Changes in the knowledge level related to infectious diseases and antibiotic use among medical students during the basic and clinical modules of their education

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Introduction

The prevention, proper diagnosis and treatment of infectious diseases are one of the most important challenges of modern medicine. Without the proper level of preparedness and the adequate number of medical professionals, the management of communicable diseases is not feasible. The number of infectious disease specialists and clinical microbiologists is steadily declining worldwide.

The aim of our study was to evaluate the knowledge level of medical students on topics concerning epidemiology of infectious diseases and antibiotic use during the different phases of their education, as well as determining their affinity to pursuing a career related to this area.

Methods

A self-administered questionnaire-based study (statement of intent, ethical permission: 1930/16/2017) was performed during practical classes of 2nd (basic module, before learning about infectious diseases at all) and 4th (clinical module, after learning medical microbiology and public health) medical students at the University of Szeged.

The questionnaire included 30 questions related to infectious diseases and antibiotic use (based on medical microbiology, epidemiology of infectious diseases and infectiology) with 5 options per each topic, devised by experts of the respective fields. Statistical analyses were performed using IBM SPSS 24.0 software (level of significance: p<0.05).

Results

Data collection has been running since February 2017, with 264 respondents (n=125 and n=139) involved so far 68.3% of the respondents polled female, with an average age of 21.3±0.99 years among 2nd year students and 23.7±1.64 years among 4th year students.

53.2% of 2nd year students were satisfied with their grades and their academic achievements, while this number was 75.9% for the 4th-year students. 32.9% of students in the basic module are involved in undergraduate research, while the students enrolling the clinical module polled 34.6% for the same question. 2 people were involved in research related to infectious disease.

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Conclusions

Our results show a marked increase in the knowledge level of medical students during the transition from the basic module to their pre-clinical studies (p<0.001 in all cases). The gradient of knowledge increase seems to be evident among the 2nd and 4th-year students.

- Almost one-third of 2nd year students had more correct answers, indicating the importance of giving the students a proper foundation in knowledge in medical microbiology, while enrolling this module.
- The number of correct answers of the 4th-year students was less than 10% from all three question groups (even though they have already passed courses from medical microbiology and public health). We believe that the knowledge of the 4th-year students falls below the desirable threshold.
- According to our result, the responding medical students are not interested in working in the field of medical microbiology/infectious disease.
- Our results suggest the need of the implementation of novel teaching method and curriculum improvement related to the topic of infectious diseases and antimicrobial chemotherapy.

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Introduction: The prevention, proper diagnosis and treatment of infectious diseases are one of the most important challenges of modern medicine. Without the proper level of preparedness and the adequate number of medical professionals, the management of communicable diseases is just not possible. The aim of our study was to evaluate the knowledge level of medical students on topics concerning epidemiology of infectious diseases and antibiotic use during the different phases of their education, as well as determining their affinity to pursuing a career related to this area.

Methods: A self-administered questionnaire-based study (statement of assent, ethical permission: 3930 [16/2017]) was performed during practical classes of 2nd (basic module, before learning about infectious diseases at all) and 4th year (clinical module, after learning microbiology and public health) medical students at the University of Szeged. Data collection has been running since February 2017. The questionnaire included 30 questions related to infectious diseases and antibiotic use (based on medical microbiology, epidemiology of infectious diseases and infectiology) with 10 questions per each topic, devised by experts of the respective fields. Statistical analyses were performed using SPSS Statistics 24.0 software.

Results: The 264 respondents (n=152 from the 2nd year students; n=112 from the 4th year students) were polled 66.3% female, with an average age of 21.33 ± 0.99 years among 2nd year and 23.71 ± 1.64 among 4th year students. 53.2% of 2nd year students and 75.9% of 4th year students were satisfied with their academic progress. 32.9% of 2nd year students has been involved in undergraduate research, while this number is 34.3% for 4th year students. 57.8% was aware of the field in which they want to work in (4th year students in majority; p<0.001), the most popular specialities being surgery, paediatrics, obstetrics/gynaecology, anaesthesiology and cardiology, while only one person was interested in infectology. The majority identified their current medical studies (83.7%) and high school education (76.9%) as one of their primary source of knowledge on the topic of infectious diseases and antibiotics. The 4th year students performed significantly better than the 2th year students both overall (2.77 ± 2.64 vs. 12.59 ± 4.29 correct answers respectively; p<0.001) and from the subjects for which they have already passed exams (medical microbiology: 0.88 ± 1.24 vs. 4.46 ± 1.83; public health: 1.27 ± 1.47 vs. 4.98 ± 1.96 for 2nd and 4th year students.
respectively; p<0.001 in both cases). 31.6% of students in the basic module had zero correct answers.

Conclusions: Our results show a noticeable increase in the knowledge level of medical students during the transition from the basic module to their pre-clinical studies. While the gradient of knowledge increase is evident, the number of correct answers of the 4th year students typically falls below 50% from the questions medical microbiology and public health. This is below the desirable threshold and suggests the need of the implementation of novel teaching methods and curriculum improvement.