

## ORIGINAL ARTICLE

## Requirement for Revision of Virology Education for Medical Students

**Background:** Medical education should be considered as a dynamic process. If necessary, the program should be changed. Considering rapid advantages in the field of virology, it seems to be necessary to review and change the virology course of medical students. Therefore we decided to analyze the view of Iranian medical students of the quantity and quality of virology course.

**Methods:** Medical students at basic science of Mashhad University of Medical Sciences attended in this research in the spring semester of 2011. A researcher-made questionnaire was used to analyze the view of students of the importance, quality, and revision of the program. And students' viewpoints about each variable were presented as percentages.

**Results:** 82.5% of students evaluated the importance of virology as high to very high levels. To most of student, the relationship between virology and their future career was high. Most of the students agreed with the increase of duration of the course and revision of the curriculum. The destitution of the courses in basic science was not appropriate according to 86.25% of students.

**Conclusion:** Considering the results of the study, we suggest increasing of virology credit point for medical students. The present study showed that the importance of the course and its professional application was evaluated as high level by most of the students. The revising of the course and adding the new topics to current curriculum was agreed by most of them.

**Keywords:** Education; Virology; Medical Students

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## ضرورت اعاده النظر في درس الفيروس عند طلاب الطب.

**المقدمة:** إن تعليم الطب امر ديناميكي و يحتاج الى تقييم و متابعة مستمره نظرا الى التطورات المتسارعه في هذا المجال. نظرا الى السرعة في التطور في مجال علم الفيروس و ان برنامج التعليم العالي يعود الى ٢٥ سنه مضت لذا من الضروري اعاده النظر في هذا المجال من حيث الكم و الكيف. و هذا الامر دفنا الى اجرا دراهه تنظر الى متطلبات الطلاب في هذا المجال.

**الأملوب:** تمت هذه الدراهه على طلاب مرحله المقدمات في جامعه مشهد للعلوم الطبيه سنه ١٣٩٠ هـ.د.س و تم استخدام استمارات قد تم تصميمها لتلبيه الامر من جبهه الكميه و الكيفيه و بعد ذلك تم تحليل هذه المطيانات.

**النتائج:** ٨٢.٥٪ اعتبران درس الفيروس ذو اهميه و ذو اهميه بالغه و ايضا اعتبر البشركون إن هذا الدرر له دور كبير في المجالات الطبيه و العلميه في مستقبلهم. و كان رأى الاكثريه انه يجب اضافه ساعات تعليميه في هذا الدرر و اعاده النظر في البرنامج التعليمي لهذا الدرر.

**الاستنتاج:** نظرا الى هذه الدراهه و عنايه الى الإستمرار الزمني المفيد لوقت الطلبة و اعطاء افضل مطالب ممكنه و متناهيه مع حاجيات الطبيب في المستقبل يجب اعاده النظر في مطالب درس الفيروس و اثارت هذه الدراهه الى أن الطلاب كانوا يعطون اهميه بالغه الى درس الفيروس نظرا الى ارتباطه به مستقبلهم العملي و كانوا قد وافقوا اعلى اجراء تغييرات جذريه في هذا الدرر.

**الكلمات الرئيسية:** تعليم، علم الفيروس، طب.

## واثولوجی کے نصاب پر نظر ثانی کی ضرورت

**بیگ گراؤڈ:** علم طب میں روز بروز ترقی ہو رہی ہے اور نئی نئی چیزیں سامنے آتی رہتی ہیں لہذا میڈیکل طلباء کے نصاب پر وقت کے تقاضوں کے مطابق نظر ثانی کی ضرورت محسوس ہوتی رہتی ہے۔ واثولوجی کا موضوع بھی اس عمل سے مستثنیٰ نہیں ہے اور چونکہ اس نصاب کو مرتب کئے پیچیس برس گذر چکے ہیں لہذا ایران میں اس موضوع کو وقت کے تقاضوں کے مطابق تبدیل کرنے کی ضرورت ہے۔ مستقبل میں میڈیکل شعبوں کے ذمہ داروں کی حیثیت سے اس سلسلے میں میڈیکل طلباء کی نظر جاننا بھی ضروری ہے اور اسی ہدف سے یہ تحقیق انجام دی گئی ہے۔

