AMERICAN UNIVERSITY OF BEIRUT

MEDICAL STUDENTS' PERCEPTION OF THE QUALITY OF BEDSIDE TEACHING IN CLINICAL YEARS IN THE AMERICAN UNIVERSITY OF BEIRUT

by
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ABSTRACT
OF THE PROJECT OF

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Title: Medical Students' Perception of the Quality of Bedside Teaching in Clinical Years in the American University of Beirut

Bedside teaching (BST) is a style of clinical teaching in medicine that is referred to as a triad phase, which involves clinicians (teachers), learners (students), and patients at the same time. It was indicated that many under-reported studies worldwide exist on student's perspective towards the quality of bedside teaching. Besides, bedside teaching has never been formally assessed in Lebanon in any of the clinical teaching hospitals.

A quantitative, explorative case study was undertaken in the American University of Beirut Medical Center to explore the quality of BST according to the undergraduate medical students' perceptions by tackling four aspects: learning climate, student learning, tutorial development, and BST value**.** A replicate questionnaire was conducted online via LimeSurvey and was adopted in this study to describe how clinical students perceive BST in November 2020.

A sample of 101 participants contributed in this study from both classes, year 3 and 4, in which all data collected were analyzed using Excel 2016 from Microsoft Office.
Clinical students reported that the BST at AUBMC was perceived valuable and important in all four aspects. Nevertheless, few challenges arose related to the BST, centering on the instructors' fair acknowledgement of the necessary strategies used at the BST.

Future directions should include conducting more BST studies in Lebanon in different medical schools in order to enhance the generalizability of the results obtained in this study. In addition, further studies are encouraged to take place in the AUBMC in different clinical clerkships to test the reliability of the results in each clinical department.

TABLE OF CONTENTS

TABLES

Table

CHAPTER I

INTRODUCTION

Background

Clinical education has an ancient Greek origin. The official practice of medicine was thought to have started with a process of rational inquiry that shaped the beginnings of observation and reasoning application in considering disease (Al Weshahi, 2008). The procedure of rational diagnosis and discussion represent "the foundations for teaching medicine", and were practiced in schools with the Greek physician Hippocrates who was said to have taught in the 5th century BC and thus originated the oath that became a belief for medical practitioners through ages (Marketos, 1997). Greeks were more concerned with the education of medicine which was believed to be acquired through experience gained from a physician-father known as a 'master' or from an aspiring student apprenticing himself to a practitioner for a couple of years (Fulton, 1953). Almost all students at that time wanting to learn medicine had to have a 'master' from which he/she could learn (Fulton, 1953). The applied experience was the base for medical education, and books used to act as adjuncts. According to Galen who acted as one of the leaders in human anatomy, the main medical practice was obtained from the anatomical dissections which were carried out under the supervision of physician-father (Fulton, 1953; Staden, 1992).

The improvement of medicine was clearly shown in the second millennium with the work of Galen (129-207 AD) who was helped by the Arab physician Ibn Sina (980-1037). Their work provided the basic knowledge for medicine in the middle ages. Afterward, large theaters were used to teach medicine which enabled students to have only one physician

teacher/master. The teaching at that time was based on a mixture of hands-on: guided practice and lecture, which were the center of physician training for several years; and still is prevalent in recent days (Al Weshahi, 2008).

In the early twentieth century, the situation for medical education in the American system was confusing and inadequate. Students who were interested in medicine got accepted directly from high school and were subjected to exhaustive scientific training which was then followed by conventional training (Al Weshahi, 2008). Not all students who graduated as doctors in medicine had adequate knowledge. Abraham Flexner (1866-1959) was assigned by Carnegie Foundation to review the medical schools in the US and Canada, and thus published a critical paper on medical education. The published paper led to the closure of several medical schools that were inadequate. The only medical schools that remained were prominent schools graduating outstanding physicians at that time. One of the outstanding doctors claimed the importance of clinical learning in teaching medicine, and that was William Osler (1849-1919) who published a textbook titled "The Principles and Practice of Medicine" the year 1892, which remained essential for medical students for more than 3 decades (Bliss, 1999).

After the report of Flexner, there was a big change in medical teaching in the American system. All universities in the US reached a consensus after few decades to stop admitting students to medicine directly from highschools and they agreed that students need to have a university degree before getting admitted to medical schools of a four years program (Al Weshahi, 2008).

Overview of Medical Schools

Globally, the pattern of medical training is somehow similar; students get to learn basic sciences in their first part of the curriculum which focuses on different pedagogical approaches (Zgheib, Simaan, & Sabra, 2010). This part of the program is two years and is known as the pre-clinical years. Students in the pre-clinical get prepared for the next step of the program that intends to teach clinically. The clinical program consists of an additional two years. This leads to a four years curriculum program. According to Al Weshahi (2008), various pieces of evidence exist on the effectiveness of the pre-clinical years in the medical curricula, yet poor evidence exists about the effectiveness of clinical years.

Clinical Clerkships

The curricula of clinical years differ from the pre-clinical years since the latter is considered preparatory for the former. Students in their clinical years tend to focus on hands-on learning through direct patient care in the hospital. Students at this stage normally take guidance from the residents and floor physicians in order to fit in the health care unit. Clinical years comprise two academic years (three and four) spent in the hospital, which come directly after the pre-clinical years. Students in their third and fourth years are set to rotate through different departments in the hospital for a specific period, each rotation in the department is called a "clerkship". For instance, at the American University of Beirut (AUB), students when they reach their third and fourth years clinical program, they rotate in different clinical clerkships. Those rotations are as follows (AUB Catalogue 2020-2021):

- Year 3:
    - Medicine-12 weeks
    - Surgery-9 weeks

    - Anesthesia-3 weeks
    - Pediatrics-8 weeks
    - Obstetrics/Gynecology-8 weeks
    - Psychiatry-4 weeks
- Year 4
    - Medicine-8 weeks
    - Neurology-4 weeks
    - Pediatrics-4 weeks
    - Emergency Medicine-6 weeks
    - Family Medicine-4 weeks
    - Public Health-2 weeks
    - Selectives-8 weeks
    - Electives-8 weeks

Elective rotations are meant to be taken either outside the hospital in an accredited teaching hospital institution or inside the American University of Beirut's Medical Center (AUBMC) hospital. Students get to select the clerkship of their choice in their two elective periods, which vary among many clinical departments. Selective rotations are optional clerkships where students are required to choose two clinical rotations to be enrolled in for a total of 8 weeks; however, this selection has to take place particularly in the AUBMC premises. The rotations in the selective vary among the following departments: Dermatology, Radiology, Ophthalmology, Otolaryngology or Surgical Specialty. Students normally work in teams in their clerkships assigned by the department's coordinator. In every clerkship, students in different teams are typically involved in clinical activities.

Those activities involve rounds with the physicians, inpatients, outpatient clinics, attending lectures/seminars, and observing procedures (Daelmans, et al., 2004). Those activities are typical work requested from students in order to learn the "craft of medicine" (Al Weshahi, 2008) that is necessary to become a medical doctor. It is assumed that students at the stage of graduation get familiarized with the essential knowledge and experience from the rotations. However, most of the activities are not designed for clinical teaching and learning, rather than providing clinical care, which restricts the education of the core value of clinical teaching and learning (Van der Hem-Stokroos et al, 2003). By stepping away from the core learning, it means that teaching hospitals are only delivering experiences without the reflective components, which barely add knowledge to "the previously-held prejudices" (Al Weshahi, 2008). The utmost strategy in teaching clinical students depends on a good teacher who knows how to benefit from the limited time of the curriculum to increase the productivity of teaching students' clinical experience, which he/she can reflect on. Furthermore, bedside teaching (BST) is considered a component that focuses on the clinical learning process that merges patients, physicians, and students at the same time. I will elaborate more on the clinical method used and investigate its quality in the study.

Bedside Teaching

According to Sir William Osler (Belkin & Neelon, 1992), bedside teaching is considered as an art, and not only science that is taught at the bedside. He also described medicine as an art of observation, whereby he taught medicine accordingly. Osler was the first teacher who brought students to direct contact with random patients for examination (Bliss, 1999).

Bedside teaching occurs when a physician in a certain clerkship takes a group of learners to the bedside of a patient and do many things simultaneously, which are: history taking by listening to patients' history, practice physical examination, communication, and clinical skills, make a provisional diagnosis and decide on best diagnostic options (Peters & Cate, 2014; Salam, et. al, 2011; Shehab, 2013). Salam, et al. (2011) state that bedside is a trialogue phase of teaching that involves clinicians (teachers), learners (students), and patients at the same time. The process provides a structure for physicians to scaffold learning for students and to facilitate the interaction among the three players in order to promote the assigned skills during the process of engagement while attending to the needs of the patients (Salam, et. al, 2011). This practical medicine type of teaching represents the complex clinical environment in a simpler and conducive way to teach (Al Weshahi, 2008). Student gets to observe the teacher and communicate with both teachers and patients while learning through observation and practice, which helps students get direct feedback on their behaviors.

Bedside teaching has some advantages as opposed to clerical teaching. During the process, practitioner-teachers act as role models for clinical-students in order to pave the way for learning different skills that would be challenging to teach didactically. According to Garout et al. (2016), comprehensive history taking provided at the bedside can help physicians diagnose up to 56% of patient problems, which may arise to 73% if a physical examination is added.

Overview of BST in Lebanon

According to prominent universities in Lebanon, such as Lebanese American University and the American University of Beirut, bedside teaching plays an important role

in the medical education program; unfortunately, new learning modalities are coming up to substitute bedside teaching such as simulators and simulation labs (Hijazi, 2020). Those modern modalities are somehow affecting the use of bedside teaching in hospitals (Qureshi, 2014). After going through the AUB official electronic website, I was able to determine three aspects that the faculty of medicine implements in its program to improve the daily clinical experience of the students in their rotations (AUB Website). Those three aspects are patient-based, student-centered, and standardized. In this study, patient-based teaching/learning process was highlighted since it is said to be the starting point for all educational activities. According to the American University Faculty of Medicine (AUBFM) electronic website, patient-based focuses on the one-on-one encounters with patients under the supervision of the attending. All departments in the AUBFM adapt a form of bedside teaching in their teaching/learning programs. The AUB main website also indicates that bedside teaching is offered in the hospital for a period that varies between once or twice a week depending on the rotation. All of this process is delivered by house staff physicians intending to replace didactic lectures.

While searching in the AUB library online databases, I realized that no empirical researches were executed on bedside teaching in Lebanon. In addition, I realized that BST is facing competition at the current time with other teaching modalities mainly clinical simulation techniques using mannequins since they are easy to implement and students feel at ease with the possibility of making mistakes (Qureshi, 2014).

This study was one of a kind in Lebanon to assess students' opinions about the quality of the delivery of bedside teaching in the clinical years of medicine. The study took place in

one of the oldest medical schools in Lebanon that is the American University of Beirut Faculty of Medicine.

Overview of BST in AUBFM

Faculty of Medicine at the American University of Beirut is considered the leading institution in medical education that is accredited globally and recognized to deliver the finest educational and training programs in medicine not only in Lebanon but also in the Middle East. The university is more than 150 years old, whereby medical school was established the year 1867 with the first graduating class of medical doctors in 1871. AUB is the first medical institution in the Middle East to have earned five international accreditations (AUBFM main website):

- Joint Commission International (JCI).
- Magnet.
- College of American Pathologists.
- Joint Accreditation Committee for EBMT and ISCT Europe.
- Accreditation Council for Graduate Medical Education.

