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Full Length Research Paper

Nigerian Dental Students' Assessment of their Clinical Learning

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ABSTRACT

Clinical learning in medical and dental education provides students with knowledge, skills and proper etiquette for their professional life. Students' assessment of clinical education is therefore important to help to promote excellence in medical and dental education in Nigeria. A cross-sectional study using a self-administered questionnaire was carried out. Section A of the questionnaire assessed clinical learning opportunities and environment, level of patient care experience and opportunity to work in different health care settings. Section B elicited students' perceived strengths and weaknesses observed in their clinical learning process. Strength of association was tested using chi-square tests with level of significance set at P <0.05. The hand written responses in section B were thematically analysed using the Taylor *et al.* (1998) protocol. It was observed that participants reported having good clinical learning opportunities especially as pertained to patients' care. However, the students expressed dissatisfaction with the level of organization in the clinic environment, unsupportive staff and unavailability of facilitating resources. Factors like early exposure to procedures and patient interactions, adequate and knowledgeable faculty members, as well as the comprehensive nature of the curriculum were identified as strengths of clinical learning. Lack of opportunities for feedback to instructors and administrators, asynchrony of lectures with clinical rotations and the stress of fulfilling procedural requirements were identified as weaknesses of clinical learning. Nigerian dental schools need to improve on the clinical learning environment through provision of resources that facilitate learning and ensure that faculty staffs are more supportive.

Key words: Dental students, clinical learning strength, clinical learning weaknesses, learning opportunities.

INTRODUCTION

Clinical learning lies at the heart of medical and dental education. It is teaching and learning focused on and usually directly at patients and their problems (Massler, 1997). The aim of clinical learning is to develop students' competence in clinical skills and ethics as well as to transform novice medical /dental students into practicing physicians (John Spenser, 2003).

At undergraduate level, medical and dental schools strive to give students as much clinical exposure as is possible. In dental education, it has been found that the clinics are the learning environment to which all the students aspire (Mullins *et al*., 2003). However, this learning environment is a challenging area for both teachers and students (Grandy *et al*., 1989, Bertolami, 2001). In this setting, the student is a trainee clinician responsible for patient care while the clinic is both a patient care facility and a learning environment.

Students are expected to learn diverse competencies simultaneously, including a range of skills, knowledge base professionalism, and empathic ethical behavior. However, previous studies have shown that dental students do not generally like dental clinic experiences (Davis *et al*., 1989, Pohlmann *et al*., 2005 and Henzi *et al*., 2006). Students have reported that "an overly stressful learning environment" is a

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primary contributor to their dislike of the dental clinic experience (Davis *et. al.,* 1989, Henzi *et al*., 2006). In another study, the limitation of leisure time and the emotional strain experienced during the transition from the convenience of the classroom to the demands of the clinical phase of dental education were reported to be other significant stressors (Pohlmann *et al*., 2005). In Nigeria, there is dearth of information on how dental students view clinical learning in their various dental schools. The need for students to express their perception of their clinical learning experience is of great value so that substantive changes can be implemented based on the information gathered from a study of this nature.

This study therefore, was aimed at assessing the quantitative and qualitative perspectives of dental students on their clinical learning.

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MATERIALS AND METHODS

Ethical clearance was obtained from the University of Ibadan /University College Hospital ethical committee (UI/EC/10/0196). A cross-sectional study was carried out in the three oldest Nigerian dental schools located in south west Nigeria. The study population comprised of second and third year clinical students who consented to voluntarily complete a structured questionnaire after obtaining permission from their school authorities. All dental students enrolled in the schools' registers, who were eligible, were approached to participate in the study. Those who did not have up to a year clinical exposure based on their schedule were excluded from the study. Based on average admissions of 25 students per session in each school and exclusion of clinical year two in one of the schools because they have not had up to a year clinical exposure, an estimated sample size of 125 was arrived at.

