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Optometry students' views on preparing for private practice via standardised patient simulation

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Background: Standardised patient (SP) simulation can significantly enrich the learning environment in health professions education. Simulation in optometry has yet to be widely adopted, especially in Africa, prompting this study to investigate whether students perceived the use of SP simulation in optometry education as an effective method for enhancing the development and refinement of core competency skills.

Aim: This study aimed to determine optometry students' perceptions of simulation learning experiences with a SP.

Setting: This study was done at the Department of Optometry at the University of the Free State, South Africa

Methods: A qualitative case study was undertaken. All 17 final-year optometry students (n = 17) were invited to participate. Data were collected using an open-ended questionnaire. Content analysis was used to analyse the experiences and perceptions of the participants.

Results: The response rate was 100%. The students perceived that the educational objectives of the simulation experiences were successfully achieved. They felt that the simulation helped them develop core competencies like professionalism and communication while boosting their confidence. They attributed this success to the realistic, appropriate and safe learning environment that the simulation provided.

Conclusion: The findings suggest that optometry students perceive SP simulations as a valuable tool in preparing them for private practice. This study highlighted the effectiveness of SP-based training in bridging the gap between academic learning and real-world practice.

Contribution: This study is the first in South Africa to explore optometry students' preparation for private practice through SP simulation. The findings offer insights that can guide other optometry programs using SPs to support students' holistic development, enhancing their professionalism and readiness for practice.

Keywords: simulation; optometry education; practice readiness; core competencies; qualitative research.

Introduction

Simulation has been integral to health-related education for decades.[1] Although this may be true for medicine and nursing education, it is less widespread and as advanced in optometry programmes.[2] Nonetheless, simulation should be adopted in all health education curriculums to improve learning outcomes and enhance student preparedness for practice and patient safety.[1] Ker and Bradley[3] point out that simulation is a method that can facilitate any learning with one main goal: to develop and maintain safe healthcare providers. From the definition provided by Ziv,[4] who explains that simulation is an educational activity that utilises simulative aids to enable educators to enhance the educational message by simulating the clinical scenario, there is no reason for simulation not to be included in optometry programmes in South Africa.

Clinical simulators, such as those designed to enhance the skills of retinoscopy and ophthalmoscopy, have demonstrated their efficacy in improving education.[5] However, optometry students must develop clinical and affective skills to be deemed competent practitioners and demonstrate entry-level proficiency.[6] These include clinical reasoning, interpersonal skills, cultural safety, evidence-based practice and patient-centred care. Learning through virtual simulation has been perceived as valuable for enhancing these affective skills. Students highlighted its potential to play a significant role in curriculum design for innovative learning strategies, such as virtual placements.[6] Although virtual simulation has been utilised across the

African continent to train students in surgical skills,[7] this type of simulation has not been used at the University of the Free State (UFS) in optometry education.

A standardised patient (SP) is trained to portray a patient realistically and consistently during simulation-based education (SBE) activities.[8] The utilisation of SPs in the education, training and assessment of healthcare practitioners has been acknowledged for over 50 years, albeit with variations in the roles undertaken by individuals during simulated healthcare encounters.[2] The literature has shown that SP simulation contributes to enhancing the learning environment in health professions education.[9] Students may find SP simulation realistic and helpful in improving their skills. Unannounced SPs proved successful in assessing the quality of clinical practice among qualified optometrists in the United Kingdom (UK).[2] Although literature described students' experiences of SP simulation as positive, enjoyable and empowering, students also reported that they could benefit more from interaction with an actual patient.[10] While it is true that because of the significant resource requirement for utilising SP simulation on the African continent, actual patients are often used to teach and assess skills.[10] It's important to notice that specific skills, such as communication (owing to language barriers) and situations encountered in private practice, cannot effectively be taught solely through interactions with actual patients during training in public health hospitals. This has highlighted a gap that can be effectively addressed by incorporating SP simulations into the curriculum alongside the clinical training, ensuring students are better prepared for the unique challenges of private practice.

