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Health professionals' perceptions of the Walter Sisulu University's integrated longitudinal clinical clerkship on service delivery in rural district hospitals in Eastern Cape Province, South Africa

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Abstract

Background The Integrated Longitudinal Clinical Clerkship (ILCC) is seen as an enabling learning space for medical students and empowering preceptors. The presence of ILCC students in hospitals contributes to delivering health services and sustained improvement in the quality of health services in those facilities. This study explored health professionals' perceptions of the impact of a South African medical university's ILCC on health professionals' workload and service delivery in district hospitals.

Methods We conducted in-depth interviews with 33 purposively recruited health professionals for this study. Participants from six district hospitals were asked about health workforce workload and service delivery factors linked to the ILCC program. Thematic analysis was conducted using NVIVO. Ethics approval was obtained from the Walter Sisulu University (WSU) Faculty of Health Sciences Human Research Ethics Committee (ref: 033/2018).

Results Regarding the effect of WSU's ILCC on health professionals' workload, it was found that while students contributed positively to their competencies, there were negative consequences in terms of the time spent orienting new students at the beginning of the ILCC block. In terms of service delivery quality, the findings indicate that students enhance the quality of health services; the presence of medical students encourages clinicians to refresh their knowledge and improves patient experiences at the facility. However, the initial integration of students can slow down service delivery due to the time required for teaching, which may also lead to diminished trust from patients.

Conclusion The ILCC approach at WSU offers a medical education platform and addresses rural medical needs. Both the university and healthcare providers should optimise the longitudinal clerkship approach. ILCC plays an essential role in improving healthcare systems, prioritising patient-centred care, and addressing public health challenges in rural communities of South Africa.

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Keywords Integrated longitudinal community clerkship, Medical education, District hospital, Rural hospital, Medical students

Introduction

The health workforce is one of the six essential building blocks of the health systems that need improvement for universal health coverage [1]. Even though the shortage of health professionals is a contributor to dysfunctional health systems worldwide, the most significant contributor is the maldistribution of health professionals between and within countries [2]. Low- and middle-income countries (LMICs), especially those in sub-Saharan Africa (SSA) have the most critical shortages and poor health outcomes due to the international migration of health professionals [3, 4].

Poor access to health is a significant rural health challenge globally [5]; SSA is further severely affected by an inadequate number of medical schools [6]. Health workforce shortages and the maldistribution of the health workforce affect South Africa, with an estimated 73.5 health workers per 10 000 population [7]. The provision of efficient healthcare services in the era of shortages is dependent on increasing the number of health professional graduates, adapting health professionals' education to deal with public health challenges, guaranteeing the proper skills mix, and ensuring equitable distribution of health professionals [8].

Medical training at all South African universities commences immediately after high school and spans six years, culminating in the award of the MBChB degree. The program is divided into two primary phases: the first three years focus on pre-clinical studies, which cover foundational sciences and theoretical knowledge, while the final three years emphasize clinical training, providing practical, hands-on experience in hospitals and healthcare facilities under supervision [9, 10]. Following graduation, medical practitioners must complete a two-year internship, succeeded by one year of community service. This is a prerequisite for registration with the Health Professions Council of South Africa (HPCSA) as an independent medical practitioner [10].

The World Health Organization (WHO) advised training institutions to use both competency and community-based curricula in scaling up the production of health professionals to meet health workforce needs [11]. The primary purpose of medical education is to meet societal health needs and produce graduates competent in all the critical disciplines of medicine [12]. In addition, when optimally designed, clinical education should be a social learning process that facilitates longitudinal relationships turning learners into participants within the community of practice [13, 14].

The integrated longitudinal clinical clerkship (ILCC) defines a clinical paradigm of social cognitive theory, situated learning, and workplace learning methods and built on the foundation of continuity between students, patients, clinicians, and the healthcare system that applies objectives and ideologies of Primary Health Care (PHC) to the core [15]. The ILCC was introduced by Minnesota University Medical School, United States of America in 1971, training physician assistants for 36 weeks [16]. According to Norris et al. [17], the second generation ILCC first started in the 1990s in Australia, Canada, South Africa, and the other parts of America but was mainly characterised by shorter durations.

Although Stellenbosch University established the Ukwanda Rural School in South Africa in 2001, the first cohort of ILCC students only started in 2011 [18]. Students spend the year at a district hospital, 80 km from the regional one, mentored by a family physician with regular visits from specialists. Weekly, they gather for academic sessions at the regional hospital, supplementing daily workplace teaching. Commencing in 2014, Walter Sisulu University (WSU) introduced compulsory ILCC clinical training where the entire class of 5th-year (pre-final year) medical students spend twenty consecutive weeks in rural district hospitals throughout the Eastern Cape Province (EC). The primary aim of the WSU's ILCC programme is to provide patient-centred community clinical clerkship programmed at the district hospitals, Health Centres and surrounding communities [9].

