

Decentralised clinical training in optometry: Student perspectives



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Background: Decentralised clinical training (DCT) allows for training outside of central academic sites to within district-based ones with the expectation of enhanced exposure translating into improved competency of students.

Aim: To determine student perspectives and experiences with the DCT model in clinical training for optometry.

Setting: Data were collected using an online survey created with Google Forms.

Methods: An exploratory, descriptive, case-based design using an online questionnaire consisting of a five-category Likert scale was applied in this study. Saturated sampling was utilised to select participants.

Results: Most respondents agreed on the acceptability of accommodation (83%) and amenities (85%), but some dissatisfaction with safety (22%), cleanliness (39%) and particularly Internet access (68%) was noted. Onsite equipment was found to be adequate (67%) and in good working order (78%), including general agreement that these aspects enhanced clinical training (72%). A positive impact was also agreed upon by the respondents on important critical cross-field outcomes including confidence (89%), empathy (80%) and teamwork (78%). Clinical training in ocular pathology was found to be better than training in other specialist skills possibly because of lack of appropriate resources (equipment and management devices). Respondents agreed that supervisors were professional (87%), approachable (87%) and key to the learning experience (86%).

Conclusion: It can be concluded that DCT placements facilitated overall positive experiences with respect to accommodation, facilities, transport and clinical training, especially in ocular pathology. Supervisors play an important role in the learning during DCT placements.

Keywords: optometry; student perspective; decentralised clinical training; clinical training; public sector.

Introduction

The Bachelor of Optometry (B. Optometry) curriculum at various institutions in South Africa has experienced significant transformations in keeping with the changing scope of the optometric profession in the country, one being the implementation of a decentralised clinical training (DCT) model. Decentralised clinical training refers to training of health science students outside of central academic training sites to within district-based training platforms, with the expectation that it will lead to enhanced competency, which would be the ability to perform all activities required of an optometrist after acquiring the necessary knowledge skills and attitudes as defined by the World Health Organization.^{1,2,3} In comparison to training at central academic sites, DCT thus necessitates students adapting to human resource requirements in the public health field, including lack of work space and available equipment, which exposes them to real-world practice contexts that are expected to promote a 'fit-for-practice' graduate.³ In addition, this model strengthens government's efforts to boost access to health care, especially in underserved areas and communities through various outreach activities.^{4,5} For academic institutions, from an educational perspective, additional benefits of DCT would include higher graduate output; an improvement in outcome competencies for health professionals; a route to ensure quality training despite the increased intake of students in various health professional disciplines without an equitable increase in resources for teaching; and a more integrated health care training approach and training that is community embedded, with direct benefits to the community served.¹

The transition of optometry in South Africa from involvement solely in the private sector to significant involvement in the public sector has largely been necessitated by policy and strategic direction of the country to respond to the quadruple burden of diseases which include those that are communicable, noncommunicable, maternal and perinatal, and injury related to prepare for a National Health Insurance.^{4,6} This has led undergraduate clinical training to also expand into this sector, particularly in its service learning component, a key tool in health education enabling students to learn while providing a direct service to society.⁷ Moreover, change was required in the clinical training of optometrists to fulfil the registration requirements of the Health Professions Council of South Africa (HPCSA) which, since 2014, requires students to complete assessments of a stipulated number of patients and hours of clinical exposure prior to registration as an optometrist. In addition, this change was required to accommodate the expanded scope of the profession that includes ocular diagnostic privileges since 2001 and therapeutics privileges since 2016. While training for the use of ocular diagnostic procedures is incorporated in the undergraduate programme, that for ocular therapeutics is currently only offered at postgraduate level. However, for therapeutics privileges, there remain limited opportunities for meeting the minimum HPCSA requirements for registration within the tertiary institutions and in the private sector, hence the importance of decentralising clinical training to the public sector.⁸

