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Informal Near-Peer Teaching in Medical Education: A Scoping Review

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ABSTRACT

Background: Near-peer teaching (NPT) has a longstanding history within medical education. While it is becoming increasingly recognized within medical curricula, its beginnings can be traced back to informal teaching among medical students. Informal NPT such as this is still commonplace. However, it is often overlooked within the literature and has remained hidden from the scrutiny of evidence-based education. There has been minimal research conducted surrounding NPT outside of formal teaching sessions. **Methods:** A scoping PubMed search was conducted after identifying appropriate search terms. Directly relevant and high quality articles were included. **Results/Synthesis:** Within this scoping review, we discuss the potential benefits and shortfalls of such teaching. **Results:** Benefits include the opportunity for tutors to consolidate their own learning while contributing to the medical school community. Their learners benefit from the opportunity for small group learning focused on a relevant level of knowledge. However, shortfalls include the lack of prerequisites, lack of content monitoring, and lack of resources. These should be considered when discussing the efficacy of this teaching. **Conclusion:** We also explore the wider culture of this informal NPT within medical education. We hope to promote further thought into this area, considering how guidance can be given to support both the near-peer teachers and their learners.

Keywords: Culture, medical education, medical students, near-peer teaching, peer teaching

Background

Near-peer teaching (NPT) is defined as “a trainee one or more years senior to another trainee on the same level of medical education (teaching one another).”^[1,2] Over recent years, NPT has been incorporated into medical curricula. However, it is known to have started informally, with senior students assisting the more junior students with difficult concepts and examinations.^[1,3,4] In this article, the term “informal NPT” describes interactions where a near-peer teaches a more junior student without faculty intervention. In contrast, “formal NPT” sessions involve faculty input and may be incorporated

into medical curricula. We argue that informal NPT is an integral aspect of medical education, encouraged by the use of exam-driven curricula. There has, however, been little research on this area due to its nonprescriptive nature.^[1] One challenge to studying informal NPT is that, by virtue of studying it, resources and teaching methods may become further scrutinized and adapted, thus not necessarily rendering them a true example of informal NPT.

Using our own medical school, a small medical school in the United Kingdom, as an example, there are three types of NPT that occur [Figure 1]: (1) university-organized NPT, supporting students in their Objective Structured Clinical Examinations, where resources are supplied and student volunteers have prior training before running sessions;^[2,4] (2) student societies, separate from faculty guidance, running NPT sessions throughout the year;^[5,6] and (3) agreements between

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Formal	Informal	
Faculty	Societies	Individual students
<ul style="list-style-type: none"> • Student selected components • Presentations to peers as part of course • Assisting with formal revision 	<ul style="list-style-type: none"> • Near-peer teaching societies with aim of supporting younger students • Other societies that use near-peer teaching to teach their speciality 	<ul style="list-style-type: none"> • Individual arrangements between students to provide exam based teaching and support

Figure 1: The different forms of near-peer teaching in a UK medical school in the south of England

individuals in different years of study to receive NPT in areas of difficulty. This third kind of NPT is informal, unregulated, and rarely discussed on a formal platform. Nevertheless, it has an important role within the “hidden curriculum” of medical education.^[1,5-7]

Methods

We conducted an initial scoping review of the literature, which identified informal NPT as an area currently with limited prior research. A scoping review, as defined by Munn *et al.*, allows the author to gain a broad understanding of the evidence currently available on a given topic before setting a more specific question for which a formal systemic literature review is more appropriate.^[8] Scoping reviews focus on identifying and clarifying the key concepts, definitions, and their characteristics of the current literature and then provide an overview. Outcomes from scoping reviews are not able to offer definitive guidelines or suggestions for practice due to the lack of direct questions asked.^[8] Broad searches were carried out using PubMed. Combinations of the terms “near peer teachers”, “near peer tutoring”, “near peer tutors”, “near peer mentoring”, “near peer mentors”, and “medical education” were used. Searches were undertaken up to March 2021. Articles were then screened in relation to our topic area and included if deemed to be directly relevant and high quality. The synthesis.

Theory

One explanation for the success of the NPT culture is that, through utilizing cognitive congruence, learners are able to relate better to the teacher.^[2,7,9-13] Cognitive congruence theory postulates that near-peer teachers have had similar, recent experiences and consequently have a good understanding of the learners’ current knowledge.^[9,10,12] Therefore, they may

be more effective at teaching the salient points than experts, where there is a large cognitive incongruence and a large difference in knowledge.^[2,9,11,14] Some students find it easier to relate to other students who have experienced similar conceptual difficulties and have developed novel explanations, whereas experts may struggle to identify where the students’ difficulties lie.^[2,7,9] Lockspeiser *et al.* found that near-peer tutors were able to spot where a student was struggling, even if the student could not see it themselves.^[15] Rashid *et al.* highlighted that a near-peer teacher is likely to have a better understanding of the level of knowledge that the student needs on a topic and therefore avoids overwhelming them with excess information.^[1] The ability of near-peer teachers to provide information at an accessible level for the learner helps create trust and develops an informal relationship between the tutor and learner for further sessions.^[11]