Simulation is not a standalone learning strategy and should be a complementary process to support theory delivery and application.[11] Gaps in clinical exposure, such as the lack of sufficient exposure to and participation in effective communication techniques and interprofessional experiences, can be addressed by using simulated situations and a marked improvement in students' verbal skills has been reported after the use of simulation.[1] The objective of this study was to investigate students' perceptions of SP simulation as an effective method in optometry education for enhancing the development and refinement of core competencies, including cognitive and affective skills.

Research methods and design

Context of the study

The study was conducted within the 4-year undergraduate optometry programme at the UFS in South Africa. In the third and fourth years, students gain experience in specialised clinical services that optometrists provide, including binocular vision, contact lenses, paediatric vision, low vision and pathology. The clinics are located in a government facility, where students are primarily exposed to the public healthcare environment during their training.

In pharmacy programmes, the intent of simulation using SPs is to strengthen knowledge, teach various professional skills and develop appropriate attitudes.[1] Slater et al.[12] agree with this and add that SP simulation also improves communication and enhances clinical knowledge. These objectives formed the basis for the development of the simulation scenarios for the optometry programme. The following objectives drove this simulation exercise to support the training of the core competencies set out by the Health Professionals Council of South Africa (HPCSA) of communication and being a health advocate[13].

After the simulation session, the student must be able to:

- Collect, analyse, organise and critically evaluate clinical information
- Effectively communicate the diagnosis and management plan
- Show the ability to be a health advocate.

The overview of the scenario can be seen in Appendix 1. The simulation unit maintains a list of community volunteers carefully selected to serve as SPs. These individuals were chosen based on their abilities. Chen et al.[9] proclaim that students prefer that staff and peers do not act as SPs when interactive communication practices are conducted. Debriefing was performed after each session to ensure that the students had an opportunity to reflect on the experience to transform the experience into a learning experience. An important aspect was the feedback provided by the SPs, as this added valuable context for sharpening the students' patient care skills.[9]

The assessment criteria the SPs used to provide feedback on the student's degree of performance are provided in Table 1.

Methods

This study formed part of a larger project to determine undergraduate optometry students' experiences and perceptions of teaching-learning methods based on the experiential learning theory. Simulation uses experiential learning techniques where the student is seen as the central focus of this learning experience.[3,11] Therefore, simulation is seen as an active learning experience that offers a wide range of learning opportunities.[14] The theoretical framework of experiential learning guided both the design and implementation of this study. Simulation activities were deliberately structured to align with Kolb's four-stage learning cycle, ensuring that participants progressed through concrete experiences during the simulation exercises, engaged in reflective observation during debriefing sessions,

TABLE 1: Assessment criteria applied by standardised patient.

Did the student	Yes/No
Introduce himself or herself?	
Explain what he or she was going to discuss with you?	
Explain the diagnosis and management in terms that you understood?	
Remain professional and ethical at all times?	
Demonstrate effective communication skills?	
Show compassion with your situation, but still remained true to the profession and the scope?	

formed abstract concepts by connecting these experiences to theoretical knowledge and applied these insights in subsequent scenarios.[15]

Employing a qualitative case study approach, the research utilised an open-ended questionnaire to elicit participants' perceptions and experiences. A case study in the educational context refers to an empirical enquiry into aspects of an educational activity, learning programme or institution.[16] Grounded in an interpretative paradigm, this qualitative research aims to comprehend life aspects and the significance individuals attribute to their learning experiences.[17] This study's design aligns with qualitative methodologies, emphasising description, exploration and understanding of each case within its real-life context.[18] The questionnaire survey aimed to determine students' perceptions and experiences regarding the different teaching-learning and assessment methods based on experiential learning, used in the current pathology modules of the optometry curriculum. The simulation experience formed part of the teaching-learning and assessment methods.