Bedside teaching was first adopted at AUBFM in the year 2013-2014 when a new curriculum got implemented in the faculty of medicine. The new curriculum implementation focused more on student-centered teaching, which resulted in all clerkships implementing bedside teaching in their clinical activities.

Clinical education is considered vital in the life of a medical student, it should also be considered as the core learning in the academic life of a doctor. Basic sciences years in medicine are indeed crucial; however, clinical years are essential to teaching students the

core of medicine in practice. As per the background, bedside teaching is the only method that makes students learn by reflecting on their learning experiences (Al Weshahi, 2008). Unfortunately, no empirical studies were done pertaining to bedside teaching in Lebanon; therefore, AUBFM was the setting selected to conduct the study due to its historical background. It is one of the oldest medical schools in Lebanon and the Arab region, and determining the quality of bedside teaching in AUBFM as per students' perspectives will be a great deal. The next chapter will focus on the literature review of the study, which was very important in order to learn more about similar studies completed worldwide pertaining to the same topic, and thus supported my study with proper evidence.

CHAPTER II

LITERATURE REVIEW

The literature search of the relevant information sources on bedside teaching took place in winter and summer 2020 through AUB Library databases. The research procedure was mainly online through AUB databases and the Faculty of Medicine catalogue. This helped in obtaining knowledge on how clinical teaching is being handled in the AUB hospital. Almost all rotations in the hospital turned out to implement a modernized form of bedside teaching in their clinical clerkships, either in core or elective rotations. This new format of bedside teaching incorporated in the medical curriculum is called mini-CEX (AUBFM Catalogue).

The term mini-CEX refers to a mini clinical evaluation exercise. Students in this modernized format get assessed by a resident or faculty member on-site in the presence of a patient, the same as in traditional bedside teaching. The only difference between traditional and modern bedside teaching is that students in the new bedside teaching format get assessed on a printed checklist sheet, which is different from what usually happens in the traditional format where students get assessed orally (Jejri, et al., 2017). The mini-CEX is a similar approach to the traditional bedside teaching because it can occur either in a simulated setting dealing with standardized patients or in a workplace setting encountering the actual patients. Accordingly, the research was limited to the following keywords and excluded the word “simulation” since my study focuses on interaction with patients and not mannequins: bedside teaching, clinical teaching, clinical education, bedside teaching in Lebanon, clinical students bedside learning, effective clinical teaching, student perspective

on the bedside, teacher perspective on the bedside, patient perspective on the bedside, clinical teaching curriculum. I limited the research to the last decade, between 2009-2020, to see if there were any novel studies related to my selected project about studying the quality of bedside teaching from students' perspectives. In the selection phase of the articles, I also added a criterion to see only the peer-reviewed articles that are written in the English language. A total of 18 articles related to the search were found. Some resources that appeared in the online research study were excluded from the total number of articles since they were not related to the purpose of the project.

Description and Appraisal of Data

The total number of articles that fulfilled the research study was 12 out of the 18. The dates of publishing those articles were mainly after 2015. In addition to four articles that got published the years 2009, 2010, 2013, and 2014. The categories of the reports were: one literature review, eight questionnaires/surveys, and three interviews/qualitative studies. The studies collected belonged to three different perceptions on the status or quality of BST in clinical hospitals. Seven studies focused on students' perspectives on BST (Al-Swailmi, et al., 2016; Dhakal, et al., 2018; Gonzalo et al., 2009; Green-Thompson et al., 2010; Jones & Rai, 2015; Sultana, et al., 2017; Yi, et al., 2019), two articles focused on teachers' perspectives on BST (Khan, 2014; Mosalanejad et al., 2013), and two articles focused on patients' perspective and satisfaction on BST (Carty et al., 2020; Luthy, et al., 2017).

After going over the research studies, recurrent themes arose from them, related to the research questions.

The decline in the Use of BST

Most researched articles reported a decline in the use of BST in clinical teaching hospitals over the years; they also claimed that the decrease has reached less than 16% globally (Yi, et al., 2019; Peters & Cate, 2014). The decrease is due to the development of new diagnosis technology tools, the high turnover rate of patients, overwhelming hospital paperwork, and patients' right violation (Carty et al, 2020; Green-Thompson, Veller, & Mcinerney, 2010). According to the literature prepared by Peters & Cate (2014), the decrease in the use of BST has affected learning skills, especially communication skills and clinical skills. Khan (2014) supports the former study and highlights the consequences which may impact the quality of clinical teaching and the interaction/communication skills with patients that are normally acquired at the bedside.

Easy Use of Simulation

Teachers considered BST very essential and important for students' clinical learning; however, a high number of clinical teachers consider simulation teaching to be a substitution for BST since they perceive the latter as somehow similar to bedside teaching (Mosalanejad, Hojjat, & Badeyepeyma, 2013, Jones & Rai, 2015). Even though simulations provide a reasonable approximation of real patient, but Peters & Cate (2014) prove that the actual clinical encounter might not be fully imitated. Some researchers argue that not all teachers comprehend the additional value for bedside, which intends to provide students with the necessary skills that can only be acquired at the bedside, such as communication skills, practical skills, and self-confidence when examining real patients (Green-Thompson, Veller, & Mcinerney, 2010). It is believed that teachers find BST to be time-consuming, and not many teachers put much weight on the modality because not all patients find

enough time to spend with medical students due to the high turnover of patients and due to the increase in the number of students (Mosalanejad, Hojjat, & Badeyepeyma, 2013).

BST from Various Perspectives

Opinions are views or judgments formed by an individual's feelings or thoughts towards a specific thing based on previously accumulated knowledge (Oxford Dictionary, 2021). Furthermore, students, teachers, and patients are considered the individuals who have their opinion matters in bedside teaching since the latter is a triad phase that involves all three of them.

Students' Opinion

Bedside is important in medicine teaching because it provides direct feedback for students when using patient-oriented medicine rather than technology-oriented medicine that centers around simulation use of mannequins (Mosalanejad et al, 2013; Peters and Cate, 2014). BST is utilized to help students learn the core concepts of medicine through the self-reflective clinical experience (Gonzalo et al, 2009). As per the research studies, students considered bedside teaching to be very practical when it comes to developing clinical skills and clinical experience with real patients (Yi et al., 2019; Carty et al, 2020).

Students view BST as essential for them to build the necessary skills that help them in becoming knowledgeable doctors. Students in one of the university hospital in KSA has requested to add more BST hours in their clerkships to exceed the 12-hour sessions a week in order to cover clinically most of the theoretical materials that are given in the clerkship rotations (Al-Swailmi, et al., 2016). Other studies that support the need for students to have more teaching hours of BST per week were one done in a teaching hospital in Nepal and another conducted in Australian clinical schools (Indraratna, Greenup, & Yang, 2013,

Dhakal, et al., 2018). Almost all students agreed in those two research studies that the optimal BST hours a week should be around 12-14 hours in order to cover all clinical knowledge provided from a particular rotation.

Patients' Opinion

In a study done by Gonzalo et al. (2009) and Luthy et al. (2017), which investigated students' and patients' perspectives on the status of BST, almost all participants from patients and students reported that the former do prefer bedside teaching/learning visits because the process made them feel that they are being well taken care of, especially during physical examinations. Carty et al. (2020) also agreed after interviewing twenty-two patients in three different rotations, Obstetrics, Gynecology, and Neonatology adding that students are in deep need of such sessions in order to gain clinical experience. Patients emphasized in both studies Carty et al. (2020) and Gonzalo et al. (2009) that teaching by the bedside is very important for their learning. BST needs to have a big portion in the clerkship curriculum program in order to maintain learning at a high curriculum level (Garout et al, 2016).

A high acceptance from patients to the modality was approved as a learning tool; moreover, patients liked the idea that their opinions were heard and taken into consideration aside from the feeling of altruism in enabling students to learn (Carty et al, 2020).

Teachers' Opinion

Teachers considered BST to be very essential for students' clinical learning since the modality combines many skills in only one teaching activity, it was also referred to by teachers as an important tool for clinical teaching (Mosalanejad et al., 2013; Shehab, 2013).

It was demonstrated in a study completed in Ninewells Hospital in the UK that teachers considered bedside teaching beneficial for students, however, the former believed that few obstacles may arise at the bedside that is teacher-related (Shehab, 2013). According to Shehab (2013), instructors believed in Ninewells Hospital that they were not being well trained to go properly through clinical teaching at the bedside; they were more technology-oriented instead. Furthermore, not all teaching hospitals implementing BST are delivering effective clinical teaching, teachers need to have a clear understanding of curriculum outcomes in order to have efficacious clinical teaching (Shehab, 2013; Asmara, 2017)

Factors Affecting Bedside Teaching

In the below sections, various views in different literature studies were highlighted pertaining to bedside teaching. The members whose views are important concerning BST are students, teachers and patients since BST as explained in the introduction is considered as a triad phase. All three views should be taken into consideration because each has its own view that might vary towards the bedside. Oxford Dictionary (2021) defines individuals' view as a specific person or group of people who see from a particular place or position about something, which in this context is bedside teaching.

Students' View

Unqualified Teachers. In studies prepared by Green-Thompson et al (2010), Peters & Cate (2014), students requested the need for teachers to give additional value to bedside since the process is considered essential for learning adequate clinical skills. Many teachers are not qualified to teach BST sessions; they need to be well prepared by having minimal efforts to provide those sessions (Al-Swailmi, et al., 2016). Workshops need to be offered for teachers not only for the principles of teaching but also to learn the bedside teaching

skills before getting assigned to teach BST in various rotations (Mosalanejad et al., 2013; Sultana, et al., 2017).

Lack of Interest among Students. Students are feeling a lack of interest during BST session delivery (Khan, 2014; Shehab, 2013). This is due to the repetition that exists in the content of BST since all students in their teams need to abide by the same procedure of diagnosing patients and record their history (Khan, 2014).

Feeling of Fear. Students fear making mistakes while examining patients because mistakes are not allowed with real patients (Luthy, et al., 2017; (Garout et al, 2016). However, some students believe that it would be better for them to practice on mannequins using simulation teaching skills since they get to learn from their mistakes without getting penalized (Garout et al, 2016; Malfait et al, 2019).

Teachers' View

Distorted Efforts. Teachers believe that BST is time-consuming and that not enough weight is put on the modality because patients' time is limited and many of them stay in the hospital for a day or two. Moreover, students' class numbers are increasing over the years, which affects the productivity of the BST due to having a high number of students sitting at the bedside for a limited time (Mosalanejad et al., 2013). Teachers believe that there is incompetence in implementing the correct methods and principles at the bedside. A high number of clinical teachers consider simulation teaching to be a substitution for BST since they perceive the latter to be similar to bedside teaching with less effort expected from teachers (Mosalanejad, Hojjat, & Badeyepeyma, 2013). Furthermore, the use of simulation techniques is much easier for teachers since students would be dealing with mannequins

that are easy to handle, whereby students feel more comfortable with the possibility of making mistakes (Qureshi, 2014).

