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Perceived teaching quality between near-peer and academic tutors in an osteopathic practical skills class.

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ABSTRACT

Background

Near-peer teaching (NPT) has been reported in a number of teaching programs across different health professions. The utilisation of near-peer teaching in a teaching program has been demonstrated as beneficial for the student, the near-peer tutor and the teaching institution. The literature reports that students evaluate near-peer teaching as comparable to faculty teaching. The use of near-peers with academic tutors in the same classroom and utilising near-peer teaching for an extended period is unreported in osteopathy and limited in the broader literature.

Objective

This study aimed to investigate the quality ratings of the academic tutors and near-peer tutors teaching in the same classroom, over a semester.

Design

Questionnaire-based study using the Practical Class Teaching Questionnaire (PCTQ).

Setting

Osteopathic practical skills laboratory.

Methods

The PCTQ is a 9-item teaching quality tool developed for this study. Students were asked to rate the academic tutors (ATs) and near-peer tutors with the PCTQ at week 5 and week 12 of a 12-week semester. Descriptive and inferential statistics were used to investigate differences between the tutor types and differences between administration times.

Participants

Students in the first year of the osteopathy program at Victoria University

Results

Statistically significant differences in mean ratings ($p<0.05$) between tutor types were noted at week 5. These differences had largely been ameliorated by week 12. There is a strong relationship between the total PCTQ and a global rating of teaching quality.

Conclusions

Teaching quality of near-peer tutors and ATs is comparable at the end of a 12-week teaching period in a first year osteopathic practical skills subject. Although the mean near-peer tutors ratings were lower than the ATs at week 5, with increasing experience and confidence of the near-peer tutors these differences largely resolved by week 12. NPT should be considered for osteopathic practical skills subjects in the early years of the training program.

INTRODUCTION

The ever-changing educational environment necessitates academics to review and develop curricula as part of their roles. Academics and program administrators design teaching programs to respond to a host of factors ranging from epistemological considerations and policy changes to staffing and enrolment numbers. One such review of a unit in the osteopathy program at Victoria University led to the implementation of near-peer teaching (NPT) to resolve the key drivers of instituting a learner-centred approach, adapting to changing student demand and learner and staffing profiles whilst improving the quality of learning for the learners, the teaching experience for facilitators and instituting evidence-based teaching practice.

Peer-assisted learning (PAL) refers to a learning process that occurs between people from a similar group who are not experts or teachers in the area. It may therefore include both peers and near-peers in the learning process and as such there is some overlap in the terminology associated with peer learning and teaching.[1] Peer teaching (PT) is defined as a student teaching or working with a student at the same academic level.[1] It has also been referred to as collaborative teaching.[2] Bulte et al.[1] defined a near peer teacher as "…a trainee of one or more years senior to another trainee on the same level of medical education training" (p. 583). Thus near peer teaching (NPT) is teaching of students by students who are one or more years further along the program. One key difference between PT and NPT is that, in NPT, there is no competition for academic grades or achievement between the near-peer and learner.[3]

Literature relating to PAL has been published in a number of health professions, although NPT is not widely used within the core curriculum of health profession programs.[4] The only mention in the osteopathic education literature relates to teaching of anatomy.[5] Nevertheless both PT

and NPT have been employed in health professional teaching programs like nursing, medicine and physiotherapy and in areas such as anatomy,[3, 6] problem-based learning,[7] prescribing,[8] and clinical skills.[9, 10] Where NPT has been employed, a number of benefits to the near-peer tutors and learners, have been demonstrated.

The literature on NPT is universally positive about its effect on the near-peer tutor. Near-peer tutors have reported positive developments in their knowledge base, understanding of subject content, and communication skills.[11-15] Improvements in communication skill have also been reported to translate to a peer tutors' own patient consultations in PAL,[15, 16] and it is likely a similar result could be anticipated with NPT. As would be expected NPT is also a practical and authentic method by which a student can develop their own teaching skills,[14, 17] an outcome deemed important by Bulte et al.[1] Further, NPT can also enlighten the near-peer tutors to the challenges and satisfaction associated with teaching "…which may make them more broad-minded (p. 414)."[15] Development of teaching skill, along with helping students to learn, has been reported as strong reasons for students to become near-peer tutors,[1, 11] and potentially helps in their developing role as health professionals.[1, 18, 19]

