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## The Behavior of the Female Preclinical Medical Students

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### **Abstract:**

*The aim of this study is to explore the behavior of the female preclinical medical students at Umm AL-Qura University regarding the way they learn physiology and suggest how this exploration can be utilized to improve the students' learning activity. One hundred ninety three female preclinical medical students participated in this study; 132 students from second year and 61 students from third year. A questionnaire of 15 questions about how do students learn physiology was distributed. The vast majority of students recognized the importance of physiology lectures (98.4%). Acquiring knowledge is the main objective of learning physiology among 79.8% of students participated in this study. Regarding the language of lecture conduction, 69.9% of participants requested a bilingual approach (mixing English with Arabic). More than four-fifth of students (81.3) do not have the practice of fresh "immediate" study of physiology. More than three quarters of students (76.2%) depend entirely on lecture notes as a main source to learn physiology. The percentage of candidates who believe that lectures should be sufficient for them to pass the examination is 87.6%. Interestingly enough an equal percentage demands the lecturer to give them handouts. In conclusion, our female preclinical medical students are much motivated. They are highly potential to adopt a self-learning process. Their entire dependence on lecture notes as a main source of learning physiology should be eradicated. The curriculum content should be designed in a clinically oriented form. Assessment and evaluation should be revised and focus on both formative and summative aspects.*

**Keywords:** Physiology, learning physiology

### **Introduction:**

Human physiology provides the scientific foundation for the field of medicine and all other professions related to human health and physical performance. The scope of topics included in a

human physiology course is therefore wide-ranging, yet each topic must be covered in sufficient details to provide a firm basis for further expansion and application. A basic understanding of physiologic mechanisms can instill a deeper appreciation for the complexity of the human body and motivate the student to learn still more (1).

Medical education, the science behind the teaching and learning in medicine, has been firmly established as a separate discipline. Parallel to the advancement in medical science, medical education as a discipline has seen tremendous progress. The world of medical education has progressed from the role of problem-identifier to that of solution-provider (2). Basic knowledge and skills, while fundamentally important, will not be enough on their own, medical students must be inspired to learn about medicine in all its aspects so as to serve patients and become the doctors of the future. The General Medical Council (GMC) in United Kingdom recommended that the aim of undergraduate medical course should be to produce doctors with the attitudes toward medicine and learning which would fit them for further professional careers and self-directed life-long learning (3). Thus the medical curriculum should include courses that emphasize compassion, communication skills, and appropriate behavior and allow for independent learning. The GMC identified two important reforms as critical factors to achieve the goals: (a) a reduction of factual overload (4) and (b) promotion of self-education, critical thinking, and evaluation of scientific evidence (5). In this study we identify our current educational status at Umm AL- Qura University and where we ought to be with regards to physiology as one of the basic medical sciences. We propose changes in educational environment consistent with the mission of world federation for medical education (WFME) to promote the highest scientific standards in basic medical education, initiating new learning methods, new instructional techniques, and innovative management of basic medical education(6).

