ANATOMY TEACHING IN THE TIME OF COVID-19: PLASTIC PHYSICAL MODELS VS. DIGITAL MODELS?

Dzintra Kažoka, Māra Pilmane

Department of Morphology,
Institute of Anatomy and Anthropology,
Rīga Stradiņš University, Latvia

Actuality / The Goal

Coronavirus disease-2019 (Covid-19) **disrupted** all classical **teaching formats in** medical education, including **Human Anatomy** course.

The availability of **plastic physical models** and the implementation of the **digital models for tutors required** a strong foundational **understanding in their use and possibilities**, including visualization skills.

Due to the COVID-19 pandemic period, **teaching methodologies have been revolutionized** with more reliance on innovative models to further consolidate and enhance the learning experience but at the same time **several advantages** were **detected for anatomical models**.

The **present study compared plastic anatomical models versus digital models** to investigate their impact on practical experience **in visualization of anatomy teaching during the Covid-19**.

Mainly, **it explored which** of them **were perceived as more useful for the teaching of Human Anatomy** at the Department of Morphology.

Methods

This **study is a descriptive and reflective part** on **different adaptations** that facilitated and enabled the **teaching of Human Anatomy** during the COVID-19.

It considers the **roles of plastic physical models and digital models** from educational innovations and how these models used to achieve teaching objectives with optimal outcomes at the Department of Morphology.

The data compiled for this study were acquired for the academic **periods of April 2020 – February 2022**.

Results

The use of **different anatomical plastic physical models, software** and **the app,** including **"Complete Anatomy"** by "3D4 from Elsevier" and **"Anatomy Next"**, were **deployed to facilitate effective teaching of Human Anatomy** in basic medical studies.

Plastic physical anatomical models were:

- the **most commonly used** materials **by tutors** in process of anatomical teaching;
- usually **formed in several removable pieces**, making them even more useful as teaching aids;
- **with content of a large number of details** which allowed them to be moved precisely into an infinite number of positions;
- **with** also **visible distributions** of the blood vessels, lymphatic vessels and nerves.

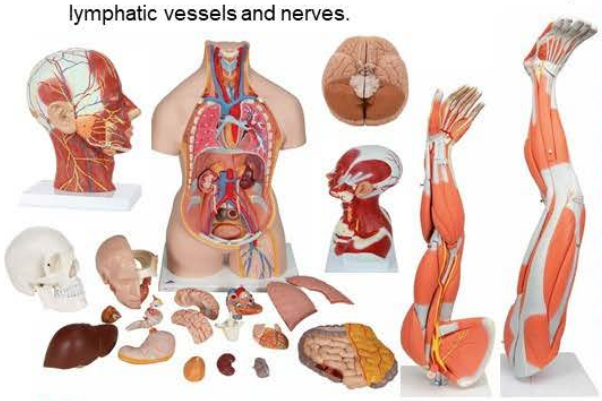
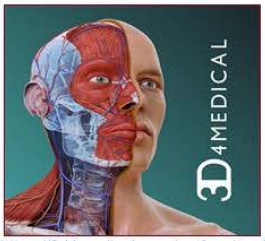


Fig. 1. Several plastic physical models that were used in teaching.

Plastic models **showed the internal organs of different regions and systems**, and offered a **useful tool** for **teaching gross anatomy** due to their easy accessibility and educational effectiveness, hence contributing to a better anatomical teaching experience **by familiarising with surface landmarks**.

One way of achieving effective teaching was the use of the anatomical models with **high spatial visualization**.

Part of the physical anatomical models **had several limitations** in their use, **because** of their **sizes** or **decreased possibility to show some deep structures and/or levels** of them.



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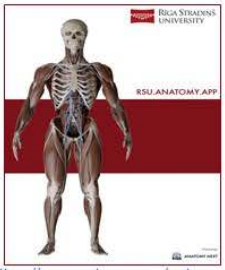

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Fig. 2. Digital models software and the app that were used in teaching.

Software "Complete Anatomy" by "3D4 from Elsevier" and the app "Anatomy Next" were:

- used for **the teaching of systemic** and **regional Human Anatomy** and **different functions**;
- helpful for tutors in providing **an ideal view to assist in visualization of the some complicated structures** and their **relationships**.

Tutors rotated and manipulated **structures from various views** to identify anatomical structures for students, allowing to see **details from any point of view** and **very fast** in an easier and more effective way.

The impact on the **using digital models** was likely **dependent on topic, presentation** and **tutors teaching styles and skills**.

The availability of the **digital models reduced the need for physical anatomical models just in part** of the practical classes.

Conclusions

Anatomical **plastic physical models were one of the general tools** to develop an accurate understanding of Human Anatomy, and **this type** of the teaching **was** extremely **useful for teaching anatomy** and it was **accessible to all tutors during pandemic period**.

Overall, plastic models in modern medical education seemed to be **still of interest for teaching on anatomical structures** and **their locations, relationships**, being **integrated with other** and **digital teaching tools** to improve knowledge and skills **in Human Anatomy**.

Digital models were **modern educational tools** to integrate teaching anatomy **in conjunction with traditional methods and plastic models**, and they **helped to maximize the identification** and **location of the structures**.

During Covid-19 all of these **models were important and useful for teaching normal Anatomy**, enabling tutors to improve visualization of structures, especially those of the skeletal, muscular, circulatory and nervous systems.