written and structured. An excellent foundation in terms of the CCC Programme is described. This approach gives the reader a good and strong overview as to the rationale and modus operandi of the service learning engagement with the community.

1. Firstly, why was a mixed method approach adopted and retained, particularly when only 38 people participated in the quantitative side of the research process? Does this represent a statistically sound set of results? Why did so few (half) not attend the final session? Were there commitment issues?

The paper requires a stronger rationale for a mixed methods approach. I feel that justification for quantitative approach is weak given the number of returns and the results could be questioned in terms of their soundness and accuracy. Perhaps it could be stated that a mixed method approach was initiative but due to the low number of quantitative returns that a qualitative approach was then adopted for a number of reasons - perhaps more reflection on the research process, rationale, challenges encountered etc. This would give greater depth to the paper. The research
process is never perfect and the reader is interested in hurdles encountered along the way and how these are handled.

Quantitative methods were initiated but lower than expected returns made analysis difficult. While efforts are taken to avoid planning sessions during examination periods, the last sessions of the CCC programme unfortunately tends to coincide with the period of time leading to the medical students examinations where students may focus more on studies than extra-curricular activities. Hence a smaller number of participants were available on the last session to contribute to the quantitative data. Nonetheless, it provided some information that the authors felt meaningful to evaluate the program and share.

“(Methods Quantitative questionnaire) Quantitative methods was initiated but lower than expected returns made analysis difficult……(limitations of study) . The sample size of our study population was small for the quantitative aspects of our study. This was largely a result of both the number of students who participated in CCC programme and the attendance at the last session when we carried out the survey. While efforts are taken to avoid planning sessions during examination periods, the last sessions of the CCC programme unfortunately tends to coincide with the period of time leading to the medical students examinations where students may focus more on studies than extra-curricular activities.”

2. What might have the non-attending students have stated? More reflection here would enhance the paper.

“(Limitations of study) Unfortunately, we are unable to assess the views of participants that missed their last session of CCC. It may be possible that such students who prioritised exam preparation over their last session may not have felt they have benefited as much. Anecdotally, however, many participants who completed one cycle of CCC, both those who attended and did not attend their last cycle, do continue to volunteer with CCC adhoc or in the next cycle.”

3. The qualitative side I feel is richer, but I feel that the data has not been reported on in a deep and meaningful way. Also, it is a missed opportunity not to include the student qualitative quotations within the actual paper rather than an add-on as an appendix to illuminate the theme that derived from the data. This would provide a narrative that feels alive, deep, rich and would help illuminate complexity in terms of themes.
As recommended by the editor and both reviewers, we have integrated and the qualitative date into a narrative format and have indeed found it to be a more interesting and engaging read.

From (Discussion):

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The benefits from volunteering in CCC described by participants through the FIPSE highlights the extent that CCC succeeds as a service learning initiative. As a student led initiative that leverages and seeks to enhance ongoing community clinics, the reported benefits were achieved at minimal financial (mainly transportation costs borne by participants) and manpower cost. The utilisation of volunteer manpower is consistent with other studies in maintaining low cost while ensuring effectiveness of their programs and benefit for all stakeholders. [18, 19] Similar to findings on medical students hospice volunteers, CCC provides additional benefit to the institution/community clinics as they provide a steady stream of volunteers without the cost of the necessary outreaching and community recruitment.[20] Hence, by linking to pre-existing community clinics, CCC is highly replicable in many countries with accessible clinics for both patients and participants. From both the quantitative and qualitative data, there are promising results that support that participation in CCC improved volunteers’ empathy. For example, one of our participant reported that participating in CCC “… taught (him) to be a better listener and … not to have any pre-formed judgments, so that (he could) take in not just what their medical complaints are but also their stories, and so … absorb the migrant mentality better.” (Quotation 2, also refer to Quotations 1-3 in Table 4) This is in line with similar studies of structured continuous service learning, which demonstrated that such models can improve empathy (defined by willingness to serve underprivileged communities). For example, in a study by Jones et al, participants’ willingness to serve underprivileged communities increased to from 34% to 70% compared to the batch before them. [21]. We similarly hope that by nurturing empathy, a culture of service can be inculcated and reinforced in our participants.