Faculty Training and Compensation. The quality of BST needs to be improved especially in domains related to the patient's comfort and trainee's participation through holding educational workshops (Jamaazghandi et al, 2015). Lack of interest among teachers due to the inadequacy of salary payments since teachers are not receiving good compensation for the extra effort they are doing at BST which is leading to the students' lack of interest because of the inappropriate delivery of teaching (Khan, 2014). They are not content about the salary that they are receiving which does not compensate the professors for their additional time spent on teaching at the bedside.

Patients' View

Some patients do feel overwhelmed with the number of repetitive questions students ask and the number of visits they do in the patients' room (Carty et al, 2020). As per Carty et al (2020), patients prefer small groups of students to visit their room rather than large groups; many believed that having a full room of students would decrease the value of the session, which transforms the session from hands-on experience to observational. Other patients in the same study felt frustrated knowing that they are taking part in the learning of students since they did not have any previous encounter with BST (Carty et al, 2020; Al Weshahi, 2008). Patients believe that there is an exposure deficit among students in BST due to the former inadequacy of knowledge in teaching (Khan, 2014).

Bedside Duration

The appropriate time for a student to visit a patient's room for bedside is 3 to 12 minutes because this time interval is considered efficacious in contributing to increasing patient satisfaction (Luthy, et al., 2017). According to Khan (2014) who also supports the previous study, students need to be divided into small batches of around 10 per team so that patients do not feel overwhelmed with questions or people observing them. Luthy et. al. (2017) added in their study, which was completed in intensive medical rehabilitation wards in Switzerland that bedside teaching is vital for students to learn clinical skills and such teaching would be most effective when this method enhances patient satisfaction. Thus Khan (2014) in his study among professors teaching BST in Pakistan, identified the best teaching hours for BST to be around 2 to 4 hours for a period of 3 days a week.

Characteristics of Adequate BST

Al- Weshabi (2008) based his doctoral research on many empirical studies that focused on building the essential characteristics for bedside teaching depending on students' and teachers' perspectives. According to his research, the best circumstances and practices to teach BST is by ensuring the following:

- When students encounter and practice on real-life patients instead of solely observing the patients.
- When students get quick and constructive feedback from teachers.
- When students have enough time in their curriculum to learn BST in an organized manner so that the process of learning does not squeeze all the info together.

- When students have a positive learning environment that is conducive to learning, which stimulates a joyful environment among them.
- When acquired knowledge is linked to real-life experiences and the level of content is adequate to students' level.
- When learning styles are respected

Limitations

Most of the research studies encountered a problem of generalizability since most studies investigated the status of BST in only one hospital setting that comprises a small sample of participants (Carty et al., 2020; Dhakal, et al., 2018; Gonzalo et al., 2009; Khan, 2014; Mosalanejad et al., 2013). The common limitation is identified in many research studies, which is not being able to generalize the study and conduct the research in different hospital settings at the same time due to effort and time consumption (Gonzalo et al, 2009; Jones & Rai, 2015; Luthy, et al., 2017). Another study also reported a limitation of having a limited number of questions used in a questionnaire, which limited the accuracy and generalizability of the research (Jones & Rai, 2015)

Literature Gaps

According to Dhakal et al. (2018), further studies need to be explored globally on the students' perspective on bedside teaching in order to be able to compare various results obtained. A continuous assessment of bedside quality teaching is needed in order to have an idea of the current BST situation in the hospital, and investigate the possible problems in order to enhance the BST program (Jamaazghandi et al, 2015). Many teaching hospitals employ bedside teaching without previous orientation or adequate preparation for the

sessions, although BST sessions are demanding (Sultana, et al., 2017). Another study suggested how best to utilize time to deliver an effective BST session (Gonzalo et al, 2009). Deeper studies were encouraged by Asmara (2014) to be conducted related to students, teachers and patients' perception about the BST process. Furthermore, a study by Qureshi (2014) advocates conducting more research on BST in order to determine whether BST is good for students in their medical teaching.

Conceptual framework

Additional studies are needed pertaining to students' perspectives on BST (Dhakal, et al., 2018) to determine the effectiveness of the tool in clinical teaching according to students since many studies were published acknowledging faculty members' perspectives. These studies need to focus on the assessment of the quality of BST in the hospital in order to get an idea about the current situation of that teaching tool and acknowledge the reason behind its decrease in medical schools (Jamaazghandi et al. 2015). Sultana et al (2017) stated that bedside teaching was being implemented without previous orientations or training to faculty members which influenced negatively the delivery of BST. Moreover, Jones et al (2015) expressed that there is a shortage in studies being published on the quality of bedside teaching.

As a result, a research study was conducted intending to describe the quality of BST in AUBMC exploring how bedside teaching is being taught in the hospital while examining the learning climate, learning process, and students' input in developing and delivering BST sessions. All of these aspects were examined depending on students' perspectives.

A replicated study will take place as mentioned earlier, entailing 23 questions to uncover those four aspects. A minor change was done to the questionnaire posted in

Appendix A, whereby the title of the last set of questions was changed from “overall impression” to “overall perception”. This change was due to the difference in meanings since this research targeted students’ perceptions. Students’ perceptions are defined as the individuals who get to select, organizes, identifies and interprets the sensory information received in order to understand the current environment (Kenyon & Sen, 2014). In addition, perception is referred to as the cognitive process that aims at reconstructing any scene at its core (Carbon, 2014). As for impression, it is defined by Cambridge Dictionary as an idea or opinion of what something or someone is like without conscious thought and based on little evidence. This study focused on students’ perception rather than impression because the former centers on students’ opinions based on impressions from available evidence of previous experience.

CHAPTER III

METHODOLOGY

A descriptive design was selected to describe the status of bedside teaching in AUBMC since it was the first study to be completed in the hospital cohort and thus offered an idea of where the hospital stands vis-à-vis bedside teaching. A quantitative method was selected, same as most of the other related research studies pertaining to students' perceptions on BST (Dhakal, et al., 2018; Gonzalo et al, 2009; Green-Thompson et al. 2010; Jones & Rai, 2015; Sultana, et al., 2017;) in order to reach a bigger sample size in less time and resources, and enable more generalization of results (Daniel, 2016). The questionnaire chosen is associated with the quality of bedside teaching that was selected from another study that tested students' perspectives of BST in South Africa clinical hospitals (Green-Thompson, Veller, & Mcinerney, 2010). This questionnaire was picked due to several reasons mainly that it has high credibility and validity scores. The use of this methodology in my project helped me identify and describe for the first time how students perceive BST delivery at AUB using a reliable instrument.

Statement of the problem

According to Jones and Rai (2015), under-reported information exists on student's perspectives towards bedside teaching and more information is needed on students' opinions regarding the quality of bedside teaching worldwide. This project will be replicating a previous pilot study that was done in a South African University, which assessed the quality of bedside teaching from a group of students in the medical curriculum (Green-Thompson et al., 2010). It also supports another study that took place in

Bangladesh (Sultana, et al., 2017), which studied students' views on bedside teaching in Obstetrics and Gynecology clinical rotation. Furthermore, in clinical medicine, 56% of the patients' problems could be diagnosed using the only history taking that is provided at the bedside, and the percentage increases with the use of physical examination (Garout et al, 2016; Jamaazghandi et al, 2015; Peters & Cate, 2014). In other words, clinical medicine can achieve the results of the comprehensive examination faster with the use of bedside teaching. Unfortunately, many studies indicate a decline in bedside teaching employment in the clinical medicine program, due to several factors mainly time limitation of teacher-physicians, sophisticated technology dependence, and computerized laboratory tests (Al-Swailmi et al, 2016; Carty et al., 2020; Dhakal et al., 2018; Mosalanejad et al., 2013; Qureshi, 2014; Sultana et al., 2017;). Those activities are modern tools to replace clinical examination skills fostered at the bedside. Three-quarters of the undergraduate clinical learning experience used to center on bedside teaching in the past decades; however, nowadays the implementation of the clinical teaching technique diminished to reach less than 16% (Al Weshahi, 2008; Garout et al, 2016; Jamaazghandi et al., 2015; Peters & Cate, 2014,). There is no evidence that BST is the best-qualified teaching in clinical domains and there is a lack of information about the link between BST objectives and the increase in understanding concepts and skills in the method (Jamaazghandi et al, 2015).

Statement of Purpose

This study aims to investigate the quality of bedside teaching in AUBMC according to the undergraduate medical students' perceptions, tackling four different aspects: learning climate, student learning, tutorial development, and BST value. Undergraduate medical students are also referred to as clinical students who are enrolled in their last two years in

the medical school. The study involved a general assessment of BST among all clinical rotations in the hospital since almost all clerkships include bedside teaching in their teaching curriculum.

Research Questions

- How do undergraduate medical students perceive the learning climate of bedside modality in AUBMC?
- How do undergraduate medical students perceive their own learning at the BST?
- How do learners perceive the delivery and planning of AUB clinical bedside teaching sessions?
- How do students perceive the value of bedside teaching at AUBMC?
- What is the overall perception of the undergraduate medical students pertaining to bedside teaching at AUB?

Research Design

An explorative case study took place to study the quality of bedside teaching at the American University of Beirut Faculty of Medicine. The study described and analyzed the learning environment of bedside teaching sessions by studying the learning climate, the enthusiasm of students, and the delivery process of BST.

According to Yin (2014), one of the aspects of an exploratory case study is that it has been used when there is no pre-determined outcome, also such studies specialize in asking “how” and “what” in order to gain in-depth and extension about a description of a phenomenon.

In a similar research study about bedside teaching, data were collected quantitatively because such explorative studies focus on the descriptive presentation of

numerical data and its statistical analysis deal with average, percentage, frequency, mode, and others (Nassaji, 2015). Quantitative research that is used in the descriptive design was proven by Benfield (2019) to have more consistency and validity than qualitative research.

Site of the Study

The study was conducted at the American University of Beirut Medical Center. The new imposed curriculum in the year 2013-2014 led to new changes that affected all academic years in undergraduate medical education, which consists of a four years program. The first two years of medicine at AUB are mainly focused on teaching basic sciences that are considered preparatory for the clinical years. The clinical years comprise of two academic years, whereby students' main teaching and learning are spent in the AUBMC hospital setting. The clinical years deal mainly with clinical experience. The new curriculum implemented in AUBFM, called 'impact curriculum', shifted the teaching and learning process to a new level by implementing innovative teaching techniques that put students at the center of teaching and learning rather than considering students as passive learners (Zgheib, Simaan, & Sabra, 2010). This change in the curriculum involved new techniques that facilitated clinical learning in the hospital and encouraged students to actively learn rather than passively. Bedside teaching was one of those new techniques, which almost all rotations have started to adopt (AUB catalogue). As per the AUB catalogue, some other rotations are using simulation teaching in order to substitute bedside teaching. Probably, this is due to prevent time consumption that professors spend at the bedside since they are inadequately compensated for the extra time they spend with students (Khan, 2014). In addition to the high turnover rate of patients in the hospital that requests much paperwork from the students, which forbids them from visiting patients and

spend enough time at the bedside to learn through history taking and patients diagnosis (Khan, 2014; Peters & Cate, 2014).