At one of the South African institutions, which was the first to implement DCT in the undergraduate clinical training of optometry in the year 2016, final-year students enrolled in the Clinical Grand Rounds module at that institution and completed a 3-week block placement at different public health facilities. The Clinical Grand Rounds module builds on the theoretical and practical knowledge obtained in the first semester modules of general clinics (analogous to primary care clinics), binocular vision (BV), contact lenses (CL), paediatric vision (PV) and low vision (LV) in providing clinical training experience in all components. Each component is coordinated by a separate lecturer who provides all necessary guidelines, orientation and support as required to students and the supervising optometrist at the DCT site for their respective components. They are required to also validate evidence of clinical training provided by students for their components before students can register as qualified practitioners with the HPCSA. Evidence of having completed training in all aspects is provided by students in the submission of signed logbooks detailing patients who were examined and managed, as well as case reports and seminars on interesting clinical case reflections on their experiences. Assessment reports are also provided by the supervising optometrist(s) upon request by the lecturer. The resident optometrist at each DCT site is thus another key role player in DCT for optometry in providing supervision of the student clinical performance to ensure competence. To fulfil this role, they are required to be an HPCSA registrant with at least two years of clinical experience. (As the initial cohort of

supervisors did not have any clinical supervision experience, they received mentorship from the lecturers for this role, which is still ongoing.)

An initial report of optometry student experiences with DCT from a focus group highlighted varied experiences with clinical training at different sites but with consensus on a positive experience, particularly with developing skills in the case-based approach and better appreciation of the inequalities in the delivery of eye care in South Africa.⁶ No other published study was available that documented optometry students' experiences with DCT. Positive learning experiences at decentralised training platforms have been noted in the discipline of nursing, including areas of competency, personal growth and confidence, mutual benefit to students and the health care system.^{8,9} Resource limitations including access to Wi-Fi did pose a challenge to functioning in a clinical setting and as a student, with a perception of lack of support from clinical tutors also noted.^{8,9} From the perspective of supervising optometrists, Ebrahim et al.² reported support for the DCT model by public sector optometrists despite envisaged challenges such as limited resources and lack of formal training to fulfil the role of clinical educators. Both the aforementioned studies were, however, conducted in the initial year of implementation of DCT in optometry and therefore may have certain limitations in providing current information that can be used in directing future planning.

Smith and Ory¹⁰ assert that evaluation is important to assess the effectiveness and level of success of any given programme, as well as to propose ways to improve the quality of the intended programme. This assertion extends to health care programmes as well, as evaluations provide a critical assessment of whether the objectives of said programmes are being fulfilled. Feedback from both the students and supervisors are therefore imperative in understanding the DCT experience in optometry to guide improvement of the model and future planning and more effectively guide other institutions that may also want to adopt this approach. The current study therefore set out to explore student perspectives and experiences with the DCT model in optometry.

Methodology

A cross-sectional, quantitative design was used for this study. The study population included optometry graduates who had been final-year students anytime during the period 2016–2019 and thus would have engaged with DCT. Purposive sampling was used to attempt to recruit all members of the study population to participate because of the limited number of eligible participants and time constraints.¹⁰

Data were collected by means of a structured online questionnaire answered using a five-category Likert scale ranging from 'strongly agree' to 'strongly disagree', with the category chosen used to describe perspective and experiences. The self-administered questionnaire was designed for the

study using Google Forms. Areas investigated were based on informal feedback, either positive or negative, from students during and after their DCT rotations and included travel, accommodation, available resources, clinical training in specialist and general optometry, and supervision. The questionnaire was piloted on a group of five current final-year students and modified to reduce ambiguities. The final questionnaire was divided into 14 sections comprising of between four and seven statements with the corresponding Likert categories and took an average of 15 min for completion.

The questionnaire was distributed via a URL link to WhatsApp groups comprising of the study sample. Reminder messages were sent out one week and then two weeks after the initial posting. Once completed, the data collected from the questionnaire were automatically logged into the Google Forms responses database hosted by the server of the South African institution at which the study was conducted and which could be accessed by the researchers only via password-protected computers. Data were captured and analysed with Microsoft Excel and were presented herein using descriptive statistics, primarily frequencies of the responses to the Likert categories as specified. It must be noted that in reporting the results, to allow the reader to focus on the big-picture pattern and to declutter the crowded figures,¹¹ the frequencies of the responses to strongly agree and agree, and those of strongly disagree and disagree, have been combined and simplified to indicate agreement and disagreement, respectively, to the statements presented in the questionnaire. However, the individual frequencies to each of the Likert categories are displayed separately in the tables and figures.

Ethical considerations

This study adhered to the tenets of the Declaration of Helsinki and received ethical clearance from the Humanities and

Social Sciences Research and Ethics Committee at the University of KwaZulu-Natal (ref. no. HSS/00001379/2020).