The sample comprised of fourth-year undergraduate optometry students at the UFS during 2017 (n = 17), all invited to share their views on the teaching and learning method. The questionnaire encouraged reflective practice, incorporating Gibbs's cycle of reflection, which emphasises emotion alongside personal thoughts and recommendations for future actions.[19] Eight questions, adapted from existing literature, guided participants' responses. Gibb's reflective cycle correlates with the questions proposed by Patton.[20] These include questions about experience and behaviour, opinions and values, feelings and emotions, knowledge, and background. The questionnaire was handed out to the students only once they had completed a teaching-learning method.

Content analysis facilitated a comprehensive understanding of students' experiences during the teaching and learning method.[21] An inductive approach allowed for the identification of patterns, themes and categories, ultimately informing recommendations for integrating this method into the optometry programme at the UFS.[20,21] The researcher was guided by three phases, namely description, analysis and interpretation, as described by Burns and Grove.[22] This corresponds with the four stages described by Bengtsson[23] and the inductive approach described by Elo and Kyngäs.[21] As all qualitative research deals with some interpretation, these steps were taken to ensure that a high degree of quality was maintained throughout the process.[20]

For the questionnaires, a manifest content analysis was followed. During the description phase, the researcher gained an intimate knowledge of the data by transcribing questionnaires verbatim and using memoing to write comments and impressions.[20] In the analysis stage, an inductive approach was used, where initial codes emerged directly from the data. These codes were iteratively refined as more responses were analysed, allowing for the codes to evolve and better reflect the data. Categories and themes were then developed based on the emerging codes[24,25] In the final interpretation stage, the refined themes and their connections were used to explain the findings and attach meaning and significance to the analysis.[26] To ensure the study's trustworthiness, an independent co-worker checked the groupings and categories to ensure authenticity. An audit trail was also kept with detailed records to trace each research process step to ensure dependability.[27] Figure 1 illustrates the step-by-step process of coding and analysing qualitative data derived from questionnaires of this study.

Ethical considerations

The study protocol received approval from the Health Sciences Research Ethics Committee (HSREC) of the Faculty of Health Sciences, UFS (Reference number HSREC 128/2016). Before participation, all students provided written informed consent. Anonymity was ensured during the questionnaire survey, and there was no linkage between respondents' identities and the information provided.

Results

The response rate for the questionnaire was 100% (n = 17). The subsequent themes were scrutinised to assess the students' perceptions of the effectiveness of simulation with SPs in preparing them for practice.

Theme 1: Achievement of learning objectives

The participants unanimously felt that the objectives of the simulation were successfully achieved. The participants noticed that the simulation prepared them professionally, improved their communication skills and be more effective with patient management. Contributing factors to the success

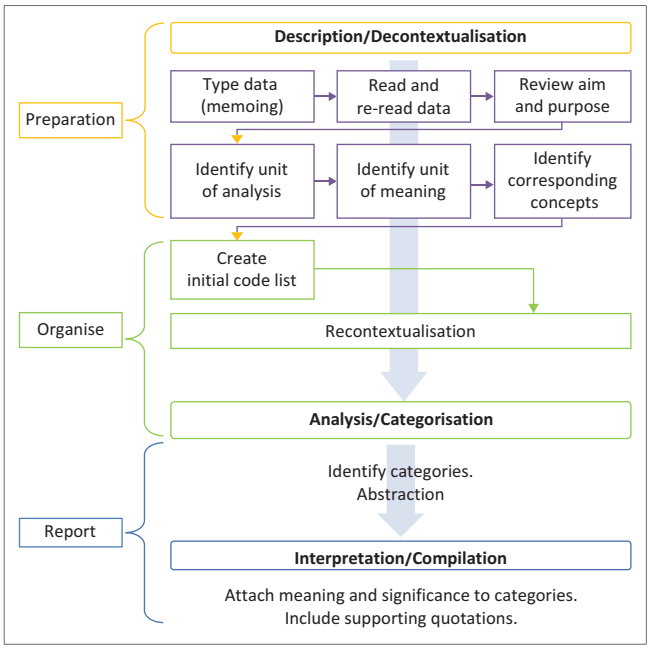

FIGURE 1: Step-by-step process of coding and analysing qualitative data.