This study uses ILCC to refer to the Integrated Longitudinal Community Clerkship (South African description) and Longitudinal Integrated Clerkship (International description). The latter, Longitudinal Integrated Clerkship (LIC), refers to a model of clerkship training for medical students; as opposed to conventional "block-based" rotations, designed to provide continuity across learning environments and experiences [19]. Both terminologies emphasise the continuity in medical training. As with the ILCC, LIC educational experience is grounded in longitudinal relationships of students with preceptors, patients, peers, places, and pedagogy [20, 21]. LICs have a significant positive impact on workforce outcomes, especially in rural and underserved regions [22]. Graduates of LIC programs are more inclined to practice in these areas and to pursue generalist fields like family medicine, which are vital for addressing healthcare disparities. The strong relationships cultivated during LIC training deepen graduates' understanding of local healthcare challenges and enhance their commitment to serving underserved populations. In a similar vein, Glynn et

al. found that graduates from a medical school offering an 18-week LIC in general practice were notably more likely to enter careers in primary care [23]. They noted that the LIC experience sparked greater interest in community-based practice and influenced their professional choices. This study highlights the essential role of LICs in meeting workforce needs and advancing equitable access to healthcare.

In an ideal structure, students are given one preceptor for each core discipline and train within one healthcare system over a year in an apprentice-like paradigm [24]. This structure also applies to the ILCC in South Africa for over 20 weeks [25]. Thus, it is rational to use both terminologies interchangeably since the definition, foundation, and structure are the same.

Globally and in South Africa, most studies on ILCC focus on its impact on students and preceptors. It is documented that ILCC increases students' clinical knowledge and skills [26], long-term learning, patient-centeredness [27], and clinical independence [28, 29] as they revisit medical knowledge across a variety of contexts. ILCC also helps students build trusting relationships with their preceptors [30, 31] and develop meaningful roles in the care of patients [32]. The ILCC is also seen as an enabling learning space for medical students as well as empowering preceptors [33].

The few studies on the impact of ILCC on the quality-of-service delivery reported that students' presence contributed to delivering health services in the facilities and the sustained improvement in the quality of health services [33–38]. Since the introduction of WSU's ILCC programme in 2014 there has never been research that was conducted to assess its effects on students, preceptors, or quality-of-service delivery. In 2021, WSU's

ILCC programme marked its seventh year, yet its impact remained unknown.

This study explored the influence of WSU's ILCC programme on the health professionals' workload and quality-of-service delivery in rural hospitals.

Methods

Study design

This study followed a qualitative case study approach to explore the perceived effects of the ILCC programme from the point of view of healthcare workers in 6 district hospitals in South Africa's Eastern Cape province.

Study setting

The study was conducted in six district hospitals which are located represent five district municipalities (Fig. 1), thus represent rural or the semi-rural parts of the Eastern Cape province [26], namely: (1) Alfred Ndzo district (Madzikane KaZulu Hospital, Mount Frere and St Patrick's Hospital, Mbizana); (2) Amathole district (Butterworth Hospital, Butterworth); (3) Chris Hani district (All Saints Hospital, Engcobo); (4) Makhanda district (Settlers Hospital, Grahamstown); (5) OR Tambo district (Dr Malizo Mpehle Hospital, Tsolo).

Contextual factors

The premise of clinical education is on relationships where students can pivot on the personal–professional relationship with their teachers, a clinician–patient relationship, a university–health service relationship, and a government–community relationship (Fig. 2) [39]. District health personnel, communities, and patients should involve medical students in the mutually beneficial relationship for ILCC to be sustainable [39]. Figure illustrates this relationship.