A self-administered questionnaire was adapted from the "Clinical Education Instructional Quality Questionnaire" (ClinEd IQ) by James *et al*., in 2001 and modified by Henzi *et al*., in 2006. The adapted questionnaire consists of two sections which were a 14-item Likert-scale based questions on clinical learning opportunities with each item scored on five points (1–5) and two open-ended questions on the strengths and weaknesses of their clinical learning. The Clinical Learning Opportunities assessed the students' clinical learning environment, level of patient care experiences and opportunity to work in different health care settings while the two open ended questions elicited the perceived strengths and weaknesses observed in their clinical learning. The questionnaire was pretested among 2nd and 3rd year clinical dental students in two dental schools who did not participate in this study and the result obtained elicited the required responses.

Data collection: After explanation of the purpose of the study to the students and assuring them of confidentiality of the volunteered information, students in each school voluntarily filled the questionnaire. Though the investigator was available to clarify any part of the questionnaire that may need clarification, each student was allowed to think through and complete the questionnaire without interference.

Data analysis

Data analysis was done using the statistical package for social sciences (SPSS) version 16.0. In section A of the questionnaire, the five possible responses to each items were consolidated into "agreed", "disagreed" and "neither agreed nor disagreed" as follows:

- Agreed : for "strongly agreed" and "agreed"
- Disagreed: for "disagreed "and "strongly disagreed".
- Neither agreed nor disagreed: remain the same.

The analyses of these 14-items Likert-scale based questions on clinical learning opportunities were handled by calculating the percentage of participants against their responses to every statement and comparisons were made between the two clinical years using Chi-square (X^2). Strength of significance was set at P-value <0.05.

For section B, where two open-ended questions on the strengths and weaknesses of their clinical learning were posed to students, analysis of the handwritten responses was done by thematic analysis of all the comments. Interpretation of themes and coding of data was a collaborative effort between the researcher and an expert with extensive experience in qualitative analysis. The technique used for thematic representation and data coding was based on a protocol recommended by Taylor *et al*., 1998. The protocol included:

- Looking for words or phrases that capture the meaning of what was said ,
- As a theme is identified, comparing statements with other subjects and seeing if there is a concept that unites them

As different themes are identified, looking for similarities between them.

RESULTS

One hundred and nine dental students from the three dental schools located in the south western Nigeria participated in this study. There were 64 males and 45 females. Forty three were in clinical year two while 66

were in clinical year three. The age distribution of all participants ranged from 21.0 to 35.0 years with a mean age of 24.2 ± 2.5years.

Of all positive statements implying good clinical learning opportunities, over 60% of the participants agreed with five statements that have to do with patients' care (Table 1).

Many of the participants disagreed with the remaining four positive statements that have to do with clinic environment, staff and available resources for learning. On the other hand, regarding the negative statements implying poor clinical learning opportunities, over half of the participants disagreed with all the negative statements which further imply good clinical learning opportunities. However, for the negative statement on time wasting with non-educational tasks such as calling patients for appointments, about half (52.3%) of the participants disagreed with the statement, 7.3% neither agreed nor disagreed while 40.4% agreed with the statement.

Table 1:
Percentage distribution of participants' response to their clinical learning opportunities

In Clinical Learning Opportunities N=109	**Disagreed n (%)**	**Neither agreed nor disagreed n (%)**	**Agreed n (%)**
• I have experienced a good mix of patients, problems and clinical experiences.	16(14.7)	10(9.2)	83(76.1)
• The learning opportunities and mix of patients were too diverse, preventing me from developing proficiency.	83(76.1)	16(14.7)	10(9.2)
• My experiences were repetitive and offered few new learning experiences.	58(53.2)	10(9.2)	41(37.6)
• I increased my independence in caring for patients.	13(11.9)	5(4.6)	91(83.5)
• I improved my communication and skills.	7(6.4)	2(1.9)	100(91.7)
• I became more proficient in clinical skills because of opportunities to practice and receive feedback.	15(13.8)	12(11.0)	82(75.2)
• I have had the opportunity to work in a variety of patient care settings.	24(22.0)	17(15.6)	68(62.4)
• Things moved too fast for me to really learn anything.	75(68.8)	22(20.2)	12(11.0)
• I felt like my time in the clinic was sometimes wasted with non-educational tasks.	57(52.3)	8(7.3)	44(40.4)
• The clinic functioned smoothly so that I could efficiently provide patient care.	55(50.5)	23(21.1)	31(28.4)
• I did not feel like a useful member of the health care team.	81(74.3)	13(11.9)	15(13.8)
• Support staff have been available and helpful	44(40.4)	17(15.6)	48(44.0)
• I had adequate resources available to me, which facilitated my learning.	53(48.6)	21(19.3)	35(32.1)
• For most of my clinical education, I have worked consistently with the same instructors.	53(48.6)	26(23.9)	30(27.5)

N = Total number of participants; n = number of participants.