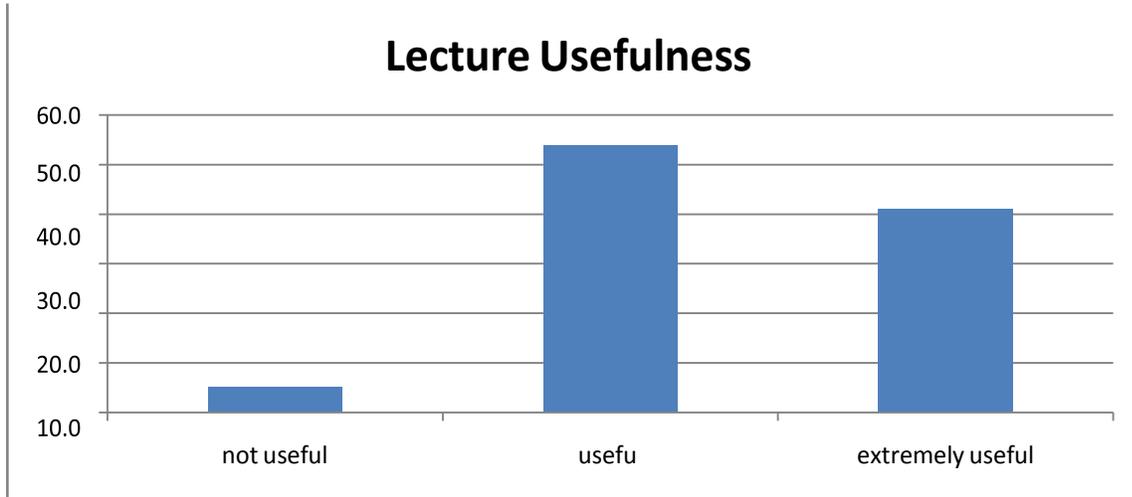
## **Methods:**

The teaching and learning strategy adopted by our medical school is traditional. It consists of three years Basic Medical Sciences followed by three years Clinical disciplines. The study was conducted among second and third year female medical students at Umm AL-Qura University during the academic year 2010-2011. The total number of participants in this study is 193 students, 132 students from second year and 61 students from third year. Junior students have almost done all courses of physiology with exception of neurophysiology and muscle physiology. Senior students have done all courses of physiology. The faculty authority was informed and asked for permission. An informed consent of the students was provided. Ethics committee approval was obtained. A questionnaire of 15 close-ended format was adopted (7). The inquiries revolving around the behavior of the students how they learn physiology. Seven questions are of dichotomous response (attendance of lectures, role of seminars and tutorials, fresh "immediate" study of physiology, usefulness of practical classes, sufficiency of lecture notes to pass the examination, and handouts request). Eight questions, multiple choice questions, provided with options to select one of them (importance and usefulness of physiology lectures,

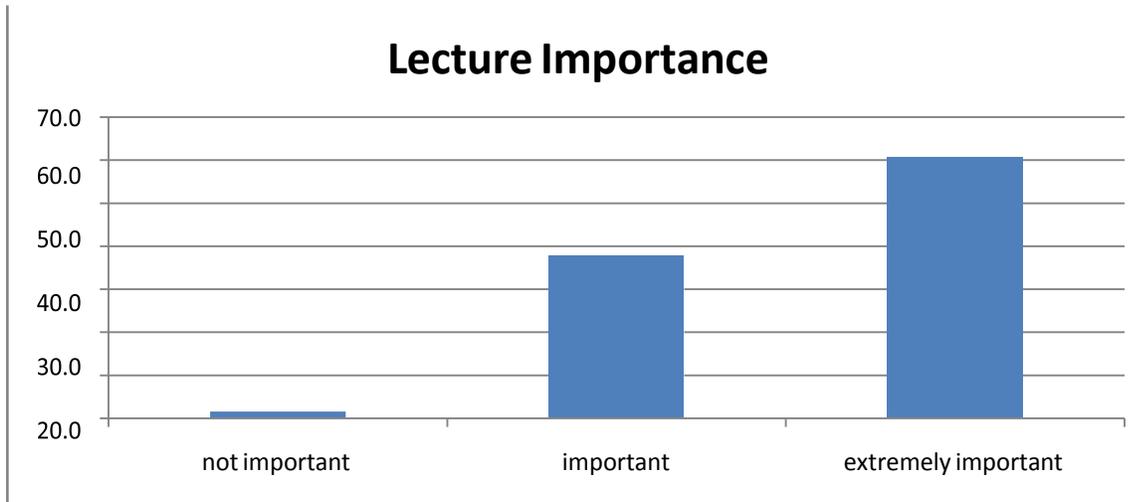
applicability of physiology in clinical practice, lecture language, source of learning physiology, consultation when facing difficulties, objective of learning physiology, and style of examination with best performance). The questionnaires delivered to the respondents and received through the class leaders on an anonymous basis. The questionnaire was distributed when the students have already had all or almost all of physiology courses so that they are entitled to understand the questions. The questionnaire was explained and the students were encouraged to ask for any further clarification. The students were informed that the objective of this study is to improve the learning process of physiology at our medical school; so they can react positively with the questionnaire. The data were recorded. The statistical package for social sciences (SPSS) version 17 was used to analyze the results.