Research Method

Based on the literature, the best instrument adopted to collect information when describing a phenomenon is through a questionnaire, because the numeric data presented in the quantitative research focuses on determining relationships between and among variables (Benfield, 2019; Creswell, 2014). Since this study was a replication of a pilot study done in South Africa by Green-Thompson et al. (2010), the same questionnaire was used online to determine clinical students' observation of the clinical teaching site in AUBMC. The use of a replicated questionnaire makes it easier for the researcher to compare data from different groups being studied (Al Weshahi, 2008). According to Al Weshabi (2008), when similar questionnaires are completed in different studies, the research triangulation and replication would be easier. The importance of using triangulation in the study is to make the instrument more valid, which helps to overcome challenges such as single-method, single-observer and can be applied to confirm the research results and conclusions (Hussein, 2009). Moreover, replication of a questionnaire does bring additional data and insight towards the same topic (Al Weshahi, 2008).

The questionnaire used in the study (see Appendix A) uses a five numerical score Likert scale that ranges between 1 and 5. The numeric score 1 means 'not done/bad', 2 means 'poor', 3 is equivalent to 'average', 4 represents 'good' and 5 is excellent. The questionnaire consists of 23 questions in total, determining the quality of bedside teaching. They are divided as per the following indicators:

- Learning climate (5 questions),

- Students' learning (4 questions),
- Actual tutorial delivery and development at bedside (10 questions)
- Overall student's perceptions of the tutorial (4 questions).

Additional space was added at the bottom of the questionnaire for students to write down their feedback and/or comments.

Objectives of the Questionnaire

Objectives of the questionnaire are to explore the quality of the teaching and learning experience at the bedside following four indicators learning climate, students' learning, session development and delivery, and students' overall impression of BST. The process will help me also understand if teachers are taking into consideration the interpersonal relationship between patients and students in the triad phase of learning (Green-Thompson, Veller, & Mcinerney, 2010)

Validity and Credibility

The bedside teaching evaluation questionnaire (Appendix A) was adapted in another peer-reviewed evaluation that was meant to evaluate normal lectures and focused group case discussions (Green-Thompson et al., 2010). The survey questionnaire was first piloted on bedside teaching in September/November 2008. The pilot study took place in the undergraduate medical years in South Africa at the University of the Witwatersrand. As per Green-Thompson et al. (2008), students evaluated by the study were in their third and fourth years of undergraduate medical education who underwent Surgery rotation. During the pilot study, students were divided into their clinical years into groups and used to rotate through blocks of study in the various clinical disciplines. 30 students were assigned to a

block at one time, in which 30 students get divided into 3 different teaching hospitals. Students were divided equally, 10 students per hospital allocated on a particular clinical discipline at a time. The sample comprised 112 students, 12 groups of students in two surgery blocks were asked to evaluate the bedside teaching. Only 112 participants filled the questionnaire evaluation forms in surgical blocks. Each subset of questions was analyzed in the pilot study and the Cronbach's alpha (CA) was determined. The results showed the below:

- The first subset of questions in the questionnaire related to climate had a CA of 0.83.
- The second subset of questions that is related to student learning had a CA of 0.82.
- The third set of interrogations, which is related to teaching delivery, had a CA of 0.89.
- The fourth set of queries corresponding to the value of the bedside on students had a CA of 0.9.

The questionnaire was determined to have high CA value scores on every subset of questions; in addition, the overall CA value of the questionnaire was 0.96, which concludes that the instrument used is very reliable (Green-Thompson et al., 2010)

Population and Sampling

The target population of the study is students who are currently enrolled in their clinical years at the American University of Beirut, Faculty of Medicine in the month of November, the year 2019-2020. Students who are enrolled in the clinical years are medicine classes 3 and 4, which form the last two years of medicine. The study population

included all students in different hospital rotations excluding the students who were on vacation during the month of November since the study was conducted in that month. Students in medicine 3 and 4 class normally get one month of vacation a year.

The population of the study consisted of students who are enrolled in their core and peripheral rotations taken either as mandatory rotations or as elective or selective. After interviewing an administrative assistant in the student affairs section at AUBFM, I was able to determine the total number of students available in the clinical years, Medicine 3 and 4 for the year 2020-2021. The clinical years comprised 215 students, of which 112 are in medicine 3 and 103 students in medicine 4. All students were invited to participate in completing the questionnaire, and thus all population was targeted to maximize participants in order to increase the study sample.

Consent of Participants

Permission was taken from the Institutional Review Board office (IRB) in order to undertake the study on hospital premises of the clinical blocks. The IRB with the help of the IT section took care of communicating with the Faculty of Medicine, Student Affairs in order to collect the emails of medicine classes 3 and 4. Participation in the study was voluntary, similar to what was done in the pilot study (Green-Thompson, Veller, & Mcinerney, 2010).

In parallel, an assurance email took part in the invitation form, which was sent to all clinical years students through their emails via LimeSurvey AUB online network. This online survey tool was mandated by the IRB since it is a legitimate and licensed electronic survey embedded in the AUB network. Thereby, all students who undergo an electronic quantitative type of research in AUB will have to go through that link. The invitation email,

which was addressed to medicine 3 and 4 students, included information about the title and purpose of the questionnaire. In addition, the invitation letter enclosed a note assuring students that their responses on the questionnaire will be treated confidentially and that the completed evaluation forms will only be used for research purposes away from teachers' sight. Participants who took part in the study were informed about the importance of anonymity so that students avoid putting teachers' names in the comment sections. It was also highlighted in the script that in case instructors' names were mentioned, the entire survey of that particular student will get deleted permanently.

Since the study involved students as participants, the whole survey process had to safeguard the rights and welfare of the human subjects participating in the study. In order to do so, the questionnaire survey was sent to the IRB at AUB before proceeding with questionnaire distribution intending to protect the rights, safety and well-being of human subjects who are participating in the study. This was done by filling an IRB application form that is found on the AUB website. After receiving IRB approval to initiate the study, an invitation to the potential participants was sent, attaching a link where students get to look at the consent form prepared and approved from the IRB in order to preserve students' rights by informing them about their potential benefits and risks that might have a direct impact on them and on their society. The consent form script highlighted on one hand that students will not get any payment for participating in the study, on another hand they were informed that the study will help them reflect on their own practice; in addition, will help them create an aspirational benefit that might affect the AUBMC curriculum and clerkship directors. Another potential benefit dictated in the consent was that the study provides an exploratory data analysis to the curriculum policymakers at AUBMC on the quality of

bedside teaching delivery. As for the potential risks to the participants, it was stated in the consent form that the study had minimal risks. The only risk that might occur is facing experience inconvenience due to the time spent in completing the questionnaire.

Students were assured in the script that if they took part in the study, they can always revoke their decision and withdraw from it at any time without consequences. Moreover, the consent form highlighted that refusal to participate or withdraw from the study will not involve any penalty or loss of benefits to the individual. In addition, the consent indicated that students who do not participate in the study will not have their relationship affected with the AUB/AUBMC organization.

Anonymity

In the feedback section at the bottom of the questionnaire, students were not allowed to state the names of their teachers in order to maintain the anonymity of the description in the questionnaire. I reminded the students to abide by anonymity during the instructions/reminder email, which was sent to students. I will elaborate more on the email in the "distribution of questionnaire" section.

Distribution of Questionnaire

With the help of the IRB office, the number of students enrolled in both medicine 3 and 4 was clearly identified. After informally interviewing an assistant administrator in the student affairs section at AUBFM, the distribution of students in different rotations became lucid. Students apparently are randomly distributed to their rotations; nonetheless, the number of students in every clerkship must not surpass the maximum number of students as pre-assigned by each department. This number may vary from one department to another. After identifying the correct number of students in medicine 3 and 4, an invitation script

was sent through LimeSurvey at the beginning of the month of November 2020, attaching the link of the questionnaire for them to easily gain access to the survey. The invitation script invites students to participate in the research study to explore the quality of bedside teaching in their clinical years of medical students in AUBMC as per students' perception. The invitation document also held a small explanation of what the study entailed. In the middle of the script, students were notified about the estimated time to complete the survey, which was about 6 minutes. The period of completing the survey was determined after asking 3 random students to fill in the questionnaire, in which those attempts were not counted in the study, and had their performance timed in order to deduce the average time of completing the survey. Three other emails followed the invitation email to remind non-respondents to complete the survey. The email was initially sent on November 3, 2020, and the reminders followed at 1-week-intervals encouraging participation. The reminder scripts reiterated the main invitation text content, asking students to fill in the questionnaire based on the last bedside teaching or Mini-CEX session completed in the month of November.

The questionnaire was uploaded on a web-based tool called LimeSurvey. According to the IRB, LimeSurvey was the only tool that is trusted by AUB to survey since it is handled securely with a password-protected system. In the online survey settings, the option of anonymity was checked in order to maintain confidentiality among students. All 23 questions were set online through Limesurvey to have a Likert Scale format varying from 1 (excellent) to 5 (bad/not done), in which students get to select a number.

Data Analysis

All responses on LimeSurvey were electronically recorded during the month of November. By the month of December, the results were extracted from the online survey in

an excel format sheet entailing students' results that were answered in a Likert Scale format. All data obtained were computed and analyzed in order to determine the below:

- Total percent of students who answered/not answered per question.
- Descriptive statistics: percentages, mean of data collected and standard deviation for all 23 questions.
- Cronbach's Alpha for the entire set of questions in order to ascertain the internal consistency/reliability of the survey.

The data were exported from LimeSurvey in an Excel format and analyzed using Microsoft Excel 2016.

In order to determine the response rates of the participants and their various answers, descriptive statistics and frequencies were applied. The results obtained through Excel 2016 were compared to the literature review section in order to show the differences or similarities among students' perceptions of the quality of bedside teaching in Lebanon and other countries. Each clinical rotation had its scores computed separately and had a graph showing the overall students' answers (Malfait, Eeckloo, Van Biesen, & Van Hecke, 2019).

The descriptive calculation was used in the Likert scale because Sullivan and Artino (2013) recommended it. Both researchers depict in their study that the optimal use for researchers when attempting to measure fewer concrete concepts is to use descriptive calculation. Less concrete concepts refer to Likert scale studies related to satisfaction (Sullivan & Artino, 2013), same as in this study, where a single survey item is unlikely to be capable of fully capturing the concept being assessed.

Raw numbers were converted to percentages in order to have a clearer reading of the results as recommended by Warmbrod (2014). The arithmetic mean was also calculated to determine the average of certain data, computed by adding all values in the data set divided by the number of observations in it (Manikandan, 2011). Moreover, the standard deviation was calculated to indicate how far the individual responses to a particular question vary from the mean and to tell how much the results spread out (Datastar, Inc.). These calculations were applied to all responses in the 23 given question items.

Role of the Researcher

I was the primary researcher in this study. In which, I have taken responsibility for all data collection and analysis. I also followed up on sending reminders to the students for them to fill in the questionnaire survey using LimeSurvey. Furthermore, I handled the confidentiality of the data and secured the numerical scores of the students to ensure the protection of the results.

CHAPTER IV

RESULTS

All medical students in their third and fourth academic year at AUBMC received the questionnaire. The total population was 215 students, among which 101 participants completed the questionnaire. A report of the information gathered from students in November 2020 will be expressed in this chapter as a result of the descriptive study conducted. This section will cover the findings of the study, which include demographic data and statistical analysis presented in tables, charts, and graphs.

Students' responses were collected anonymously as stated in the study and had a Likert scale that varies between '1' as the lowest score and '5' as the highest score, referring to bad or excellent respectively. The students' answers were exported from Limesurvey in an excel file where all students' responses were located in one big list. Every student in the file was randomly labeled by the Limesurvey system from 8 to 131 depending on who filled the survey first. Those digital numbers were considered as haphazard ID numbers. The information was exported on the document, included the dates when students filled the questionnaire and the number of pages completed out of the total six electronic pages, comprising four questions per page except for the last page, which had three questions to come up with a total of 23 questions.