The impact of NPT on the learner has also been investigated with the literature indicating a positive outcome on a learner.[19] Ross & Cameron[1] suggest that near-peer tutors provide "a qualitatively different educational experience (p. 532)"[4] that may support meaningfulness, motivation and individual feedback. Given that the academic level of the near-peer tutors is only a small jump from that of the learner, this may provide a motivating effect on learning and development.[4, 12, 20] Near-peer tutors have been reported to create a positive learning climate,[1, 21] increased confidence with clinical skill application,[9, 22] improved OSCE (Objective Structured Clinical Examination) performance,[23] and to serve as role-models for learners.[2, 14, 24]

When comparing near-peer tutors to academic teachers there is reported to be little difference in teaching quality between these two groups[7, 10, 11, 19, 20, 25, 26] with numerous authors demonstrating no difference in the outcome of learner results on assessments.[20, 22, 27, 28]

Educational theory

The educational theories relevant to PAL, as described by ten Cate and Durning,[2, 29] can also be applied to the use of NPT. ten Cate and Durning[1] discuss the idea of a "journeyman" (p. 597) or a person midway on the journey from novice to master who is developing skills whilst practising and teaching those who haven't travelled as far along the educational path. These journeymen share a closer congruence, both socially and cognitively, with the learners and congruence has been put forward as the theoretical basis of NPT.[1, 18, 30] Social congruence applies to NPT insofar as the learner and near-peer tutor are of a similar social standing within their community of practice, and just having the learners interacting with the near-peer tutors increases the value of such an educational approach.[30] Jackson and Evans[31] report there is no optimum distance between the learner and near-peer tutor, however, ten Cate and Durning[29] and Hall et al.[6] suggest that once a student qualifies as a health professional, they can no longer be considered a near-peer. Cognitive congruence refers to the learner and near-peer tutor sharing a similar knowledge base and therefore, the near-peer tutor may be able to better explain concepts at a similar level to the learner.[30, 32] More recently ten Cate et al.[33] have proposed that self-determination theory can account for much of the 'intrinsic' motivation for peer teaching. Students participating as peer or near-peer teachers may see it as a way of developing themselves as a professional and gain expertise, without needing to be 'rewarded' through grades or financially.

NPT is not issue free. Making any change to NPT solely for financial reasons (i.e. near-peer tutors being cheaper to employ than academic faculty) is potentially unethical, unless comparability with faculty-led teaching can be demonstrated[4] and teaching quality maintained or improved. The lack of experience as an educator and clinician can make it a challenge for the near-peer tutor to engage the learners or provide job-related reinforcement of the practical application of the subject content. There is also the potential for a learner to not respect the near-peer tutor as the near-peer tutor is also a student.[1] The lack of experience has also been reported to be a key reason for resistance to the introduction of near-peer programs.[34] Another reason may be that neither a peer or near-peer tutor is a content expert or experienced educator.[1, 4] Whilst there are challenges, the educational theories and current research suggests that the benefits to implementing near-peer teaching outweigh these challenges. The current paper reports on the implementation of NPT in an osteopathic practical skills class. Given the importance of feedback from learners,[4] and perhaps more so with the introduction of a change to the teaching program, the paper presents data from the learner evaluations of teaching that involved both academic and near-peer tutors.

METHODS

<u>Academic subject</u>

'Osteopathic Science 1' is the subject of this paper and is undertaken in the Bachelor of Science (Clinical Science) at Victoria University (VU), Melbourne, Australia. Osteopathic Science 1 is made up of three components: osteopathic technique – two 1.5 hour sessions; palpation skills & surface anatomy one 1.5 hour session; and osteopathic history and principles over a one hour session for a total of 5.5 hours per week. This paper presents data from the osteopathic technique component. In the osteopathic technique component, there are two primary aims. The first is for the students to develop skills in musculoskeletal assessment of the shoulder, elbow, wrist/hand, cervical spine and temporomandibular joint. The second is to osteopathic manual technique development in these regions, with the techniques consisting of articulation and soft tissue techniques. Key techniques are selected that encompass the basic skills required for a manual technique such as operator posture, patient position, and body motion[35] along with a description of the aim of the technique. A variety of learning activities are utilised to support the development of these skills by all students in the class. These include large and small group demonstrations, individual feedback and coaching, group activities and peer-assessment. These are utilised flexibly at different intensities to support the particular activity and goal, and in response to the teachers perceived progress of the class within the overall program aim. The subject does not contain any clinical information, however students are made aware of how the examinations and techniques they are learning could be applied in osteopathic practice – although this is not included within the summative assessment.