**روش:** یہ تحقیق مشہد مقدس کی یونیورسٹی آف میڈیکل سائنس میں دوہزار گیارہ میں انجام دی گئی۔ طلباء کو سوالنامے دئے گئے جن میں واثولوجی کے نصاب کے تعلق سے متعدد سوالات پوچھے گئے تھے۔ جوابوں کا تجزیہ کیا گیا۔

**نتیجے:** تحقیق میں شریک طلباء کی اکثریت نے یعنی بیاسی فیصد طلباء نے واثولوجی کو موضوع کو نہایت ہی اہم قرار دیا۔ ان طلباء کا کہنا ہے کہ واثولوجی کا موضوع ان کے کلینیکل اور پیشہ ورانہ کام سے سوبفیدی جزا ہوا ہے لہذا اس موضوع کو اپڈیٹ کرنا اور اس میں وقت کے تقاضوں کے مطابق تبدیلیاں لانا نہایت ضروری ہے۔

**سفرات:** اس تحقیق سے واضح ہوتا ہے کہ واثولوجی کا موضوع چونکہ میڈیکل سائنس کے ہر شعبہ سے متعلق ہے لہذا اس میں تبدیلی آنا ضروری ہے اور اس کو اپڈیٹ کر کے اسکی تعلیم دی جائے۔ تحقیق میں شریک طلباء نے اس موضوع کو ماڈرن بنانے اور اپڈیٹ کرنے پر کافی زور دیا ہے۔

**کلیدی الفاظ:** واثولوجی، تعلیم، میڈیکل۔

## ضرورت بازبینی درس ویروس شناسی در دانشجویان پزشکی پزشکی

**زمینه و هدف:** آموزش پزشکی باید به عنوان یک فرآیند دینامیک دیده شود و با عنایت به علم روز و نیاز آموزشی فراگیران مرتباً مورد پایش و ارزیابی قرار گرفته و در صورت لزوم تغییر در برنامه داده شود. با توجه به رشد سریع علم در حوزه ویروس شناسی، و گذشت بیش از ۲۵ سال از برنامه موجود آموزش پزشکی، ضرورت بازنگری در برنامه آموزشی این درس از جنبه های کمی و کیفی وجود دارد. با عنایت به اهمیت نظر دانشجویان پزشکی، به عنوان فراگیران موضوع، بر آن شدیم تا طی یک نظر سنجی دیدگاه دانشجویان را درباره وضع موجود درس ویروس شناسی پزشکی به لحاظ محتوا و کمیت جویا شویم.

**روش:** جامعه این پژوهش، دانشجویان رشته پزشکی مقطع علوم پایه در سال ۹۰، در دانشگاه علوم پزشکی مشهد بود. ابزار پژوهش یک پرسشنامه محقق - ساخته بود. سوالات پرسش نامه به منظور ارزیابی دیدگاه دانشجویان در مورد اهمیت، کمیت، کیفیت و لزوم بازبینی برنامه آموزشی درس ویروس شناسی طراحی شد. سپس داده های جمع آوری شده مورد تجزیه و تحلیل قرار گرفت.

**نتایج:** نتایج نشان داد که اکثریت پاسخ دهندگان (۸۲.۵٪) میزان اهمیت درس ویروس شناسی را زیاد تا خیلی زیاد ارزیابی نموده اند. اکثریت پاسخ دهندگان میزان ارتباط درس را با مباحث بالینی و آینده حرفه ای خود را زیاد ارزیابی کردند. اکثر دانشجویان موافق افزایش ساعات تدریس و بازنگری در کوریکولوم این درس بودند. دانشجویان همچنین نحوه توزیع واحد های درسی در مقطع علوم پایه را ضعیف تا متوسط ارزیابی نمودند.

