

Student and Faculty Perceptions of Factors Influencing the Clinical Learning Experience

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Abstract

Purpose: The purpose of this study was to investigate and compare student and faculty perceptions of factors influencing the clinical learning experience. The areas investigated were: causes of stress, confidence levels and teaching interventions that contributed to the transference of knowledge from the didactic to clinical setting.

Methods: Students and faculty from two optometry colleges participated in the study. Focus group methodology was used and responses were analyzed to identify commonalities and trends.

Results: Trends related to causes of stress were: transitions, clinic scheduling, expectations, supervisor behavior, challenging patients and faculty stress. Trends related to building students' confidence were: feedback, independence and supervisor's demeanor. Teaching interventions that fostered confidence and the transference of knowledge were identified as: case discussions, seminars, skill demonstrations and questioning of students.

Conclusion: This study illuminated several trends that were perceived by students and faculty to impact the clinical learning environment. Student and faculty perceptions demonstrated similarities in several areas. Trends that were not identified by both groups are important to acknowledge when trying to improve the clinical environment.

Key Words: clinical education, stress, confidence, transference of knowledge

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Introduction

Each year approximately 1,300 students graduate from colleges of optometry in the United States.¹ In 2000, the Association of Schools and Colleges of Optometry (ASCO) stated that the central goal of the Doctor of Optometry degree program is to prepare students to enter into the general practice of optometry and the new optometrist must possess appropriate cognitive and motor skills needed to prevent, diagnose, treat and manage clinical conditions that are within the scope of his or her professional responsibilities.²

Clinical optometric education is one of the primary vehicles for achieving the ASCO goals. The clinical educational environment is dedicated to promoting cognitive development, along with psychomotor, communication and related patient care skills. All clinical environments share a common challenge to provide the highest level of patient care while maintaining the highest level of education for the students. The clinical environment is composed of many factors, including physical setting, types of patients, equipment, faculty, students and support staff. Quantitative measures of factors affecting clinical learning can be complex due to the diverse influences to which students are exposed.

The student's overall learning experience is influenced by many factors. Some of these factors are concrete, such as class schedule, course load, exam schedule and pre-clinical schedules. Other factors are subjective and perceived individually by students. These factors include anxiety and stress. Anxiety and stress are common components of everyday life. Small amounts of stress have been known to be beneficial to the learning process by heightening awareness and ability to focus.³ High levels of stress, on the other hand, can be detrimental to the student's emotional health, the learning process and patient care.³

A number of studies have addressed the topic of medical students' stress.^{4,5} In medical education, anxiety and stress have been associated with factors such as overwhelming amounts of information presented in class, concern over grades, fear of making a mistake, lack of time for recreation and family and

financial pressures.⁶ In the optometric literature, searches employing Educational Resources Information Center (ERIC), Pub Med and Visioncite using the terms “anxiety, stress, optometry students and optometric education” revealed no studies investigating stress and anxiety in optometry students.

Students’ level of confidence at graduation is one outcome of their learning experience and clinical teaching. Students must pass the National Board of Examiners in Optometry exam to qualify for licensure. However, is passage of this test sufficient to foster self-confidence in students’ skills in patient care? What factors influence the confidence levels of optometry students? Reports from the medical education literature suggest that there is a significant association between the number of times a task is performed and the student’s self-assessed competency.⁷ A search employing ERIC, Pub Med and Visioncite using the terms “confidence, optometry and graduate” revealed no research studies on this subject in the optometric literature.

For most clinical educators, teaching skills are not instinctive. Most clinical teachers are selected because of their expertise in a specific specialty and have no formal training in the educational process. Clinicians are well-prepared to care for patients but may have limited teaching skills in facilitating thought processes and guiding students to access and utilize their existing knowledge base for application in patient care. Studies in medical education show that untrained clinical teachers tend to give mini-lectures rather than conduct discussions, provide inadequate feedback to learners, and allow residents to present haphazardly or bluff their way through presentation.^{7,8,9} With appropriate intervention, considerable improvement in teaching behaviors can be achieved.¹⁰ Both seasoned and novice clinical teachers need to continuously develop and refine their teaching skills. Many clinical teachers have experienced both effective and ineffective teaching styles and are aware of the impact that poor teaching can have on a student’s confidence and capabilities.