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4. I think 17 qualitative interviews are a more than adequate number for a qualitative study despite what is stated in the limitations section on the number interviewed - see page 17.

Thank you for your feedback! We have amended our wording accordingly.
“(methods – Data Qualitative data collection ceased once data saturation was reached at the 15th interview, but 2 more interviews were conducted to confirm that there were no further new themes that could be elicited.”

5. What is FIPSE? Perhaps I missed out on this description.

“(Methods – Quantitative questionnaire) In an attempt to assess the quality of CCC as a service learning platform, we adopted questions from the Fund for the Improvement of Postsecondary Education (FIPSE) survey instruments.[15] We adopted the Ability Scale which was designed for an Asian population in Taiwan [16] As it subjectively evaluates skills acquired from service learning projects and also allows for comparison with other projects previously studied. The questionnaire is a self-evaluation of participants’ gains in the areas of 1) Leadership skills, 2) Communication Skills, 3) Teamwork, 4) Ability to see consequences, 5) Critical thinking skills, 6) Ability to identify social issues, 7) Action skills, 8) Gaining of knowledge, 9) Application of knowledge. Additional questions were designed to obtain participants’ opinions on peer-to-peer teaching by their fellow student seniors in CCC and to assess specific gains in skills to communicate with migrant workers. (Appendix 1).”

6. Terms such as students and volunteers are used interchangeably. I suggest omitting the word volunteer and volunteering as this is NOT a volunteer programme as students are using their academic knowledge and attaining credit for the engagement. Perhaps at the outset a programmatic definition of service learning might help and position the student within this realm.

Apologies for the confusion, in the CCC program, Medical student who volunteer do not receive any academic credits for their service. CCC is a student-led service learning initiative that was started by medical students in 2013 to involve medical students in learning about and serving migrant communities. We have tried to clarify this in our revised draft.

“(introduction – Logistics) CCC is a student initiative by an Asian undergraduate medical school, the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine). All medical students from NUS Medicine including pre-clinical (years 1-2) and clinical (years 3-5) are invited to volunteer for CCC. Volunteers are selected to achieve a clinical to pre-clinical
student ratio of roughly 1:1-2 and are paired in such a ratio. In the case of an overwhelming response, volunteers are selected at random. In NUS, each medical year consists of 300 students. Out of this, an estimate of about 60-80 volunteer for CCC (as of 2017). The number of volunteers are following an increasing trend. As CCC is a student led initiative, volunteers do not receive any academic credits for their service.”

7. Page 7 lines 15-24 - I am confused as to the method of recruitment perhaps it is because I am not part of the medical field, but I do think greatly clarity could be offered here.

All medical students from NUS Medicine including pre-clinical (years 1-2) and clinical (years 3-5) are invited to volunteer for CCC. Out of this, an estimate of about 60-80 volunteer for CCC. Members of CCC who were present at the final session of their cycle in 2015-16 were invited to participate in the quantitative survey.

“(Introduction – Logistics) All medical students from NUS Medicine including pre-clinical (years 1-2) and clinical (years 3-5) are invited to volunteer for CCC. Volunteers are selected to achieve a clinical to pre-clinical student ratio of roughly 1:1-2 and are paired in such a ratio. In the case of an overwhelming response, volunteers are selected at random. In NUS, each medical year consists of 300 students. Out of this, an estimate of about 60-80 volunteer for CCC (as of 2017)....... (methods – Inclusion criteria) Members of CCC who were present at the final session of their cycle in 2015-16 were invited to participate in the quantitative survey”

Maria van den Muijsenbergh (Reviewer 2):

1. Background.

= specify the kind of volunteer projects you are comparing with

= provide info on Singapore and its migrant population as well as the medical curriculum at the start of the paper

= include information / literature about the importance of empathy and cultural competences, what they include, how they can be improved and to what extent a self-assessment reflects behaviour
regarding the project itself: what exact task / responsibilities did the students have? Were interpreters involved? If so, how were they involved and did the students get training in discussions with an interpreter, if not how did they address language barriers?