Results

Following a description of the demographics of the respondents, the ratings of the respondents to statements regarding accommodation, transport, equipment and facilities, specialist skills training, clinical competency and other aspects of DCT are detailed in this section.

Demographics of respondents

The link to the online survey was sent out to 129 graduates and was completed by 45 graduates and hence a response rate of 35%. The mean age of the respondents was 23.95 ± 1.93 years (median age 23 years) with the majority being female (76%). Almost two-thirds had graduated recently, with 33% and 31% having graduated one and two years ago, respectively.

Accommodation

Figure 1 presents a summary of their perceptions of the accommodation that they occupied as students during their DCT rotation.

While an overwhelming majority of respondents found that there was sufficient space allocated for the entire group (83%) and confirmed access to water and electricity (85%), a lower percentage (72%) reported access to adequate facilities to store and prepare their meals. Just under two-thirds (65%) felt the cell phone coverage was adequate, with most (60%) feeling safe in the site accommodation. The majority (68%) felt that they did not have adequate Internet access. Respondents appeared to be divided with respect to satisfaction with the overall cleanliness of the site accommodation.

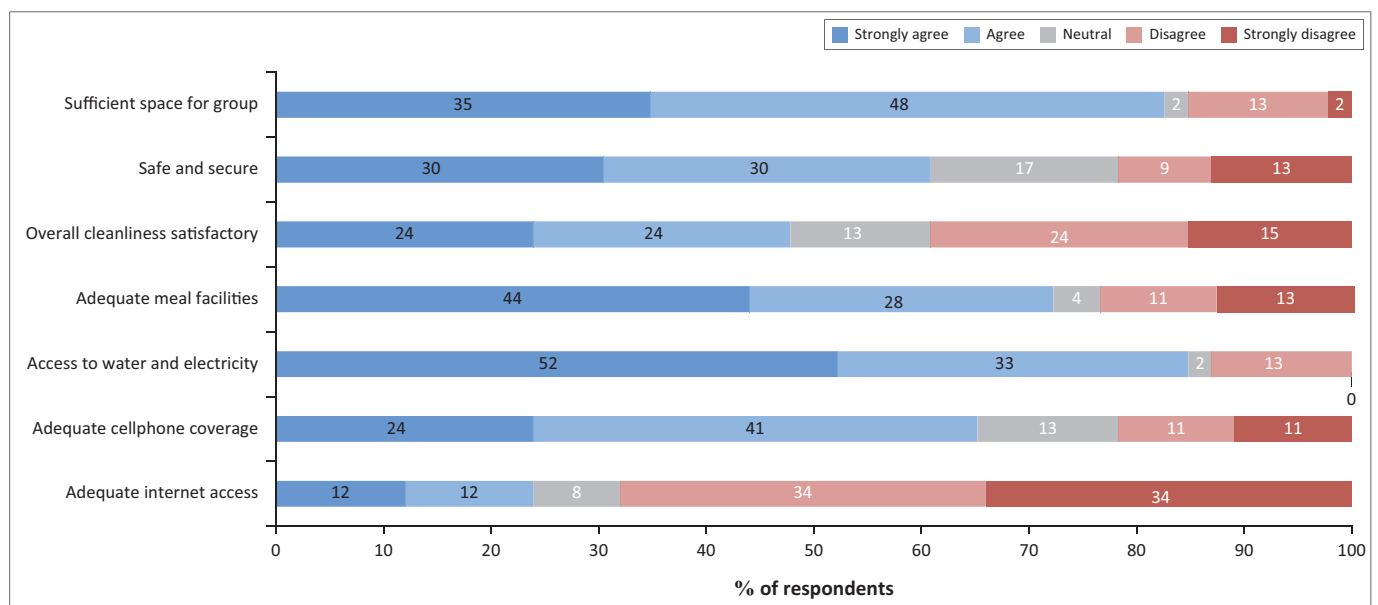


FIGURE 1: Perceptions of accommodation linked to the decentralised clinical training sites.

Transport during decentralised clinical training rotations

Most respondents perceived the assigned driver to be professional (79%), the vehicle used to be roadworthy (91%), daily transport to have been safe and punctual (85%) and that there had been effective communication in this regard (76%).

Supervisor interaction

As noted in Figure 2, equal proportions of respondents agreed that supervisors were professional (87%), approachable (87%) and key to the learning experience at the site (86%) concerned.