Literature from the area of medical education indicates that the quality of teaching during clinical rotations is an important determinant of medical students’ learning.¹¹ Medical students in-

fluenced by good clinical teachers score higher on board and clerkship exams and perform better overall in clerkship experiences.¹²⁻¹⁴

Although some conclusions can be generalized from medical education, the educational process, along with exposure to potentially stressful situations, differs significantly in optometry compared with medicine. Medical students often encounter the risk of getting infected by patients, talking with dying or seriously ill patients or performing techniques on patients, which if done incorrectly could seriously harm the patient. The optometric profession has shown some interest in studying effective clinical teaching methodology, yet there is a paucity of research in this area.

Tolls, Carlson and Wilson, in 2003, reported on trends in optometric clinical teaching methodology and students’ perception of educational effectiveness.¹⁵ This paper found that students and faculty often have different perceptions of what is being taught in clinic.¹⁵

A comparison between student and faculty perceptions is important because “the difference between the world of present day students and the world that shaped the beliefs, assumptions, knowledge and skills of many of their instructors can vary.”¹⁶ Clinical education must be adaptable and respond to changes in scope of practice, standard of care, student body, faculty and healthcare policy or delivery. To meet the needs of today’s and tomorrow’s practitioners, optometry schools must constantly review and revise their clinical education learning experience. Information concerning how the process of clinical education works is needed to successfully respond to changing needs in clinical education and patient care.

The purpose of this study was to investigate and compare student and faculty perceptions of factors influencing the clinical learning experience. The study

was limited to investigating three specific areas: causes of stress, confidence levels and teaching interventions that fostered the transference of knowledge from the didactic to clinical setting.

Methods

This study represented a collaborative effort between the New England College of Optometry (NECO) and the State University of New York, State College of Optometry (SUNY). A total of 19 graduating students from the class of 2009, nine from SUNY and 10 from NECO, participated in the study. A total of 13 faculty members, six from SUNY and seven from NECO, participated. Focus group methodology was used to gain information from both the students and faculty. Four separate focus groups (SUNY faculty, SUNY students, NECO faculty, NECO students) were held. All students were within one to two weeks of graduation. All faculty members had clinical teaching responsibilities (students having responsibility for patients from the beginning to the end of the exam) start at both institutions in the third year of education and culminate with four, full-time, three-month clinical rotations in the fourth year. Participation in the focus groups was voluntary and the participants were determined based on availability for specific dates and first responders. Both students and faculty were self-selected to participate and incentives were given to each participant.

The focus groups were facilitated by an educational psychologist, who had extensive experience in conducting focus groups. An anonymous lead question survey was used as the starting point for the discussion. Themes addressed in the survey were: stress (defined as feelings of anxiety, fearfulness, uncertainty or hopelessness), confidence levels and the clinical environment. **Table 1** depicts

Table 1
Lead Question Survey

- Identify the area(s), such as activities, behavior(s), time intervals or aspects of the clinical environment, that you feel produce the most stress while in the clinical environment. (Stress was defined as feelings of anxiety, fearfulness, uncertainty or hopelessness.)
- Describe a clinical incident involving a student, patient or supervisor over the last 6 months that you felt was stressful.
- What teaching behaviors contributed most/least toward increasing students’ clinical confidence?
- What teaching interventions (activities, assignments) contributed most/least toward increasing students’ clinical confidence?
- What teaching interventions foster the transfer of knowledge and skills from the didactic to the clinical setting?

a sampling of lead questions that were used to initiate discussion. Participating students and faculty were sent the lead question survey by e-mail to be filled out prior to the focus group, and the surveys were collected at the focus group. The purpose of the survey was only to initiate discussion. The role of the facilitator was to facilitate discussion and compile responses in a written report.

All information obtained within the focus group was anonymous and confidential. Student and faculty names were not used in any written transcripts of the dialogue.

The verbatim responses were analyzed to look for commonalities and trends. Each verbatim comment was coded to represent a theme, and the themes were compiled to represent trends.

This project was authorized by the Institutional Review Boards at both participating colleges.