= add your research questions

The volunteer projects available in literature range greatly owing to the diversity of cultures and the underprivileged communities they serve. We have, however, refined our definition of the various forms of service learning to having shared traits of community service or experiential learning paired with some form of reflection. We hope that this may give the readers some form of context when service learning is mentioned.

“(Introduction – background) There are numerous structured volunteering programmes worldwide. These programmes when intentionally paired with learning or experiential objectives can be classified as service learning and yield benefits in medical education”

2. Methods

= elaborate a bit on how you developed the questionnaire, what item of the Fipse did you contain, what new items did you add, based on what

= describe the method for recruitment of the respondents to the qualitative part (should be purposeful striving for diversity)

= I do not understand the total number of respondents you mention; it looks like the 17 qualitative respondents are not from the group of quantitative respondents, but that seems undesirable to me

= how did you develop the topic list for the interviews

We adopted the Ability Scale which was designed for an Asian population in Taiwan as it subjectively evaluates skills acquired from service learning projects and also allows for comparison with other projects previously studied. Participants whom were interviewed also completed the quantitative questionnaires. Participants to be interviewed were selected to ensure adequate representation of volunteers from pre-clinical and clinical years. Topics for the interviews were discussed and selected by the authors based on the aim of this study and likely
areas which CCC may address, open questions were purposely included to allow capture of themes outside the topic lists.

“(Methods – Quantitative questionnaire) In an attempt to assess the quality of CCC as a service learning platform, we adopted questions from the Fund for the Improvement of Postsecondary Education (FIPSE) survey instruments.[15] We adopted the Ability Scale which was designed for an Asian population in Taiwan [16] As it subjectively evaluates skills acquired from service learning projects and also allows for comparison with other projects previously studied. The questionnaire is a self-evaluation of participants’ gains in the areas of 1) Leadership skills, 2) Communication Skills, 3) Teamwork, 4) Ability to see consequences, 5) Critical thinking skills, 6) Ability to identify social issues, 7) Action skills, 8) Gaining of knowledge, 9) Application of knowledge. Additional questions were designed to obtain participants' opinions on peer-to-peer teaching by their fellow student seniors in CCC and to assess specific gains in skills to communicate with migrant workers. (Appendix 1).”

“(Methods – Qualitative interviews) Participants whom were interviewed also completed the quantitative questionnaires. Participants to be interviewed were selected to ensure adequate representation of volunteers from pre-clinical and clinical years”

3. Results and Discussion

= table 1 is in fact table 2 (characteristics): this table 2 is not very clear especially not when it comes to the figures between brackets referring to percentages: of what?

= the description of results is definitely insufficient: you should say a bit more about the answers regarding different items of the questionnaire, and make text of your qualitative results; quotations can be put in a box (they are interesting indeed) , but you should not only sum up the topics but show us your analysis and provide in-depths inside in the different views of the students regarding these topics and relate them to your research questions and the topics of empathy and cultural competence (e.g. to knowledge, attitude and intercultural communication skills),

Discussion

= here the text about comparison with other volunteer projects can be shortened and instead you should provide more information about your data in relation to existing studies on improving / teaching empathy and cultural competences, referring to broader international literature.
Thank you for your feedback! We have edited the results and discussion as the comments of the editor and both reviewers.

For table 2 we have edited the title of the column with the figures and brackets to “Total No who agree with the statement. (% of responses)” for better clarity.