### **Results:**

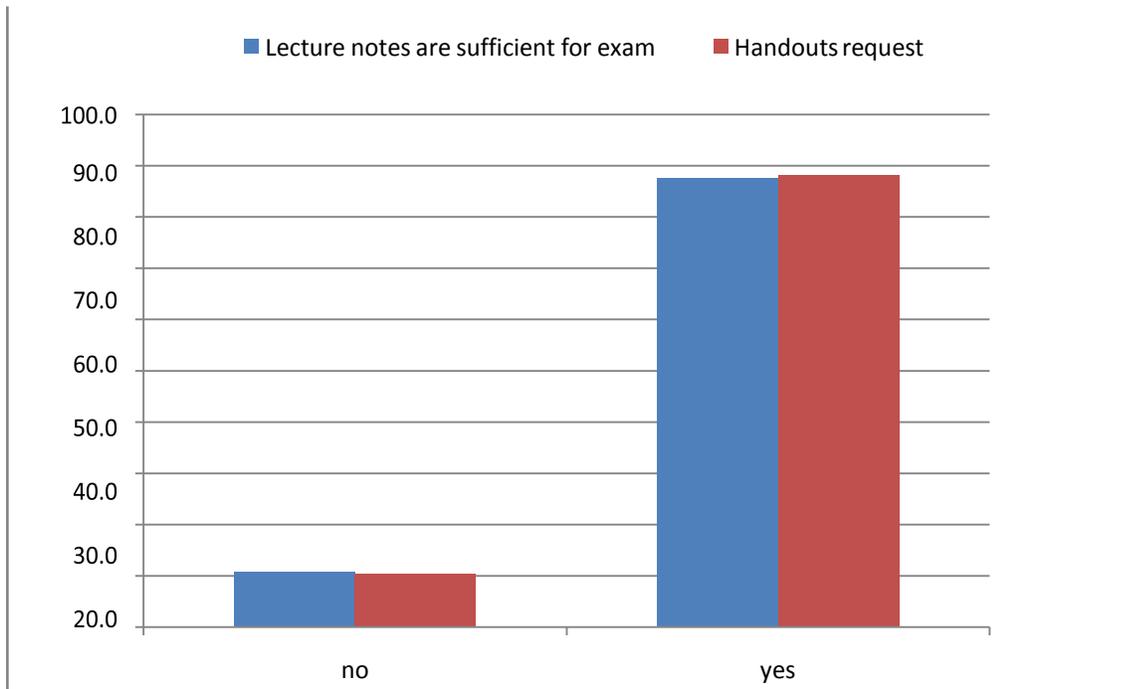
The response of participants to the usefulness of physiology lectures is shown in figure 1. Practical classes of physiology are useful for 90.7% of all students. The role of seminars in learning process of physiology is supported by 59.6% of students. Students who believe that tutorials do push the learning process of physiology forward represent 68.8%. Study of physiology for purpose of acquiring knowledge rather than gaining marks is agreed upon by 79.8% of all participants in this study. The importance of physiology lectures to understand physiology is depicted in figure 2. The applicability of science of physiology in clinical practice is demonstrated by 86.6%. Delivery of lecture in bilingual manner (mixing of English and Arabic) is requested by 69.9% of students, 25.4% prefer English, and only 4.1% demand Arabic language. Participants who are due to attend the lecture even no attendance is taken are 63.2% of all students while 32.6% attend only to satisfy their attendance requirements. Fresh “immediate” study of physiology lectures is encountered among 18.1% while 81.3% do not do so. Lecture notes are the source to learn physiology by 76.2% of all students, 19.1% use textbooks of physiology, and 4.1% go to internet. Lecture notes should be sufficient to pass the examination is claimed by 87.6% while 10.9% think other sources are needed for this issue. Handouts by the lecturer demanded by 87.6% of all students and 10.4% do not have such demand (Fig. 3). Lecturers are consulted by 40.4% of students whenever they find difficulties in learning process of physiology, 22.8% consult one textbooks, 26.9% consult their class-mates or senior colleagues, and 8.8% do not care at all of consultation. With regards to best performance in examination, 65.8% of students perform best with single best answer, 11.9% like short essays, 8.8% prefer ultra-short questions, 7.3% trust clinical problems, and 4.7% with filling in blank spaces.



**Fig. 1: Students' response (%) to the usefulness of physiology lectures**



**Fig. 2: Students response (%) to the importance of physiology lectures**



**Fig. 3: Consistent students' response (%) to sufficiency of lecture notes to pass the examination and handouts request**

### Discussion:

The female students participated in this study represent 54.7% of the total number of females in preclinical second and third year medicine where the whole of physiology is studied. The participation of junior students, who have done all physiology disciplines with exception of neurophysiology and muscle physiology, in the study is 68.4% while that of senior students, who have already finished with all courses is 31.6%. The usefulness of physiology lectures is recognized by the vast majority of our female preclinical medical students. Out of 94.8% of those who claimed this usefulness, 40.9% were even sure of its extreme usefulness. The relevance of learning physiology to clinical practice is also appreciated among 86.6% of our students. A study conducted among medical students in their clinical years at King Saud University, in Saudi Arabia, showed that physiology was perceived, by two-third of participants, as the subject with the highest applicability to clinical practice. Moreover, 50% of participants retained the most knowledge of physiology during their clinical years (8). More than two-third (69.9%) of our participants prefer the lecture to be delivered bilingually (mixing of English and Arabic language). This is similar to a study done among preclinical medical students at King Faisal University in Saudi Arabia. The study showed that most of the students preferred the use of some Arabic phrases in lectures (9). Our medical students are not native English speakers. Their mother tongue is Arabic. Therefore, some sort of difficulty in understanding will be created when lectures are conducted in English (10). Nevertheless, this preference of bilingual language reflects the poor English language among a considerable number of our students. We

