Use of Clinical Cases to Teach Endocrine Physiology by means of Peer Instruction and via the Socrative app

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Introduction: The *peer instruction* methodology promotes the consolidation of concepts through discussions by the students when they are asked to solve clinical cases or to answer questions elaborated by the teacher. Another approach is to use the *Socrative app*, which allows to project slides together with questions from the teacher´s platform to the students 'cell phones. The app has the advantage that immediately after the questions have been answered, a histogram is generated that allows to verify the percentage of correct answers in the classroom or for each student.

Objective: To analyse if the use of clinical cases in combination with peer instruction and the Socrative app would be well accepted by the students in substitution for the traditional theoretical expositive classes in an Endocrine Physiology discipline.

Material and Methods: Third year Dentistry Course students (n=80) received didactic material related to the Thyroid or Pancreas Physiology prior to the class and they were asked to study this. In classroom, after a brief review of 30-40 min about the subject, a clinical case on hyper- or hypothyroidism or on *Diabetes Mellitus* was displayed to the students, and they were oriented to answer the teacher's questions by peer instruction and the Socrative app. The correct answers were revealed after the teacher explained the concepts underlying the correct or wrong answers. Subsequently, the students' perceptions about the use of these methodology in their learning process were evaluated through a Likert Scale questionnaire.

Results: The correct answers to the questions were 53.6% for the thyroid clinical cases and 83.1% for the *Diabetes Mellitus* case. Regarding the perception concerning the use of the Socrative app, the majority of the students (76-89%) answered that it is very good and interesting to use during class, and similar results were obtained for peer instruction, which was evaluated as very good and good by 58% and 86% of the students. Furthermore, 85% fully agreed that the two methods together (peer instruction and

Socrative) helped them to learn better the class subject. However, the majority also answered that they prefer the conventional theoretical class style over peer instruction.

Conclusions: The conventional theoretical class style should not be entirely substituted by active learning methods, like peer instruction and apps like Socrative, but that the passive and active learning methods should be combined, since all these have good acceptance in the teaching-learning process. Furthermore, the use of the cell phone Socrative app prevents the students from using the cell phone for other purposes, and thus help to maintain their attention during class.

Keywords: Endocrine Physiology, peer instruction, teaching, cell phone app

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