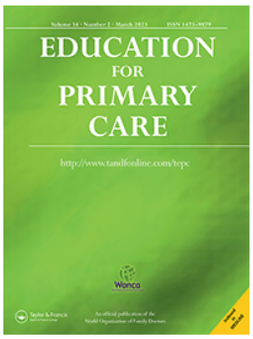

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Community action projects: community-engaged quality improvement for medical students

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ABSTRACT

Background: Healthcare Quality Improvement (QI) is an essential skill for medical students to acquire, although there is insufficient empirical research which suggests the best educational methods to do this. This study explored the experiences of medical students participating in two versions of a Community Action Project (CAP) which gave medical students the opportunity to learn QI skills in a community setting. The first version (GPCAP) was pre-pandemic where students identified and delivered QI projects on placement in general practice to improve local population health. The second version (Digi-CAP) ran remotely where students worked on QI projects identified by local voluntary sector organisations focused on local community priorities during COVID-19.

Methods: Semi-structured interviews were conducted with volunteers from the two cohorts of students who had taken part in quality improvement initiatives. Transcriptions were independently coded by two researchers and analysed through thematic analysis.

Results: Sixteen students were interviewed. Whilst students had mixed experiences of completing their CAP, engagement and successful learning was associated with the following themes from the two versions of QI CAP projects: finding a sense of purpose and meaning in QI projects; preparedness for responsibility and service-driven learning; the importance of having supportive partnerships throughout the project duration and making a sustainable difference.

Conclusions and implications: The study provides valuable insights into the design and implementation of these community-based QI projects, which enabled students to learn new and often hard to teach skills, whilst working on projects which have a sustainable impact on local community outcomes.

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Quality improvement; medical students; community engagement; primary care; education

Introduction

Quality improvement (QI) aims to improve safety, effectiveness, and patient experience by 'designing, testing and implementing changes using real-time measurement for improvement' [1]. QI is crucial to medical education, equipping doctors with the skills to achieve the 'quadruple aim' of better population health outcomes, patient satisfaction, provider satisfaction and reduced costs [2]. The General Medical Council's (GMC) *Outcomes for Graduates* states that graduating medical students should understand the principles of QI and have had experience of QI in clinical care [3]. Despite this, many junior doctors struggle to complete meaningful QI projects, and the reason often cited is their lack of knowledge of QI principles [4,5].

Didactic and experiential learning activities that incorporate QI principles have been implemented within medical education curricula internationally [6]. These include observational practicum experiences, cooperative educational placements, and community service learning [7]. Whilst previous evaluations have focused on students' satisfaction with their own QI projects and knowledge of QI principles [8–11], less attention has been paid to their implementation within community settings and how the process may develop students' social accountability, or understanding of health inequity.

This paper details a qualitative evaluation of two versions of a community-based QI programme for third year medical students to: 1) explore their experiences of developing and delivering QI projects and 2) to

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understand the factors that facilitated and hindered student engagement and learning.

Methods

Context: 'community action projects'

The Medicine in the Community Apprenticeship (MICA) course is an 8–9 week primary care placement for third year students within a six-year MBBS programme based in a large urban setting [12]. Students placed in a general practice, conduct a 'Community Action Project' (CAP), in which they i) identify local community health and wellbeing priorities, ii) develop a QI project to address these, and iii) conduct an evaluation. Students complete their CAP projects in pairs under GP supervision, whilst supported by central faculty. They are encouraged to develop sustainable projects in collaboration with their GP tutors, practice staff, patients and community organisations. Students are provided with a teaching session ahead of the project: this includes teaching on QI principals, health inequities and discussion around the value of co-creation and community collaboration in conducting the projects. A four hour session per week was timetabled for the students to work on the CAP (referred to in this paper as the GPCAP). The projects were a mandatory part of the course. Each term around 50 GPCAPs were completed by students.