Results

Verbatim responses from students and faculty were analyzed to identify themes and trends in responses. The focus group leader reported that all participants were verbal and enthusiastic about responding. A summary of identified trends is displayed in **Table 2**.

Stress

Analysis of students' comments related to causes of stress in the clinical environment yielded four main themes: supervisor behavior, transitions, clinic schedule/organization and fear of not meeting expectations/unclear expectations/unpreparedness. Analysis of faculty comments related to causes of student stress yielded five themes: transitions, clinic schedule/organization, fear of not meeting expectations/unclear expectations/unpreparedness, faculty stress and challenging patients/students' lack of experience.

Confidence

Teaching behaviors and teaching interventions (activities, assignments) were areas explored related to confidence levels. Analysis of students' comments related to teaching behaviors that contributed most toward increasing students' clinical confidence yielded three themes: feedback, independence and supervisor demeanor (respectful,

Areas that contribute the most to student stress while in the clinical environment <i>(Stress was defined as feelings of anxiety, fearfulness, uncertainty or hopelessness)</i>	
Student	Faculty
<ul style="list-style-type: none"> • transitions • clinic schedule and organization • fear of not meeting expectations/unpreparedness/unclear expectations • supervisor behavior 	<ul style="list-style-type: none"> • transitions • clinic schedule and organization • fear of not meeting expectations/unpreparedness/unclear expectations • challenging patients/students' lack of experience • faculty stress
Teaching behaviors that contributed most toward increasing students' clinical confidence	
Student	Faculty
<ul style="list-style-type: none"> • feedback • independence • supervisor's demeanor-respectful, friendly and enthusiastic 	<ul style="list-style-type: none"> • feedback • independence
Teaching behaviors that contributed least toward increasing students' clinical confidence	
Student	Faculty
<ul style="list-style-type: none"> • inconsistent feedback/no feedback/delivery of feedback • supervisor's demeanor-unreceptive, close-minded or yelling 	<ul style="list-style-type: none"> • delivery of feedback-belittling manner • lack of independence
Teaching interventions (activities, assignments) that contributed most toward increasing students' clinical confidence	
Student	Faculty
<ul style="list-style-type: none"> • case discussion • reading/writing assignments • seminars/grand rounds/presentation 	<ul style="list-style-type: none"> • case discussion • questioning
Teaching interventions that contributed the least toward increasing students' clinical confidence	
Student	Faculty
<ul style="list-style-type: none"> • seminars/grand rounds/presentation • busy-work 	<ul style="list-style-type: none"> • no trends
Teaching interventions that foster the transfer of knowledge and skills from the didactic to the clinical setting	
Student	Faculty
<ul style="list-style-type: none"> • case discussion with clinicality • questioning • skill demonstration/observation 	<ul style="list-style-type: none"> • case discussion with clinicality

friendly and enthusiastic demeanor). Factors that contributed least to confidence levels were delivery of feedback, inconsistent feedback or lack of feedback and supervisor demeanor. Supervisor demeanor characterized negative qualities such as being unreceptive, close-minded or yelling. Analysis of faculty comments related to teaching

behaviors that contributed most toward increasing students' clinical confidence yielded two themes: feedback and independence. Factors that contributed least to confidence levels centered on delivery of feedback, specifically feedback delivered in a belittling or chastising manner, and lack of independence.

Analysis of students' comments related to teaching interventions that impacted confidence levels yielded three themes: case discussion, seminars/grand rounds/presentations and reading/writing assignments. Teaching interventions that contributed least to confidence levels were centered on seminars/grand rounds/presentations and busy-work. Analysis of faculty comments with regard to teaching interventions that positively impacted confidence levels resulted in case discussion and questioning of students as common themes. No trends were identified with regard to teaching interventions that contributed least to student confidence levels.

Teaching interventions that fostered the transfer of knowledge and skills from the didactic to clinical setting

Analysis of students' comments about teaching interventions that foster the transfer of knowledge and skills from the didactic to clinical setting yielded three main areas: case discussions with clinicality, questioning of students and observations/skill demonstrations. Analysis of faculty comments revealed that case discussion was the primary theme represented for teaching interventions that fostered transference of knowledge.

Discussion

Student and faculty comments are displayed in boxes throughout the text. Responses were modified to remove any identifying information, enhance readability and reduce repetition while maintaining the original intent.