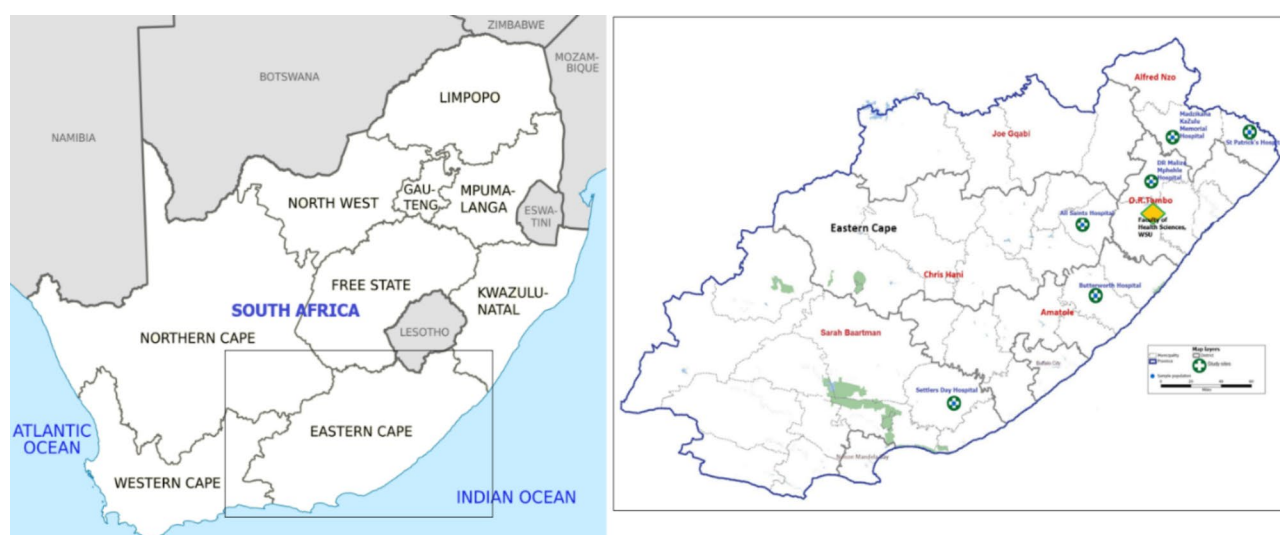


Fig. 1 Map showing WSU's ILCC teaching hospitals

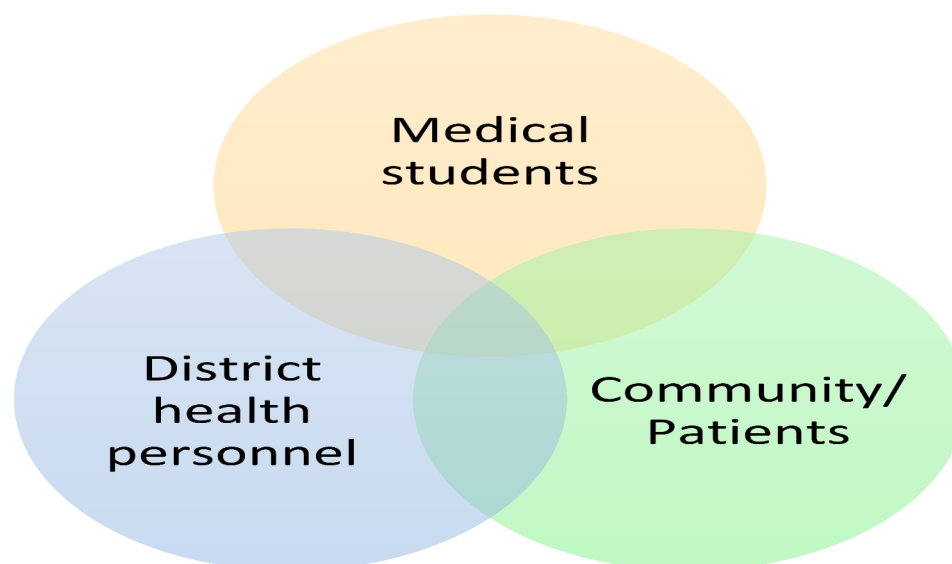


Fig. 2 Symbiotic clinical education model

Epistemological position

In hospital wards, doctors, nurses, and clinical associates engage with students, while preceptors fulfil the role of educators. These preceptors serve as a vital link between the hospital and the university, integrating clinical practice with academic programs. Jointly appointed by the Department of Health and the university, they mentor medical students during their clerkship experiences in hospitals. Meanwhile, non-clinical health professionals, such as hospital CEOs, assume administrative positions. Furthermore, a researcher's epistemology, or worldview, shapes their theoretical perspective, methodology, and research methods [40]. In this study, the researchers used a constructivist approach, thus acknowledging that all participants have different perceptions, experiences, and understandings of hosting medical students [41]. Constructivists believe that knowledge is relative to a particular time and place, which means there is no one truth. However, there is an interpretation of each phenomenon by people using their constructs. Constructivism was suitable for this study, as its setting was in six hospitals with varying challenges.

Population and sampling

A total of eight [8] hospitals involved in the WSU's ILCC program constitute the study site population in this study. Whereas all healthcare workers in these hospitals constitute the population of participants of this study.

Purposive sampling was used to choose both the study sites (hospitals) and participants [42]. The hospitals were selected based on their level of care (district hospitals) and participation in the WSU's ILCC programme since its inception in 2014. Therefore, six [6] district hospitals were included in this study.

The study participants were included in the study based on their experience of the ILCC programme, through their interaction with the medical students during their placement in the respective hospitals.