Equipment and facilities

Familiarity with the equipment, found to be in good working condition, was reported by an overwhelming majority of respondents (96% and 78%, respectively; Figure 3). However, 30% of respondents did not find the equipment to be adequate or appropriate, although 72% agreed that it enhanced their clinical training.

Specialist skills training

Figure 4 shows the responses to various aspects of clinical training in relation to specialist clinics and pathology, viz., BV, CL, LV, PV and pathology (Path). The vertical bars are colour-coded with respect to the specialist clinics. Where a particular colour bar is absent, it implies that that aspect of clinical training was not surveyed in this study. If the label '0'

appears, it means that none of the respondents were in agreement to that aspect of clinical training for that specialist clinic.

The clinical training for pathology had relatively higher levels of agreement for all aspects compared to other specialist clinics. While most respondents reported having effective supervision in pathology (96%), LV (85%) and PV (84%), a comparatively lower percentage of respondents reported this for BV (61%), with the lowest reported for CL (13%). Very low levels of agreement were noted for all aspects of clinical training in CL.

Clinical competencies

Table 1 presents a summary of responses to statements (also summarised) based on the possible influence of DCT training on clinical competencies. Most respondents (> 70%) agreed with most of the statements. Lower percentages of respondents agreed with the statements regarding development of their abilities to use case-based approaches (63%), that clinical competency was better assessed at the

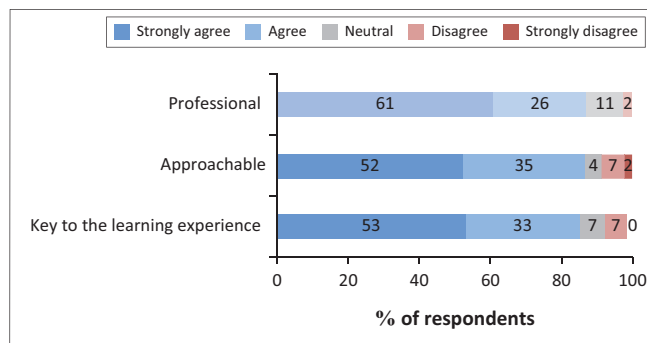


FIGURE 2: Perceptions of supervisors and supervision at decentralised clinical training sites.

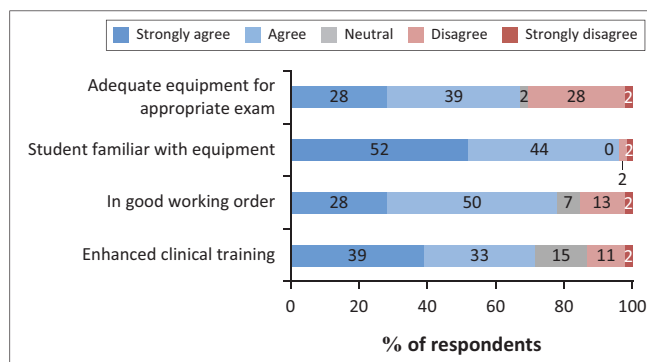
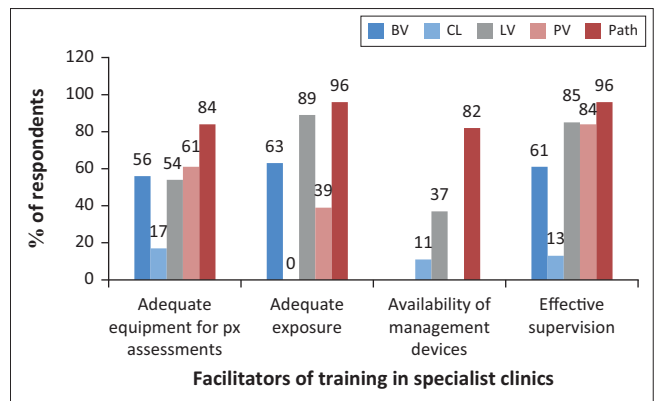


FIGURE 3: Perceptions of equipment available to students at decentralised clinical training sites.



BV, binocular vision; CL, contact lenses; LV, low vision; PV, paediatric vision; Path, pathology; px, patient.

FIGURE 4: Perceptions of the opportunity for the training of specialist skills at decentralised clinical training sites for students.