Stress

Studies have reported that high levels of stress can hinder cognitive function and decision-making.¹⁷ In the clinical environment, clinical decision-making is a key component to patient care and the educational process. Identification of perceived causes of stress can lead to interventions that may enhance the clinical learning experience. Congruence between students and faculty perceptions can enhance interventions, whereas lack of congruence can lead to frustration and potential conflicts.

Transition periods from one clinic to another were identified by both students and faculty as a cause of stress.

Students' Comments on . . . Transitions

- Changing clinic rotations was perceived as fairly stressful because "one needs to learn a new computer system and new policies in each clinic," "figuring out what to do takes time and effort," and "it takes three months to get comfortable in a clinic and then one has to move to another rotation."
- Moving from place to place to get settled without adequate time in between rotations was very stressful.
- Housing conditions and strange living conditions in the middle of nowhere was very stressful.

Radcliff and Lester (2003) found in medical school that transition periods were often highlighted by medical students as particularly stressful.¹⁸ Greater guidance and support from medical school personnel at these critical transition periods were suggested to help alleviate stress. Students felt stress was related to changes in living conditions as well as the need to adjust to a new environment, and faculty did not elaborate on the specific causes of stress, but acknowledged that transitions did produce stress. Better preparation in terms of housing expectations, transportation and the characteristics of the new surroundings along with adequate time for travel may be helpful in ameliorating the stress of a new location.

Causes of transitional stress may also be related to fear of not meeting expectations/unpreparedness and unclear expectations at new sites. Both faculty and students agreed that expectations and being unprepared were causes of stress.

Faculty Comments on . . . Fear of not meeting expectations/unpreparedness/unclear expectations

- The first day of a new quarter, a student showed up to a specialty clinic which was fully booked. The student had not reviewed any of the patient records and had not reviewed class notes.
- Lack of preparedness is stressful for students.
- A student not meeting increased responsibility is stressful for the student.
- Lack of consistency of expectations between sites/preceptors contributes to a student's stress.

Students' Comments on . . . Fear of not meeting expectations/unpreparedness/unclear expectations

- Performing skills that were practiced in the lab only once was stressful.
- Applying the knowledge was also difficult and stressful.
- I was thrown into a clinical situation without any kind of orientation about the supervisor's expectations.
- It was difficult to meet supervisor's expectations because those far exceeded what we knew.
- We did not receive detailed description of what we needed to do, we had to figure it out, and that was stressful.
- Being placed into a clinical situation where one was unprepared and then not being provided with the appropriate level of supervision for the level of complexity of the encounter.

In the delivery of optometric education, a diversity of clinical experiences provides students with the breadth and depth of clinical knowledge needed for independent patient care. To achieve a diversity of clinical experiences, transitions to new clinical environments with exposure to different expectations, faculty and clinical scenarios are necessary.

Faculty need to be aware of their role in providing students with clear expectations for each clinical experience. This should include: organization of the clinic, rules and regulations, unique characteristics of patients, patient demographics, knowledge and skills needed to be successful, equipment and method of record keeping, etc. A comprehensive orientation to new surroundings could reduce the stress felt and enhance the clinical learning experience. If possible, a visit and observation period may also enhance the initial transition. Students need to be made aware of their role in taking responsibility in the educational process. Self-directed learning by students should encompass maintaining all clinical skills needed to be successful in a particular environment. Additionally, students should be proactive in investigating new environments.

Faculty and students agreed that clinic schedules and organization were causes for stress.

Faculty Comments on . . . Clinic schedules/organization

- Patient overload creates a lot of stress for the students.
- Overbooking; everybody is running around and the patients are upset because they have been waiting for a long time.
- There is a conflict between clinical teaching and seeing as many patients as you can.
- Inefficient and inconsistent scheduling; overbooked in the morning and slow in the afternoon can cause stress.
- An overbooked primary care with patients added on becomes stressful. It became all about “moving” the patients and not about the educational experience.