class arrangements

Eighty-two learners were enrolled into Osteopathic Science 1. The osteopathic practical skills class that forms part of this subject utilises a combination of both large group and small group teaching. For the large group teaching (all 82 learners), a single AT would demonstrate elements of a musculoskeletal examination or a number of articulation or soft tissue techniques. Learners would then return to their treatment tables to practice what had just been demonstrated. In small group teaching, 14 (approximately) learners were allocated to one AT or near-peer tutor. All tutors (near-peer or academic) would then demonstrate examination and treatment techniques simultaneously to their small groups. Learners could then practice, ask questions, and receive feedback and guidance from their assigned group tutor.

The learners worked with one AT or NPT for 4 weeks then changed to another AT or near-peer tutor twice more before the end of the 12-week semester. This process was used to ensure that all learners had worked with at least one AT and one near-peer tutor during the semester.

Participants

academic tutors

The four ATs involved in the teaching of the technique components were tenured staff from within the Discipline of Osteopathic Medicine at Victoria University, are qualified and registered osteopaths and had taught the content of this unit in previously.

near-peer tutors

The near-peer tutors were final year students in the Master of Health Science (Osteopathy) program at Victoria University. The Master of Health Science (Osteopathy) follows the Bachelor of Science (Clinical Science) degree and completion of the Masters program is required in order to register as an osteopath in Australia. Four students from the final year responded to an email to the final year cohort to request for near-peer tutors for this subject. Academic ability was not a prerequisite for participation as a near-peer tutor [36] and self-selection is favourable in the early stages of implementing NPT.[19] The near-peer tutors were paid for their time in the classroom. The near-peer tutors indicated that they had no previous teaching experience, and no formal education or training in teaching and learning was provided prior to the commencement of their near-peer tutoring role. The near-peer tutors had completed a similar osteopathic program although, there has been updates and changes in delivery and volume, the content was similar.

Measure

The learner evaluation of teaching measure employed in this study was developed by the academic staff at VU. It is specifically focused to practical skills subjects and is entitled the Practical Class Teaching Questionnaire (PCTQ). The PCTQ was developed as there is no questionnaire that is consistently used in literature to evaluate NPT, and the PCTQ items reflect the classroom environment for the osteopathic practical skills class.

All academic faculty teachers involved in teaching the practical skills classes were asked to identify aspects of their teaching they would like to receive feedback on, as well as to suggest the wording of the items. Items and aspects of teaching were collated by the lead author (BV) and developed into a brief questionnaire. The completed questionnaire was then distributed to

all academic staff for review. This process ensured both content and face validity. The PCTQ

is a 9-item questionnaire that uses a 5-point Likert scale of 1 (Strongly disagree) to 5 (Strongly

agree). Items 1-8 address teaching quality and item 9 is a global rating of the tutor. An open-

response section is provided at the bottom of the questionnaire. The questionnaire is attached

as Supplementary File 1.

Data collection

Students undertaking the subject were asked to complete the PCTQ at the completion of week

5 and week 12 of semester 1, 2013 (February 2013 – May 2013). These two time points

corresponded with the collection of other teaching evaluation data, and week 5 corresponded

with the learners completing a formative assessment task in the subject. The name of each of

the ATs and near-peer tutors were prefilled on the questionnaire. The PCTQ was distributed

as a paper-based questionnaire and all responses were anonymous. Completion of the PCTQ

was optional.

Data analysis

All data were entered into Microsoft Excel for Mac (Microsoft Corp, USA) and then transposed

into *R* (version 3.1.2)[37] for analysis. As the data were not normally distributed, the Mann-

Whitney test was used to investigate the differences in ratings for each PCTQ item between

tutor types at both week 5 and week 12 using the *Rcmdr* package.[38] Alpha was set at p<0.05

and effect sizes (Cohen's *d*) were calculated. Effect sizes were interpreted as small (0.2),

medium (0.5), large (0.8), very large (1.2).[39] Ordinal alpha was calculated using the *psych*

package (version 1.4.8)[40] in order to establish the internal consistency of the PCTQ,[41, 42] and

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linear regression (R^2) used to investigate the relationship between the total PCTQ score and

global rating item.

