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Examining the transition from college to internship: workplace readiness of clinical laboratory sciences graduates

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Internships can provide students with work experience that assists them in transitioning from academic settings to career settings. They allow students to apply their knowledge and skills in a professional, supervised environment. This study aimed to examine the perceptions of clinical laboratory sciences (CLS) students at Taif University participating in a clinical laboratory internship and internship supervisors about students' readiness for the internship period, as well as their satisfaction with the internship. The study also explored students' and supervisors' ideas for improvements. A descriptive cross-sectional research design was used. Two self-structured questionnaires using close- and open-ended questions related to the objectives of the study were developed. A total of 52 Taif CLS internship students and 4 clinical internship supervisors completed the survey. The study showed that, while students believed that they were not adequately prepared, supervisors believed that they were. Both groups of participants indicated that internship students are prepared with certain skills for the workplace. They also agreed that students are prepared adequately with knowledge, but that their practical skills were insufficient. Inadequacy of practical skills was primarily linked to lack of clinical practice prior to the internship. Although students and internship supervisors were mostly satisfied with the experience, two common challenges that face Taif CLS students were indicated by their supervisors: low self-confidence and inability to interact professionally with employees. This study may form a basis for other studies aimed at enhancing internships and may serve as a pilot study for other institutions that share a similar program.

Keywords: clinical laboratory sciences; Internship; Clinical practice; workplace.

INTRODUCTION

Internships can be important steps for students' professional and personal development. They are part of the curriculum for various health professions and can assist students in building the connection between their academic studies and professional practice. In Saudi Arabia, students who pursue a profession in clinical laboratories normally spend four years of academic studies in classrooms and educational laboratories, during which they acquire the fundamental knowledge and skills of the profession. Then, they have to complete a one-year internship training in an approved hospital before being awarded a Bachelor of Science degree (Saudi Arabia Qualifications Framework 2018). Internships allow students to apply their knowledge and skills in a professional environment under supervision, especially where early clinical exposure is not feasible due to the absence of a university or teaching hospital.

In addition, internships help students to

understand their actual role as a medical laboratory specialist by following a specific job description, working in a professional team and interacting with professionals from other disciplines (Bashawri et al. 2006). It is essential to enable them to develop the entry-level competencies of graduates required for the professional practice.

Moreover, the internship period is a great opportunity for programs to assess the readiness of their students and to evaluate the effectiveness of their curricula. It is vital that program developers and stakeholders ensure that their students have the necessary competencies to meet present labor market needs – insufficient preparation may result in underperforming interns, which can be stressful for them and may pose risks to patients.

Developing an effective curriculum requires an ongoing process of evaluation that involves data collection from multiple sources, data analysis and interpretation of results. It can enable program developers or stakeholders to determine whether the program achieved its intended outcomes, as well as identify strengths and weaknesses. This process relies on systemic data collection from those who are benefiting from the program or participating in the program using several methods or performance indicators (Norris 1998; Peeraer et al. 2009).

Thus, this study aims first to examine the perceptions of internship students and internship supervisors in each hospital laboratory about students' readiness for the internship period, as well as the participants' satisfaction with the internship. It also explores students' and supervisors' ideas about areas that could be improved to make internships more effective. This may shed light on the current situation, form a basis for other studies aimed at enhancing internship training and serve as a pilot study for other institutions that share this program.

MATERIALS AND METHODS

Study design

A descriptive cross-sectional research design was used. Two self-structured questionnaires (one for students and one for supervisors) using close- and open-ended questions related to the objectives of the study were developed. The student questionnaire was divided into four parts (Appendix A). The first part included three demographic questions to understand the identity of the respondent. The second part included five questions related to the preparation of students for the internships. The third part included two questions on how the knowledge and skills they acquired during academic studies applied to the professional practice. The fourth part included three questions related to their level of satisfaction with the internship experience and areas of improvement. The supervisor questionnaire was divided into four parts (Appendix A). The first part included two questions related to the students' preparation for the internships. The second part included two questions on the knowledge and skills students acquired during academic studies and how these were related to professional practice. The third part included four questions related to the internship settings and challenges. The fourth part included two questions related to their level of satisfaction with the internship experience and areas of improvements.