of this teaching-learning method were that the scenario illustrated a real-life situation, and participants had to illustrate professional conduct. This experience also took students out of their comfort zone and allowed them to act confidently and professionally and be health advocates for their patients:

> 'Yes, I learned how to stand up for my patient and to fight for the right thing.' (Participant 8, female, fourth-year student)

> 'I now have an idea of what to expect to be dealing with when faced with one of these situations in the future.' (Participant 17, female, fourth-year student)

> 'I now know how to act more professional towards my patient and colleagues and to communicate. I also learned more about the necessary stuff that must be said and what is unnecessary.' (Participant 1, female, fourth-year student)

Theme 2: Pre, during, and post-learning experience feelings

The second theme involved the participant's feelings before, during and after the experience. In the sub-themes, three categories were identified: positive, neutral and negative, which are analysed and discussed next.

Sub-theme: Feelings before

All the participants responded that they had experienced negative feelings before the simulation session. Feelings of anxiousness, confusion, nervousness, fear and stress, and uncertainty were mentioned. These feelings were mainly because of the participants not knowing what to expect:

> '[*I was*] a bit on my nerves because you are not entirely sure what to expect and what you will experience.' (Participant 1, female, fourth-year student)

> '[*I was*] stressed whether I would be able to do it because I have never been in such a situation.' (Participant 3, female, fourth-year student)

Sub-theme: Feelings during

The participants reported that they had experienced positive, neutral and negative feelings during the simulation. The positive feelings included being comfortable, confident, reassured and in control. These feelings were mainly because they realised that they possessed the knowledge and skills to perform the task:

> 'I felt professional and in control of the situation. I was able to do what was asked with confidence.' (Participant 17, female, fourth-year student)

Three participants voiced negative feelings. One participant reported feeling out of his depth, while two others felt stressed and uncertain:

> '[*I felt*] very uncertain, never done anything like that.' (Participant 12, male, fourth-year student)

Sub-theme: Feelings after

Only positive feelings were experienced after the simulation was completed. Participants felt satisfied and felt that the experience was informative. The simulation sessions reassured and prepared the participants, and they felt more confident to handle similar situations in future. Other positive feelings found were appreciation, happiness and readiness:

> 'I feel grateful and sure of what to do should I be placed in these situations again.' (Participant 13, female, fourth-year student)

> 'Satisfied, impress over the authenticity of the situation, felt like I learned.' (Participant 3, female, fourth-year student)

Theme 3: Factors that influenced the learning experience

The main factor in simulation, which enhanced the students' learning, according to their responses, was that it provided a practical, applicable, real-life experience offering an opportunity to improve their communication skills and the effective management of the patient:

> '[… *I*]t is hands-on and realistic. I think it would really help to ease the going into real practice next year.' (Participant 15, male, fourth-year student)

Some participants also felt that the appropriateness of the scenario enhanced their learning. This teaching-learning method also increased the participants' confidence and professionalism. Other positive factors mentioned were that the simulation was performed in a safe learning environment. The participants also noticed that their learning was enhanced as they had the opportunity to learn from others' experiences through the debriefing experience:

> 'It was very realistic and well planned. Good experience for private practice.' (Participant 5, male, fourth-year student)

> '[*I*]t was a save environment to make mistakes and learn from it, without being assessed. It helps to keep you calm and actually enjoy and learn from the experience.' (Participant 16, female, fourth-year student)

> '[*I*]t teaches you to have confidence and to be confident in your work.' (Participant 8, female, fourth-year student)

> 'I could learn from my own and other's weaknesses and can improve on it.' (Participant 11, female, fourth-year student)