Inclusion and exclusion criteria

Only healthcare workers who had experience interacting with the WSU's fifth-year medical students during their ILCC placement in the respective hospitals were considered for participation in this study.

Participants were approached in a direct face-to-face meeting, during which the study was explained to them. If they were interested in participating, they were required to sign an informed consent form. The informed consent form highlighted five main aspects among which was the consent to be interviewed and consent for the interview to be recorded. Three participants declined for the interview to be recorded. Only one participant declined to participate because the timing of the interview was not convenient but redirected the interview to a participant of the same cadre.

Data collection and tools

A semi-structured interview guide (Appendix E) was used to conduct in-depth interviews with the hospital personnel. LG developed the interview guide under the supervision of MM and SCN. The interview guide was piloted in a rural district hospital that was not participating in the study to improve its credibility and ensure the unambiguity of the interview questions. All necessary revisions were made before the interview guide was used for data collection. Furthermore, to enhance the study's rigour and trustworthiness, the researcher used triangulation of data sources by utilising field notes, session summaries,

and observation techniques to supplement data obtained from the recorded in-depth interviews [26]. A total of 33 in-depth interviews were conducted and ranged from 30 to 60 min. Of the 33 in-depth interviews, 30 were audio recorded, and 3 were hand-written because participants did not consent to the audio recording of the interviews. Two of the 3 unrecorded interviews were done telephonically. All the interviews were conducted in English, by LG. The interviews were held in venues that were provided by the hospital staff, including offices, hospital boardroom, consulting rooms. The researcher did not stick to the order or wording of the questions as they appear in the interview guide [41]. Probing was employed throughout the discussions to encourage critical thinking, enhance data clarity, and elicit in-depth insights into participants' personal opinions, emotions, and experiences [26]. All the audio-recorded interviews were transcribed verbatim into Microsoft office [43] using Otter.ai, an online commercial transcribing program (available at Otter.ai-AI Meeting Note Taker and Real-time AI Transcription). All data were stored in a password-encrypted cloud-based storage system for safekeeping [26]. The transcripts were then cross-checked against the audio recordings and edited where needed to ensure accuracy by MN and LG [26, 43]. Transcripts were coded using NVivo.

Data analysis

The data was analysed following a thematic approach using NVivo software. Thematic analysis followed six steps as outlined by Braun and Clarke [44]. These steps are: (1) familiarising with data through transcribing data, proofreading the data, and noting initial ideas; (2) generation of initial codes – making interesting coding data features systemically across the entire dataset, collating data relevant to each code; searching for themes – collating data into potential themes, gathering all pertinent data to each possible theme; (3) Searching for themes-arranging individual codes into broader themes that capture the overarching patterns present in the data. This step helps provide a comprehensive understanding of the significant trends and insights that emerge from the analysis; (4) reviewing themes- checking in the theme work about coded extracts (level 1) and the entire data set (level 2), generating a thematic analysis map; (5) defining and naming of themes – ongoing analysis to refine each theme's specifics and the overall story the analysis tells, generating definitions and names for each theme; (6) producing the report – is the final opportunity for analysis, characterised by a selection of vivid, compelling extract examples, the final analysis of selected extracts, relating analysis to the research question and literature reviewed, thus culminating in the production of a scholarly report.

Table 1 Number of health professionals interviewed per study site

Study site	Number of participants
All Saints Hospital	6
Butterworth Hospital	6
Madzikane Ka-Zulu Hospital	6
Dr. Malizo Mphehle Hospital	5
St Patrick's Hospital	5
Settler's Hospital	5
Total	33

Table 2 Organisational position of the participants

Organisational position	Number of participants
Non-clinical position	
Administrative officer	5
Clinical position	
Operational Manager	7
professional nurse	7
Medical Officer	4
Preceptor	3
Clinical Manager	3
Clinical associate	2
Nursing Service Manager	2
Total	33

Reflexivity

Creswell [45] states that the researcher in qualitative research should reflect on how their role in the study and personal background, culture, and experiences hold the potential for shaping their interpretation, such as the themes they advance and the meaning they ascribe to the data. The first author is male, a medical doctor and an academic tasked with coordinating the ILCC programme at WSU between the years 2015 and 2020. He is the former clinical manager at one of the participating rural hospitals. LG's qualifications and professional responsibility influenced his perspective and the lens through which he interpreted the data. LG performed daily post interview reflections as a way of reflecting on his effect on the interview process and analysis of data.

Results

Description of the sample population

Thirty-three ($n=33$) health professionals from the six study sites participated in the study (Table 1). The data collection tool did not capture demographic information such as sex and age of the participants. The maximum number per site was six, and the minimum was five. Three sites had six participants each, and the other three sites had five.