Study settings, sample and sampling procedure

All 74 Taif CLS internship students (43 female students and 31 male students) were invited to participate in the survey. All supervisors (4 supervisors in 4 different laboratories) were also invited to participate.

Surveys were distributed electronically from 20 February to 1 March 2020 through the internship coordinator in the department (convenience sample). Informed consent was obtained from all participants. Prior to survey distribution, the surveys were validated by two colleagues, one of whom was the Vice Dean of Clinical Affairs. In addition, the student and supervisor surveys were piloted on 10 interns and 2 senior laboratory specialists, respectively. Participants in the pilot study were asked about what they thought each question and their response meant.

Data analysis

The data collected were first entered into Microsoft Excel. Each questionnaire was given a numerical code that allowed the data to be entered without errors of omission. Statistical Package for the Social Sciences (SPSS) version 21 was utilised for data analysis. Descriptive statistics were used to present the demographic data and the trends in the data.

RESULTS

Demographic information

A total of 52 internship students (32 females

and 20 males) completed the survey. Their grade point averages (GPAs) ranged from 1.0–3.5, with the majority being in the range of 2.0–3.0. Twenty-two students (20 females and 2 males) indicated that they had had clinical training prior to the internship. All 4 internship supervisors (1 female and 3 males) completed the survey.

Student questionnaire

In 5 questions, what students intended to gain from the internship experience and students' perceptions of how well they were prepared for internships were explored. Their intentions were varied and included gaining more knowledge, building self-confidence, clinical practice and adjusting to the work environment. The vast majority of their responses were related to turning their knowledge into practice. Twenty-six students (50%) felt that they were not adequately prepared for the internships, 15 students (29%) felt that they were adequately prepared and 11 students (21%) stated that they did not know. Students believed that they needed to have clinical experience prior to internships. They stated that laboratory classes were not enough to prepare them and the curriculum should allocate time for clinical practice simultaneously. Of the 52 respondents, 46 (88%) believed that classes and on-campus activities were enough to prepare them with theoretical knowledge, but not with practical skills (application of their knowledge). Six respondents (12%) believed that on-campus activities also prepared them with skills such as communication, teamwork, adaptation and leadership.

The majority of students agreed that they were prepared with the following skills: leadership (25 students, 48%), ability to work in a team (44, 85%), writing effectively (31, 60%), speaking effectively (33, 63%), problem solving (29, 56%), professional ethics (44, 85%), flexibility/adaptability (34, 65%) and work in a professional setting (30, 58%; Figure 1).

In the next two questions, students' perceptions about how their knowledge and practical skills applied to clinical practice were measured. While 27 students (52%) believed that their knowledge was adequate, 32 students (62%) believed that their practical skills were less than those required for clinical practice (Figure 2).

The last part was related to students' satisfaction with the internship experience and what can be done to improve their experiences. A 10-point scale (with 10 being the highest score) was used to collect students' responses about how beneficial they found the internship experience and how satisfied they were with the experience. The majority of responses for both questions were clustered above 5 points, with points 8 and 10 being most commonly selected (Figure 3). Their suggestions of areas for improvement can be divided into two groups: suggestions related to the curriculum in the academic years prior to internship and suggestions related to the internship period. Students believed that the practical section of their curriculum should be enhanced in two ways: allocation of more credits to practical classes than theoretical classes and integration of early clinical exposure through scheduled hospital visits. With regards to the internship period, students stated that there should be scheduled educational activities alongside the training, including tutorials, workshops and student conferences. In addition, they suggested that the daily working hours of an intern be shorter than the working hours of a full-time employee to allow them time for self-education and preparation for licensing exams.