During the pandemic, when clinical placements (including MICA) were suspended, third year students were given the opportunity to participate in a voluntary, remotely conducted community action project (Digi-CAP), where students (in groups of up to five) collaborated directly with community leaders and the statutory sector (e.g. community health fora, charities, and NHS Clinical Commissioning Groups). The Digi-CAP students, who were not based in practice, were linked directly with community partners. Students were jointly supervised by university faculty and these community partners. These students received similar QI teaching sessions as those who completed the GPCAP. Students worked on specific project topics identified by these partners during the lockdown, focusing on the existing assets of the communities when developing their projects, and were supervised by faculty and the community organisations. Whilst the topic was identified by community partners, there was flexibility for students to collaborate with these partners to develop the project in original ways. These projects were conducted entirely remotely due to pandemic restrictions. Again, students were given dedicated time to work on projects. Seven Digi-CAPs were completed in total.

Students in both versions of the community action project (GPCAP and Digi-CAP) presented their projects to their peers and received peer and faculty feedback. Table 1. Presents a selection of student projects undertaken in both GPCAP and Digi-CAP. These projects were selected to show the range of different types of projects which were completed by students. These examples are not the projects undertaken by the interviewees, who could be potentially identified by this information.

Study design

The design chosen for this research was an exploratory, qualitative study. To explore students' experiences, we adopted an interpretative approach which assumes that knowledge is situated, relative and socially constructed. Semi-structured interviews were selected to foster a meaningful dialogue between researcher and participants to gain greater contextual insight into students' experiences.

Data collection

Due to the relatively small pool of eligible students, particularly for the Digi-CAP, convenience sampling was used. The study was advertised through posters and face-to-face or virtual 'shout-outs' in lectures. All CAP students were eligible to participate on completion of their project, and all who volunteered were interviewed. Students were aware that participation was voluntary and that they could withdraw at any time.

Table 1. Examples of QI projects conducted across 2019–21.

GPCAP	Digi-CAP
Development of portable Diabetes Card with ideal values for diabetic patients to help with patient engagement in diabetes management	Creating and delivering well-being packs of art supplies, nutrition and exercise information for vulnerable families to support young people's health during the COVID-19 pandemic
Collaborating with commissioning group (CCG) and patient groups to develop an online website where patient condition leaflets were translated into variety of languages for better access.	Assessing local community information needs around COVID-19 and developing an evidence-based Frequently Answered Questions resource for community partners to use when engaging with the public.
Encouraging uptake of the cervical smear screening program by organising a patient event, in partnership with charity and local hospitals, to support peoples' understanding of gynaecological malignancies.	Creating accessible guides on how to use digital platforms e.g. zoom, aimed at supporting socially isolated older persons.

Semi-structured face-to-face interviews with GPCAP students were conducted in 2019, whilst Digi-CAP interviews in 2020 were conducted remotely due to pandemic restrictions. Interviews were conducted by researchers (SC, MF, RF) using a topic guide to elicit the student's experiences of 1) developing and implementing their project (including their perspectives on teamwork, supervision, and resources) 2) their perceived impact of the CAP on both them and on the local community and 3) any views on how the programme could be improved for students. Participants were informed at the beginning of the interviews that their comments would be confidential, that the expression of positive and negative experiences was welcome, and that providing their views would have no impact on any of their academic assessments. All interviews were recorded with permission and transcribed verbatim.

Data analysis

Dedoose software (version 8.4.43) was used to code data which was then analysed using a thematic analysis process [13] due to its flexibility of being untied to a particular theoretical stance. The analysis was completed in six stages based on Braun and Clarke [13]: Step 1) Two authors (SC & DF) checked the transcripts against the original recordings to check for quality and become familiar with the data. Step 2) SC and DF began coding independently and then met to compare initial coding schemes and discuss any disagreements until a consensus was reached. A final coding scheme was produced and applied to the dataset. Step 3) The codes were subsequently grouped into coherent themes by both coders through an iterative process. Step 4) The themes were reviewed again by SC and DF, by returning again to the original data set to check their relevance. Trustworthiness of the coders' themes was checked by sharing a sample of quotes under each theme with two other authors (RF and ND), alongside a wider whole team discussion on how well the themes reflected the dataset. Step 5) Finally, the names of the themes were defined and further refined where necessary by SC and DF, and then shared with the group. Step 6) The analysis was written up for inclusion in the manuscript. The research team reviewed the data on an ongoing basis, and it was agreed that data saturation had been reached at sixteen interviews, and further interviews would be unlikely to add significant value.