It has been postulated that social congruence is equally as valuable as cognitive congruence.^[7] Social congruence defines the personal relationship between teacher and student. Schmidt and Moust reported that near-peer teachers have a greater interest in the pupil as a person.^[14] As the relationship develops, this allows the learner to access the wider hidden curriculum of the medical school.^[7,11,14] The hidden curriculum may be thought of as the “rules and regulations” that medical students learn to adhere to as they progress through medical school.^[7] These role models guide the more junior students, helping them to learn the characteristics of a medical student and instilling confidence in the tutee.^[5,7,11,12,15,16] Communication skills are often consolidated and perfected within the hidden curriculum where senior medical students teach the more junior students how to interact with patients.^[5] Lockspeiser *et al.* discussed the comfort students felt in knowing that the near peers had managed to complete their phase of study, and this gave them more confidence that they too could do so.^[15]

In addition, Schmidt and Moust emphasized the benefits of a relaxed and open teaching environment.^[14] In such an environment, learners feel comfortable to approach the near-peer teachers with questions and concerns. It could be easy to see why students may prefer to approach near peers when they are struggling, rather than seeking more formal support.^[12,15,17]

Near-Peer Teaching and the Role of the Teacher

It is important to consider the role of the near-peer teacher within the teaching interaction.^[9] Conventionally, there are 12 roles of a teacher, split into 6 key themes [Figure 2].^[18] It has been suggested that medical students should be involved in facilitation and role modeling during their teaching, but that the areas of planning and assessment are less appropriate.^[9,19]

Facilitator	Role Model	Information Provider	Resource developer	Planner	Assessor
<ul style="list-style-type: none"> • Mentor • Educational tutor 	<ul style="list-style-type: none"> • Doctor • Teacher 	<ul style="list-style-type: none"> • Lecturer • Practical advice 	<ul style="list-style-type: none"> • Learning resources • Research 	<ul style="list-style-type: none"> • Overall course structure • Curriculum 	<ul style="list-style-type: none"> • Curriculum evaluator • Student assessor

Figure 2: The 12 roles of a teacher. Adapted from: Guerrero^[18]

There has been some discussion over the appropriateness of near-peer teachers adopting the roles of information provider and resource developer.^[4,15,19] Some students feel that they need training in order to confidently take on this responsibility because they appreciate that they lack the knowledge of an expert.^[15] Others argue that it is important for students to learn how to perform all roles to prepare them for their future careers.^[4,19] Inevitably, through being involved in informal NPT, all six themes will be adopted when trying to organize and teach junior students without faculty involvement.^[4] It is, therefore, important that both the benefits and limitations of NPT are considered.

When considered in conjunction with role of a teacher and how the delivery of that role would be affected by the social and cognitive congruence, it is easy to understand how informal NPT develops.

Benefits of Informal Near-Peer Teaching for Near-Peer Teachers and Learners

The NPT culture of medical school is introduced to students from the moment they begin their studies. Numerous medical schools have “medic families” where a near-peer “parent” is given a number of new student “children” to mentor.^[15,20] This is encouraged to give the junior students a support network in their new, unfamiliar environment. It creates a sense of community and helps to forge relationships with near peers, allowing the hidden curriculum to be passed down. The “children” are encouraged to go to their “parents” with questions regarding any aspect of university life, including academia.^[15,20] McKenna *et al.* found that near-peer learning in allied health professionals plays a similar role in the hidden curriculum.^[16] The General Medical Council (GMC) also requires UK medical graduates to “be able to demonstrate appropriate teaching skills”.^[2,4,11,21] NPT is able to contribute to this requirement allowing students to be familiar with teaching before they begin their professional career.^[4,22]

NPT has benefits for both teachers and learners. As the saying goes, “to teach is to learn twice.”^[4] Teaching others encourages tutors to learn topics in more detail, thus allowing the knowledge to be retained long term.^[1,15,21] This is directly relevant to medical students engaging in NPT, who are themselves re-engaging with the curriculum to pass it on to their mentees and are thus re-enforcing their own learning and medical experience for their own examinations. There

has been research supporting the view that those involved in NPT perform better than their peers in examinations.^[4,11,12,15] Further, students offering NPT will inevitably curate learning resources for their peers, enabling them to approach the medical curriculum in a new way to create concise or more detailed notes on topics already familiar to them, adding further benefit to their own learning.^[1,12,13]

Medical students often have to consider the potential benefits when deciding whether or not to become involved in NPT, as they have limited time outside the curriculum to engage in other activities.^[22] As informal NPT within medical schools is undertaken on a voluntary basis, those who volunteer are often altruistic in nature, and having benefited from NPT want to offer the same opportunity for others.^[4,6,13,15,21] Those who do not wish to teach need not get involved, meaning that students who are less likely to be motivated and engaged in the NPT process are not required to teach others and so any negative impact of poor-quality teaching through lack of interest is negated by the voluntary nature of the NPT system.^[1]