Internship supervisor questionnaire

Of the 4 internship supervisors, 3 supervisors believed that Taif CLS students were adequately prepared for the workplace. With regards to the skills demonstrated by Taif CLS students, all supervisors agreed with "writing effectively"; three supervisors agreed with "leadership, speaking effectively, problem solving and flexibility/adaptability" and two supervisors agreed with "ability to work in a team, professional ethics and work in a professional setting" (Figure 4).

Three supervisors stated that the knowledge that Taif CLS students acquired during their academic years was adequate, and 2 supervisors stated that students' practical skills were less than those required for clinical practice (Figure 5).

The next part was related to internship settings and challenges. Only two supervisors confirmed that their laboratories have a job description for interns. Only two supervisors believed that the working hours of an intern should be similar to those of an employee. Those in favor of similar daily working hours believed that an internship is an opportunity to simulate the real job environment and will prepare students for their future career. Those against similar daily working hours believed that an internship is a training period and that there must be some flexibility in working hours adjusted to meet the specific needs of students.

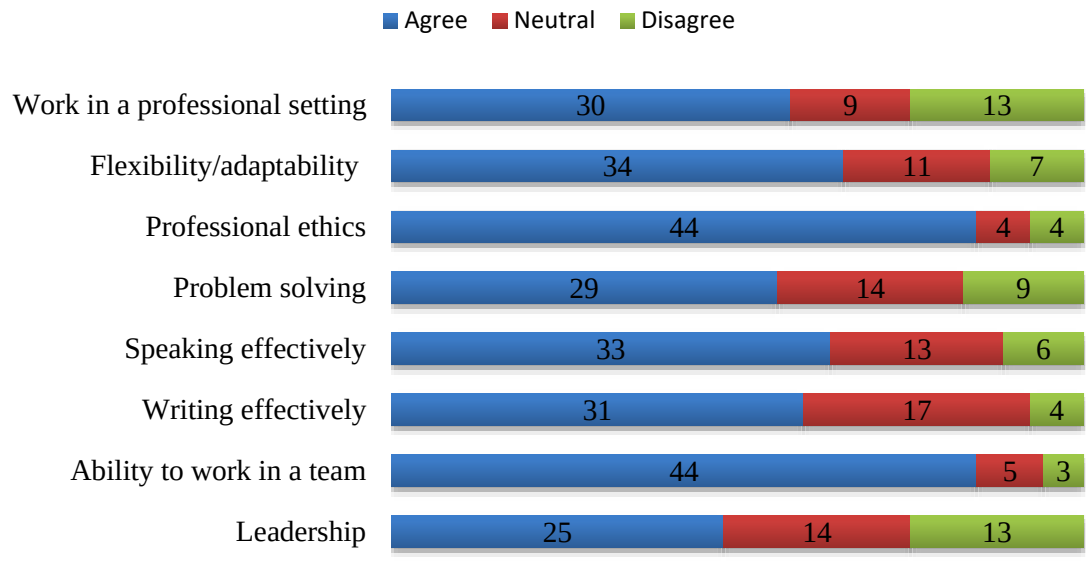

Figure 1: Students' responses to "The clinical laboratory sciences program has prepared me with the following workplace skills".

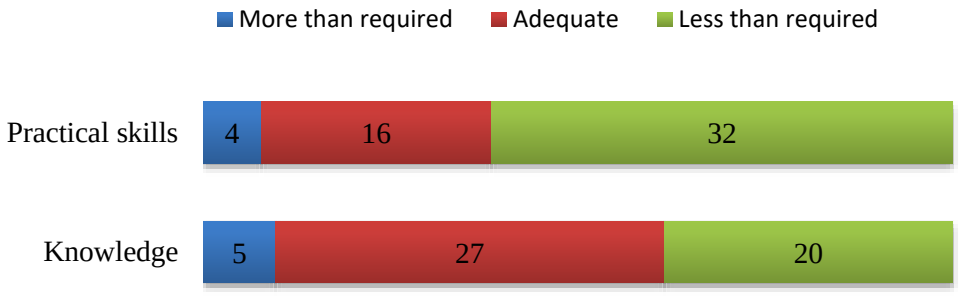

Figure 2: Students' perception about how their knowledge and practical skills apply to the clinical practice.