Demographic

The population was 215 students, distributed as follows: 104 students (48%) from medicine 3 class, and 111 students (52%) from medicine 4 as shown in Table 1. The sample of the study consisted of 101 participants, which corresponds to 47% of the entire

population. Out of the 101 participants, 64 students completed the questionnaire fully and 37 students filled it partially (Table 1). The partial completion was categorized as follows: 30 students left more than three questions unanswered and seven students left less than three questions blank.

Findings

The results in Table 1 show the total percentage of students who answered or skipped answering every question out of the 23 questions survey. Overall, questions 6 to 9 had the highest response rate, in which they represent the second subset of questions referring to 'student learning'. It appears that the number of students answering those questions reached a peak of 95% respondents with a lowest of 93%.

The lowest section that had the least responses was the last set of questions, which refers to the 'value of bedside teaching'. These questions numbered 17 to 23 received the lowest answers in the questionnaire with scores varying from 77% to 81% respectively. The question that had the highest response rate from students was question #7 (95%) related to the allowance of students to ask questions and provide feedback during BST session. On the other hand, the least questions answered by participants dealt with students' perception of the value of the tutorial, which involved three questions with a score of 77%. Those questions were 21 to 23. The questions that were not answered by a high number of participants might be indicative to students not knowing how to rate those particular questions since they have not encountered those question aspects before, or it might be due to students leaving the last 2 pages of the questionnaire empty due to not having enough time to complete them.

Table 2 shows the percent of the distribution of responses per question that varies between 1 and 5, which corresponds to “bad/not done” and “excellent” respectively. The majority of students’ answers circled around “4”, which is equivalent to “good”. The highest percentages were distributed on the “Good” label performance except for question number 14 that centers on the teacher if he or she uses different strategies at the bedside to maintain students’ attention. The highest number of responses centered around “average”, whereby not all students agree that this question was well implemented. Moreover, question #13 had the highest response scales that varied between “good” and “excellent”, with 50% and 48% of responses respectively.

Most participants in the study marked an average scale rate of “4” in all four subsets of questions as demonstrated in both Table 2 and Table 3. The average responses scores on all 23 questions vary accordingly (Figure 3): “good” (51%), “average” (25%), “excellent” (16%), followed by “poor” and “bad/not done” with 7% and 1% respectively. Besides, the minimal number of students marked “poor” and “bad/not done” in the survey study makes those 2 answers outliers.

Table 2 emphasizes the average and standard deviation of students’ responses per question. Question #13 had the highest average responses as shown in Table 1 with the lowest SD. The results were followed by questions #5 and #21 with a high average performance score of 4.0 and 3.9 respectively. Figure 4 also demonstrates a somehow low standard deviation throughout the survey, which results in having most participants' responses clustered around the mean, which is marked on the scale as “4” or “good”. This eliminates the outlier “2” and “1”, which refer to “poor” and “bad/not done”.

Table 3 shows the quality score of student comfort in the rotations at AUBMC. The four categories that questions belonged to (learning climate, student learning, delivering and developing tutorial, and value of BST) shared an average percent of students' responses to be 74 ± 1 with an average standard deviation of 16 ±1. This supports Table 2 by indicating that all responses center on the "good" label.

Cronbach's alpha (CA) of the responses was calculated to provide evidence that the components of the scale are inter-correlated and that the grouped items measure the underlying variable (Sullivan & Artino, 2013), which scored a numerical number of 0.94. This indicates the study questions and responses to be of high consistency, similar to what was demonstrated in the pilot study that was arranged by Green-Thompson et al (2010).

Furthermore, three students out of the entire sample reported in the comment field that was posted electronically at the end of the questionnaire. One anonymous student highlighted the importance of his/her mentor in the BST sessions since the latter provided a formative assessment after each session and reported that not all faculty members abided by the same strategy in other clinical rotations. Another student reported that he thinks that he never had a BST tutorial stating in his comment "I think?". The third comment emphasized the importance of students to refer to the USMLE book and other reading materials in order to acknowledge the value of medicine since the materials on the floor are quick and haphazard, and therefore he/she encouraged studying from supplementary materials because such learning was considered of greater help than hospital floor.

Overall, the results of the research study showed that the quality of bedside teaching at AUBMC in Lebanon is good according to students' perception of such tutorials offered in the month of November. Students perceive the learning climate, self-learning, delivery

and development of bedside teaching classes to be good in general, and they appear to value the BST sessions integrated in their curriculum. Although most students find BST good, standard deviation (SD) for the whole questions combined, determines students to have their answers distributed around the mean. An SD of 15% is considered slightly distant from zero. This demonstrates that the results vary from the mean with ± 1 SD. With this being said, the range that is covered by the SD includes both "excellent" and "average". Moreover, as we can see from Table 2, students scoring "average" are much higher than students who marked "excellent", and this applies to all four categories.

Table 1

Distribution in the Number of Students in Proportion to Potential and Actual Participants Who Filled the Questionnaire

	Potential Participants		Actual Participants	
	Year 3	Year 4	Partially (>3 questions unanswered)	Fully (<3 questions unanswered)
Number of students	104	111	37	64
Total	215		101	

Table 2

Percent Distribution of Students' Answers and Statistical Data Analysis Per Question

Question #	Answering Rate (%)	Participants Answers (%)					Statistical Data Analysis	
		Excellent	Good	Average	Poor	Bad/not done	Average	SD
1	85	8	51	27	11	4	70	18
2	85	16	49	24	8	2	74	19
3	87	6	48	31	13	2	69	17

4	86	14	53	21	10	1	74	18
5	86	28	49	20	3	0	80	16
6	93	15	55	22	8	1	75	17
7	95	15	49	29	5	1	74	16
8	94	19	53	22	5	0	77	16
9	94	16	47	26	11	1	73	18
10	85	9	59	28	4	0	75	14
11	82	9	52	29	7	2	71	17
12	84	13	56	24	5	2	75	17
13	84	48	50	2	0	0	89	11
14	84	12	32	44	10	2	68	18
15	82	13	49	26	11	1	72	18
16	83	14	49	29	7	0	74	16
17	80	10	63	26	1	0	76	12
18	80	21	40	28	9	3	74	20
19	81	15	40	30	12	4	70	20
20	78	14	62	22	3	0	77	13
21	77	19	57	22	1	0	79	14
22	77	14	58	22	5	0	76	15
23	77	16	53	23	6	1	75	17

Table 3

Average Percent Scale of Students' Responses and Statistical Data Analysis Per Evaluation Category.

Scale	Constructs of the Evaluation Form							
	Learning Climate		Student Learning		Delivering and Developing the Tutorial		Value of BST	
Excellent	14.46%		16.22%		16.92%		15.65%	
Good	50.12%		51.08%		49.65%		53.20%	
Average	24.46%		24.71%		26.04%		24.67%	
Poor	9.08%		7.19%		6.19%		5.41%	
Bad/not done	1.87%		0.80%		1.20%		1.07%	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AUBMC	73.2	17.6	74.9	16.8	75.0	15.8	75.4	15.9

To sum up, most students answered in all questions either “good”, or “average”, or “excellent” on the Likert scale questionnaire. Therefore, if we exclude the outliers, we come up with students considering the quality of bedside teaching to vary among three different scales: satisfactory, good and excellent. The biggest vote from students went to the “good” scale, which was followed by “average” and “excellent” respectively. This result applies to all subset of questions pertaining to learning climate, student learning, delivery and development of the tutorial and its value in clinical teaching. There has been a small variation in a few questions’ answers related to the strategies used in delivering BST and the proper strategies used between teacher and student. Those strategies are related to the following: students’ engagement in BST sessions, and reinforcements provided by teachers. These questions were highlighted because they received a primary response rate of “average”.

Almost all students’ results represented a good perspective towards the quality of bedside teaching; nevertheless, a high number of students believed that the quality of BST was average because many students reported the score of “average” among all questions. Moreover, a high standard deviation was indicated in some questions related to: provide students with guidance, a summary at the end of the session, and being treated with respect. Those questions were numbers 2, 18, and 19. This shows that many students’ answers varied among participants, and many answers deviated from the mean. In the following chapter, the reason behind the variation of the results was explained in detail and was supported with background research to acknowledge the difference in students’ answers.

CHAPTER V

DISCUSSION AND CONCLUSION

In this chapter, interpretations of the findings were elucidated in order to understand the significance of the results in relation to the quality of bedside teaching according to the undergraduate medical students' perception. The interpretation of the results was supported with literature findings, and thus further critical explanations and analyses were provided in order to find a significant meaning of the data obtained. Each subset of questions from the survey was discussed separately. Another section follows that conclude the discussion by recapping the main points highlighted in this section to generalize the results obtained and apply them more generally through describing lessons learned from the study and proposing best practices at bedside.

Relationship of data to conceptual framework

Learning Climate

Regarding this subset of questions related to learning climate, it was stated by Ramani and Leinster (2008) that teachers encounter many challenges in the clinical environment that are mainly time constraints, and lack of incentives. The former is due to the high number of patients' admissions, and the second might be due to teachers' distorted efforts as explained previously in the literature (Khan, 2014; Mosalanejad et al., 2013; Ramani & Leinster, 2008). With this being said, teachers might not provide adequate and direct observations for learners, in addition to lack of feedback which can result from insufficient time spent on reflection and discussion after BST sessions that may create a

lack of congruence with the rest of the curriculum as per Ramani & Leinster (2008) and Williams et al. (2008). This claim supports the reason behind the high number of students scoring low-performance scales on this subset of questions which varied between ‘average’ and ’poor’, with scores of around 35% and 11% respectively (Table 2). Besides, question #3 demonstrates a somehow low-performance score comparing to the other questions pertaining to students receiving positive reinforcement from teachers, which resulted in almost 46% of students reporting a scale of less than ‘good’ on that item (Table 2). Nevertheless, patients appear to be well treated during BST from both ends, students and faculty members, since almost all students rated the patients’ treatment between “good” and “excellent”. We can easily spot the questions with a low-performance scale rate in this subset, which are #1 and #3. These questions are related to teachers’ inadequate attitude with students at the bedside, such as establishing rapport with the latter and provide positive reinforcements. This might prove that many teachers teaching BST are not familiar with the procedure of how to deal with students during the session.

Student learning

Students in the second construct of questions, related to student learning, perceive their motivation to learn, the opportunity to ask questions, being challenged, and emphasis on their own understanding to range in the ‘good’ scale level with an average score between 73 and 77. This indicates that students learning minds are being well challenged, and therefore they are being engaged by answering the teacher’s questions, which prevents them from feeling bored. On another note, the scale of ‘good’ had the highest students’ answers, which was followed by the ‘average’ scale that received approximately 25% of students (Table 3). This demonstrates that there is a variation among students’ answers

between ‘good’ and ‘average’. As a result, not all teachers seem to know how to acknowledge a proper interaction with students by engaging them, and asking questions/answers, which might be the reason to lead the latter to feel bored during BST sessions and less motivated. Green-Thompson et al. (2010) and Mcinerney (2010) supports the claim by indicating the importance of engagement during BST session between students and instructor because this impacts negatively on students motivation and learning. Carlos et al. (2016) highlighted the importance of students’ involvement in BST when teachers ask relative questions to students at the bedside. Asking questions in the sessions by instructors should keep students focused and aware of what is happening during the session. This presumption was supported by Carlos et al. (2016) that believed in the sense of awareness that questions might generate among students, which is related to the enhancement of collective leadership style that increases students’ learning.