Students’ Comments on . . . Clinic schedules/organization

- The clinic tends to be overbooked during the mornings and at the beginning of the week. This is stressful and frustrating.
- Students reported that when the clinics are overbooked, they are used as technicians instead of clinicians and this is stressful.
- Not enough time allotted to see patients. A second patient was waiting in the hallway and got really mad. He told me that he planned to complain to the hospital even after I apologized for the delay and explained the situation. During his eye exam, he told my preceptor that he needed to be transferred to another clinic for the next annual eye exam. That was very stressful to me.
- Patients waiting several hours to see a specialist is stressful.

Overbooking of patients is a reality that most clinics experience. Financial concerns, emergency patients and inadequate staffing are common reasons for overbooking patient appointment slots. Successful practice management policies require clinics to adhere to a sustainable and suitable productivity level. Most clinics also experience patients not showing up for appointments, yielding a consistent no-show rate. Significant clinic no-show rates are often compensated for by overbooking patient slots in order to maintain productivity levels. A balance of financial realities and educational ideals needs to be achieved.

Every effort by faculty and clinic administrators to modify the scheduling should be made. However, clinic scheduling may not be easily modified. Practice management courses may help students become more aware of the complexities of running a successful clinic. Discussions with students may help to increase awareness of the situation and lead to an open discussion of how to deal with the stresses involved in less than optimal patient scheduling. Discussions could include: how to deal with frustrated or irate patients, inadequate time to meet patients’ needs, better methods of efficiency, chart review to familiarize students with incoming patients, etc.

Clinic scheduling, specifically overbooking, highlights the delicate balance that clinical faculty face in providing patient care while also educating students.

Two themes that were not expressed by both faculty and students were challenging patients/lack of experience and supervisor behavior. The faculty perceived that one cause of student stress was challenging patients/lack of experience. A student’s lack of experience with a specific condition may make a routine patient encounter seem challenging. Students did not identify this area as a cause of stress. Students may not perceive this as a stressful situation because the ultimate responsibility of a patient is with the faculty member.

Faculty Comments on . . . Challenging patients/lack of experience

- It was also mentioned that students feel a lot of stress when confronted with a very difficult case described as “one that goes over their heads.”
- Lack of experience demonstrated by students who do not know what to do for the patient at the beginning of their training.
- Difficult patients (such as Type A personalities) add to students’ stress, especially if the patient had to wait for hours.
- Students’ lack of experience is the main reason for stress.
- A student scheduled for patients needing services the student had not been trained for, e.g., contact lenses or examination of a child.

Supervisor behavior was perceived by students but not by faculty as a cause of stress. Supervisor behavior that is caustic, intimidating or contributes to student discomfort in front of patients has been documented to impact the learning environment.¹⁹⁻²¹ The lack of agreement by faculty and students indicates a lack of recognition and acknowledgment by faculty that a particular behavior may produce stress. This may impact a faculty member’s ability and opportunity to reflect and change behavior patterns. Appropriate faculty evaluations and feedback could increase awareness of problematic faculty behaviors.

Students’ Comments on . . . Supervisor behavior

- Short temper from preceptors causes stress.
- Supervisor was reprimanding another student in front of me. I think it should have been done in private.
- Yelling is stressful.
- Doctors who don’t respect us as students; a particular doctor judged me by appearance from the moment he met me.
- Working with a disorganized or nervous preceptor was stressful.
- The preceptor questioning the student in front of the patient.

Faculty also related that their own stress is a cause of student stress. Faculty stress may impact faculty behavior. Students may not perceive the challenges that faculty face in delivering both patient care and an educational experience.

Faculty Comments on . . . Faculty stress

- Faculty mentioned that their own stress can contribute to students’ stress. The process could be stressful for faculty too. We know that it is stressful; we have a great responsibility with the public.
- One faculty member said that it is beneficial for the students to see that supervisors also experience stress. It is part of the profession. Even when in practice for many years one still feels a bit of stress when seeing patients.