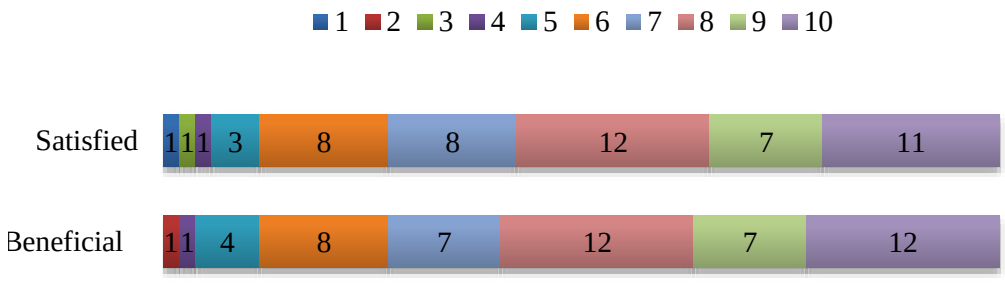

Figure 3: Students' responses about how beneficial they found the internship experience and how satisfied are they with the experience.

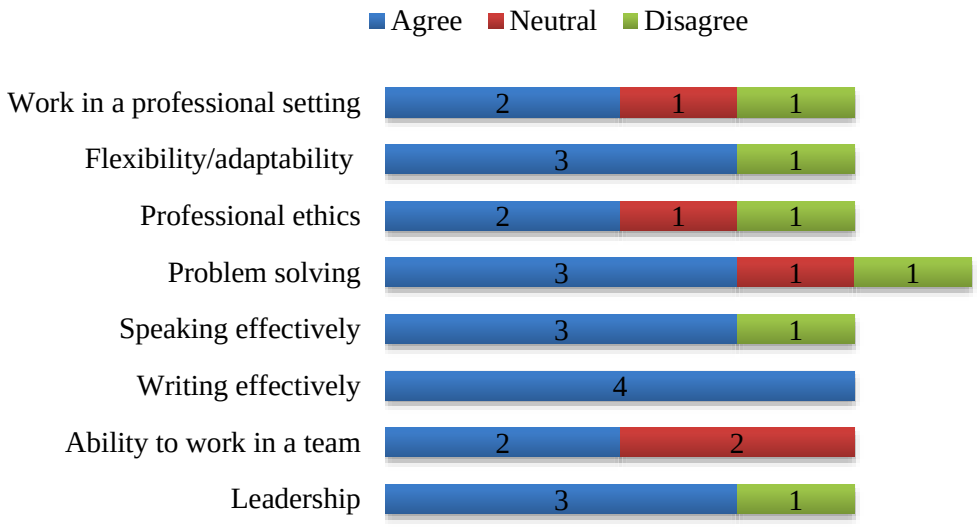

Figure 4: Supervisor responses to "The clinical laboratory sciences program has prepared Taif CLS students with the following workplace skills".

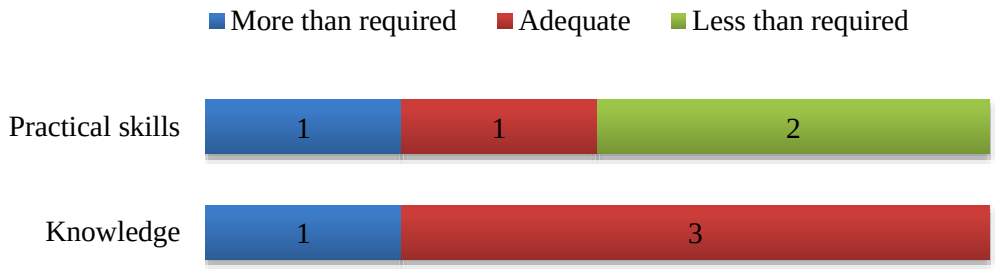

Figure 5: Supervisors' perception of how students' knowledge and practical skills apply to the clinical practice.