Two factors that negatively influenced the learning experience were also analysed: feeling unprepared and the preparation of the SPs and their training. Some participants felt they had not been sufficiently prepared for the simulation and were unsure what to expect, creating uncertainty. To alleviate the negative feelings experienced before the simulation, the participants suggested that the lecturer provide more information to prepare for the session. Some participants found that there was confusion during the simulation because of inadequate preparation of the simulated patients. They observed that some simulated patients forgot their scripts and there were inconsistencies in how different simulated patients acted despite dealing with the same scenarios:

> 'It could be a weakness to not be able to prepare for the simulations, but then again, you would not be prepared in real-life.' (Participant 15, male, fourth-year student)

Discussion

To enhance communication and professional skills, it is well-established that health sciences educators should employ experiential methods rather than solely didactic approaches. This enables the integration of acquired skills into clinical practice.[28] Simulation offers an experiential learning experience,[3] yet it has not been as widely adopted in optometry training as in other health sciences programmes. This study ventured into new and unexplored territory by recognising the importance of simulation in developing key competencies in undergraduate education. This study successfully addresses the gap and the importance lies in the students' perceptions of the simulation to ensure that it is practical and relevant.

Participants of this study valued simulation learning and recognised that it provided an opportunity to improve their communication skills, indicate professionalism and demonstrate effective patient management. In accordance with findings reported in the literature, this simulation experience also provided the participants with confidence.[1,11,29] Participants mentioned that this experience made them realise that they possessed the required knowledge and skills, and after the simulation, they felt better prepared and ready for their professional careers. Confidence will influence future learning and development of skills, motivating students to do it again because they know what they are doing.[11,29]

The emergence of this confidence finding became apparent within the second theme, which delved into the feelings experienced by participants before, during and after the simulated experience. Before the experience, all the participants experienced feelings of anxiety, confusion and nervousness. This may be because of the participants having never encountered simulation before these experiences. This caused them to feel scared and unsure, as they did not know what to expect. The negative feelings expressed by the students revealed their discomfort with being caught off guard. They identified a key weakness of the experience: the lack of opportunity to prepare. As one participant pointed out, 'If we could have prepared more, it would have been more like an oral exam than just being yourself' [Participant 8, female, fourth-year student]. The authors fully agree with this sentiment and this aligns with the concept of 'the ubiquity of uncertainty' described by Moffett et al.,[30] which is commonly experienced in health professions. What is particularly noteworthy is how the students responded to this uncertainty, and, in contrast, the feelings they experienced afterwards were overwhelmingly positive. Interestingly, this was the only learning experience in the more extensive study where some students' feelings changed from entirely negative before the experience to totally positive after the experience.[31] This study has shown that the simulation experience not only helped students overcome their initial anxiety and uncertainty but also contributed to building their uncertainty tolerance. This is particularly important for health professionals, as uncertainty tolerance influences their career choices, clinical decision-making and interactions with patients. The ability to manage uncertainty effectively is a crucial skill in the health professions, and this simulation experience has played a key role in fostering that competency.[30]

Another important key point to remember is that for students to interact, experiment explore new topics, and construct new knowledge, they need to feel safe and comfortable in a situation.[11] Simulation builds on the learning theory of constructivism and with the use of this teaching-learning method, the student and facilitator can apply theory to practice in a safe environment, promoting deliberate practice.[11,29] Likewise, simulation includes ways of applying theory to practice by making principles learned in a lecture come alive.[14] Slater et al.[12] also postulate that simulation will decrease students' anxiety, increase critical thinking and enhance learning. The results of the data collected with the questionnaires clearly indicated that undergraduate optometry students saw simulation as a favourable, safe teaching-learning method. This was attributed to several factors, including the practical application of theory and the execution and discussion of the simulation experience in a safe learning environment. The safe learning environment can be attributed to the simulated experience, which allows the participants to make mistakes without it being detrimental to the patient or causing them to receive poor marks. Students seem to value an approach that provides an opportunity to learn without risks, something with which simulation achieves success.