Reflexivity: SC and MF were non-medical health and educational researchers, and DF was a GP trainee. None of these three authors, who were involved in the collection of data and analysis, were connected to the community QI programmes, or had prior teaching or academic relationships with any of the third-year medical students. ND, an Academic GP, was responsible for organising and teaching on the MICA course, which the Digi-CAP and GPCAP were part of. RF, a Clinical Teaching Fellow, taught on the course. RF conducted a small sample of the interviews but had no academic relationship with any of these students. All members of the research team were mindful of their own positionality and backgrounds. RF and ND in particular, reflected on their beliefs about the implementation and value of the CAPs during their discussion of relevant themes with the coders.

Results

Ten GPCAP participants were interviewed (with one joint interview) from the total sample of 215 students who completed the GPCAP across the sampled timeframe in 2019. Six students were interviewed from the total sample of 27 participants who took part in the Digi-CAP (2020).

The following themes emerged as key facilitators for positive student experiences and learning outcomes from the community QI projects: finding a sense of purpose and meaning in QI projects; preparedness for responsibility and service-driven learning; the importance of having supportive partnerships throughout the project duration and making a sustainable difference.

Finding a sense of purpose and meaning in QI projects

In GPCAP, students were able to select the topic of their project, with the broad guidance of being asked to choose a health and/or wellbeing issue that was of importance to the local community in which their practice was based. This part of the QI process was often identified as the most difficult for students:

> I think the most common problem that all students would face is trying to find an interesting idea. (GPCAP student4)

GPCAP Students were advised to identify these local priorities through discussion with their GP tutor, practice staff, patients and local community groups. This approach was dependent on the practice setting with some students getting more support than others. However, having an opportunity to tackle issues which resonated with participants increased their engagement and the potential for student learning. Several students drew upon their own experiences of health issues in their family. Others were able to build meaning by connecting and building upon prior clinical learning:

> We've had a lot of exposure to the needs of the elderly. In particular with loneliness. We learn a lot about the struggle that people face. And so being able to intervene there and do something meaningful is very, very fulfilling. (GPCAP student 6)

This flexibility of being given the freedom to choose a topic that had personal resonance and felt important and meaningful was important for students.

In the pandemic, Digi-CAP students worked on project topics identified in advance by the community partners. The projects were set up in this way, as the pandemic had generated multiple specific needs for community groups, and it was important that projects directly responded to these pressing needs. Pre-defined project topics reduced the challenge of topic selection and appeared to increase students' confidence that the work would be valued. In addition, contributing to the pandemic effort gave students' project further meaning and purpose. However, it was still important for these Digi-CAP students to shape their projects to ensure personal meaning in the way they addressed community issues. Students were able to bring their own ideas and strengths to the pre-chosen topic and co-develop the project with community members. In both versions of CAP, projects which felt meaningful and important to students appeared to lead to increased engagement and motivation:

> We both valued the work that it was doing. We thought it was important. If you think that things are important, you're more motivated to work towards them. The personal meaning and the potential that we saw it could have . . .(Digi-CAP Student1)

Preparedness for responsibility driven learning

A key facilitator to project success was the student's ability and willingness to engage with this form of experiential learning. Students recognised that CAP was different to usual educational opportunities where they sometimes adopted a more 'passive observatory' role. The CAP provided them with greater scope to be responsible, creative, and autonomous. Students explained how they felt empowered to give back to the communities in which they were working. Many appreciated that the active, 'hands on' approach, allowed them to develop practical skills such as enhanced teamworking, presentational skills and project management. Some students were able to reflect on how it would help them as medical students and doctors to serve patients from different cultures and generations:

> that's really important, to feel a bit uncomfortable . . . I will tell a second-year that you might not like doing it [The CAP], but it's going to help you for your overall development in research, academia, and just being a clinician in general. (GPCAP Student4)

Other students who clearly enjoyed the responsibility of trying to improve local health services were inspired to seek our further community engagement opportunities within and outside of their medical studies:

> It emphasises to me the importance of community work and wanting more of it in our curriculum. Maybe in the future, I think I will go out of my way a bit more to find out what I can do to help the community. (Digi-CAP student1).