In addition, they indicated that the number of interns is growing and that this can lead to overcrowded work environments in some laboratory sections. Thus, reducing working hours may help to divide interns into smaller groups, which would increase opportunities for educational encounters between students and employees. Supervisors believed that there are two common challenges that face Taif CLS students during internships: self-confidence and interacting professionally with employees.

The last part was related to supervisors' satisfaction with the performance of Taif CLS students during their internships and what can be done to improve the internship training. A 10-point scale was used to collect supervisors' responses about how satisfied they were with students' performance. Of the 4 supervisors, 3 selected the highest point (10) and one supervisor selected 3. Their suggestions indicated that there is insufficiency in students' practical skills and that these skills should be stressed in practical classes as early as possible during academic studies.

DISCUSSION

This study was conducted to assess the readiness of internship students for internships and to generate ideas for improvements by studying the perceptions of those directly involved in the internships. The study was conducted in the late phase of internship for the current graduation class (2020) after they had spent nearly 10 months as interns. They spent their time rotating across different laboratory sections in one or more laboratories based on their requests and availability.

A total of 52 internship students and 4

internship supervisors from 4 different hospital laboratories participated in the study. In each laboratory, there is one internship supervisor who orients students to the laboratory system, deals with all internship affairs and coordinates these affairs with the academic department. There are also section instructors in each laboratory section, which include haematology, biochemistry and microbiology. These instructors will communicate students' performance with the internship supervisor and discuss students' evaluations with him/her at the end of the rotation in their section. Thus, a supervisor's perception may reflect the perceptions of other laboratory instructors.

Of the 52 students, 22 students (20 female and 2 male) had had previous hospital training prior to the internship. While gender was shown to be associated with having prior training (p = 0.000), the association between GPA and prior training was not found to be statistically significant (p = 0.137). Hospital training prior to internship is an optional task for students that are carried out during summers. It is entirely subject to a student's willingness, and the role of the academic department is mainly to officially communicate and coordinate this training with hospitals.

It was interesting to see that, while the majority of internship students believed that they were not adequately prepared, 3 of the 4 internship supervisors believed that they were. Internship supervisors provide supervision for students from different graduating classes and for students from several academic institutions. In addition, they are aware of entry-level competencies. This knowledge may formulate the basis for their beliefs. Students' beliefs that they were not adequately prepared may be related to the fact that the internship is the first encounter with a professional workplace for the majority of them. Neither gender nor GPA were statistically associated with students' beliefs (p = 0.219 and p = 0.397, respectively).

Both students and supervisors indicated that internship students are prepared with certain skills for the workplace. They both agreed that students are adequately prepared with knowledge, but that their practical skills are less than required. Deficiency in practical skills was brought up on several occasions in participants' responses. It was linked several times with the need for early clinical exposure due to the inadequacy of practical classes to prepare students. Practical skills, as described by students and supervisors, are skills related to handling specimens/materials and skills related to apparatus manipulation.

The source of the deficiencies in practical classes and their inadequacy in preparing students for clinical practice may be related to the fact that practical classes rely mainly on manual methods. They cannot provide real patient samples and access to the state-of-the-art equipment that is normally found in hospitals. Initially, the main purpose of internships is to bridge this gap between education and practice by providing as much information and guidance as possible. However, programs can also implement other approaches to facilitate the transition and to make internships more effective.

With this aim in mind, Taif CLS curriculum has undergone a reform in recent years. Starting from next year, fourth-year students (level 7) will have the chance to undertake a three-credit-hour clinical practice course. In this course, students will participate in a weekly hospital visit to observe and practice according to the course specification. In addition, last semester, the program piloted one observational hospital visit as an optional course activity for selected courses for students from lower levels. In the current study, internship students emphasised the importance of hospital visits on several occasions. Thus, feedback from students and faculty members involved in the pilot observational visits will be recorded and evaluated, and a plan will be made for coming semesters.