The study was approved by the Victoria University Human Research Ethics Committee.

RESULTS

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Responses were collected from 72 out of 82 students – a response rate of 88%. Not all

students provided ratings for all ATs and near-peer tutors as they did not work with every AT or

near-peer tutor during the semester. At week 5 the number of ratings per tutor varied from 19

to 61, and at week 12 from 41 to 48. Mean ratings for the ATs and near-peer tutors at week 5

and week 12 are presented in Figure 1.

Figure 1. Mean academic tutor (AT) and near-peer tutor (NT) ratings at week 5 and week 12.
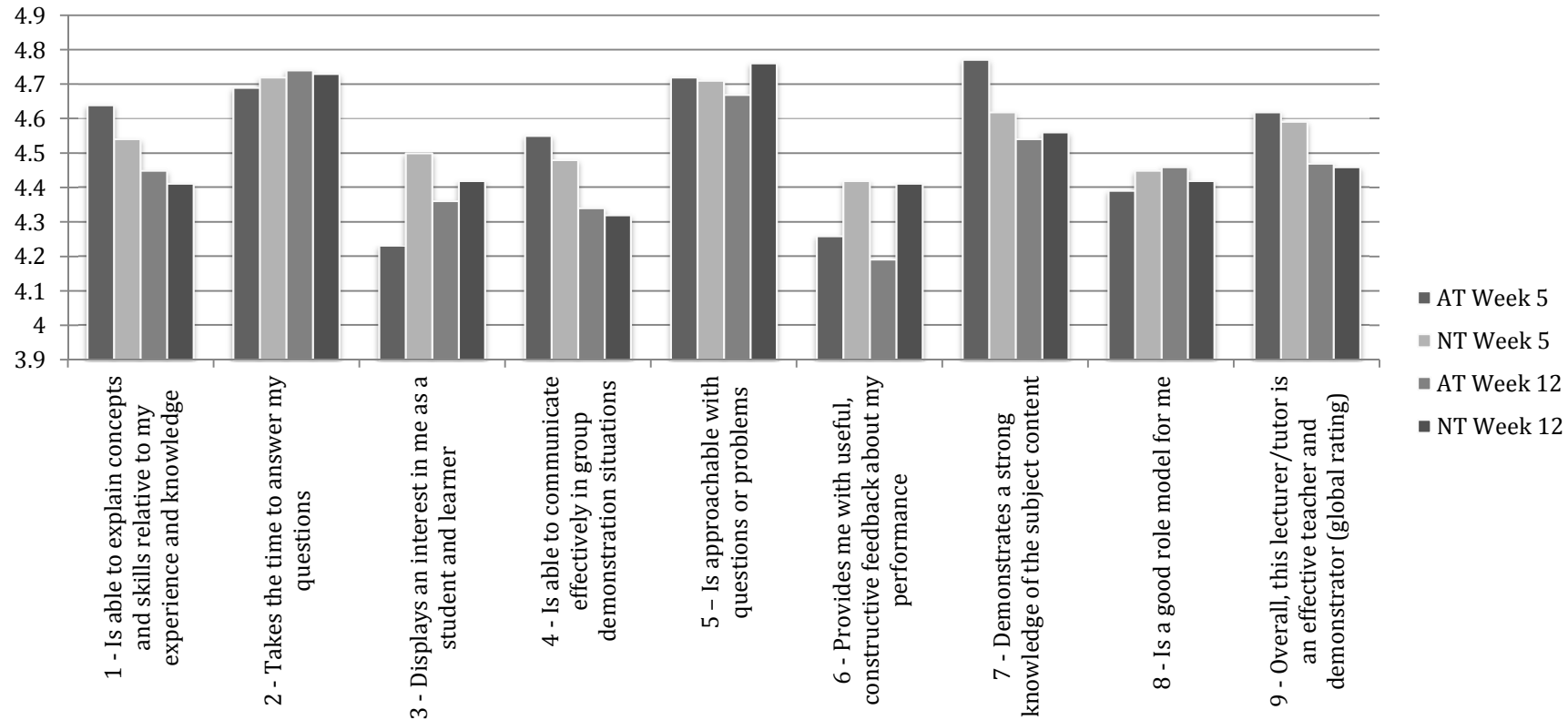
Ordinal alpha for the PCTQ using the combined week 5 and week 12 data was α = 0.91.