Delivering and developing the tutorial

This construct refers to delivering and developing the tutorial and tackles questions related to the ability to communicate information clearly, being knowledgeable and enthusiastic about the topic, integration of all aspects of health care, and teaching strategies that are used to maintain students’ attention. The questions in this section were based on Parsell and Bligh’s concept of ‘knowing learners’, which emphasizes the importance for teachers to comprehend teaching strategies at the bedside in order to stimulate self-directed learning and another form of knowledge including communication skills, ability to manage emotions, knowledge of curricula, health care organizations, ethics and health care costs (Green-Thompson et al., 2010). According to question #13, all students agree that teachers are knowledgeable enough since most students marked a scale of “good” and “excellent”

on that question. Despite that, teachers need to understand that students should remain in the center of learning and they should not fall into the teachers' eloquence on medicine as labeled by Ramani (2003). According to students' responses, strategies used in BST to grab students' attention were not enough, and therefore, were considered average. Ramani (2003) stated in her study twelve tips in order to improve bedside teaching, in which she emphasized three points to overcome frustration and boredom during BST because the following points might keep the session learner-centered rather than shifting the focus on teachers' eloquence on medicine (Ramani, 2003). The first aspect is for teachers to be well prepared for the BST session especially if teachers are unfamiliar with the necessary techniques; this would conduct an effective round and increase teacher comfort at the bedside. The second point is to orient the learners to the session plan and negotiate the goals and objectives of every session. The third characteristic is to challenge learners' minds augmented by gentle correction when necessary in order to move away from long discussions. These factors are very essential to keep learners engaged in BST sessions. Instructors also should comprehend these aspects to avoid any frustration during the sessions, especially if they were unfamiliar with BST techniques.

Value of BST

The study of Williams et al. (2008) confirms the results obtained in the section related to the value of BST, which considered the overall BST process valuable for students. Learners in the study of Williams et al. (2008) found that BST is valuable for learning essential clinical skills such as physician-patient interaction, physical examination, clinical reasoning, and professionalism. Since not many studies corroborate the effectiveness of BST, this affirmation by students is crucial. The learners recognized the

tutorial to be valuable and interesting; in addition, almost all students felt that a summary was ready at the end of their BST tutorials. The literature backed up the importance of BST in clinical students' careers because it tends to manage emotions and provide patient education and support (Carty et al., 2020; Williams et al., 2008).

Although most students assert that bedside teaching at AUBMC was handled well, however, it all refers to the teachers' readiness to offer BST, since not all faculty members may know how to conduct BST sessions as per the twelve tips of Ramani (2003). This confirms the comment provided by one of the students who stated “not all teachers provide a summary and constructive feedback at the end of the bedside session” same as his/her last instructor in the month of November.

The high number of Cronbach’s alpha (0.94) in the study makes the entire questionnaire consistent and proves the questions of the four constructs to be closely related as affirmed by Green-Thompson et al., (2010) in their pilot study.

Recommendations

The data obtained in the study helped to describe in detail the quality of BST at AUBMC as per the perspective of the undergraduate medical students. Below are few recommendations, which should guide and help improve the quality of BST.

- All BST instructors need to acquire the twelve tips explained by Ramani (2003) in order to guide teachers in learning the correct teaching techniques and hence be able to run the corresponding sessions efficiently without any frustrations, in addition, this would help teachers to avoid falling into their eloquence on medicine.

- If teachers are going to put the effort into learning the BST techniques, they need to be compensated for the additional educational job they are doing with their medical students. With this being said, teachers should have no difficulty in allocating additional time for the BST sessions or can substitute some clinical appointments for the sake of remunerated teaching without the feeling of having their time distorted.
- Teachers need to start asking questions during BST sessions in order to engage all students in the patient's room to create a collaborative leadership style between students-teacher. This would result in involving all students in the BST session and responding to questions pertaining to the topic or disease that is being addressed. In return, this would center the session on students, which results in elevating students' learning outcomes and should stop the feeling of boredom during BST sessions.
- Ramani et al. (2008) reported that most clinical faculty receive little or no explicit training in how to properly conduct BST sessions, yet they are expected to teach students clinical skills and medical knowledge at the bedside. Clinical teachers are already overwhelmed with their hospital duties and ambulatory teaching, it would be easier for them to have faculty development sessions related to BST in order to ameliorate the tutorials provided in the hospital, which may contribute to the overall clinical academic advancement.

CHAPTER VI

CONCLUSION

This study supports Green Thompson et al (2008) by demonstrating that evaluation of bedside teaching sessions can be done formally. Also, the findings obtained in the study mainly helped to describe the quality of BST from students' perceptive at AUBMC. In this chapter, research questions were answered in relation to the study results and discussion. This section was followed with implications on the findings before concluding with a few strengths and limitations that generated along with the study while highlighting the major key points and obstacles encountered in the study vis-à-vis AUBMC and the Lebanese community. This section ends with an opening to future research ideas in the area.

Undergraduate medical students at AUBMC perceive the learning climate of bedside teaching to vary between average and good; however, there appears to be a problem in teachers' attitude with students and lack of positive reinforcement during most BST sessions. On an additional note, students see patients as more than satisfied due to their proper treatment in the sessions from both students and teachers.

Students at the bedside perceive their learning to be at a good level according to this study. Nevertheless, a big number of students seem to find a problem in getting engaged with professors at the bedside, which is leading the students to get the feeling of boredom.

Delivering and developing the tutorial seems to be well prepared by teachers as per students' results. The majority had a consensus that teachers are knowledgeable about the

medical information; however, the biggest batch of students highlighted an average score on the strategies used in BST to grab students' attention.

Students recognized the value of bedside teaching and considered its way of delivery as interesting. Most students agreed that teachers provide a summary at the end of the sessions, which guides them through their clinical learning.

Implications

For Knowledge

- BST in AUBMC was determined according to students' perception to be valuable and essential for students' clinical learning. The study also determined that most students observed BST as challenging and reflective to their own understanding of medical knowledge. Furthermore, the study perceived teachers to be knowledgeable enough for teaching medicine; however, many learners agreed that there might be a lack of teachers' acknowledgment of the right techniques and skills implemented at the bedside. This is somehow affecting the value of BST.
- The study was a revelation to faculty members and administrators about the quality of bedside teaching in the clinical years of undergraduate medical education at AUBMC. Although most students agreed that BST was valuable in clinical teaching, many other students disagree.
- This research shows that BST sessions in AUBMC need more engagement from both ends, teachers and students since the latter reported in this study that they were not feeling being fully engaged in the BST sessions. As a result, the feeling of ennui arose among students. Consequently, curriculum directors need to work more on

constructing the right skills among physicians to engage learners fully throughout the sessions.

- This study shows that clinical teachers in AUBMC might be having difficulties in coping with teaching techniques at BST, which is leading to the sense of either being uncomfortable while teaching or having a misunderstanding of the whole BST concept of teaching.

For Practice

- This research proves that the delivery of knowledge at BST needs some improvement in order to have better clinical teaching. With this being said, faculty members need to have a better acknowledgment of the process and strategies of BST in order to seal the gap that exists in the delivery of knowledge between teachers and students.
- The study highlights the importance of remunerating teachers on their additional teaching tasks at the bedside, in order for the latter to allocate more time for teaching in the hospital and learn the required skills/strategies of BST, or else they might disregard the importance of teaching strategies, which impacts negatively on the value of BST.
- Curriculum directors need to acknowledge the importance of administering workshops for teachers pertaining to the required skills and strategies (as explained by Ramani (2003)) in order to guide them to comprehend the best practices at the bedside.

- The obstacles found in this study were consistent with the study of Ramani (2003), which highlights in detail the teaching strategies that are necessary for every teacher to acknowledge before teaching at the bedside. These steps may be effective at AUBMC to guide interventions in order to improve teaching and learning in BST and would help overcome the obstacles that resulted in this study, such as teachers' frustrations during BST sessions and students' sense of ennui. Abiding by these strategies may intervene to make BST sessions more interactive among teachers, students and patients; in addition, may help in keeping students engaged throughout those sessions rather than making them fall into boredom.

Strengths

- Although many research studies have revealed the importance of bedside in medical teaching hospitals (Mosalanejad et al., 2013; Green-Thompson et al., 2010), Lebanon had no formal studies conducted pertaining to the same topic. This study will ultimately inform other teaching hospitals about the best practices of teaching methods.
- This study was the only formal assessment of its kind prepared in Lebanon to explore bedside at the American University of Beirut Medical Center. It is a great use to the AUB medical curriculum to acknowledge how students perceive the quality of BST in the hospital clinical rotations.
- This study investigated one of the most prominent teaching hospitals not only in Lebanon but also in the Middle East (QS Top Universities, 2020).

- The study appealed to many responses (around 47% of participants) due to the fact that students recognized my name on the study when the three electronic reminders were sent through Limesurvey. I believe that many students filled in this survey as a favor since I used to work with them in their pre-clinical years in the FM at AUB.

Limitations

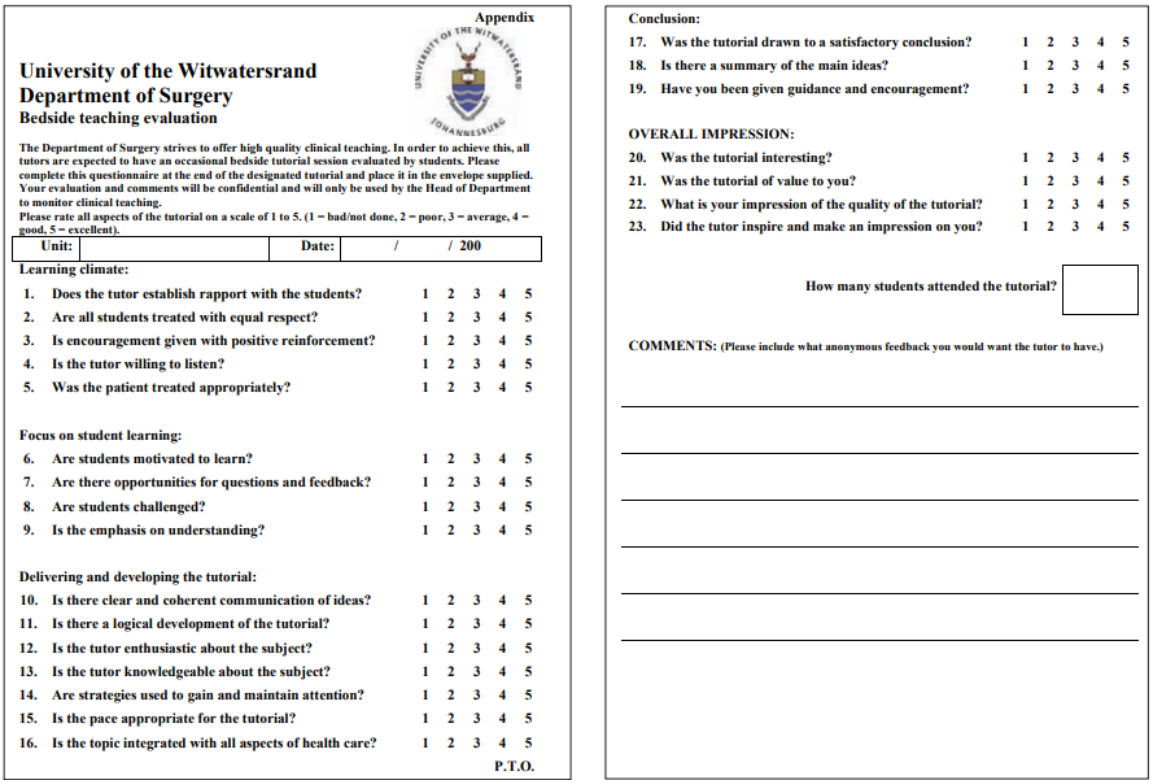
- The explorative study investigation about bedside teaching in Lebanon entailed only the AUBMC site, which played a negative role in the generalizability of the study as explained by Luthy et al (2017).
- Using an online survey limited the study in two ways. On one hand, it lowered the completion rates of the students; for instance, the survey results show that 19 students entered the survey without answering any question, and another 37 students filled the questionnaire partially. Those students might have accessed the questionnaire and got interrupted due to their overwhelming working duties in the hospital and missed resume their completion attempt. Hence, a decrease in the reliability of the results might have occurred.
- The study was initially planned to describe each department at AUBMC on its own depending on the students enrolled in every clinical rotation; however, IRB policy requested consent of every clinical director and practitioner who teaches BST. According to the IRB, this would normally take few months to receive consent from those individuals; besides, some professors may not want to contribute indirectly to this research. In order to expedite the process for launching the survey, the