The scope of CAP was considered by some students as beyond core curriculum, and some found this type of learning challenging and time-consuming, and struggled to see relevance to their studies. GPCAP is considered a 'gateway assessment' in that it was mandatory to complete successfully to pass the MICA placement. However, projects were not awarded specific marks beyond pass or fail. This sometimes led to conflicting motivations for students with regards to effort, alignment and relevance to their final exams:

> It's a shame that as a student it becomes so exam-orientated in your life. The concept itself is a really nice idea and getting involved in the community in some shape or form but given that students are unfortunately motivated by one thing only, it was purely – let's get this out the way. *(GPCAP Student7)*

This was rarely an issue for most Digi-CAP students who viewed learning from their projects as secondary to contributing to the national pandemic effort. Students who conducted the Digi-CAP had all done so entirely voluntarily with the hope of being able to support local communities through the pandemic in addition to acquiring new skills. During this time, medical school learning had changed significantly with no in-person placement activity due to pandemic restrictions, and students reported feeling freer to invest time and energy in their projects:

> This could be a way we could not only develop skills for the CAP project, but also we'd actually have something tangible that would be helping with the COVID-19 crisis. (Digi-CAP, Student4)

The importance of having supportive collaborative partnerships

Students repeatedly emphasised the importance of having good support throughout the development and implementation of both types of CAP. In GPCAP, the student's supervisor was the GP tutor at the practice and students were advised to work collaboratively with the full general practice team,

patients and community groups. A key factor to a successful and enjoyable CAP student experience was the quality of support provided by this supervisor. Most GPCAP students described how essential their GP supervisors and other practice staff had been in identifying projects, in addition to providing practical support and enthusiasm. Students had good experiences in practices where staff held positive views about the value of students' work for improving the care of their patients. However, students reflected in the variability of experience within this type of service- learning:

> if you get a good GP placement, you're likely to have a supportive person for what you present . . . .If you have a GP where the GP is not very engaged with it or there is no idea of a project - you're on your own. (GPCAP Student3)

Within the Digi-CAP, students worked with community partners who were leading the pandemic response. These partners included local Public Health Fora, NHS Clinical Commissioning groups, local Councils, and Community Development Leads. Some students reported initial communication issues with partners which delayed their work, particularly as everything was conducted remotely and they sometimes had to wait for feedback or direction. However, most reported enjoying the opportunity to work with different types of organisations that they perceived really understood community needs and had tangible resources to support projects. Despite the brevity of these working relationships, most students felt as if they were treated as equal partners, and importantly, given scope to shape the projects and responsibility to implement them. This autonomy and the trust placed in them served as a further motivating factor:

> The help that they [community partners] gave us just gave us more autonomy in the end, because once we knew exactly what it was we were trying to achieve we had as much free rein and as wide a scope as possible to create that. (Digi-CAP Student5)

Interviewees described how collaborating with patients and listening to their personal narratives had enhanced their experience, empathy and their understanding of meaningful QI:

> So, it is very easy to learn about these presentations like a textbook, but with CAP, I found out so much more about why there is this issue . . . [poor mental health]. So, I would say that CAP gave me the extra push to just try to find out why there are these issues. . . (GPCAP student4).

Although disappointed at being unable to reach out directly to patients due to COVID-19 restrictions, partnering with community and commissioning groups gave students an indirect lens through which to view health inequalities, and students were able to reflect how the pandemic had served to further expose these inequalities in local communities.

Making a sustainable difference

In both versions of the CAP, the students were asked to conduct an evaluation of their projects. This included an analysis of the immediate impact of their project on the target population and whether there was potential for long-term sustainable impact. Students valued qualitative feedback from the GP practice, community collaborators and patients about the potential impact of their work. However, students in both versions of CAP experienced challenges to evaluating project impact within a short time frame. For example, it was often difficult to make a direct link between their project outputs such as health educational materials (e.g. student created leaflets, or videos) and a change in patient or doctor behaviour.