The participants were a multidisciplinary team of health professionals from clinical (28/35) and non-clinical positions (5/35) (Table 2).

Major themes

The researchers found nine major overarching themes after scrutinizing and discussing the data (Table 3). There was a balance in terms of the impact on workload, with an equal number of positive and negative effect. The positive themes that emerged as impact on service delivery, outweigh the negatives.

Impact of WSU’s ILCC on health professional’s workload.

The results reveal that WSU’s ILCC was perceived by the majority of participants to have a positive effect on workload of healthcare professionals in rural district hospitals. It was suggested that they contributed in a positive way and with competency, thus easing clinicians’ workload. However, the results also show that the presence of students at the district hospitals had a negative effect on personnel workload.

Reduced workload of health professionals

Health professionals indicated that students positively affect workload as they reduce the clinician’s workload by providing patient care. Students participated in almost all patient care activities, including but not limited to independent consulting and managing patients, performing different medical and surgical procedures, and managing emergencies. Even though students were learning, they also contributed to patient care.

Extra-hands in managing patients

Students are valuable resources serving as extra-hands in triaging patients, taking detailed history, initiating treatment, and reducing patient waiting times.

“Students become extra hands here..., where we have this chronic shortage of doctors. They consult patients on their own even though they do not make final decisions. They play an essential role in managing lines, managing wards, becoming messengers, and more importantly, managing patients.” (Participant 13).

“...these students are senior.... There is a smooth patient flow that reduces waiting times.” (Participant 7).

“It is quite helpful to have medical students around. Even in the mornings before ward rounds, they have checked the results and made clinical notes.” (Participant 25).

“... they come here early in the morning, and they try to manage patients while we are waiting for a medical officer.” (Participant 27).

Perform clinical procedures

The participants also admitted that students reduce personnel workload since they performed different time-consuming medical and surgical procedures, including insertions of intravenous lines, insertion of chest drains, catheterisation, applying Plaster of Paris (POP), and

Table 3 Major themes on impact of WSU’s ILCC on health professional’s workload and service delivery

Study Objectives	Major themes
Impact on workload of healthcare professionals:	1. Reduced workload of health professionals: <ul style="list-style-type: none">• Extra-hands in managing patients/perform clinical procedures• Clinicians struggle to get time to teach students
Impact on service delivery:	1. Improved quality of health service delivery 2. Stimulate health professionals to learn 3. Create a learning environment 4. Health professionals adhere to correct clinical procedures 5. Enhanced quality of patients’ experiences 6. Extended ward rounds 7. Maternity patients prefer not to be attended by students

wound dressing. Medical students assist in reducing the workload, especially for the doctors.

“Students reduce our workloads because they assist us with taking blood, insertions of intravenous lines, catheterisation of patients, and before they leave, they even insert chest drains.” (Participant 15).

“The nurses become so excited when students are here because students do all the procedures usually done by nurses like putting up IV lines, POP’s, suturing, giving injections, wound dressings.” (Participant 20).

“They even assist in managing emergencies when our doctors are busy in theatre.” (Participant 18).

Clinicians’ struggles to get time to teach students

Participants also mentioned some negative effects of hosting students on personnel’s workload, stressing clinicians’ struggles to get time to teach students. They felt this negative effect mainly during the early weeks of ILCC, after which students become an asset to the facilities.

Participant 19 shared that *“The problem with having students, it is when they are still new where you have to spend a lot of time teaching (sic).... you spend a lot of time like extra 10 minutes with each patient. And for an overpopulated hospital like ours with a shortage of doctors, this becomes a problem....we do it because we know you only do the teaching for a week or two, then students become your assets doing most of the work.”*

“Compared to the time the students are not there, a doctor working alone in 30 minutes can see several more patients than when students are around.” (Participant 32).

Effect of WSU’s ILCC on the quality of service delivery

The results of this study reveal that the majority of participants reported a positive effect of WSU’s ILCC on service delivery quality while the minority reported a

negative effect of WSU's ILLC on the quality-of-service delivery. Broadly, the health professionals indicated that students contributed to an improved quality of care by conducting quality improvement projects, community outreach, and bringing new ideas to patient care. The participants also reported that the student's presence created a teaching environment that impacted the health-care teams and the quality of care. Health professionals also noted that students contributed to enhanced quality of patients' experiences in the facility.

Improved quality of health service delivery

Students improved the quality of health service delivery by conducting quality improvement projects. Most of them indicated that these students' projects resulted in increased care efficiency and sustained care practice changes.

"Our medical students do quality improvement projects... They identify gaps in how we do things and come up with implementable plans to close those gaps. In the end, it is not just a paper project, but they implement and evaluate showing sustainability." (Participant 14).