From (Discussion):

“Improved Empathy and Minimising costs

The benefits from volunteering in CCC described by participants through the FIPSE highlights the extent that CCC succeeds as a service learning initiative. As a student led initiative that leverages and seeks to enhance ongoing community clinics, the reported benefits were achieved at minimal financial (mainly transportation costs borne by participants) and manpower cost. The utilisation of volunteer manpower is consistent with other studies in maintaining low cost while ensuring effectiveness of their programs and benefit for all stakeholders. [18, 19] Similar to findings on medical students hospice volunteers, CCC provides additional benefit to the institution/community clinics as they provide a steady stream of volunteers without the cost of the necessary outreaching and community recruitment.[20] Hence, by linking to pre-existing community clinics, CCC is highly replicable in many countries with accessible clinics for both patients and participants. From both the quantitative and qualitative data, there are promising results that support that participation in CCC improved volunteers’ empathy. For example, one of our participant reported that participating in CCC “... taught (him) to be a better listener and … not to have any pre-formed judgments, so that (he could) take in not just what their medical complaints are but also their stories, and so ... absorb the migrant mentality better.” (Quotation 2, also refer to Quotations 1-3 in Table 4) This is in line with similar studies of structured continuous service learning, which demonstrated that such models can improve empathy (defined by willingness to serve underprivileged communities). For example, in a study by Jones et al, participants’ willingness to serve underprivileged communities increased to from 34% to 70% compared to the batch before them. [21]. We similarly hope that by nurturing empathy, a culture of service can be inculcated and reinforced in our participants.

Improved FIPSE and Communication Skills

We compared CCC to other studies- a local service-learning program on health screenings, and another on community medicine in Taiwan [16], in which participants reported marked benefit from the FIPSE Survey instrument ability scale. CCC FIPSE scores are comparable or even higher than another local service learning program that has fared well. [12] This could be due to
a CCC’s emphasis on structured reflection, discussion and learning, as other studies conducted reflection on an ad hoc basis.

Participants in CCC also reported increased confidence levels and improved communication skills in talking to strangers and patients, with one of our participants reflecting that CCC has taught her to “(find) ways to explain things in a very simplistic manner, … (and) to be creative”. Our participants employed various strategies to enhance communication, through “(drawing) … on a piece of paper”, “changing… tone”, “code (switching)”, and “breaking down ... questions into simple words”. (Quotations 12-14, Table 4). Both this study and the service-learning program in Taiwan attributed the immersive nature of exposure, interaction with their communities and structured tasks as key reasons for improved communication skills. Communication, essential in the therapeutic relationship, increases patient satisfaction [22]. However, populations with limited English-speaking abilities, can receive compromised care because of English-predominant conversation, highlighting healthcare providers’ decreased awareness of the language barrier [23]. CCC was able to overcome such barriers as volunteers tailored verbal and non-verbal communications toward the migrant population.

Improved Cultural Awareness

In addition, since construction workers also come from different cultures, CCC provided the platform for them to develop cultural sensitivity and appreciation for differing health seeking behaviours. One male participant reported that he realised that many migrant workers “(came) to get medical services from CCC, because they feel that they are unable to get good medical services from their company doctor, … And so in the future, when (he treats) migrant workers, when (the patient) is very anxious, (he wouldn’t) think that he is trying to get out of work”, as he “(knows) where this anxiousness comes from, why he feels that the company doctor can't relate to him, that his company doctor isn't treating him well.” (Quotation 8, also refer to Quotations 4-10 in Table 4) If local healthcare providers have can increase their understanding of the migrant workers’ culture and health seeking perspectives, this could improve the care migrant workers receive [24].

Improved Empathy

Participants also feel that CCC allowed them to practice empathy realistically. In many medical school, students practice of empathy with Simulated Patients (SP), which may be limited. By allowing students to interact with migrant workers, it bridges the gap between theory and practice. Empathy is not only positively associated with clinical competence [25], it also
improves patient outcomes. Participants in CCC felt that from this exposure to an underprivileged population, they were more accepting and understanding of the migrant workers, and more aligned with the needs of the community. One participant commented that each CCC session allowed her to “(look) at the world from a very different point of view”, where she would “try to understand what (the migrant workers were) going through,... (and) try to put (herself) in their shoes and try to think how (she) would be like if (she) were in their position to work for such long hours, not having much freedom... Being away from family and so on” (Quote 1, Table 4) By forming bonds on the ground and emphasizing on the similarities rather than differences between the volunteers and the migrant workers, this could de-emphasize a sense of self-importance and build connection and understanding, which would greatly aid in developing empathy. Additionally, many participants were inspired by the seniors’ teaching and sharing of their own experiences. From this we have learnt that peer-to-peer teaching and learning can possibly also play a role in boosting empathy in medical students.