questionnaire needed to be general and not target a specific department on its own. I had to expedite the IRB process in order to graduate on time.

The quality of bedside teaching in the undergraduate medical education at AUBMC according to students' perspectives is valuable and considered important in the medicine clinical curriculum. Nevertheless, BST appears to encounter some challenges related to its implementation in different rotations at AUBMC. Those problems mainly centered on teachers' ability to engage students throughout the sessions and on how to prepare teachers with the required strategies to deliver knowledge to students. Although BST faced a decline as a component of undergraduate medical education curriculum over recent decades, AUBMC seems to have not only maintained that part in its curricula but also improved its use to become modernized, such as the implementation of Mini-CEX.

For further investigations, it would be better to have other studies conducted in Lebanon from different medical teaching hospitals related to students' perception of bedside teaching in order to have a bigger data collection, which enhances the generalizability of the results. Furthermore, it would be of interest to study the quality of BST according to students' perspectives in different clinical rotations and compare them at the end to see whether the results are reliable to all clerkships.

APPENDIX A



Appendix

University of the Witwatersrand
Department of Surgery
Bedside teaching evaluation

The Department of Surgery strives to offer high quality clinical teaching. In order to achieve this, all tutors are expected to have an occasional bedside tutorial session evaluated by students. Please complete this questionnaire at the end of the designated tutorial and place it in the envelope supplied. Your evaluation and comments will be confidential and will only be used by the Head of Department to monitor clinical teaching.
Please rate all aspects of the tutorial on a scale of 1 to 5. (1 = bad/not done, 2 = poor, 3 = average, 4 = good, 5 = excellent).

Unit:		Date:	/ / 200

Learning climate:

1.	Does the tutor establish rapport with the students?	1	2	3	4	5
2.	Are all students treated with equal respect?	1	2	3	4	5
3.	Is encouragement given with positive reinforcement?	1	2	3	4	5
4.	Is the tutor willing to listen?	1	2	3	4	5
5.	Was the patient treated appropriately?	1	2	3	4	5

Focus on student learning:

6.	Are students motivated to learn?	1	2	3	4	5
7.	Are there opportunities for questions and feedback?	1	2	3	4	5
8.	Are students challenged?	1	2	3	4	5
9.	Is the emphasis on understanding?	1	2	3	4	5

Delivering and developing the tutorial:

10.	Is there clear and coherent communication of ideas?	1	2	3	4	5
11.	Is there a logical development of the tutorial?	1	2	3	4	5
12.	Is the tutor enthusiastic about the subject?	1	2	3	4	5
13.	Is the tutor knowledgeable about the subject?	1	2	3	4	5
14.	Are strategies used to gain and maintain attention?	1	2	3	4	5
15.	Is the pace appropriate for the tutorial?	1	2	3	4	5
16.	Is the topic integrated with all aspects of health care?	1	2	3	4	5

P.T.O.

Conclusion:

17.	Was the tutorial drawn to a satisfactory conclusion?	1	2	3	4	5
18.	Is there a summary of the main ideas?	1	2	3	4	5
19.	Have you been given guidance and encouragement?	1	2	3	4	5

OVERALL IMPRESSION:

20.	Was the tutorial interesting?	1	2	3	4	5
21.	Was the tutorial of value to you?	1	2	3	4	5
22.	What is your impression of the quality of the tutorial?	1	2	3	4	5
23.	Did the tutor inspire and make an impression on you?	1	2	3	4	5

How many students attended the tutorial? ☐

COMMENTS: (Please include what anonymous feedback you would want the tutor to have.)

APPENDIX B

Abstract

Background. Bedside teaching (BST) is a patient-based teaching strategy that is implemented in the clinical years (last two years) of medical education.

Bedside teaching occurs when a physician in a certain clerkship takes a group of learners to the bedside of a patient and do many things simultaneously, which are: history taking by listening to patients' history, practice physical examination, communication, and clinical skills, make a provisional diagnosis and decide on best diagnostic options. BST involves a trialogue phase of teaching that involves clinicians (teachers), learners (sutdents), and patients at the same time. The process provides a structure for physicians to scaffold learning for students and to facilitate the interaction among the three players in order to promote the assigned skills during the process of engagement while attending to the needs of the patients

Many studies complain about the under-reported information that exist on student's perspective towards bedside teaching and request more information on students' opinions regarding the quality of bedside teaching. Furthermore, lack of evidence exist between bedside teaching objectives and understanding the main concepts of medicine and its learning skills.

According to prominent universities in Lebanon, bedside teaching plays an important role in the medical education program; in which, American University of Beirut Medical Center (AUBMC) is considered as one of those prominent teaching hospitals in the country.

Goal. The aim of this study is to explore the quality of bedside teaching in the clinical years of medical students in AUBMC. This study will be first of its kind to formally evaluate bedside teaching-learning experience using a valid instrument not only in AUB but also in all Lebanese medical universities. In addition, this project will play a role that benefits research to enlarge its databases in topics related to quality of bedside teaching related to students' perspectives in the American University of Beirut.

Method. A quantitative, exploratory case study will undertake in the clinical years of medical teaching at AUBMC. The study will comprise clinical medical students in all rotations during the academic year of 2019-2020. A bedside teaching evaluation, based on an online questionnaire will be used and replicated from another study that has a Cronbach's alfa of 0.96 in order to test the quality of BST according to students' perspectives. The population targeted in this study are students in year 3 and 4 who are enrolled in their clinical years.

The study will have indirect benefits. The first is to help students reflect on their own bedside teaching/learning practice; in addition, the study will create an aspirational benefit that might

affect the AUBMC curriculum and clerkship directors. This study would also provide an exploratory data analysis for the curriculum policy makers at AUBMC on the quality of bedside teaching delivery.

The study might also have minor potential risks that can vary between students inconvenience and distress in filling the online questionnaire.

Institutional Review Board
American University of Beirut

03 NOV 2020

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APPENDIX C

Consent to participate in an Online Research Study

This notice is for an AUB-IRB Approved Research Study for Dr. Lina Khalil at AUB.

It is not an Official Message from AUB

You are invited to participate in a research study entitled "Medical students' perception of the quality of bedside teaching in clinical years in the American University of Beirut" conducted by Dr. Lina Khalil and Mr. Rami Hawi, Faculty of Arts and Sciences at the American University of Beirut. The conduct of this study will adhere to the IRB approved protocol.

The IRB approved method for approaching subjects is through an online questionnaire. The purpose of the study is to explore the quality of bedside teaching in students' clinical years at AUB according to their perceptions.

PROCEDURES

This message invites you to:

1. **Read the consent document and consider whether you want to be involved in the study.**

And to note:

- **Participation is completely voluntary.**
- **Completing the questionnaire will take around 6 minutes.**
- **Only the data you provide in the questionnaire will be collected and analyzed. The research team will not have access to your name or contact details.**
- **The results of the survey will be used in a project report that is a requirement to complete my Masters' degree.**
- **The inclusion and exclusion criteria.**

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

You will not receive payment for participation in this study.

The results of the study will help you reflect on your own practice. In addition, will create an aspirational benefit that might affect the AUBMC curriculum and clerkship directors..

Institutional Review Board
American University of Beirut

03 NOV 2020

APPROVED

PI: Dr. Lina Khalil ext: 3077, email: lk80@aub.edu.lb
Co-PI: Rami Hawi ext: 4857, email: rah62@mail.aub.edu

Furthermore, the study will provide an exploratory data analysis to the curriculum policy makers at AUBMC on the quality of bedside teaching delivery.

POTENTIAL RISKS TO SUBJECTS AND/OR SOCIETY

The risks of the study are minimal. You may experience inconvenience due to time spent to complete the questionnaire.

CONFIDENTIALITY

The collected data will remain confidential and anonymous.

Records will be monitored an may be audited by the IRB while assuring confidentiality.

PARTICIPATION AND WITHDRAWAL

If you voluntarily consent to take part in this study, you can change your mind and withdraw at any time without consequences of any kind before completing the questionnaire. However, due to the anonymous nature of the online questionnaire, you may not withdraw your participation after you have completed the online questionnaire.

Refusal to participate or withdrawal from the study will involve no penalty or loss of benefits to which the subject is otherwise entitled, and neither will it affect their relationship with their organization and AUB/AUBMC.

QUESTIONS ABOUT THE STUDY

If you have any questions about the study, you can contact the research team Dr. Lina Khalil as the PI on 01/350 000 ext. 3077, email: lk80@aub.edu.lb or Co-PI Mr. Rami Hawi on 01/350 000 ext. 4857, email address: rah62@aub.edu.lb

ACCESS TO THE SURVEY

If after reading the consent document and having your questions answered, you voluntarily agree to take part in the study, you can access the survey by clicking on the following link.

To be created

CONCERNS OR QUESTIONS ABOUT YOUR RIGHTS

Institutional Review Board
American University of Beirut

03 NOV 2020

APPENDIX D

AUB Social & Behavioral Sciences
INVITATION SCRIPT

Invitation to Participate in a Research Study

This notice is for an AUB-IRB Approved Research Study

for Dr. Lina Khalil at AUB.

(Add PI address)

It is not an Official Message from AUB

I am inviting you to participate in a research study to explore the quality of bedside teaching in the clinical years of medical students in all clinical rotations at AUBMC according to students' perception. The research study is entitled "Medical students' perception of the quality of bedside teaching in clinical years in the American University of Beirut".

You will be asked to complete a short survey/questionnaire with demographic information.

You are invited because we are targeting medical students in their clinical years.

The estimated time to complete this survey is approximately 6 minutes

The research is conducted online and is hosted on AUB server.

Please read the consent form and consider whether you want to be involved in the study.