When students' evaluations showed positive impact on the GP practice or on patient experience, it provided powerful evidence to some students of their potential to be agents of change. These students explained how this increased their confidence that they could affect change through quality improvement activities as qualified doctors:

> The most valuable thing I've learned is how easy it is to have an impact. . . You need to have the skills . . . and now . . . able to produce something that has a genuine impact on people's lives in the next few weeks . . . That is do-able. (Digi-CAP student2)

Longer-term implications of student projects were considered important by interviewees, and they were keen to know how their work might be taken forwards or sustained:

> Something I'm keen to do is to make sure there's some kind of continuity, some sustainability, some legacy to the project. So that when we're doing something - we don't just intervene, and it stops - but we've actually created some sort of lasting change. (GPCAP student6)

Not all students were motivated to develop projects which had a significant impact, and this appeared to contribute to a less fulfilling experience:

> I suppose if we had a mentality of, "oh we could do something that really makes a difference", then I suppose we would have been a bit more motivated

> to try that. But that's something that didn't really come into my head. (GPCAP student9)

However, when students were able to witness a sustainable change for their GP practice or community partner, this motivated them to excel in their projects.

Discussion

This study supports previous research which found clear benefits of teaching medical students and trainees quality improvement skills in a community setting [14–17] and that experiential, creative QI activities in clinical settings are often most effective to fostering student learning [7]. This study emphasises that a key factor to engagement in QI activities was a perception of their work as valuable both to themselves and to the community, and this supports previous research looking at medical student and trainee quality improvement in community settings [14–17]. Indeed, a realist review of QI teaching for trainee doctors suggests that the choice of QI topic is key for learning to occur [18]. Within CAP, meaning for students came from a personal interest in a topic, through inspiration from meeting patients or community members, or was driven by the enthusiasm and expertise of partners and tutors. It is important, however, to recognise that not all students found a sense of meaning from the outset, and so early guidance must be provided to ensure all students can develop an engaging project. Within GPCAP, this guidance came from discussion with their GP tutor, practice staff and patients. Within Digi-CAP, a pre-defined topic was set by community partners and faculty, which still provided room for student autonomy in guiding and shaping the project. A recent realist review of QI curricula in medical education supports working with a combination of student identified and pre-defined priority projects to ensure relevance to local priorities, stakeholder support and student engagement [6].

The evaluation highlighted the importance of students' learning expectations and readiness for community service-led QI work which is different from basic clinical sciences. Students gained more from these experiences when they felt adequately prepared for engaging with the responsibility, uncertainty and challenges of implementing QI projects in clinical practice. Secondly, medical students can become overly focused on developing the knowledge to pass their end of year assessments [19] which can lead to conflicts about dedicating time to QI projects which they need to pass but which do not count numerically towards their end of year mark. This tension for students between QI work and broader education goals has been confirmed across several studies [15,16,20,21]. Integrating community-based QI projects appropriately into their existing curriculum assists students in understanding how this type of work enhances their learning and furthers their professional training [6,15,19]. Hence our decision to include the CAP project module as a compulsory component of our existing clinical placements, rather than as an isolated course.

The importance of having supportive partnerships throughout the CAP was evident from our data and supports research which emphasises the key role of mentorship and partner commitment within QI curricula [6,18,22,23]. Training-the-trainers, ensures that those tasked with more supervisory roles feel supported and confident, helping to address issues of variability of student experience. Our data suggested that close collaboration from the outset with community stakeholders to develop projects goals lead to outputs with significant impact. However, time and space in the curriculum are needed to develop the necessary trust and respect that such partnerships are founded upon. Our decision to dedicate a faculty member with expertise in community engagement to support these initial student-community partner relationships further assisted this process.

In both CAP versions, students sought evaluative stakeholder feedback for evidence that they were making a difference as a true 'agent for change'. Previous research has highlighted the importance of 'making a difference' for students in QI programmes which enhances student experience and builds confidence [16,17,22]. Similarly, when students' CAP evaluations demonstrated a meaningful impact on the community, students placed greater value on their work which made the whole CAP experience feel worthwhile. However, students spoke of the challenges in evaluating the impact of CAP within a short time frame and how they struggled to develop appropriate improvement goals to measure longer term project outcomes. This is keeping with other QI student project evaluations which feature the recurrent theme of limited time [16,21,23]. Within CAP, our data suggested that students would benefit from clear initial guidance on developing more realistic and measurable short-term outcomes and the opportunity to build upon previously established student QI projects with clearer longer-term impact.