TABLE 1: Perception of clinical training at decentralised clinical training sites and influence on competency from a student perspective (percentage of respondents).

Other perspectives	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Clinical training is better than at the UKZN-based clinic sites	35	26	22	7	11
Training at the DCT sites built self-confidence in my ability to manage patients	55	37	4	4	0
Improvement in time management	68	26	2	4	0
Adequate time for clinical teaching and learning despite patient volumes	39	35	9	17	0
Ability to use a case-based approach was enhanced	56	33	7	4	0
I am a better clinician because of my training at the DCT sites	46	40	7	7	0
Clinical competency is better assessed at the DCT training sites than at the UKZN-based clinic	43	20	13	17	7
Opportunity to work with other health professionals	33	41	11	13	2
I learnt new clinical skills and knowledge not included in the UKZN curriculum during my DCT rotations	65	26	4	2	2

DCT, decentralised clinical training; UKZN, University of KwaZulu-Natal.

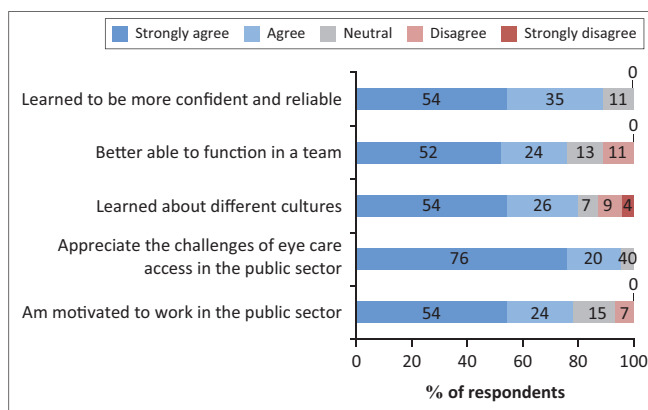
DCT training sites than at the University of KwaZulu-Natal (UKZN)-based clinic (63%) and that the clinical training was better at DCT sites than at the UKZN-based ones (61%).

Personal growth

While an overwhelming majority of respondents found that they appreciated the challenges of eye care access in the public sector (96%), they learned to be more confident and reliable (89%) and learnt more about different cultures (80%); nevertheless, slightly lower percentages felt that they were now motivated to work in the public sector (78%) and were better able to function in a team (76%) (see Figure 5).

Other aspects of decentralised clinical training

Table 2 presents a summary of their perceptions on issues outlined from an emotive standpoint. Although 32% found the clinical training at DCT to be more stressful than at the campus-based clinic, only just over half (52%) reported that support was readily available from their lecturers while on their DCT rotations. A higher number (63%) found the DCT staff to be supportive. On the positive note, an overwhelming majority of respondents felt safe to practice their religion and beliefs freely (74%), and 78% believed that patients attending the clinical sites benefited because of their training there.



DCT, decentralised clinical training.

FIGURE 5: Perceptions on their personal growth following decentralised clinical training rotations.

TABLE 2: Perspectives of other aspects of decentralised clinical training (percentage of respondents).

Other perspectives	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I felt safe to practice my religion and beliefs freely at the DCT sites.	46	28	19	7	0
The supervisors and staff at the DCT sites were understanding to any of my disabilities or requirements.	41	22	35	2	0
Support was still readily available from our lecturers while completing our rotation at the DCT site.	24	28	24	17	7
Patients attending the clinical sites benefited because of my training at the sites.	37	41	18	4	0
I found my clinical training at the DCT site to be more stressful than at the UKZN-based clinic.	20	12	22	22	24

DCT, decentralised clinical training; UKZN, University of KwaZulu-Natal.

Discussion

Decentralised clinical training involves a transition from the more familiar 'in-house classrooms' and lab-based training to a clinical learning environment which can be both stressful and exciting for students. However, a meaningful learning environment is one of the key areas in making this transition easier and the clinical learning more effective.¹² One component of the clinical learning environment, as it pertains to DCT, is the accommodation that students are allocated to, as they are required to be in close proximity to the clinical site and community being served.⁶ This is an area that has not received any attention in previous publications on DCT in South Africa and yet can be pivotal in ensuring the success of this training platform.^{2,3,6} The accommodations, which were self-catering units, offered to the students for the two chosen sites appeared to have been largely acceptable to students. However, two areas of concern noted were regarding overall cleanliness and access to the Internet. Overall cleanliness of the accommodation is necessary for many reasons, particularly in the context of health care. Moreover, considering that online learning has become an important feature of education in the 21st century, access to the Internet is critical for communication between the students and their lecturers in sustaining formal instruction, as is necessary. In terms of clinical training of final-year optometry students, a key element is case presentation seminars, which are only possible via various online platforms during the times that students are out in DCT rotations. It remains the responsibility of the institutions involved to ensure students and their guardians that they are assured of safe and clean environments to facilitate and sustain effective clinical learning.