Participants commented on the authenticity of the scenarios, with mixed opinions about the SPs. While some participants appreciated the consistency and friendliness of the SPs, others felt that the SPs should be better trained to understand their roles fully and to ask more questions that would help provide clearer explanations. This underscores the importance of ensuring that the SP's portrayal is closely aligned with the objectives of the simulation activity to achieve an effective learning outcome.[32] However, as Draper et al.[10] found, it's also important to acknowledge that simulations are conducted under artificial conditions, and students may sometimes benefit more from interactions with actual patients. Balancing these factors is crucial for optimising the educational value of simulation activities.

While vast numbers of patients are available in the public health sector across Africa, and certainly in South Africa, to teach clinical skills, our data revealed a significant insight. We recognise the importance of exposing students from the UFS to learning experiences they will likely encounter in the private health sector. It is therefore recommended that more simulation sessions with different scenarios, different SPs and varying degrees of difficulty be applied throughout the programme.

Limitations include the study's narrow focus on a particular institution and student group, which may constrain the generalisability of the results to broader optometry programmes and student demographics, potentially limiting the applicability of the findings. Additionally, relying solely on questionnaire responses as the sole method of data collection might restrict the depth of insight gained, potentially missing nuanced perspectives that could be uncovered through supplementary qualitative approaches like interviews or focus groups. Incorporating diverse data collection methods can enrich the understanding of the subject matter and provide a more comprehensive analysis of the research findings.

Conclusion

The study results showed that the simulation experience achieved the educational objectives. The confidence gained from the simulation will empower students to replicate the skill in private practice. Although the experience initially evoked negative personal feelings, the overwhelmingly positive feelings afterwards suggest that this approach should be utilised more in the optometry programme. Importantly, educators should consider the factors that influence learning, as mentioned in the study results, to enhance the learning experience for the students.

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Competing interests

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Authors' contributions

E.K., M.J.L. and M.P.J. were responsible for the conceptualisation and planning of the study. E.K. wrote the research protocol, collected the data and wrote the first draft of the article. M.J.L. was the study supervisor and M.P.J. was the co-supervisor of the study and contributed to editing of the article. E.K., M.J.L. and M.P.J. approved the final version of the article.

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Data availability

The data that support the findings of the study are available from the corresponding author, E.K., upon reasonable request.

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Appendix starts on the next page →

Appendix 1

Simulation unit

Simulation concept plan

Simulation Outcome:

The student should be able to:

- Collect, analyse, organise and critically evaluate clinical information
- Communicate effectively the diagnosis and management plan
- Show the ability to be a health advocate.

Overview of Scenario:

Students will have the role as an optometrist and there will be standardised patients as patients.

Students will be provided with clinical notes of a diabetic patient with irreversible damage to the eye. The student will be provided with time to analyse the case and write down the management of the patient.

The student then has to discuss the diagnosis and management with the patient. The patient will then also ask for a driving licence form for the student to complete, but the patient does not qualify for a driving licence and the student has to explain that to the patient.

Door instruction (Instruction to student):

A patient was seen at a clinic where you work. The complete examination was performed and it is your responsibility to discuss the diagnosis and management plan with the patient.

Study the clinical notes from a patient diagnosed with diabetic retinopathy. Complete the management plan, after which you will discuss the diagnosis and management plan with the patient.

Instruction to SP:

Case History:	**Personality:**
You are an uncontrolled diabetic patient for 15 years and have irreversible vision loss because of diabetes. Smoker. Main goal is to renew your driving licence, which you failed at the traffic department.	You can be yourself

Specific Instructions:

You have been at the clinic the whole day and a lot of eye tests and examinations have been performed on you. This is the last step where the optometrist must explain to you the diagnosis and management plan.

The student should introduce himself or herself and explain to you that he or she will discuss the diagnosis and management with you.