Between tutor type differences

Differences between tutor ratings at week 5 and week 12 are presented in Table 1 and 2 respectively. At week 5, statistically significant differences were demonstrated for 3 PCTQ items; items 1, 4 and 7. The mean ratings for each of these items were lower for the near-peer tutors compared to the ATs. This was also the case for the global rating at week 5. At week 12 there were no statistically significant differences between the tutor ratings for each item, except item 4 which remained significantly different. The global rating and total PCTQ score were not significantly different at week 12.

Table 1. Descriptive and inferential statistics for ratings at week 5.

Item	Academic	Near-peer	p-value	d
1 - is able to explain concepts and skills relative to my experience and knowledge	4.64 (0.52)	4.45 (0.75)	0.04*	0.30
2 - takes the time to answer my questions	4.69 (0.73)	4.74 (0.72)	0.22	
3 - displays an interest in me as a student and learner	4.23 (0.88)	4.36 (0.79)	0.24	
4 - is able to communicate effectively in group demonstration situations	4.55 (0.73)	4.34 (0.82)	0.01*	0.27
5 – is approachable with questions or problems	4.72 (0.73)	4.67 (0.81)	0.73	

Item	Academic	Near-peer	p-value	d
6 - provides me with useful, constructive feedback about my performance	4.26 (0.87)	4.19 (0.82)	0.26	
7 - demonstrates a strong knowledge of the subject content	4.77 (0.52)	4.54 (0.61)	<0.001*	0.40
8 - is a good role model for me	4.39 (0.77)	4.46 (0.70)	0.47	
9 - Overall, this lecturer/tutor is an effective teacher and demonstrator (global rating)	4.62 (0.60)	4.47 (0.64)	0.02*	0.24
Total PCTQ score (items 1 to 8)	36.28 (3.83)	35.80 (4.34)	0.61	

reported as: mean (standard deviation), * statistically significant difference (p<0.05)

Table 2. Descriptive and inferential statistics for ratings at week 12.

Item	Academic	Near-peer	p-value	d
1 - is able to explain concepts and skills relative to my experience and knowledge	4.54 (0.91)	4.41 (0.97)	0.05	
2 - takes the time to answer my questions	4.72 (0.60)	4.73 (0.59)	0.79	
3 - displays an interest in me as a student and learner	4.50 (0.97)	4.42 (0.93)	0.11	
4 - is able to communicate effectively in group demonstration situations	4.48 (0.98)	4.32 (0.99)	0.01*	0.16
5 – is approachable with questions or problems	4.71 (0.64)	4.76 (0.60)	0.28	
6 - provides me with useful, constructive feedback about my performance	4.42 (0.96)	4.41 (0.96)	0.84	
7 - demonstrates a strong knowledge of the subject content	4.62 (0.87)	4.56 (0.96)	0.36	

8 - is a good role model for me	4.45 (0.97)	4.42 (1.00)	0.91
9 - Overall, this lecturer/tutor is an effective teacher and demonstrator (global rating)	4.59 (0.88)	4.46 (0.93)	0.05
Total PCTQ score (items 1 to 8)	36.47 (5.91)	36.12 (5.93)	0.37

reported as: mean (standard deviation), * statistically significant difference (p<0.05)

Within tutor type differences

Differences between the ratings obtained at week 5 and week 12 for the same tutor types were analysed. For the near-peer tutors, item 6 *Provides me with useful, constructive feedback about my performance* demonstrated a statistically significant improvement (p = 0.001, d = 0.25). All other items for the near-peer tutors were not significantly different. For the ATs, item 6 *Provides me with useful, constructive feedback about my performance* (p = 0.009, d = 0.17), item 8 *Is a good role model for me* (p=0.047, d = 0.06) and the total PCTQ score (p=0.002, d = 0.04) all demonstrated a statistically significant improvement. All other items for the ATs were not statistically significant.