Another logistical key element to the success of DCT is transport which is required by most students to get to the sites as well as for their daily movements during the rotation period. The university, as part of its duty of care, has to take all measures to ensure the safety of their students, which in the case of transportation would require professional drivers, roadworthy vehicles and effective communication.^{13,14} This aspect has been reported previously as creating some frustration, especially with regards to transport to community clinics, which appears largely to be related to budgetary constraints.^{2,3,6} This study, however, found the aforementioned aspects to be perceived as acceptable.

The provision of primary eye care through comprehensive eye examinations, which result in the diagnosis and management of refractive errors as well as ocular pathology, is only possible with appropriate equipment. While students take their personal equipment adequate for a basic refraction and ocular health assessment, other equipment will be required for the specialist components of clinical training, which is more often not available at all sites. Not surprisingly, therefore, the lack of resources particularly testing equipment has been touted as a serious limitation to effective clinical training and delivery of comprehensive eye care services at public health institutions.^{2,3,6} It may also limit the capacity to provide community level care, which is one of the goals of

DCT.⁵ This was also reflected in the findings of the current study, as almost one-third of the respondents reported onsite equipment to be inadequate and/or inappropriate. It is advisable to have standard equipment available at all public health training facilities, enabling the full scope of the profession. This will also ensure that all students get equal exposure and will equip them with the knowledge and skills required for future practice. Considering budgetary constraints, both at public sector hospitals and academic institutions, partnerships in acquiring the necessary equipment should be considered.

As the clinical training in this model occurs outside of the academic institution, the resident optometrist at the DCT site is pivotal to continued formal instruction and clinical training. Considering that public sector optometry to be in relative infancy, it must be acknowledged that many resident optometrists would be young and therefore may need additional support and mentorship for their own development to be able to competently supervise students under their care. Such mentorship of the resident optometrist can be and is provided remotely at some sites by the university lecturers. Most students reported supervisors as being key to their learning experience and found them to be both professional and approachable. This is encouraging, considering that in earlier studies some resident optometrists expressed concern about their readiness to serve this role.^{2,3,6} This indicates their possible development as trainers and mentors since inception of the DCT programme, which may be related to the mutual benefits of skills transfer between academics and resident optometrists, as described by Van Staden.⁶

The DCT rotations offer students an invaluable opportunity for exposure to and training in the management of many different ocular conditions not often encountered at the university-based clinics and local placements. The area of clinical training that students appear to benefit the most from, during their DCT rotations, was ocular pathology. Similar findings were reported by Ebrahim et al.² The fact that many patients with ocular pathology present at the hospital sites may be related to the presence of ophthalmological services more often at the hospitals, than would be the case at university-based optometry clinics. The possibility of learning the benefits of co-management with ophthalmologists presents as an additional advantage with DCT. Furthermore, considering the expanded scope of optometry to include therapeutics, the possibility of a partnership with ophthalmology addresses a huge challenge currently faced by the profession in completion of their therapeutics certification.

The training of specialist skills in BV, CL fittings, LV and PV does not enjoy the same benefits as ocular pathology and appears to be related to the lack of appropriate resources such as equipment and management devices to support clinical training in these specialist areas. This limitation was also highlighted by previous studies.^{2,6} In particular, the current study noted that further enhancement of clinical

skills in CL assessments and fittings is not often possible in the public sector. Anecdotal reports indicate that many patients requiring CL, in particular keratoconic patients, are often referred from the public to the private sector, due to inability to manage these patients at hospital sites. Thus, suggesting that while there is a need, the public sector remains ill-equipped to provide this specialist care. It is an area that requires particular attention in the future planning of training and services in public sector eye care facilities. Incorporation of specialist skills in the public sector will allow for better integration of optometry at primary health care level and thereby increase access to appropriate eye health care in addition to facilitating optimal outcomes for DCT in optometry.²