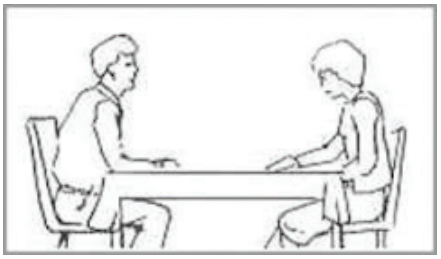
You are aware that you have diabetes, but you are not aware of the damage that it has done to your eyes. You do not realise the importance of the fact that you should control your diabetes. Questions should be asked like: 'But how did this happen? What can I do to reverse the damage?'

After 5 min or if the student ask if you have any further questions, you must present a driving licence form and ask the student to complete the form because you have failed the test at the traffic department and that you really need to renew your licence. The patient will inform you that you do not qualify to drive. You must bribe the student to complete the form.

Clothing required:

Nothing specific

Provide a sketch of one station:



Equipment required (total) and Props:

Table
2 Chairs
Clinical notes
Extra paper for student to write management plan
Purple licence form for drivers licence
Patient must have a soft drink with him or her.

Supporting documents or books for simulation:

Description	Supplied by

Video recording of sessions:

Not required	x	Required	
Details of recording:			
Distribution of recordings:			

Assessment checklist	**Distribution of roles**		
Did the student…	**Activity**	**Person Responsible**	
1. Introduce himself or herself?	Briefing of SPs	Lecturer x	CSU
2. Explain what he or she is going to discuss with you?	Debrief	External x	SP x
3. Explain the diagnosis and management in terms that you understood?			
4. Remain professional and ethical at all times?	**Additional Information**		
5. Communicate effectively?			
6. Showed compassion to your situation, but still remained true to the profession and the scope?			
Additional criteria:			

Simulation unit

Simulation concept plan

Simulation Outcome:

The student should be able to:

- Collect, analyse, organise and critically evaluate clinical information
- Communicate effectively the diagnosis and management plan
- Show the ability to be a health advocate.

Overview of Scenario:

Students will have the role as an optometrist and there will be standardised patients as patients.

Students will be provided with clinical notes of a patient with wet macular degeneration and the patient should be seen by an ophthalmologist urgently. The student will then call the ophthalmologist practice and speak to the receptionist who will inform the student that the only available date is in 6 weeks.

Door instruction (Instruction to student):

You've seen a patient who has come to you as an emergency because of acute vision loss and the patient was diagnosed with wet macular degeneration. The patient should be seen immediately by an ophthalmologist. You have to phone the practice, which is the only one in town, to make an appointment.

Instruction to SP:

Case History:	**Personality:**
You are a receptionist to an ophthalmologist – the only one in town.	You can be yourself.

Specific Instructions:

You work at the only ophthalmic clinic in town. You are very protective over your doctor's schedule and when an optometrist calls for an appointment for a patient, you inform him or her that the first available appointment is in 6 weeks.

You can ask the student why it is so important that the doctor has to see the patient today or tomorrow?

The tipping point should be if the student inform you that the patient will go blind.

Clothing required:

Nothing specific.

Provide a sketch of one station:

Equipment required (total) and Props:

Table

Chair

Telephone

Clinical notes

Extra paper for student to write management plan

Supporting documents or books for simulation:

Description	Supplied by

Video recording of sessions:

Not required	x	Required	
Details of recording:			
Distribution of recordings:			

Assessment checklist	**Distribution of roles**		
Did the student…	**Activity**	**Person Responsible**	
7. Introduce himself or herself?	Briefing of SPs	Lecturer x	CSU
8. Explain why he or she is calling?	Debrief	External x	SP x
9. Explain the diagnosis and management of the patient with you?			
10. Remain professional, ethical and polite at all times?	**Additional Information**		
11. Communicate effectively?			
12. Showed the ability to be a health advocate for the patient?			
Additional criteria:			