Correlations

Item 9 on the PCTQ is a global rating of the AT or near-peer tutors. The correlation between item 9 and the total score using the combined week 5 and week 12 data was R^2 = 0.755 (r=0.869, p=0.01). This indicates a strong relationship between the total PCTQ score and the global rating; over 75% of the change in the global rating is attributable to the items on the PCTQ score (as represented by the total score).

DISCUSSION

Near-peer teaching (NPT) was introduced into the first year practical skills class in the osteopathy program at Victoria University following a review of the pedagogy and to provide an appropriate student-to-teacher ratio, as the 2013 program intake was the largest in the programs' history. The review of the pedagogy led to a restructure of the theory content for the practical classes, and a reduction in content with a focus on key techniques as learning activities to support key manual therapy skills. Further small group teaching being employed on a regular basis, and NPT is particularly suited for this purpose.[1, 3] Lockspeiser et al.[30] suggest that NPT is most effective in the early stages of a teaching program, and may assist with transitioning learners into a higher education environment. This suggestion is based on the idea of 'social congruence' where near-peer tutors are academically much closer to the student than the AT, and potentially able to relate their experiences with the subject content better than the AT. This could also serve to encourage the learner to comprehend and learn more rather just receiving instruction from an AT alone.[4] Bulte et al.,[1] in their survey of near-peer learners and teachers, indicated that likely roles for the near-peer tutor included 'information provider, role model and facilitator' (p. 589). These authors indicated that their NPT group felt that assessment was 'not beyond their capabilities' (p. 589). The near-peer tutors in the current project did not participate as examiners for the practical summative assessment of the subject content, however they did play a role in the formative assessments during the semester. Here they provided feedback to learners about their performance on the formative assessment tasks. This role of formative assessor was viewed as extending the normal role required of a tutor, and was thought to be an appropriate role for the near-peer tutors.

Peer and faculty teaching in the same classroom

Compared to other peer teaching studies, the present study used both ATs and near-peer tutors in the classroom at the same time. For any one practical skills class there would be up to 3 ATs and 3 near-peer tutors. This provided a ratio of approximately 1:14 students in the small group teaching situations and this ratio is comparable to that suggested by Jackson and Evans.[31] All large group demonstrations, the development of all course materials, and conduct of the practical examinations was undertaken by the ATs. Solomon and Crowe[12] have suggested that the presence of academic staff / tutors in the classroom may disrupt peer teaching. To counter this, each near-peer tutor was responsible for their own group of students (as were the ATs) in order to avoid any direct influence on their teaching from the ATs. The student groups were also rotated between the near-peer tutors and ATs to ensure that all students received instruction and feedback from both tutor types. Jackson and Evans[31] suggested that the "novelty" of having the near-peer tutors leading tutorials accounted for the largely positive result in their study. It is unlikely that this "novelty" accounted for the results in the present study as both the and near-peer tutors were in the room at the same time, and the students were in their first semester of an osteopathy program. It may be that, as Hall et al.[43] suggest, the positive teaching evaluation results lie in the use of small group teaching or other unit updates rather than the use of near-peer tutors. Small group teaching has been demonstrated to be an important component of learning musculoskeletal examination skills,[44] and it was implemented routinely in the practical skills class that is the subject of the current study.

Evaluation of teaching quality

The PCTQ was developed to evaluate teaching quality in practical skills classes, particularly in light of the introduced changes. The questionnaire demonstrates face and content validity, and internal consistency as indicated by the high alpha value ($\alpha = 0.91$). The 9-item questionnaire requires little time to complete per tutor and is suitable for use in a classroom with multiple tutors. Topping[45] suggests that in relation to peer teaching "…the need for monitoring and quality control cannot be overstated" (p. 325) and Reyes et al.[46] reinforce this view in the near-peer context. The PCTQ was employed at week 5 and week 12 of a 12-week semester. The collection and analysis of teaching quality data at week 5 allows for the identification of any quality issues with near-peer tutors that need to be addressed.