Improved Social Awareness

Participants in CCC have also developed a greater awareness of how social situations affect health. This was probably achieved through 2 mechanisms: a focus on social history taking in CCC, and an immersive environment of seeing first-hand the living conditions of these migrant workers and its impact on their health. One participant commented that CCC allowed him to “(humanize) a person or a certain stereotype that (he had). (He could) really do that when (he) actually (went) and (talked) to the person and (asked) them about their background, about their family, about things that (he could) identify with in (his) own life. When (he did) that, (he could see them)... as a brother, as a son, as a father, (which) really helps bridge that human connection,...” (Quotations 4-10, Table 4) Many participants have reflected that the migrant workers require a more personalised process of medical treatment, tailored to their social background and limitations on their lifestyles. A study in Germany by Keifenheim of 42 medical students in a peer-assisted history-taking course showed that interaction with a real patient, and taking history taking resulted in marked improvement in identifying and dealing with their emotional and social issues.[26] In our study, participants reflected for the need to have a deeper understanding and empathy for migrant workers, especially in the standard medical care system (eg. in hospitals and polyclinics), given their unique socio-economic circumstance. Both Keifenheim’s paper and CCC has shown that the 2 factors of having an immersive experience with a real patient, and a focus on social history taking has led to a greater awareness of social issues in relation to health.

Additionally, CCC has also shown to develop greater awareness of other underprivileged communities and deepen the participants’ understanding of society and varying worldviews. This
was mainly achieved through allowing the participants to interact with the migrant community in a safe and natural environment, where both the participant and the migrant worker are both very willing to share their experiences with each other. The reflection participants did at the end of the session and by themselves after the interaction also contributed to the development of a greater awareness of the community and helped them translate it into greater awareness of other communities. Similarly, in a Pittsburgh study of occupational therapy students participating in a service learning project with marginalised communities, students who were given the opportunity to interact with and learn from an underprivileged community in a natural context were able to gain a deeper understanding of the community they served and practice it within and beyond the community.[27] Although this project had a longer time frame, and more sessions with the community they served, the factors identified contributing to the development of a larger worldview was that of the sharing of experiences by the community and the natural context the project was set in. This is similar to the experience the participants had at CCC. This will serve the participants well when they encounter other underprivileged communities in the future, as students or as medical professionals. Patients will also benefit from dealing with healthcare professionals that have a deeper awareness of their situation, and hence be rendered more personalised and effective care.

Peer-to-peer teaching

Participants felt positively about peer-to-peer teaching and many felt this was a safe environment to do so. Seniors benefited by being able to consolidate their knowledge, add meaning to their experiences and clarify their own understanding. Juniors enhanced their knowledge and understanding though thematic and opportunistic discussions. Peer-to-peer teaching not only enhanced senior-junior interaction, but the learning of both parties involved. One participant reported that teaching helped her to “consolidate what (she) learned and (she thought was) also a good way to communicate with more juniors as well. (Teaching consolidated her) knowledge”, and being taught benefited her understanding as “both (were) both medical students. (Quotation 19, also Quotations 17-23) In a systematic review paper of peer-to-peer teaching in clinical education [27], it was found to be an effective educational intervention that aids learning. In our study, some seniors reported a sense of responsibility towards teaching their juniors when opportunities were presented to them, and juniors felt more motivated to teach their peers in the future. This creates a culture of collaboration and sharing of knowledge, enhancing each student's learning experience.”