The percentage distribution of participants' responses in clinical years two and three to their clinical learning opportunities are presented in Table 2. Generally, over half (>50%) of the participants in clinical years two and three agreed with five statements which have to do with patients' care with participants in clinical year three having higher percentage of agreement in most of them. Many of the participants in both clinical years disagreed rather than agreed with the remaining four positive statements pertaining to clinic environment, staff and available resources with participants in clinical year three having higher percentage of disagreement (Table 2). However, for all the negative statements in this clinical learning opportunities subscale, over half of the participants in both clinical years disagreed with all the negative

statements except for the negative statement on time wasted with non-educational tasks where lower percentage in both classes disagreed with participants in clinical year two having the lowest percentage of disagreement with this negative statement (Table 2). There was no significant difference in the responses of clinical year two and clinical year three in all the statements under this clinical learning subscale except for the negative statement: "I felt like my time in the clinic was sometimes wasted with non-educational tasks" where more participants (45.8%) in clinical year three disagreed compared with participants (40.0%) in clinical year two ($p = 0.042$).

With regards to strengths of the clinical learning, the following themes were positively identified after analysis of the open-ended questions:

- Early exposure to clinical procedures and interaction with patients.
- Adequate and knowledgeable faculty.
- The broad and comprehensive nature of clinical learning curriculum.

In terms of weaknesses of their clinical learning, the main concerns expressed by the participants in all the three schools were:

- Lack of opportunity to give feedback to lecturers, instructors and administrators.
- Asynchrony of lectures with clinical rotations.
- Inappropriate feedback
- The stress of trying to achieve procedural requirements.

Some of the illustrative example of students comments on the strengths and weaknesses of their clinical learning which were direct quotes related to major themes identified are as shown in Table 3.

Table 2:
Percentage distribution of participants' response to clinical learning opportunities according to clinical years

In Clinical Learning Opportunities	**D (%)**	**N (%)**	**A (%)**	**D (%)**	**N (%)**	**A (%)**	**P value**
I have experienced a good mix of patients, problems and clinical experiences.	13.6	12.1	74.2	16.3	4.7	79.1	0.409
The learning opportunities and mix of patients were too diverse, preventing me from developing proficiency.	78.8	13.6	7.6	72.1	16.3	11.6	0.690
My experiences were repetitive and offered few new learning experiences.	54.5	7.6	37.9	51.2	11.6	37.2	0.769
I increased my independence in caring for patients.	15.2	1.5	83.3	7.0	9.3	83.7	0.086
I improved my communication and skills.	9.1	1.5	89.4	2.3	2.3	95.3	0.359
I became more proficient in clinical skills because of opportunities to practice and receive feedback.	9.3	16.3	74.4	16.7	7.6	75.8	0.244
I have had the opportunity to work in a variety of patient care settings.	25.6	20.9	53.5	19.7	12.1	68.2	0.272
Things moved too fast for me to really learn anything.	67.4	20.9	11.6	69.7	19.7	10.6	0.969
I felt like my time in the clinic was sometimes wasted with noneducational tasks.	40.0	3.0	57.0	45.8	14.0	40.2	0.042
The clinic functioned smoothly so that I could efficiently provide patient care.	51.5	15.9	32.6	53.0	21.2	25.8	0.725
I did not feel like a useful member of the health care team.	68.2	15.2	16.7	83.7	7.0	9.3	0.189
Support staff have been available and helpful	51.2	14.0	34.9	54.6	16.9	28.5	0.426
I had adequate resources available to me, which facilitated my learning.	50.0	19.6	30.4	51.2	18.6	30.2	0.910
For most of my clinical education, I have worked consistently with the same instructors.	56.5	17.9	25.6	58.0	11.2	30.8	0.722