Differences between the ATs and near-peer tutors were noted for items 1, 4 and 7 at week 5 and then only for item 4 at week 12. The difference for item 1 *Is able to explain concepts and skills relative to my experience and knowledge* could be explained again by the greater exposure to the ATs up to week 5 (the ATs presented theoretical information in a lecture-style to the entire group), or differences in confidence and competency with teaching by the near-peer tutors. The latter is supported by the statistically significant difference in the mean ratings for item 4 *Is able to communicate effectively in group demonstration situations* and item 7 *Demonstrates a strong knowledge of the subject content* at week 5. Both of these items could be evaluating confidence with teaching. As near-peer tutor teaching competency and confidence improved with experience and practice over the semester, the differences between the mean ratings were ameliorated for item 7, but remained for item 4. Although it has been suggested near-peers can be effective teachers[1] further support may be required to develop their confidence teaching in a group situation compared to smaller ratios (i.e. 1:2 or 1:1). Further support for the assertion that experience increases in confidence and competency, and the effectiveness of the near-peer tutor as a teacher, is that there was no significant difference

between the AT and near-peer tutors at week 12 for items 1 and 9 in the present study, whereas there was a significant difference at week 5.

The statistically significant increase in the mean AT ratings for item 8 *Is a good role model for me* are interesting. Outwardly there is little that would explain this improvement and given the p value was approaching non-significance, and the effect size negligible, this may be a statistical anomaly. Another possible explanation is that up to week 5 one AT had sole responsibility for delivering the theory content and introducing the students to the basic examination and treatment methods as a large group. This was changed to spread the delivery across the AT group. There may be an element of bias in this result based on the students having a greater level of exposure to one AT over the other ATs during that time, with no opportunity to evaluate the status of the other ATs as role models.

Feedback and assessment

Consistent with previous research,[6, 26] both the near-peer tutors and ATs were approachable with no significant difference between the tutor types at weeks 5 or 12. Learners have an expectation about receiving feedback on their performance on an ongoing, or at least semi-regular basis. In the present study there were statistically significant differences between the near-peer tutors and ATs for item 6 *Provides me with useful, constructive feedback about my performance* however both groups mean ratings for this item improved from week 5 to week 12. This result suggests that both the near-peer tutors and ATs provided feedback that that the students found to be helpful in improving or confirming their performance, the feedback provided improved over the semester, and quantitatively, there was no difference in the learner-perceived quality of this feedback. Bulte et al.[1] reported that near-peer tutors in their

study took more time to explain concepts and issues to students when compared to faculty teachers. Comparing this with the results of the present study is difficult as none of the PCTQ items addressed the length of time spent providing feedback. This could provide an interesting avenue for further research using mixed methods.

Global rating

There was a strong relationship between the global rating and total score for the combined week 5 and 12 data. A large R^2 value was also observed and indicates that over 75% of the change in the global rating can be attributed to a change in the PCTQ total score. Such a large variance is encouraging as there is only 25% of the global rating that is accounted for by factors other than those captured on the PCTQ, including random error. This data provides some support for the criterion validity of the PCTQ.

Limitations and further work

There are a number of areas the present study did not address. The near-peer tutors were not asked about their intrinsic experiences[4] with teaching during the semester (i.e. improved self-esteem and satisfaction, skill development, increased empathy) and this may have provided valuable information about whether modifications to the NPT program are required in the future. The intrinsic characteristics and experiences could also account for the NPT results through self-selection bias.[19] Students who were motivated to teach or learning about teaching may have expressed their interest in becoming a near-peer tutor over those that do not have such a motivation. The impact of the extrinsic reward (payment for teaching) in the present study also requires investigation given that Ross et al.[4] suggest the intrinsic rewards

may be enough to motivate a student to become an NPT. It would be of interest to ascertain whether there were changes to the near-peer tutors confidence with peer teaching as the semester progressed and in-turn, investigate changes in teaching competency.

Formal training in educational theory and practice was not provided to the near-peer tutors and there is little in the medical education literature that supports more positive student outcomes when this training is provided.[4]   Given that there was very little difference in the ratings provided for both the near-peer tutors and ATs it could be assumed the teaching quality is similar. Such training may not improve learner assessment outcomes from their current level and therefore, the time and effort required by the faculty to develop and deliver a training program may not be warranted. Having an AT mentor a near-peer tutor may be an effective way of addressing some of the educational theory and practice, along with providing the near-peer tutor an opportunity to debrief after each teaching session. It may also be possible for the AT to view the near-peer tutor at work[2] thereby providing more relevant and targeted feedback, as well as support. Such a mentoring scheme is under consideration. As Tolsgaard et al.[26] suggest, further research should be conducted into the near-peer tutors pedagogical knowledge, and such a study will be undertaken with the future near-peer tutor cohorts.

