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## Medical students opinion on an open book examination

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### *Introduction*

First year medical students of the Carol Davila Medical and Pharmacy University attend courses and workshops of medical genetics and they have to pass two exams at the end of the first term. The first examination is from the material of the workshops and it accounts for 25% of the final grade in medical genetics. It is mandatory for students to obtain a grade equal or higher than 5 at this first knowledge testing to further enter the final examination. Usually both exams in medical genetics test students' mastery in memorizing data, as do most exams they have to pass during their training to become physicians. However, in an era where information is easily available and medical genetics evolves and even changes from one year to another, memorizing certain data may be unnecessary. First year students usually find it difficult to retain or recall the huge amount of specific medical terms that describe the different genetic disorders. In fact, preclinical specialties seem to be in a contest of expecting first- year students to learn a volume of new information that surpasses the quantity of data acquired during their past 12 school years. All of this can stimulate the need to attempt cheating during tests and exams like: asking colleagues to help answer certain questions or looking under the table for answers on their mobile phones.

To discourage these behaviors and to promote learning from a newly published book of medical genetics in this academic year I have asked my students to write an open book examination as their first testing, and then to state their opinion about this kind of verification.

### *Material and method*

132 first-year medical students of the Carol Davila Medical and Pharmacy University were tested in medical genetics through an open book examination at the end of the first term, in January 2019. The students had attended 10 workshops between October and the end of December 2018, and previous to the discussion of each subject they had received by e-mail a succinct written material that they were supposed to study and learn. After each workshop I recommended from the newly translated book Thompson & Thompson Medical Genetics 8th edition the chapter comprising the subject discussed, urging students to become familiar with the specific language. The open book examination from subjects discussed and analyzed during the workshops took place at the Department of Medical Genetics. The students were examined in groups in three different days and were allowed to borrow the book from colleagues. The questions of the open book examination were the same for all 132 students; some questions asked them to analyze pedigrees drawn in the book, but from a different point of view than explained in that chapter, while other questions just asked theoretical facts. 4 students sat at a rectangular table, each one of them receiving a paper with a different set of multiple-choice questions. Each time only 12 students entered the examination room. They were not allowed to talk to their peers or use any other source of information beside the specified book. Mobile phones were not allowed on the table and books were not verified whether being marked during reading and learning.



After writing their open book examination all students who have had workshops under my supervision, received a questionnaire and I explained its purpose: their answers would guide me in organizing the exams at the end of the workshops in the following academic year. The questionnaire consisted of 8 questions, three of them being analyzed in this paper. Two of the questions addressed eventual academic misconduct, like: copying from whatever source and talking to peers during examinations; the third question asked students to grade the difficulty of the examination. Students were also asked to motivate their choice for a certain answer.

## Results

113 students considered the open book exam a good method against cheating by copying and only 13 students were against this view. One of the latter group motivated his/her answer by writing that “students in difficulty of answering would still turn to the easier way: the mobile phone”; while one of the former considered as motivation the fact that “everyone is concentrated on the book, knowing that all the information is in there, thus leaving the mobile phone to the side”. From an interesting experience to a learning tool, from useful to easier, or from being supported to being reassured, students stated the benefit of an open book examination instead of the usual testing of their memorized knowledge. Some of them recognized that having a limited time to answer the examination questions, or because not finding the exact answer by using the index or general content, the cheating opportunity was diminished up to being eliminated.

When asked to grade the difficulty of this type of examination, the students chose as follows: 9 students – ‘very easy’, 37 of them - ‘easy’, 5 of them - ‘difficult’, 3 of them – ‘very difficult’ and 59 chose neither easy, nor difficult.

The last question presented in this paper asked students to choose as answer one of the following two statements:

- a. *Since I was allowed with the book, I did not feel the need to talk to my colleagues during the exam;*
- b. *Although I was allowed with the book, I still felt the need to ask my colleagues when the answer seemed difficult to be found.*

110 students did not feel the need to talk to their peers, while 19 still wanted their support even if having permission to look in the book.

## Discussion

The present study aimed to investigate whether students chose to abandon the usual cheating methods and felt more at ease with an open book examination. Anonymous questionnaires were answered by 132 students revealing their opinions about the degree of difficulty of the questions and the need to cheat during an open book examination. Their motivations are scares and differ, suggesting their answers were sincere and without influences from their peers’ opinions.

The overall high rate of answers in favor of the absence of copying (89.68%) or the ab-

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sence of the need to ask a colleague for the right answer (85.27%, despite the fact that each neighbor at the table received a different set of multiple-choice questions) showed that one could successfully implement an open book examination to eliminate such types of misconduct.

Because the exam took place in three different days and students were divided in 11 groups to enter the examination room, they could talk to one another about the subjects. There is no agreement to a statement of nondisclosure of exam subjects to peers signed by students or at least discussed with them. Also they could have easily made marks inside the book when studying, or in case of finding out the questions from peers, or if the book was previously used in the examination by its owner or somebody who borrowed it, or they could even prepare a sheet of paper with answers from home, as each student writes the answers on his/her own paper brought in the examination room. Supervising during the examination I observed only one marked book (a drawing that was subject for a question) in the last examination day. Also there was a student who did not have a great performance during the workshops and who answered correctly all questions in a surprisingly short time, although I never saw him writing anything, suggesting he knew the questions from his peers or had the answers already written on a sheet of paper before entering the room.

When asked about how difficult the examination was for them, the seemingly neutral position of students (52.21%) shows that such verification of genetic knowledge acquired during the first year of study is not burdensome but perceived as balanced. Feeling less pressured during the examination can lead to less attempts to cheating and this is shown by the few students (7.07%) who perceived the exam as difficult and very difficult. In comparison to previous academic years students' achievements were skewed to the right, suggesting questions were too easy, and the feedback given by students' opinions (40.71% answered the examination was easy and very easy) did still not entirely support this fact, because if some knew the answers before entering the examination room, this interpretation of their results and the difficulty of the examination could have only been spurious. But the limitations of the present study can be surpassed in a new design that considers their elimination, like: changing questions for each group of students entering the room, or having all students answer them simultaneously; the supervisor having access to all corners of the room for viewing if mobile phones are used under the table and signing all papers students use; not allowing students to leave the room with their answers written on paper.

### Conclusions

The open book examination was perceived by the first-year medical students of the Carol Davila Medical and Pharmacy University as an assessment tool that could diminish their misconduct.

**Keywords:** open book examination, medical students' opinion, cheating.