- = Positive statement D= Disagreed : N= Neither agreed nor disagreed : A= Agreed
- = Negative statement n = number of participants in the clinical year

Table 3:
Illustrative examples of students' comment on the strengths and weaknesses of their clinical learning

Strengths	Weaknesses
Interaction with patient and early exposure to clinical procedures: • "Interacting with patients early in the programme has contributed to building my confidence" • "Having direct contact and access to formulate treatment plan for patients has a lot of impact in my learning process" • My early exposure to clinical practice and patients' care put me at an advantage over medical students" **Adequate and knowledgeable faculty** • "Our school has very knowledgeable instructors who has given us adequate skill acquisition" • "Many of my instructors are approachable and they are role model in the profession" • "My school has adequate and experienced faculty members who are willing to share their knowledge and experience with their students". • The faculty is very committed to educating us" **The broad and comprehensive nature of the clinical curriculum** • "Our clinical learning curriculum is broad and comprehensive, integrating theoretical classroom teaching with adequate clinical exposure" • "The scope of our programme is wide, incorporating communication skill with clinical and competence skills" • "Our exposure to general medicine and surgery has given us an edge over our medical counterpart who have little or no knowledge of dentistry" • "Dental curriculum is wide and diverse, incorporating basic medical and surgical knowledge into dental programme and this build our confidence as dentist to be"	**Lack of opportunity to give feedback to instructors and other faculty staff** • "Certain instructors are great, extremely helpful and provide positive feedback, but many are very difficult to work with and we are not given opportunity to let them know how we feel about them". • "We are not given opportunity to share our opinion about our instructors' impact on our learning" • "A number of faculty member hindered our learning progress because they could not be found when they are needed to supervise patient care, evaluate work, or sign off our posting booklet". **Asynchrony of lectures with clinical rotations** • " Certain clinical posting should have taken place before others to foster understanding and its right application" • "Haven't done some posting in clinical dentistry before general pathology, pharmacology, general medicine and surgery". • "Classroom lectures lagging behind clinical teaching in the clinic" • "Classroom lecture not corresponding with the clinical rotation of the student" **Inappropriate feedback**: • "I don't feel comfortable in the clinic because I am afraid of being embarrassed in front of patient when I make mistake". • "I feel like no matter how hard I try, I cannot please certain instructors." • "All instructor will say 'If you don't know, ask!' but when you do, you are ridiculed quite often. • " Our Instructors embarrass us in front of our patients by saying things like 'Why didn't you do this?' or 'Why did you do that?' instead of telling us how best to do it" **Stress of achieving the procedural requirements**: • "Our clinical procedure requirements are demanding and often not feasible" • "Faculty only emphasize on procedural requirement without provision of all the required facilities to make thing easier for us" • "Quite often we are more interested in meeting up with our procedural requirement rather than skill acquisition". • "Due to low patients' turnout in our teaching hospital, our schools cannot provide enough patients for us to meet the requirements, then why are they stressing us"

DISCUSSION

There is no doubt that this study has been able to reveal the perception of the study participants on their clinical learning. It was observed that the study participants reported good clinical learning opportunities especially with regard to patients' care in their various institutions. This could be due to the fact that these

three dental schools are fully staffed and have adequate infrastructural facilities to offer the best clinical learning opportunities for their students. Dental students by reason of their training are known to have early exposure to patients management when compared with their medical colleague and this, the students have also identified as strength. However, many of the students in these institutions expressed their dissatisfaction with the disorganized clinic environment, unsupportive staff and non-availability of resources that facilitate learning. These observations may be due to inability of these schools to address some of the challenges identified in the literature as challenges of teaching in clinical setting. Such challenges include increasing number of students, lower patients' turnout, time pressures when running the clinic and poor facilities in many hospitals (John Spencer, 2003).

The students reported that some of their faculty / support staffs were usually not available and helpful. Since many faculty staff also have administrative responsibilities competing with clinical duties, when clinical teaching demands conflict with administrative work and research, problems with efficiency and stewardship are bound to occur. Most participants also complained about time wasted on non-educational tasks such as calling patients for appointment and doing the work of dental surgery assistant. Four handed dentistry is advocated for best practice but as a result of dearth of manpower attributed to inadequate number of dental surgery assistants in our environment, it is not always practicable. This may account for students being seconded to perform some of the tasks of the dental surgery assistant.