Behaviors and interventions that impacted confidence and clinical learning

Delivery of feedback and encouraging independence were cited by both groups as behaviors that contributed to students' levels of clinical confidence. Formative evaluation is the term given to feedback that is delivered during the learning phase of a skill.²² This type of feedback enables students to correct weaknesses and repeat already perfected skills.²²

Students' Comments on . . . Feedback

- By far, praise is the number-one technique for increasing a student's confidence. When being praised for a particular behavior, a student is much more likely to replicate it and do so to a greater extent and executed more gracefully.
- What helped most is simply encouragement, acknowledging what was done well and pointing out what was done wrong.
- Acknowledgment of a job well done, feedback.
- Feedback in the comments section of the electronic medical records grading system, this let us know what was being done right or wrong.
- While at the Veterans Administration Hospital Clinic, I was constantly rewarded for being inquisitive and discussing hypothetical patient scenarios. The more competent I felt, the more confident I felt, which in turn led to praise.
- Encouraging students on their strengths allows for one to build confidence.

Faculty also perceived the importance of feedback in contributing to confidence levels, but also acknowledged the difficulty in delivery of the feedback.

Faculty Comments on . . . Difficulty in delivery of feedback

- Many students have a hard time receiving constructive criticism or negative feedback.
- Students have a hard time accepting that one thing can be done in different ways. The fact that there are many ways of doing the same thing could be incredibly frustrating to students. This sometimes becomes a learning barrier because they want to know which way is right.
- Appropriate feedback and effective communication could help bridge a learning barrier.
- Many students are unable to admit that they are wrong or that they have made an error because they are afraid of failing an encounter.

Adult learning theory indicates that effective feedback needs to be given as close to the event as possible, secondary to firsthand observations, in a specific manner, and the feedback should be descriptive not judgmental.²³ Most clinical faculty are not trained in education. Therefore, the delivery of feedback may be an appropriate focus for faculty development.

Increasing responsibility for patient care with the goal of increasing student independence in patient care is recognized by both student and faculty as contributory to students' confidence levels. The amount of independence given to a student while maintaining efficient and safe patient care is partially directed by the individual faculty member's philosophy, as well as by the student's level of competence. Other factors previously mentioned, such as clinic overbooking and unprepared students, can also impact the ability to increase student responsibilities.

Clinical scenarios that use students as technical support should be avoided as this would further hinder the fostering of independence.

Students' Comments on . . . Independence

- Supervisors while on externship allowed us to see patients in a more independent manner, which helped me gain confidence in seeing patients on my own.
- Encouraging students to manage cases independently and then discuss the management with students are very helpful for increasing a student's clinical confidence.
- Giving me space to figure out a clinical problem on my own.
- Allowing students to come up with their own assessment and management plan.

Faculty Comments on . . . Independence

- Giving independence to students/interns is extremely important to promote a sense of confidence.
- One professor commented that the best supervisors are those who are close to the students and can tell what is going on and at the same time give them "rope" to act and perform.
- Giving students autonomy (mentioned twice).
- Not micromanaging.
- Giving independence to students/interns is extremely important to promote a sense of confidence.

Faculty Comments on . . . Philosophy toward independence

- Some faculty members prefer to give a lot of independence to their students in the clinic.
- A faculty member said, "If one gives the students clear expectations, it is easier then to give them more independence."
- Students have to learn that if they make a mistake, it is not the end of the world. They need to be responsible for their actions and giving them independence contributes to that.
- Other faculty members agreed that expectations have a lot to do with the success of students' clinical performance. It is important to give them high expectations, even when that means to pressure them a bit, one faculty member said. However, not everyone agreed. One faculty member answered that students "don't want to take risks. They want to feel safe in the environment."

Supervisor demeanor was identified by students as a theme in contributing to student confidence. Students felt that faculty behavior that was warm, insightful, enthusiastic and respectful contributed to a sense of confidence. This is consistent with faculty behaviors that are identified in the literature as constituting “good teaching.”^{19, 24, 25}

Personal attributes of faculty and behaviors were not perceived by the faculty as to contribute to confidence levels. This dichotomy could hamper faculty attempts to ameliorate nonproductive behavior.

Case discussions, seminars/grand rounds/presentation and reading/writing assignments were perceived by students as contributing to increasing confidence levels. Seminars/grand rounds/presentation are in reference to presentations made by faculty or residents on specific topics. These activities represent a wide range of teaching interventions, which may reflect a wide range of learning styles within the students. Faculty agreed that case discussion contributed toward increasing confidence levels but also added questioning of students as an additional area. Seminars/grand rounds/presentations were also perceived by students as interventions that were considered least influential to confidence levels. Students commented that the seminar/grand rounds/presentations that were not helpful lacked clinical relevance, represented theoretical cases or lacked relevant educational information. This indicates that the quality and relevance of the activity may be more important than the type of activity.