"I will make an example of the quality improvement project they did last year as part of their 20-week rotation..., they came up with practical solutions on how to improve our services to the community." (Participant 19).

The participants also reported that students presented new approaches to patient care, including new treatment guidelines, clinical audits, booking card systems, and filing systems resulting in enhanced service delivery.

"Last year's group came up with new treatment guidelines or protocols; they even assisted us to download an app in our smartphones with all those protocols. Another group presented topics in terms of how we can improve some of the ways we do things." (Participant 13).

The participants highlighted that student research projects provided evidence-based knowledge on how to improve service delivery.

"Students also do mini-research where they assist us in improving some of our programs. Furthermore, their preceptor also takes them to the clinics and schools for outreach. The outreach exposes them to the community." (Participant 2).

"Students always come with new researched knowledge leading to medical changes in our facility. These changes contribute to improved quality of healthcare delivery." (Participant 11)

Students also visited local clinics and schools to do health education/promotion; do in-service training activities for the nurses in hospital.

"They also do health education... They help clients by educating them on acceptable healthy standards, healthy living ways." (Participant 21).

"Student held a small in-service training on family planning. They came up with ways on how to reduce termination of pregnancies, how to get scholars to use family planning, and all those things" (Participant 22)

The quality of health service delivery improved during the rotation period of the students. According to the participants, these improvements are sustained even after the rotation period of the students. This is so mainly because they were achieved through translation into practice from activities such as quality improvement projects, research, health promotions, and evidence-based current approaches to patient care.

Stimulate health professionals to learn Another favourable finding on the implications of hosting students on service delivery that emerged from the interview data was that students stimulated health professionals to learn and improve their clinical knowledge in advance of teaching.

"The main advantage that I can think of is that all my doctors, they get to learn and be updated on the current information because a student will just ask something, for instance, the current guideline in managing...meningitis, you give them may be the last update of those guidelines, they will tell you: '...doc, no today, I read somewhere...'. they probe the doctors to go and check the recent information before going into tutorials." (Participant 32).

"Students ask lots of questions, and no one wants to appear like they do not know anything in front of students. This happens to both the nurses and doctors." (Participant 11).

Create a learning environment

Participants also reported that the presence of students creates a learning environment in the facilities. They indicated that academic meetings and presentations with students help them to update both clinical and academic knowledge. The participant also mentioned that when students are around, they felt responsible for imparting knowledge and were obliged to revisit reference materials. *"Students help us updating both our clinical and academic knowledge. When they are around, we have academic meetings and presentations that we would not normally have....all doctors have to read to prepare for these."* (Participant 14).

Health professionals adhere to correct clinical procedures

Participants reported that professionals were thorough when providing care to patients, especially when carrying out procedures and manoeuvres in the presence of students.

"When demonstrating or teaching students you, stick to principles or correct manoeuvres. You do not do shortcuts. Students need to learn the correct procedure or movement." (Participant 6).

Enhanced quality of patients' experiences

Students' presence in the facility resulted in enhanced quality of patients' experiences. Participants felt that students had a positive attitude towards patients and thus improved their attitudes towards students. They felt that patients do not feel the shortage of clinicians during the rotation period of students. They also reported that patients are happy with the thoroughness of care provided by students.

The district hospitals experienced improvements in patients' rights because the medical students had positive attitudes toward patients. Participants felt that patients considered students more polite, compassionate, and genuinely concerned about their well-being. They noted that these positive attitudes improved patients' experiences in the facilities.

Participant 8 said *"students always have positive attitudes towards patients. Our patients are very satisfied with the students. These guys treat them with respect and courtesy."*

"It is not helpful when you come, and there are no doctors to see you. They are so glad when they are here. There is no waiting for a doctor if they are here, these student doctors." (Participant 3).

"...our patients are doctor orientated, and when they see students, they see doctors." (Participant 9).

Patients recognised students for the thorough physical examination they perform on them and follow-ups after referrals. Several noted that patients appreciated this increased attention given to them by the students.

"Patients are happy with students, you know, they like that physical examination, I mean thorough physical examination. Most doctors do not do that these days; they just put the stethoscope all over you without even undressing you." (Participant 12).

"Our patients are very satisfied with the students. Students examine patients thoroughly, people like that." (Participant 15).

Extended ward rounds

It also emerged from the interview data that students' presence had some negative implications on the quality-of-service delivery in rural district hospitals. The participants reported that students' presence slows service delivery at the beginning of their rotations because of the time required to teach students, which usually prolongs ward rounds.

"...the rounds take longer because students ask lots of questions and you spend time teaching them." (Participant 25).