**بحث و نتیجه گیری:** بر اساس نتایج این مطالعه و با رویکرد استفاده بهینه از زمان و وقت دانشجوی مقطع علوم پایه در ارائه بهترین و مفیدترین مطالب با کاربری شغلی و حرفه ای و نیز با در نظر گرفتن قدمت برنامه آموزشی موجود و رشد سریع علم ویروس شناسی بویژه در دو دهه اخیر، بازنگری و افزایش سرفصلهای تدریس این درس، پیشنهاد می شود. مطالعه حاضر نشان می دهد که اکثریت پرسش شوندهگان درس ویروس شناسی را با اهمیت بالا و مرتبط با آینده حرفه ای خود دانسته و موافق بازنگری و افزودن سرفصلهای جدید و ضروری به آن می باشند.

**کلید واژه ها:** آموزش، ویروس شناسی، پزشکی

**INTRODUCTION**

Medical education should be seen as a dynamic process and must be regularly monitored, evaluated, and changed if needed (1-3). Changes in medical training programs in various countries, based on detailed studies are being conducted continuously (4-7). These revisions usually take place with regards to specific problem of the area, for example, infectious diseases, in African medical schools are taught with higher volumes than European medical schools due to more infectious diseases in Africa.

The science of virology plays a critical role in maintaining and promoting health and preventing disease. The incidence of major viral epidemics in recent decades has high-lightened the importance of this knowledge.

Increasing and widespread impact of virology on public health indicates that health care workers have sufficient knowledge in this field. Therefore according to the medical universities mission to preserve and promote health, these institutions are required to provide enough knowledge of this field for their students.

In many medical curriculum programs virology is still a little part of microbiology education and many medical schools offer the program within a microbiology course. Traditionally the main part of such courses is bacteriology and in many cases virology education to medical students is neglected. Lack of educated virologists to teach medical students is another problem of many medical schools which may result in insufficient virology education.

Here at Mashhad University of Medical Sciences we are currently training virology to medical students on the basis of general medical curriculum which has been implemented for more than two decades. In this program students should pass virology course in a single university credit point. In the program some topics of virology is put into the curriculum. The program seems to be insufficient in terms of content. For example, HIV is absent in the program while we try to teach it in a very limited time. This is true in many other viral pathogens such as viral hemorrhagic fevers which have a high mortality and therefore high clinical importance. The paradox is that if the lecturer tries to

cover such unpredicted issues, lack of planned time remains an unsolved problem.

In general, medical education should be planned based on professionalism, namely the curriculum should be established in a way in which whatever a doctor needs to know is of more importance and considered as higher priority(8-10).

Based on our current medical education, graduates will not become familiar with many human viral pathogens which are absolutely essential for physicians. Doctors are at risk of occupational exposure to potentially fatal viral infections such as viral hemorrhagic fevers, while teaching these topics is absent in their current curriculum. Considering rapid growth in the field of virology, revision of the curriculum in qualitative and quantitative aspects seems to be worthy and considerable. Meanwhile doctors also have a role in educating the community. In the lack of enough knowledge, playing this role would also be disrupted.

The current study was designed and conducted to investigate the viewpoints of medical students about the current situation of virology training in terms of content and quantity.

**METHODS**

This cross - sectional study was designed and conducted in spring semester of 2011 to evaluate medical students' views about the current virology education in our medical school. The study sample included 80 students from basic science of Mashhad medical school who were selected purposively. We used a questionnaire created based on Likert's scales. The validity of the questionnaire was reviewed and approved by experts and the reliability was confirmed by calculating the Cronbach's alpha (85%). The questions were designed to assess students' views about the importance of this topic, fulfilling educational requirements, the clinical relevance, professional applications of the course and future needs to review the program. Student views about any variables were measured from very high to low according to Likert's spectrum of rating. Thereafter student responses to each item were calculated as percentages and were demonstrated in table.

