



## Analysis Of the Impact of Simulation Training on The Mastery of Practical Skills in Dentistry Training from The Perspective of Students Based on A Social Survey

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### ABSTRACT

A recognized field of higher education focuses on a sufficient balance of academic knowledge and practical knowledge and skills while teaching future dentists in the field of medicine. The results of a public survey of students were used to examine the impact of simulation training on the degree of practical skills in future dentists' training.

### Keywords:

Cariesology, phantom, simulation training, virtual training, model, tyodont

**Topic relevance.** One of the most well-known trends in higher medical education is the necessity to considerably improve the practical part of future dentists' training while keeping a sufficient degree of theoretical knowledge.

The introduction of the phantom simulation course is a vital step in the educational process for students, interns, and doctors, where they can practice and consolidate manual skills in the sections "Cariesology," "Endodontics," "Periodontics," and "Orthodontics" during their education. They also learn tooth extraction techniques, outpatient surgical manipulations, clinical phases of fixed and removable dentures, and the most up-to-date dental technologies, such as implants with follow-up prostheses. Students get preclinical theoretical training in therapeutic, prosthetic, surgical, and paediatric dentistry, as well as orthodontics and paediatric dentistry, in the first phase.

Future doctors learn the fundamentals of medical deontology, diagnostic principles,

semiotics of disorders of the oral organs and tissues, and the basic manual skills of a general dentist, which serve as the foundation for additional training in clinical dentistry departments. After that, students move on to phantom classes where they learn practical skills. The base of the phantom dental model of a human skull is built of a durable, non-shrinking plastic. The model is made of duroplast and features 32 screw-in teeth (or 20 temporary teeth) and a soft, replaceable gingiva that is anatomically right for the patient's age. The model allows you to practice manual skills such as tooth preparation, endodontic treatment, and root canal filling, as well as hygiene, periodontics, orthopaedics, and orthodontics. With theoretical training, practical skills, and a virtual algorithm for the treatment of dental pathologies, the student in the simulation center in conditions as close to real as possible (real environment, real equipment, manikin, tyodonts), achieves perfection of one' psychomotor skills, skills working with equipment and patients, and

teamwork skills through multiple repetitions and analysis of errors (4-handed work).

The benefits of simulation training:

- Clinical experience in a simulation environment without risk to the patient.
- An objective assessment of the skill level achieved.
- There is no limit to the number of times the skill can be practiced.
- Training at a convenient time, irrespective of clinic hours.
- Practice for rare and life-threatening pathologies.
- Part of the teacher's role is taken over by the virtual simulator.
- The stress of the first independent manipulation is reduced.

The teacher supervises all phantom sessions, checking the level of clinical manipulation at each stage and debriefing on faults. In turn, practical training is split into two categories: working with phantom equipment and working with real people (in the practical training of dental departments as well as on-the-job training).

**Research objective.** The aim was to analyze the impact of simulation training on the mastery of practical skills in dentist training, from the perspective of students, based on a social survey.

**Research materials and methods.** In order to realize the objective, a voluntary anonymous questionnaire method was used to minimize the concealment of information. A total of 78 fifth-year students of the Faculty of Dentistry of the ASMI participated in the survey. The questionnaire was a table with a list of questions and space for responses. The set of answers characterised the problem under study.

Students were asked to evaluate the impact of simulation training methods on manual skills acquisition before and after their dental work placement. The assessment was carried out using a 5-point system for

therapeutic, orthopedic, surgical and paediatric dentistry.

**Study results and discussion.** A comparative analysis of the results of the study showed that the level of mastery of practical skills among 5th year dental students of the Faculty of Dentistry of ASMI after simulation training based on the phantom centre for surgical dentistry averaged  $3.74 \pm 0.62$ ; in therapeutic dentistry -  $3.88 \pm 0.56$ ; in orthopaedics -  $3.79 \pm 0.47$ ; in paediatric dentistry -  $3.81 \pm 0.53$  on a 5-point system and ranged from 78 to 80 on a 100-point system.

Questionnaire data of students after work experience showed that the average level of practical skills mastery in surgical stomatology was  $4.36 \pm 0.49$ ; in therapeutic stomatology -  $4.44 \pm 0.37$ ; in orthopaedic stomatology -  $4.26 \pm 0.28$ ; in pediatric stomatology -  $4.34 \pm 0.31$  with 5-point system, and with 100-point system - from 86 to 88.

The findings show that the use of simulation teaching methods significantly increases the learning of practical skills among dental students.

**Conclusion.** Thus, simulation training of students in combination with practical training in dental disciplines plays an important role in the formation of professional competencies of students of the Faculty of Dentistry of the ASMI, contributes to the consolidation of theoretical material, as well as the ability to apply it in practice. An analysis of the impact of simulation training on practical skill acquisition from the perspective of ASMI students, based on a social survey, revealed that the use of quality simulation training, modern dental instruments, equipment and materials, the use of native preparations and virtual learning improves the quality of practical skill acquisition.

Simulators adapt clinical scenarios and learning situations to each student with an unlimited number of repetitions of skills, which reduces the stress of the first independent manipulation in a real clinical setting. This method strengthens the practical aspects of the

training of future doctors while maintaining an adequate level of theoretical knowledge.

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