Adequate, knowledgeable faculty and comprehensive nature of the dental curriculum were identified as strengths of clinical learning in this environment. These findings are consistent with previous studies conducted among dental students in North America (Henzi *et al*., 2006, Henzi *et al.,* 2007) where the students identified early exposure to clinical practice and interaction with high quality and knowledgeable faculty as the strength of their own dental curriculum.

However, in terms of weaknesses of clinical learning, the main concerns expressed by the participants in all the three dental schools were lack of opportunity to give feedback to their instructors, asynchrony of classroom lectures and the clinic teachings, inappropriate feedback and the stress of trying to achieve procedural requirements. Henzi *et al*. (2006) also reported similar findings in a study where students' identified limited number of faculty and faculty who are unavailable, inconsistent and condescending feedback and impact of "Chasing" requirements as some of the weaknesses of their clinical learning. In contrast Henzi *et al.* (2007) in another study reported that weakness identified by students in their clinical learning to include "instructional strategies of faculty that emphasized memorization in their teaching", "interactions with faculty who exhibited poor teaching methods and/or poor attitudes" and "poor quality of evaluations by the faculty".

The main weaknesses identified in the present study and the previous studies are basically on evaluation, feedback and stress of trying to have enough procedural requirements. In the literature on effective clinical teaching, provision of prompt, frequent and helpful feedback (constructive "how to improve" feedback in a non-belittling manner) is one of the eleven dimensions of best practices in clinical teaching (Irby, 1995, Heidenreich *et al*., 2000).

Chambers *et al*. (2004) has shown that dental students place more emphasis on evaluation of skills and effective feedback in their reports on "teachers' best practices. The possible reasons for this include the fact that dental students are graded/ rated more frequently and in finer details than medical students due to the procedural nature of clinical dentistry. Hence from student's point of view, those faculty members who are able to provide helpful and prompt feedback and accurate evaluations are viewed as the most effective instructors (Chambers *et al.,* 2004). Similarly, one of the clinical instructors' performance expectations is to promote students evaluations of the clinical experience and encourage feedback from students and other colleague (Heidenreich *et al*., 2000). Nigerian students' evaluation of their instructors has not previously been done in any of the dental schools probably because most students culturally believe that they cannot query their teachers.

Concerning procedural requirements, this has been a problem in various dental schools in this environment. Increasing students intake coupled with decreasing patients' turnout in the dental clinic, has led to difficulty in dental students meeting up with procedural requirements before their licensure examination. Dental faculties need to look into this situation for an appropriate intervention such as subsidizing cost of treatment so as to increase patients' turnout in the dental clinics. However, students also need to be persistent and resilient in making good use of the opportunities in the clinic to have these procedures performed, because in clinical education, the process of learning is principally by doing. Students need practice opportunities for skill and concept development.

Concerning the issue of synchronizing classroom lecture with teaching in the clinic, this may be difficult

to resolve. It is a known fact that the focus of clinical teaching/education is on the patient and the richness of the learning experience depend on the patient mix available as the dental cases that are presented are unpredictable. This therefore explains the asynchrony of lectures and teaching in the clinics. Knowing that clinical teachings in the clinic are often opportunistic and most often dependent on patients' presentations, it may be difficult to plan the classroom lectures based on those chair- side teachings. However, students' need to be actively involved in their learning process thereby correlating those clinical teachings at the chair side with their classroom lectures.

In conclusion, the studied students acknowledged that knowledgeable faculty members and comprehensive nature of their dental curriculum are strengths of clinical learning in this environment however the students do not perceive that they gain much from the overall clinical setting. The studied dental students saw their clinical environment as being inefficient and characterized by lack of organization to provide efficient patient care. This perception may have deleterious effects on their future clinical skills development. There is therefore a need for all the faculties and clinical instructors to pay more attention to this deficit in their students training. It is also important to state that giving of feedbacks should be consistent and reciprocal in nature. This way, the clinical instructor and student will find reason to promote a renewed commitment to excellence in clinical teaching and learning.

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