Maternity patients prefer not to be attended by students

The participants also indicated that patients in the maternity ward do not trust students and preferred that students should not attend to them.

"Our patients in maternity do not like to be attended by students." (Participant 6).

"Maternity is a critical place. When maternity patients come to the hospital they always want to be seen by a doctor." (Participant 7).

Discussion

This study aimed to expand the existing information on the ILCC teaching model's impact on health personnel's workload and health services delivery in South Africa. This study, therefore, provides novel evidence in this field derived from a multidisciplinary group of health professionals comprised of hospital managers, nursing managers, medical doctors, preceptors, professional nurses, and clinical associates. The findings of this study underscore the perceived advantages of the ILCC for students, clinicians, patients, and the healthcare system. Participants observed that the involvement of senior medical students could help alleviate shortages of healthcare professionals, shorten patient waiting times, enhance the overall patient experience, foster the professional development of clinicians, and potentially improve the quality of care delivered within the healthcare platform.

However, students' presence also resulted in an increased workload of already overburdened rural clinicians during the initial week when teaching and orientation of the students in the district hospital took place.

The ILCC model of teaching serves as a credible and effective alternative pedagogy in medical education. It prioritizes student involvement in the comprehensive care of patients over time, fostering ongoing learning relationships among students, patients, and clinicians. Furthermore, it ensures that students achieve the majority of key clinical competencies required for the year across multiple disciplines [25].

By integrating community-based ILCCs into their curricula, medical schools exemplify social accountability. This alignment of educational goals with societal health needs contributes to addressing health disparities and prepares graduates dedicated to enhancing health outcomes in their communities. This approach underscores the transformative potential of medical education as a driver of social justice and health equity [46]. The study further revealed that WSU final year students participated in patient care by providing hands-on support to the hospitals. This finding is consistent with the literature [34, 37], where students were reported to be caring and compassionate, available on time and anytime, and found to participate in patient care. Consistent with literature, students have assisted by alleviating the outpatient

and in-patient load [37]. They also participated in various clinical and non-clinical activities, including health promotion and education, disease screening, counseling, diagnosis and minor rehabilitation activities [37]. Findings from both settings revealed that students were extra hands to the clinicians supervising them. In the present study, students participated in almost all-patient care, including independently consulting and managing patients, performing different medico-surgical procedures, and managing emergencies. This participation had a positive effect on the workload of personnel.

Students' competencies in providing patient care helped reduce the workload of overburdened health professionals by supporting them in in-patient care and shortening patients' waiting time, which positively affects staff workload and job satisfaction, a finding similar to other sub-Saharan African countries [47]. Notwithstanding, though not a finding of this study, proficiency of students rotating through the ILCC could result in complacency of hospital and Department of Health administrators to fill vacant posts as students could be seen as readily available and competent substitutes. Available literature did not highlight this aspect but could be considered for future qualitative research to make conclusions.

As much as participants reported students to be a valuable resource for rural district hospitals, there were also challenges around the transition to the ILCC experience. These challenges include additional tasks and time in orienting the learner and initial possible challenges in re-orienting to the teacher role. Overburdened health professionals struggle to teach students while providing clinical care to many patients, thus resulting in tension between workloads and students' supervision [48].

This conflicting finding is in line with the hypothesis that students' presence negatively affects workload during the initial phase but becomes less of a burden during the rest of the clerkship [49]. More so, Talib et al. acknowledge that time is required to supervise students, but the positive effects of working with students supersede the time constraints [47]. Walters et al. also stress that these two responsibilities, patient care, and student teaching, benefit both [50]. Student teaching contributes to improved clinical practice and enhances patient care [50].

There were positive effects on the quality of health services delivery and the clinicians and patients that are consistent with the literature [33, 51].

The present study's findings brought different light on how students improved the quality of health service delivery. The students implemented quality improvement activities at the facilities relevant to rural hospitals faced with limited resources. The students also presented up-to-date approaches to patient care, including new

treatment guidelines, thus ensuring compliance with clinical guidelines.

They also conducted research that provided current evidence-based knowledge necessary for positive health outcomes in clinical practice [52]. In addition to research, they conducted in-service training and locally relevant health education, a finding consistent with the literature [47].

The findings also revealed that a teaching environment created within the hospitals positively influenced the clinicians and the quality of patient care. The students stimulated clinicians to refresh their clinical knowledge, a phenomenon common in literature [33].

Teaching students stimulated practical accuracy when providing care to patients, especially with procedures and manoeuvres, to familiarise students with the right skills. Students' presence resulted in better patient care, concurrent with the literature [33].