Students' Comments on . . . Seminars/grand rounds/presentations

- Seminars/grand rounds on pertinent topics such as headaches, dry eye, pinhole testing, etc., were useful as review tools and learning aids before starting clinic each day.
- In one clinical system the residents/doctors give presentations and it probably was the worst grand rounds I have had to go to. The topics were not interesting or clinically relevant.

Students also perceived “busy-work” as not contributing to confidence levels. Busy-work activities ranged from educational activities viewed as nonproductive to noneducational activities such as calling patients or ordering cabinets. Calling patients or ordering supplies, equipment, cabinets, etc., although a necessary component of practice management, should be evaluated for worth and value to the student as a developing clinician.

Students' Comments on . . . “Busy-work”

- Calling patients, busy-work, ordering a cabinet does not help with confidence.
- There needs to be value within the assigned readings/assignments as busy-work does not contribute to building the student clinician and is a waste of time.
- Calling patient for specialists.

The didactic environment prepares students with a knowledge base and foundation to be utilized in the care of patients. Information acquired in the didactic environment needs to be organized and accessed by the student when in the clinical environment. Therefore, a “cognitive bridge” must be developed by the students to transfer the information.²⁶ Case discussion with clinicality was perceived by both students and faculty as an intervention that fosters the transfer of knowledge. Case discussion provides a context for learning and transferring knowledge. An appropriate contextual environment enhances the learning experience.²⁷ Case discussion provides an opportunity for the student to practice clinical decision-making, reflect on past clinical experiences, integrate knowledge and be exposed to the faculty’s thought process. Incorporating case discussions and clinical scenarios into the didactic curriculum should be considered as a means of enhancing learning.

Limitations and Strength of the Study

Limitations of this study included lack of levels of quantification of responses and self-selection of participants. Levels of stress can be put on a spectrum with small amounts enhancing the learning

environment and larger amounts hindering the environment. The level of stress was not quantified in this study. Although a description of stress was used as a guide during the discussion and the implication was of a nonproductive level of stress, each student’s interpretation of stress was subjective. Additionally, specific diagnoses of anxiety, depression or other psychiatric disorders were not solicited from the focus group participants. Participation in the study was voluntary. Therefore, both faculty and students were self-selected and this may have led to responder bias. The small number of participants in the study is also a limitation.

A strength of the study was the collaborative effort between the two colleges of optometry. NECO is an independent, private institution with a student body of approximately 450 students. The college draws from more than 30 states and Canada. SUNY is a state-supported college with a student body of approximately 290 students. SUNY draws from more than 15 states and Canada with half of the student body coming from one state.¹ The dual institutions may yield results that are more generalizable than if the study occurred within a single institution. However, while there seemed to be general agreement between the colleges, the small number of participants in the focus groups made any systematic comparison difficult.

Conclusion

Maximizing the clinical learning experience should be a goal of all optometric educational institutions. This study illuminated several trends perceived by students and faculty to impact the clinical learning experience. Student and faculty perceptions demonstrated similarities in several areas. Trends that were not identified by both groups are important to acknowledge when trying to improve the clinical teaching environment. Faculty development programs should support faculty in areas such as the delivery of feedback and the challenge of balancing patient care and education because these areas were identified by both students and faculty in relationship to increasing student confidence.

This study provides preliminary infor-

mation about causes of stress, factors contributing to confidence levels and interventions contributing to the transfer of knowledge. However, many research questions and much information still needs to be explored. How much stress do students experience? What percentage of optometry students experience detrimental stress? How confident are students at assuming full responsibility for patient care without the benefit of a clinical instructor with whom to confer? How confident are optometry students in their ability to provide patient care at the time of graduation? Does student stress and confidence influence student career decisions, such as those involving residency and mode of practice? Are students able to identify strengths and weaknesses in their clinical skills? Qualitative studies should be pursued to gain more information about the clinical learning environment. Educational research with the goal of continuous growth and development will help to make the most of the clinical learning environment.

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