advise that English proficiency both written and spoken should be a prerequisite for a university enrollment. However, we think that the use of Arabic phrases must be deserved for circumstances at which the students cannot conceive the message otherwise. More than three-quarters of participants (76.2%) depend entirely on their lecture notes to learn physiology. Less than 20% read the textbooks recommended by the college. This is in contrast to their counterparts in Study done by Elmansi among two major medical schools in Sudan (11). Elmansi showed that 99% of participants use textbooks of physiology. The poor English language could be one reason for our students not to read the textbooks. The main source for our students to learn physiology is lecture notes. Having this attitude, it is not surprising that, 87.6% of participants in this study demand the lecturer to give them handouts. Interestingly enough the same percentage (87.6%) claimed that lecture notes should be sufficient for them to score top marks or at least to pass the examination. In a study, done among premedical students at college of medicine of King Faisal University in Saudi Arabia, Bamosa and Ali showed that most of the participants depend mainly on lecture notes (12). Our female medical students should realize that the task of the lecturer is to deliver the basic principles and concepts of the subject and the students should dig into textbooks in order to magnify their knowledge, widen their scope of understanding, and reach the competence level conveniently (13). The increasing emphasis on student autonomy in medical education has moved the center of gravity away from the teacher and closer to the student. Indeed it has become fashioned to talk about learning and learners rather than teaching and the teacher (14). On the other hand, our curriculum should also be questioned. One of the disadvantages of the traditional curriculum is the huge amount of information that medical students are requested to learn. A great deal of this information is not used in clinical practice. Simply because the students cannot sort out the relevant information which has to be applied clinically (15). The educational mission of our medical school should be very obvious. The content of curriculum should be very much trimmed in a way to make physiology more relevant to clinical practice (16,17,18). Basic medical sciences curricular content must be expanded in response to rapid growth and advancements in scientific knowledge (basic standard) and these subjects must be integrated into the clinical disciplines (quality development standard) (19). Having done this, the students will be highly excited and provoked to read textbooks and change the learning process from lecturer-centered learning to learner-centered learning which is an ultimate goal in contemporary medical education (20,21). Since 40.4% of students consult their teachers when facing difficulties in learning process of physiology, allocation of office hours should be highly considered and other means of communication must be facilitated. Our students imposed great level of confidence over practical classes of physiology. More than 90% appreciate the usefulness of practical classes. This again in contrast to Elmansi (11) who showed that only 28% did respond positively with the usefulness of practical classes. This high level of confidence among our students may be attributed to various factors. The practical conductors, in our medical school, give theoretical background about the experiment to be conducted. Students raise points which are not understood in the lecture to be clarified by the conductors within the practical frame work of the subject. Several

studies have shown how positively enhanced student-teacher interaction impacts on the academic achievement of students (22). A study, was done among preclinical medical students at University of Benin in Nigeria, documented that the majority of the respondents were satisfied with practical sessions in physiology which may have to do with such positive student-teacher interaction(23). The Small group of practical classes allows efficient dialogue between students and conductors. We think it will be good, also, if there is well organized coordination between the lecturer and practical tutors to figure out the points which are likely not understood in the lecture and try to clarify them in the practical sessions. In this way, the practical classes will contribute more significantly in students' learning activity. The role played by tutorial classes in learning process of physiology is agreed upon by 68.4% of participants in this study. Tutorial classes serve as an important role complementing the normal curriculum (24). Rather special consideration and seriousness should be given by our academic institution as far as conduction of tutorial classes is concerned to promote active and collaborative learning. Teacher student ratio should not be a barrier to implement such indispensable issue of tutorials in learning process of physiology. This is because, small group tutorial leads to greater satisfaction but not to better learning result than large group interactive seminars. Such seminars might be an effective alternative to small group tutorials (25). Almost two third of participants claimed that their performance in examination is superior with best-answer test items which is a variety of correct response. Whether the students prefer this type of examination because of, difficulty to express themselves in written words due to their poor English proficiency, guarantee to attempt all questions, or having at least 20% chance to reach the correct answer by guessing remains to be determined. Dependence on lecture notes as a main source of learning physiology should be radically eradicated. The curriculum content should be designed in a clinically oriented form to help the students achieve proper self- learning process.

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