The present study did not investigate the relationship between near-peer tutor ratings and student assessments. Given the classroom environment where each student worked with at least one AT and one near-peer tutor, it would be difficult to examine the impact of either teacher type on assessment outcomes. Anecdotally, the number of students to fail the end of semester summative assessment for this subject was less than 5% and is a substantial reduction compared to previous years (down from 10-15%). This result cannot be attributed to the implementation of peer teaching alone, however the authors feel that it would have

contributed to the reduction in some way, possibly through the near-peer tutors increasing student motivation to study.[29]

The PCTQ, whilst demonstrating face, content and criterion validity along with internal consistency, appears to be subject to a ceiling effect. The mean ratings for all items were greater than 4, therefore large sample sizes are required to ascertain whether there is any change in ratings between administrations of the questionnaire. Further work to improve the questionnaire could include changing to a 7-point scale. Combining the learner PCTQ evaluations with self-evaluation, and possibly from evaluations conducted by the ATs, will assist in establishing a 360-degree view of near-peer teaching.

The generalisability of the results of the present study can be viewed as limited given the small sample size, and small to moderate effect sizes (where a significant difference between ratings was noted). As an example using the week 5 item 7 data, the study is considered under-powered at 0.13, although to improve the power to 0.80, 78 tutors would be required in each group, which is unrealistic for the osteopathic program. Caution should be exercised when interpreting the results or applying them to other near-peer teaching situations. That said, the results of the present study are consistent with the literature on near-peer teaching, support the use of near-peer teaching in a first year clinical skills subject,[36] and similar to Qureshi et al.,[11] demonstrate that perceived teaching quality ratings between faculty teaching staff and peer teachers are similar.

CONCLUSIONS

The present study investigated the differences in teacher quality ratings between academic and near-peer tutors in an osteopathic practical skills class. A strength of this study was the use of both ATs and near-peer tutors in the same class at the same time allowing students to make a direct comparison in teaching quality. The results suggest that perceived teaching quality ratings between ATs and near-peer tutors are comparable for an osteopathic practical skills class at the end of the semester. Regular feedback from learners could assist in identifying near-peer tutors who may require extra assistance with their teaching activities, particularly when they first enter the classroom environment. Developing and implementing a near-peer teaching program provides the opportunity to extend students, allows would be teachers to 'dip a toe' in the pool of teaching experience in a supported environment, and can assist teaching programs to develop their next generation of health professional educators (along with formal education training). The results of this study provide support for the on-going use of near-peer tutors in the classroom to support teaching.

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<u>AUTHOR CONTRIBUTION STATEMENT</u>

Both authors were involved in the literature review. BV conducted the data analysis. Both authors contributed to the development of the manuscript and approved the final version.

ETHICAL STATEMENT

This study was approved by the Victoria University Human Research Ethics Committee.

IMPLICATIONS FOR PRACTICE

- Near-peer teaching is feasible in an osteopathic practical skills class

- This teaching format is suitable for the early year practical skills classes in an osteopathy program

- Near-peer teaching may assist in developing the next generation of osteopathic educators

STATEMENT OF COMPETING INTERESTS

Brett Vaughan is a member of the Editorial Board of the International Journal of Osteopathic Medicine but was not involved in review or editorial decisions regarding this manuscript.

Using the following scale, please rate the items below:

1 – Strongly disagree
2 – Disagree
3 – Neutral or undecided
4 – Agree
5 – Strongly agree

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Practical Class Teaching Evaluation

This lecturer/tutor…				
Is able to explain concepts and skills relative to my experience and knowledge	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1
Takes the time to answer my questions	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1
Displays an interest in me as a student and learner	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1
Is able to communicate effectively in group demonstration situations	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1
Is approachable with questions or problems	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1
Provides me with useful, constructive feedback about my performance	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1
Demonstrates a strong knowledge of the subject content	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1
Is a good role model for me	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1
Overall, this lecturer/tutor is an effective teacher and demonstrator	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1

Overall comments on the teaching staff

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