The health professionals believed that students' presence enhanced the quality of patients' experiences in the health facilities. There was a two-way positive attitude between the patients and the students. The respect that students showed to patients enabled initial acceptance of the students and showed them the same. This finding is exciting as the health system behaviour of the students is also in accordance with the prescribed concept for practice as in the Batho Pele Principles [53] and the Patient's Rights Charter [54]. The Batho Pele principles, introduced in 1997 in South Africa, are a set of eight guiding principles aimed at transforming public service delivery and ensuring that government services are people-oriented. The phrase "Batho Pele" means "People First" in Sesotho, highlighting the commitment to prioritize the needs of citizens in the public sector [55]. Medical students are a good instrument for promoting an ideal health establishment.

Patients also had the best experiences in the health facility during the rotation period of students. They did not feel the shortage of clinicians; they did not wait for long hours while accessing care, and above all, were happy with students' thoroughness of care. According to Sturmberg et al. giving a patient the best health experience in facilities is core to achieving patient-centred health care [56].

A unique behavioural pattern reported in this study consistent with erstwhile international literature [57] was that personnel reported that patients in the maternity ward do not trust students and prefer that students should not treat them. Seemingly, this behaviour results from patients' need for privacy, experience with student care, and students' performance expectations [57].

Some patients had privacy concerns but overlooked them because of the respect students showed to them. Patient's need for privacy, together with other factors

[57], often determines their selection or refusal of student involvement in their care. It is, therefore, important to consider these factors when placing students in hospitals.

The introduction of ILCC to the healthcare facility creates a teaching community that directly influences health providers and healthcare teams by improving the morale of clinicians [38]. Teheran et al. previously reported that rural clinicians felt they had the responsibility of teaching the students, thus ensuring that students learn, and they derived a great sense of satisfaction on seeing students' development or growth [48]. Doctors exceptionally commit to their profession, and, as a part of this commitment, they want to hand over knowledge to future physicians [58]. When undergraduate students go to a new ILCC site, rural physicians go through four major changes that Kurt Lewin's change management model could explain: melting old ways, overcoming fears, synergy, and benefits all around [59].

Limitations of the study

The findings cannot be generalised to another context. However, lessons can be drawn from other contexts and models of undergraduate teaching. Not all participants were available for interviews during the times when the interviews were held in the various facilities. There is, however, no reason to think that any of the other participants would have offered significantly varying responses from the ones presented here. This study does not provide a complete understanding of the impact of ILCC on service delivery within the participating hospitals, as it focuses solely on the perspectives of healthcare workers. To achieve a more comprehensive assessment, it is important to also consider the viewpoints of healthcare service users, including community members and students, and possibly involve the Department of Health. Furthermore, the qualitative nature of this study limits the ability to establish causal relationships between variables.

Conclusion

The South African health system has health workforce shortages and maldistribution, with rural district hospitals severely affected. The WSU's ILCC delivers education in these rural district hospitals. The expected outcomes are pertinent in scaling up the number of context-relevant doctors in the country and simultaneously settling the unequal distribution of clinicians between rural and urban health establishments. As desired, the WSU pre-final year students' presence in the facilities assists in reducing the workload of rural health personnel. Thus, WSU's ILCC approach provided a platform for medical education and served as a short-term mode of alleviating rural workforce challenges.

The study also confirms that the WSU students through the ILCC improved health service delivery, stimulated academic interests of personnel, enhanced personnel's clinical practices, contributed to proper patient care, and enhanced the quality of patients' experiences at the facility. Therefore, a reasonable conclusion is that WSU's ILCC positively affects service delivery in district hospitals.

Considering the compelling positive contributions made by the medical students on service delivery in rural hospitals, the University and health care providers should make the best use of this clerkship approach. This approach should serve as a tool for promoting an ideal health establishment, achieving patient-oriented health care, and dealing with public health challenges in peripheral rural communities in South Africa.

Supplementary Information

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Supplementary Material 1

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Author contributions

LG conceived the research, sourced funding, engaged stakeholders, facilitated ethics and research access approvals, completed the first draft of the manuscript, and jointly approved the final draft. ORM edited and commented on manuscript versions, incorporated and addressed feedback from the co-authors, and jointly approved. SAM, MM, WWC, MN and SCN edited manuscript versions, provided methodological strategy and jointly approved.

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Data availability

All data used and/or in the study will be available from the corresponding author upon reasonable request.

Declarations

Ethical considerations and consent to participate

This study was approved by WSU's Faculty of Health Sciences Research Ethics Committee with reference number: 033/2018 (Appendix A). Permission to access research sites was granted by the Eastern Cape Provincial Department of Health Research Committee with reference number EC_201905_009 (Appendix B).

Participation was voluntary and affirmed on the developed consent form (Appendix D). Furthermore, the study abided by the 4 ethical principles of autonomy, beneficence, non-maleficence, and justice.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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