**Table 1: The perspectives of medical students about virology course**

	<b>Very high n (%)</b>	<b>High n (%)</b>	<b>Moderate n (%)</b>	<b>Low n (%)</b>	<b>Very low</b>
Importance of virology	20(25)	46(57.5)	14(17.5)	0	-
Fulfilling educational needs	7(8.75)	33(41.25)	39(48.75)	1(1.25)	
Relation to clinical issues	19(23.75)	46(57.5)	14(17.5)	1(1.25)	-
Relation to professional future	23(28.75)	41(51.25)	14(17.5)	2(2.5)	
Agree with revising of curriculum	22(27.5)	33(41.25)	23(28.75)	2(2.5)	-
Agree with increasing of credit point	23(28.75)	28(35)	16(20)	13(16.25)	
Distribution of basic sciences credits	5(6.25)	6(7.5)	41(51.25)	28(35)	-

## RESULTS

The results are shown in Table 1. As indicated in the table, the majority of respondents (82.5%) have evaluated the importance of virology as high to very high levels. The majority of respondents assessed clinical relevance and relationship of virology to their future career as high to very high (81.25 and 80%, respectively). 68.75% of students believed the course should be revised and 63.75% of the students stated the virology education should be more than the current one credit point. According to the majority of students (86.25%), the distribution of credit points in basic science education was moderate to weak.

## DISCUSSION

Lack of training may lead to lower virology diagnostic skills of physicians. This can be associated with adverse outcomes such as unnecessary use of diagnostic procedures (economic burden), unnecessary use of drugs such as antibiotics used in the treatment of viral infections (economic and physical damage), delays in treatment and prevention, occupational risks for doctors, and finally the loss of the role of medical education in the community. Viral illnesses involve a broad range of medical specialties and this highlights the economic importance of such diseases.

The majority of respondents believed that the course is related to their future career and stated reviewing and addition of new essential topics to the course is necessary. High percentage of students (86.5%) evaluated the arrangement of basic science program as moderate to weak. This requires further study and consideration of medical education experts. Although faculty members play a considerable role in the process of education (11), the curriculum itself also should be designed in a perfect way. The current virology program has some insufficiencies, for example in General Virology some topics such as epidemiology, pathogenesis, the body's defense against viruses, chemical and physical effects on viruses and prions are not listed in the program and these topics need to be added. Further evaluation of the systematic virology (viral families) also makes it clear that the program needs to be

completely revised. Viruses such as parvovirus B19, human papillomavirus (HPV), HIV, HTLV-1, rotavirus, Norwalk, SARS, viral hemorrhagic fevers and viral encephalitis should be added to the curriculum although some lecturers try to cover very briefly the topics but these topics should find their established and permanent position in medical education.

Virology is one of the first courses that combines basic sciences with clinical applications during medical education. It has been shown that such early clinical exposures improves the medical students' interest in the field of study (12).

Revising the program and adding new topics do not mean to increase the length of medical education period. But it is to rearrange issues according to their priority for a general medical education program. Considering the importance of the topics, program should be rearranged in a way that issues which are necessary for a general practitioner, are in priority. Such revisions should be in line with the teaching of applied basic sciences to medical students. Considering the high volume of science which is produced, one should select the necessary parts for medical students training. This means some unessential topics in basic science education should be replaced by new important ones. Such revisions will improve the quality of education and educational standards at microbiology and virology departments (13).

Applied and practical training in basic science has been emphasized by the researchers in the field of medical education (14-17). Practical applications of the topics presented in basic science education are also important from the perspective of medical students as learners (18).

In this study, students assessed virology as a practical and applied course with high relevance to their future clinical career as practitioners, although greater number of participants preferably from other universities and including the views of virology lecturers from different faculties might have strengthened the study.

Based on the data presented in this study, we suggest to consider changes in the quantity and quality of virology education for medical students in the medical sciences universities. It will be a curriculum which is responsive to the needs of the community, the approach which should be considered in any revision of medical programs (19-20).

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