EDUCATION IN IMMUNOLOGY (EI)
ACTIVE LEARNING PROMOTES STUDENTS’ METACOGNITION IN A BLENDING VIRTUAL AND PRESENTIAL TEACHING CONTEXT

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Introduction: Information and Communication Technologies are being increasingly adopted in science education. The high cost of setting up laboratories has stimulated the development of software for teaching Immunology. In this context we highlight the Virtual Learning Environment (VLE), which combine tools for communication, collaboration and resource sharing. However, technology does not influence the construction of knowledge when employed as a mere vehicle of information. Therefore, we employ in our classes the active learning method based on cognitive learning theories. Objective: Evaluate the effects of active learning supported by virtual environment in the way students learn. Methods: The classes were prepared following the principles of the active learning method: autonomy, problem solving, collaboration and reflection. Three mandatory (10 individual and 1 collaborative activities) and five optional (11 individual and 3 collaborative activities) VLE classes were offered as support to the presential learning. Metacognition was assessed using open questions in an e-questionnaire applied at the end of the discipline. Results: Half of the students who answered to the e-questionnaire(11/21) acknowledged a shift in preference from individual to group study and 62%(13/21) stated that their habit of studying right before the exams changed to a more evenly distributed pattern. Categorization by content analysis of students’ statements reveal that autonomy is the predominant principle responsible for the changes in their mode of study. Conclusion: Presential teaching with support of VLE and based on cognitive theories of active learning was effective for students' metacognition.
INFECTION & IMMUNITY: INTERDISCIPLINARITY AND EDUCATIONAL PLURALISM

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INTRODUCTION: The teaching of immunology to undergraduate courses in medicine should be appropriate to the Diretrizes Curriculares Nacionais do Curso de Graduação em Medicina, published by the Ministry of Education. In this sense presents itself, in this paper, a different way of teaching / learning immunology, microbiology, associating such areas to clinical practice and public health. METHODS AND RESULTS: We initially selected the contents – for teachers in the areas of Infectious Diseases, Microbiology, Parasitology and Public Health – and proposed the chronological organization of the discipline. Then the menu of discipline was elaborated and methods of teaching and learning were selected. They built two disciplines that integrate the curriculum of the course: Infection & Immunity (I and II) and Applied to Clinical Laboratory (III and IV). The concepts articulated in an interdisciplinary way, were included in the third period of the course, according to the following organization: (1) Fundamentals of immunology and its importance in infectious processes; (2) Health promotion and the interaction between microorganisms and human; (3) Health-disease process and the fundamentals of microbiology; (4) Health-disease process and clinical microbiology; (5) Principles of antimicrobial therapy; (6) Pathophysiology, clinical presentation, diagnosis and treatment of infectious diseases. The activities have been developed since 2011, with different methods of teaching and learning (methodological pluralism), especially (1) exposure dialogued, (2) clinical cases discussion, and (3) laboratory practice, privileging the students’ active participation in the construction of knowledge. Each activity lasts two hours per week (total weekly workload of six hours). Evaluation was achieved via weekly tests with objective question. Moreover, they are evaluated twice per semester integrated, combining the concepts of both disciplines, with the use of visuals and interpretation of clinical and laboratory findings. CONCLUSION: The construction of interdisciplinary activities – involving the disciplines Infection & Immunity and Applied Clinical and Laboratory – represented a major breakthrough for the construction of concepts pertaining to the infection and immunity, which are usually produced into compartmentalized disciplinary curricula.
NEW REGULATION FOR BIOETHICS RESEARCH INVOLVING HUMANS AND INVESTIGATIONS IN IMMUNOLOGY

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INTRODUCTION: The debates on bioethics in research involving humans achieved great prominence in the world after World War II, culminating in the publication of international documents such as the Nuremberg Code and the Declaration of Helsinki. In Brazil, Resolution 196/96 of the National Health Council, of the Ministry of Health established the CEP / CONEP (Research Ethics Committees / National Committee for Ethics in Research) system and regulated the standards and guidelines for research involving human subjects, emphasizing respect for the autonomy of the subject, which is expressed mainly in the informed consent (IC). In 2013, Resolution 196/96 was repealed by Resolution 466/12 of the National Health Council. The purpose of this communication is to present of the main aspects of Resolution 466/12 to the immunologist community.

METHODS AND RESULTS: We proceeded with complete reading and comparison of resolutions196/96 and 466/2012. In the new resolution, the research participant – a term that replaces the term "research subject" of Resolution 196/96 – is given greater protection. For children, adolescents, and legally incapable individuals, the term "assent" (and not "consent") is used. Issues of public relevance, as well as those of interest to the Unified Health System (SUS - Sistema Único de Saúde), take priority in the evaluation of research protocols from the community perspective. The research participant is given guarantee of full and immediate assistance to meet any complications arising from the investigation. There are better definitions / incorporation of terms such as: research findings, research benefits, research on genetics and human reproduction, brain death, genetically modified organisms and embryonic stem cells. Moreover Resolution No. 466/2012 opens the opportunity to integrate paid participants in cases of Phase I and bioequivalence studies. CONCLUSION: Resolution 466/12 provides tools for the protection of participants in research involving human subjects, and the its context must be fully known by the immunologist community.
PERCEPTIONS OF NURSING UNDERGRADUATE STUDENTS ON IMMUNOLOGY AND IMMUNE SYSTEM

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Introduction: The teaching and learning of Immunology are described as difficult and complex processes. In addition, Immunology is recognized as relevant for training in the biomedical area. In this context and considering that the perceptions of a given topic may influence the learning of it, the present study presents a descriptive research with a qualitative approach, in which we analyzed the perceptions of Nursing graduates on Immunology and immune system.

Methodology and Results: Data were collected by means of questionnaires, observations, and audio recordings of classes offered to 2nd period students of a Nursing course in a public University of Rio de Janeiro, Brazil. The data analysis was performed based on interpretative method hermeneutic. The 42 students who participated in the research have attributed to immune system the role of defense, designed to protect the organism against the invasion and/or the attacks carried out by foreign bodies of external nature to the body. It was identified the belief that microorganisms are enemies and must be vanquished by lymphocytes, antibodies and phagocytes. The presence of the metaphor war, in the responses and students discourse, was related to the understanding of immunological phenomena exclusively connected with the maintenance of health as the condition of exemption of foreign bodies from the body. It was verified the little knowledge of the immune system’s physiology in the dynamic of interactions of the organism with himself and with the environment. Only one student mentioned, indirectly, the relationship of the immune system with the concept of homeostasis, i.e. as a system that operates in maintaining the structure of the body by means of dynamic metabolic balance.

Conclusions: We believe that the pattern of perceptions found could jeopardize future learning, understanding the activity of the immune system in organisms and states of health and disease, thus configuring, as an epistemological obstacle. We suggest that this finding indicates the need for implementation of a teaching that appreciates the approach of the homeostatic physiology of the immune system. We underscore the importance of giving attention to the knowledge brought by the students as well as of deepening investigations in other levels of education to subsidize discussions about what seems to us to be a limited vision of Immunology and the Immune system.

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