The primary aim of the DCT placements is for students to become clinically more competent. In achieving this aim, students are exposed to different challenges which requires them to put their knowledge into practice, including dealing with a large number of patients with different clinical conditions than they are usually exposed to in their academic settings.³ An overall positive influence of DCT on clinical competency, including time management, enhancement of the case-based approach and acquisition of new clinical skills and knowledge, was reported in the current study by the students. Slightly lower levels of agreement, however, were noted for clinical training and assessment of clinical competency being better at DCT sites than at the UKZN clinic. The latter finding may relate to the limited exposure to specialist skills training and should be taken into consideration in future planning sessions.

A positive impact was also noted on perceived personal growth following the DCT experience which lends itself to the concept of critical cross-field outcomes, which according to the South African Qualifications Framework are generic outcomes built into teaching and learning. It includes critical thinking, effective teamwork, organisational skills, both personally and professionally, fostering and taking responsibility for society and the environment among others.^{15,16} Many of the aforementioned outcomes appear to be achieved with DCT training, at least from a student perspective, including the building of greater confidence, giving them greater insight into and respect for cultural diversity and learning to cope better in under-resourced situations. The DCT settings expose students to 'real-life factors' and health system constraints that are faced by public hospitals in terms of working space and equipment, and learning how to deal with these challenges fosters the development of a more responsible and efficient health care practitioner.^{6,17} Furthermore, these settings allow greater exposure to disadvantaged communities with varied clinical conditions, which may awaken in the student the importance of public place sector involvement as a means of giving back to their communities.¹⁸

As envisaged by previous studies, DCT provided mutual benefits to both students and the site concerned.^{2,6} Students perceived their training at DCT sites to have mutual

benefits in improving eye care accessibility to a greater number of patients attending the hospital sites. On the other hand, some students found the experience stressful, with only half of them indicating that support was readily available from their lecturers. There appeared to be relatively greater support from the staff at the DCT sites. Exactly which areas created such stresses was, however, not investigated in any detail in this study and would be an important consideration for future studies. Overall, however, considerable support for the continuation of DCT was noted from students.

In general, the primary objective of evaluation of a programme is to assess its effectiveness as well as measure the success rate of such programmes. The significance of the current study is that it is the first formalised survey of DCT for optometry students since inception. It is, however, not without limitations, considering the relatively low response rate. Furthermore, while online surveys have become very popular and were the only viable method for data collection because of the coronavirus disease 2019 (COVID-19) pandemic in the time that this study was conducted, limited access to the Internet and technology may have impacted the response rate. As experiences and perspectives were ascertained, the effects of time lapse on memory of events must be considered when interpreting the study results. Moreover, it should be noted that even though students are randomly assigned to DCT sites with not all sites being attended by all students, because of the sites being classified at different levels of the health care system, the infrastructure and resources varied and may have also impacted the experiences and perspectives of the students of DCT. While limiting the study site to just one South African tertiary institution makes it difficult to generalise the findings to the broader optometry student population in South Africa, only one institution currently has DCT training incorporated into the clinical training of optometrists and can be used to inform other relevant institutions in the country of the benefits and challenges of this model. This information can also inform future planning and evaluations of DCT clinical training in medical and other health disciplines.

Conclusion

The primary aim of the DCT placements is for students to be clinically competent in 'real-life' settings such as the public sector, and this study revealed that DCT placements facilitated overall positive experiences from student perspectives, with respect to clinical training including gaining confidence in their clinical skills and decision-making abilities. Furthermore, mutual benefits to both the university and public health sector appear to accrue from this type of training platform. However, more information may be gained by a qualitative study with the use of focus group discussions with open-ended questions to facilitate the attainment of deeper insights into the specific issues raised, and such should therefore be included in any similar future study and utilised to improve on the current

model. An enhanced programme in the future can serve as a model for this mode of clinical training that may then be considered by other universities in South Africa, Africa and elsewhere.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

R.H., S.B., Z.C., F.H., N.M., N.N., A.S., M.X. and F.N. substantially contributed to the conceptualisation, data collection, analysis of data and article write-up.

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Data availability

The data that support the findings of this study are available from the corresponding author, R.H., upon reasonable request.

Disclaimer

All views expressed in this article are those of the authors and not of the institution.

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