Institutional Review Board
American University of Beirut

03 NOV 2020

APPROVED

If you have any questions about this study, you may contact the investigator/research team Dr. Lina Khalil ext. 3077, email lk80@aub.edu.lb or Rami Hawi, ext#:4857, email: rh156@aub.edu.lb for further information regarding the study.

Institutional Review Board
American University of Beirut

03 NOV 2020

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APPENDIX E

Medical students' perception of the quality of bedside teaching in clinical years in the American University of Beirut

Presented to the Faculty of Arts and Sciences

American University of Beirut

PI: Dr. Lina Khalil

Co-PI: Rami Hawi

Institutional Review Board
American University of Beirut

03 NOV 2020

APPROVED

Background

According to Sir William Osler (Belkin & Neelon, 1992), bedside teaching is considered as an art, and not only science that is taught at the bedside. He also described medicine as an art of observation, whereby he taught medicine accordingly. Osler was the first teacher who brought students to direct contact with random patients for examination (Bliss, 1999).

Bedside teaching occurs when a physician in a certain clerkship takes a group of learners to the bedside of a patient and do many things simultaneously, which are: history taking by listening to patients' history, practice physical examination, communication, and clinical skills, make a provisional diagnosis and decide on best diagnostic options (Peters & Cate, 2014; Salam, et. al, 2011; Shehab, 2013). Salam, et al. (2011) state that bedside is a trialogue phase of teaching that involves clinicians (teachers), learners (students), and patients at the same time. The process provides a structure for physicians to scaffold learning for students and to facilitate the interaction among the three players in order to promote the assigned skills during the process of engagement while attending to the needs of the patients (Salam, et. al, 2011). This practical medicine type of teaching represents the complex clinical environment in a simpler and conducive way to teach (Al Weshahi, 2008). Student gets to observe the teacher and

communicate with both teachers and patients while learning through observation and practice, which helps students get direct feedback on their behaviors.

Bedside teaching elevates learning to a different level. During the process, practitioner-teachers act as role models for clinical-students in order to pave the way for learning different skills that would be challenging to teach didactically. According to Garout et al. (2016), comprehensive history taking can help physicians diagnose up to 56% of patient problems, which may arise to 73% if a physical examination is added.

Overview of BST in Lebanon

According to prominent universities in Lebanon, such as Lebanese American University and the American University of Beirut, bedside teaching plays an important role in the medical education program; unfortunately, new learning modalities are coming up to substitute bedside teaching such as simulators and simulation labs (Hijazi, 2020). Those modern modalities are somehow affecting the use of bedside teaching in hospitals (Qureshi, 2014). After going through the syllabi of the AUB faculty of medicine (FM), all departments stated to adapt bedside teaching in their teaching/learning programs. According to the AUB main website, bedside teaching is only offered in the hospital grand rounds that are usually done once a week, and delivered by house staff physicians aiming to replace didactic lectures.

While searching in the AUB library online databases, I realized that no empirical researches were executed on bedside teaching in Lebanon. In addition, I realized that BST is facing competition at the current time with other teaching modalities mainly clinical simulation

techniques using mannequins since they are easy to implement and students feel at ease with the possibility of making mistakes (Qureshi, 2014). This study will be one of a kind in Lebanon to assess the students' opinions about the quality of the delivery of bedside teaching in the clinical years of medicine. The study will take place in one of the oldest medical schools in Lebanon that is the American University of Beirut Faculty of Medicine.

Literature Review

The literature search of the relevant information sources on bedside teaching took place in winter and summer 2020 through AUB Library databases. The research was mainly online; I went through AUB databases and viewed the university catalogue in order to gain knowledge on how clinical teaching is being given in the AUB hospital. While going over the catalogue, I realized that all rotations do implement a form of bedside teaching in their clinical rotations. This helped me limit my research to the following keywords: bedside teaching, clinical teaching, clinical education, bedside teaching in Lebanon, clinical students bedside learning, effective clinical teaching, student perspective on the bedside, teacher perspective on the bedside, patient perspective on the bedside, clinical teaching curriculum. I limited the research to the last decade, between 2009-2020, to see if there were any novel studies related to my selected project about studying the quality of bedside teaching from students' perspectives.

Methodology

Research Design

An explorative case study will take place to study the quality of bedside teaching at the American University of Beirut Faculty of Medicine. The study will describe and analyze the learning environment of bedside teaching sessions by studying the learning climate, the enthusiasm of students, and the delivery process of the BST.

In a similar research study about bedside teaching, data were collected quantitatively because such explorative studies focus on the descriptive presentation of numerical data and its statistical analysis deal with average, percentage, frequency, mode, and others (Nassaji, 2015). Quantitative research that is used in the descriptive design was proven by Benfield (2019) to have more consistency and validity than qualitative research.

Research Method

Based on the literature, the best instrument adopted to collect information when describing a phenomenon is through a questionnaire, because the numeric data presented in the quantitative research focuses on determining relationships between and among variables (Benfield, 2019; Creswell, 2014). Since this study is a replication of a pilot study done in South Africa by Green-Thompson et al. (2010), the same questionnaire will be used online to determine clinical students' observation of the clinical teaching site in AUBMC. The use of a replicated questionnaire makes it easier for the researcher to compare data from different groups being studied (Al Weshahi, 2008).

The questionnaire used in the study (see Appendix A) uses a five numerical score Likert scale that ranges between 1 and 5. The numeric score 1 means 'not done/bad', 2 means 'poor', 3 is equivalent to 'average', 4 represents 'good' and 5 is 'excellent. The questionnaire consists of 23 questions in total, determining the quality of bedside teaching. They are divided as per the following indicators:

- Learning climate (5 questions),
- Students' learning (4 questions),
- Actual tutorial delivery and development at bedside (10 questions)
- Overall student's impressions of the tutorial (4 questions).

Additional space is added at the bottom of the questionnaire for students to write down their feedback and/or comments.

Anonymity

In the feedback section at the bottom of the questionnaire, students will not be allowed to state the names of their teachers in order to maintain the anonymity of the description in the questionnaire. I will remind the students to abide by the anonymity prior to every bedside teaching session during the instructions/reminder email, which I will be sending to students. I will elaborate more on the email in the "distribution of questionnaire" section.

Population and Sampling

The target population of the study is the clinical students who are enrolled in their clinical years at the American University of Beirut, Faculty of Medicine in the month of November, year

2019-2020. Students who are enrolled in the clinical years are medicine 3 and 4 (last two years of medicine).

Distribution of Questionnaire

With the help of the IRB, I will be able to identify the students enrolled in the clinical years. As per the student affairs administrator, students are randomly distributed to the rotations, and each department accepts a certain number of students that might be different from others. After collecting the address info of the students in their clinical years, I will send them an email entailing the invitation script and consent form as confirmed and approved by the IRB, attaching the link of the questionnaire for the students to easily gain access to the survey. A reminder will be sent 3 times along the month of November to remind students to fill in the questionnaire that will be placed on Limesurvey. The three reminders will be sent at the beginning of the month (before the first bedside teaching session of the month), in the middle, and at the end of the month.

The questionnaire will be inserted on a web-based tool called limesurvey as approved by the IRB. The participants' responses will be handled in a secure manner, password-protected system, and respondents' answers will be anonymous and confidential.

Data Analysis

All responses on the limesurvey will be electronically recorded. I will extract the results from the online survey in an excel format once the month of November ends. The excel format sheet will have the students' ratings on the Likert Scale questionnaire, which I will compute and

analyze in order to determine the average, percentage, frequency, median, and mode of the results the same as Khan (2014) did in his study. The results will be analyzed using SPSS-25.0. The data analysis method will be conducted using SPSS 25.0 (IBM, 2017). In order to determine the response rates of the participants and their various answers, descriptive statistics and frequencies will be applied. The results obtained through the SPSS will be compared to the literature review section in order to show the differences or similarities among students' perceptions of the quality of bedside teaching in Lebanon and other countries. Each clinical rotation will have its scores computed separately and will have a graph showing the overall students' answers (Malfait, Eeckloo, Van Biesen, & Van Hecke, 2019).

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APPENDIX F

Questionnaire

Please rate all aspects of the session on a scale of 1 to 5. (1=bad/not done, 2=poor, 3=average, 4=good, 5=excellent).

Date: _____

Learning Climate:

1. Does the tutor establish rapport with the students?	1	2	3	4	5
2. Are all students treated with equal respect?	1	2	3	4	5
3. Is encouragement given with positive reinforcement?	1	2	3	4	5
4. Is the tutor willing to listen?	1	2	3	4	5
5. Was the patient treated appropriately?	1	2	3	4	5

Focus on student learning:

6. Are students motivated to learn?	1	2	3	4	5
7. Are there opportunities for questions and feedback?	1	2	3	4	5
8. Are students challenged?	1	2	3	4	5
9. Is the emphasis on understanding?	1	2	3	4	5

Delivering and developing the tutorial:

10. Is there clear and coherent communication of ideas?	1	2	3	4	5
11. Is there a logical development of the tutorial?	1	2	3	4	5
12. Is the tutor enthusiastic about the subject?	1	2	3	4	5
13. Is the tutor knowledgeable about the subject?	1	2	3	4	5
14. Are strategies used to gain and maintain attention?	1	2	3	4	5
15. Is the pace appropriate for the tutorial?	1	2	3	4	5
16. Is the topic integrated with all aspects of health care?	1	2	3	4	5

Conclusion:

17. Was the tutorial drawn to a satisfactory conclusion?	1	2	3	4	5
18. Is there a summary of the main ideas?	1	2	3	4	5
19. Have you been given guidance and encouragement?	1	2	3	4	5

Overall perception:

20. Was the tutorial interesting?	1	2	3	4	5
21. Was the tutorial of value to you?	1	2	3	4	5
22. What is your impression of the quality of the tutorial?	1	2	3	4	5
23. Did the tutor inspire and make an impression on you?	1	2	3	4	5

Comments:

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_____

Institutional Review Board
American University of Beirut

03 NOV 2020

APPROVED

APPENDIX G

American University of Beirut
Institutional Review Board

Application to Conduct Research involving Human Participants/Subjects
Social and Behavioral Sciences IRB Review

Expedited or Full Board Studies

To ensure a timely and effective review by the IRB, a full description of the planned research must be submitted with the application to conduct research involving human participants/subjects. The research protocol described in the Application provides the reader with background information of the problem under study, including the study rationale, a detailed plan for recruiting and conducting the research involving human research participants/subjects, and a discussion of the potential importance of the research. The IRB must determine that the risks to participants/subjects are minimized consistent with sound research design, that risks are reasonable in relation to the anticipated benefits, selection of participants/subjects is equitable, non coercive, and transparent taking into consideration the purpose of the research and the setting in which the research will be conducted, that informed consent will be obtained from the participants/subjects or their legally authorized representatives, that the participants'/subjects' privacy is respected, that confidentiality of the collected data is protected, that adequate monitoring will be performed to ensure the safety of participants/subjects, and that vulnerable populations will receive additional protections.

1. Project Identifiers:

1A. Project title:

Medical students' perception of the quality of bedside teaching in clinical years in the American University of Beirut

1B. Type of Review:

1B.1. Application for Exemption from IRB Review and Oversight
Certain categories of research are Exempt from IRB review and oversight (45 CFR 46.101(b)). If you believe your research qualifies for Exempt Status, do not use this form. Please use the "Application for Exemption from IRB Review" form.

1B.2. Requested Review

[X] Expedited [ ] Full Committee

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