Completing the cycle: changes to our QI curricula

A key part of QI activity is to gather feedback which can be incorporated into the next iteration of the project [1,24]. Accordingly, we have listened to informal feedback from students, GPs and community partners throughout the two versions of CAP on how best to identify problems and to make changes to our own

QI curricula. Based on the themes emerging from this study which provide information on the facilitators and barriers to successful student engagement with community projects, we have some developed suggestions for educators and course developers to consider when planning to develop similar QI projects in medical education (Box.1). We have enacted some of these recommendations into our programmes, including supporting students to find meaningful projects by providing them, and their GP supervisors, with a needs and asset analysis of their local area to flag community priorities. They are provided with the contact details of community groups and organisations that students could consider collaborating with. We have worked with Department of Health and Social Care (DHSC) to help us identify national population priorities such as vaccine hesitancy and mental health to focus student CAPs. The DHSC have since disseminated some of the key projects via their social media channels. Regular evaluation supports the development and improvement of such complex educational interventions which feature community engagement.

Box 1 Improving the quality of community-based QI courses.

Key ingredient for QI projects	
Help to ensure that the QI project is valued by students *(Theme: finding a sense of purpose and meaning in QI projects.)*	• Support students to collaborate with stakeholders to create a project that they are personally invested in. • Assist students by offering community priority projects to adapt and incorporate their own interests.
Supporting student readiness for responsibility in service learning *(Theme: preparedness for responsibility and service-driven learning)*	• Ensure students are adequately prepared through faculty training and support for the opportunities and challenges of implementing QI projects. • Consider the timing of the QI projects in medical training and ensure adequate space and that it is integrated into existing curriculum. • Promote the unique benefits of this type of service-learning to students' wider professional development. • Give students space to reflect and share their experiences of QI to highlight the value added to the community, and their personal and professional learning.
Ensuring an effective partnership and supervision *(Theme: The importance of having supportive partnerships)*	• Actively support students to foster positive working relationships with clinical staff and the community. • Ensure that clinical staff, patients, and community organisations are also adequately supported to work effectively with students • Engage practice and community organisations which have a positive attitude to QI and who value student contributions
Ensuring projects have a sustainable, measurable impact *(Theme: Making a sustainable difference)*	• Develop clear and realistic expectations with students about what can be achieved within the constraints of the programme. • Show students how to develop meaningful and measurable outcomes to evaluate the short-term impact of projects. • Encourage students to work on longitudinal QI projects where outcomes are more significant. • Allow students to revisit their projects to ascertain longer term impact.

Limitations

Due to the limited pool of potential interviewees who had completed projects at data collection, the study used convenience sampling. However, with a larger pool of students, a purposive approach would have been better, in particular, to obtain a greater number of Digi-CAP students. Such an approach may have led to differences in the facilitators, challenges and experiences reported in this study. As with most interview studies, participants were volunteers and thus self-selecting. Therefore, they may have had different or more extreme views than those who did not choose to participate. Equally, as the Digi-CAP at the time of the study was not compulsory, participating students may be different to the wider pool of students who complete the compulsory GPCAP every year. In addition, the students were all in their third year of study as this is when the programme occurs, thus the findings may not reflect the issues of engaging early years students in community action projects. Furthermore, the GPCAP data was collected pre-pandemic and the Digi-CAP occurred during the first COVID-19 wave, which may have further influenced student perceptions of quality improvement and community priorities. Despite these limitations to sampling, we believe that the data from this study still suggests a number of areas to consider when preparing and supporting medical students in community-based quality improvement.

Conclusions

With adequate resources, support and supervision, this experiential QI activity broadened students' understanding of health inequalities and provided the potential for students to act as agents of change. Both versions of CAP provided students with a service-learning opportunity where they could gain critical QI skills whilst having a sustainable and meaningful impact on their local communities.

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Ethical approval

Ethical approval was granted by the Imperial College London Medical Ethics Committee (EERP1920–009).

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