Although both students and internship supervisors were satisfied with the experience, two challenges faced by students were indicated by internship supervisors: self-confidence and interacting professionally with employees. These challenges are likely related to the lack of previous exposure or encounters. Introduction of clinical practice and hospital visits prior to internships may help to overcome these challenges.

In addition, a briefing-debriefing program may have a positive effect through review of interactions and events during the first few weeks in the workplace. An orientation program that addresses all internship affairs, including instructions, goals, roles and evaluation criteria, is usually done in Taif CLS academic department for internship students before their internships begin. In addition, laboratory orientation sessions are usually led by professionals in each laboratory. These orientation events can serve as briefing sessions. Debriefing, on the other hand, is a facilitated reflection done by a group or an individual to discuss experiences, difficulties and concerns (Mackenzie 2002). Debriefing sessions

can be initiated in collaboration with clinical facilities.

They can be done, for instance, as weekly or monthly sessions according to the needs of participants. They can be done physically or virtually through web-based tools such as Blackboard. However, it is important that those assigned to run debriefing sessions are trained adequately and aware of the various debriefing techniques and skills. Both briefing and debriefing were shown to increase self-confidence and professional development in other educational settings, which can be helpful as well for interns (Mackenzie 2002; Ostovar et al. 2018).

In addition, it has been shown that self-efficacy and, subsequently, self-confidence can be enhanced by repeated successful experiences and by receiving positive encouragement (Schwarzer & Luszczynska 2007; Bandura 1977). Thus, clinical instructors and supervisors can be advised to set an achievable task for internship students at the beginning of their rotations and to acknowledge their effort when they successfully execute a given task in order to reinforce their confidence. In addition, instructors can discuss with students their knowledge and ability before they perform a given task to avoid difficult situations that may negatively affect their confidence.

It has been shown that clinical instructors may have a profound impact on student learning and professional development (Endo & Harpel 1982; Pascarella & Terenzini 1991). It was even suggested that instructor impact might be the most important factor in student learning (Umbach & Wawrzynski 2005). It is not clear how internship supervisors and sections instructors are selected for their roles and how their performance is assessed. To the best of my knowledge, the perceptions of internship students are not normally recorded by clinical facilities as a method to evaluate their experiences or to evaluate their supervisors and instructors. Many of the clinical instructors may have little to no experience with teaching methods or methods to engage students in learning activities.

Thus, academic programs may have a role in the preparation of inexperienced instructors by developing manuals or orientation programs for instructors.

Furthermore, academic programs can initiate a shared continuing education program between laboratory staff and faculty members that may help to maintain a productive environment.

CONCLUSION

Internships are important for providing students with work experience that helps them make the transition from academic settings to career settings. The level of readiness of students and the level of satisfaction demonstrated by participants in this study are encouraging. The main concern raised by participants was the inadequacy of interns' practical skills and the need for early clinical exposure. It is a concern that was, to some extent, anticipated by the program stakeholders, and a plan for improvement will soon be implemented. It is important that the perceptions of students and supervisors are re-examined after the implementation of the new plans and compared with previous data to ensure effectiveness.

Academic programs rely heavily on clinical facilities to successfully integrate clinical practice in their curricula. Certain factors, such as large numbers of students and heavy staff workload, may limit the successful incorporation of education in health facilities. Internships can be beneficial for clinical facilities as much as for academic programs, as clinical facilities can make good use of unpaid assistance from interns to manage their workload and have the opportunity to hire professionals developed within their settings.

Therefore, both academic programs and clinical facilities have a common interest in improving internships and need to communicate and work together to enhance the effectiveness of clinical practice prior to and during internships.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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AUTHOR CONTRIBUTIONS

A conceptualized the study, designed and validated the survey, collected data, performed the analyses and wrote the manuscript.

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