Some students find near-peer teachers superior to their faculty counterparts.^[9] This is partly due to the nature of near-peer sessions, which are often interactive and undertaken in small groups.^[9,11] In contrast to the traditional lecture format, often employed in large groups by faculty, small group session enables the students to engage interactively and to ask questions to enhance their understanding.^[20,23] This gives the learners an in-depth understanding of topics engaged with.^[24]

Weaknesses of Near-Peer Teaching

A lack of training prerequisites

Due to the nature of informal NPT, any medical student can partake in both teaching and being taught. This means that the teachers often have no formal teaching qualifications and have received no guidance.^[1,4] There is therefore no quality assurance when an individual seeks informal NPT, which leaves the possibility that poor teaching will take place. This, at best, will not benefit the students, and at worst, may be detrimental to their learning.^[1,4,10] It could be argued that structured teacher training is not necessary to be a near-peer teacher. As previously referenced, near-peer teachers are normally self-selecting; actively seeking out opportunities.^[25] Consequently, this may make near-peer teachers more likely to want to develop their skills.^[25] Iwata *et al.* found that it

was generally students with strong academic backgrounds that chose to be involved with NPT.^[26] There are numerous teaching programs where the only prerequisite to become an NPT is the prior completion of the module in question, without further training.^[1,19,21]

Knowledge deficits

Another potential problem with NPT is that near-peer teachers inevitably have less knowledge than lecturers.^[4,9] This, combined with limited clinical experience, could mean that they struggle to accurately answer questions and to provide enough depth on a topic.^[9] This is especially the case in new or rapidly changing fields where they may be less likely to use the latest research in their teaching,^[27] NPT relies on integrity. If near-peer teachers are not confident on a topic, it may be tempting to extrapolate or guess answers to questions that they do not know.^[4,17,19] This may lead to learners assimilating incorrect information which, if they do not check, could later lead to dangerous practice or poor examination results.^[19] However, NPT can instill a self-awareness that encourages near-peer teachers to admit the limits of their competence and to allow themselves to demonstrate appropriate strategies for finding information.^[4]

No content monitoring

In formal NPT, the curriculum is carefully monitored, with near peers being asked to teach set topics.^[9] However, in informal NPT, near peers can choose the focus of their sessions. Students participating in informal NPT have found that sessions were solely examination focused with near-peer teachers deciding which topics to cover and which were less important.^[10,13] Although the learners may appreciate this insight, it can lead to selective learning, where students chose not to revise a topic due to recommendations of near peers.^[10] This can lead to crucial gaps in students' knowledge but may not be regularly assessed due to the vast size of the curriculum.^[10,13]

Poor resources

Near-peer teachers may not have sufficient time to create high-quality resources – relying instead on their past notes, diagrams, and explanations.^[10,19] Khaw and Raw found that near-peer teachers recognized the need for adequate preparation.^[11] However, they felt this was an area where formal NPT training could have given them further support.^[11] Despite this, volunteering to become a near-peer teacher can be a motivation to re-learn the curriculum in depth, and thus create better resources in the process.^[2,10,19]

Dissemination of resources after a session can also be a problem. Whereas formal education uses an official online platform, during NPT sessions, students may be unable to access this, therefore relying on student dissemination to forward learning resources.^[10,28] Although, in a society ever

more reliant on online learning, this is becoming less of a problem.

Issues of equal opportunities

It can be argued that informal NPT excludes students who have not made the necessary social contacts.^[10] However, student-initiated NPT societies may mitigate this, once well established, as it becomes embedded within the medical school culture.

Influences of formal near-peer teaching

NPT is increasingly formally adopted by medical schools, allowing institutions to fulfill the aforementioned GMC requirement.^[2,4] Therefore, as formal NPT is introduced into the curriculum, it may be pertinent to consider how this may affect current informal teaching practices. When adopted formally, NPT benefits from stricter regulations with more structured planning, training, and content monitoring.^[2,4] Therefore, resources and content can be scrutinized in advance, allowing greater confidence in the quality of the teaching. NPT can also benefit from feedback from a third party, ensuring that improvements can be made where necessary. This means that near-peer teachers can get feedback not only from their students but also from members of the faculty.^[4,11] Some argue that informal NPT should be kept as student-centered as possible, without the involvement of faculty.^[4] Through formalizing NPT, there is speculation that junior students may feel embarrassed coming to near peers with problems if they feel that their concerns might be passed onto faculty members.

Future considerations

There is a need for research regarding the nature of this informal NPT to better understand what goes on behind closed doors. We might suggest conducting such research with an ethnographic focus, without trying to formalize or artificially impact the nature of the teaching, which by definition is and should remain informal. In time, it would also be prudent to understand if the introduction of formal NPT within the medical curriculum subsequently influences and impacts the quality and culture of informal NPT within medical schools.

Conclusions

Informal NPT will always occur, though junior students naturally gravitating toward senior students for teaching, guidance, and support. An increased awareness of NPT may allow learners and teachers full disclosure of its potential pitfalls, as well as its benefits and so offer better preparedness for seeking and implementing this important process within the medical school culture.

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Conflicts of interest

There are no conflicts of interest.

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