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Review Article

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An overview of the first year Undergraduate Medical Students Feedback on the Point of Care Ultrasound Curriculum

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Abstract

With the technological progress of different types of portable Ultrasound machines, there is a growing demand by all health care providers to perform bedside Ultrasonography, also known as Point of Care Ultrasound (POCUS). This technique is becoming extremely useful as part of the Clinical Skills/Anatomy teaching in the undergraduate Medical School Curriculum.

Teaching/training health care providers how to use these portable Ultrasound machines can complement their physical examination findings and help in a more accurate diagnosis, which leads to a faster and better improvement in patient outcomes. In addition, using portable Ultrasound machines can add more safety measurements to every therapeutic/diagnostic procedure when it is done under an Ultrasound guide. It is also considered as an extra tool in teaching Clinical Anatomy to Medical students. Using an Ultrasound is one of the different imaging modalities that health care providers depend on to reach their diagnosis, while also being the least invasive method.

We thought investing in training the undergraduate Medical students on the basic Ultrasound scanning skills as part of their first year curriculum will help build up the foundation for their future career.

Purpose

Incorporating POCUS as part of the Clinical Skills/Anatomy teaching within the first year undergraduate Medical School curriculum will provide students with a very unique experience in utilizing this increasingly used imaging modality in their career. This will not only help them in reaching more accurate diagnosis along with their Clinical Skills training, but will also help them in performing safer tests with less complications associated with different ultrasound guided therapeutic, and or, diagnostic procedures - Examples include; Paracentesis and drainage of Abscesses.

Material

A series of 3 figures are provided, the ultrasound machine that is used to train the undergraduate medical students, student scanning each other. And the actual tutorial room. The idea was to train the learner how to use the ultrasound probe, and be comfortable to scan. And how to integrate shape, location, size, orientation and dimensionality of the image that they create by them scanning a warm body. The mission of discriminating between normal and abnormal features is less scary, when students have a solid understanding of normal structure.

Method

The research we report in this manuscript is a preliminary qualitative study. And provides the template for future model for teaching a hand on Ultrasound for all health care providers in different learning institutions.

McMaster undergraduate Medical School is a three year program, in which we introduced POCUS to the first year curriculum. We have a total of 150 students, where we divide them into eight equal groups. One tutor will supervise each group, where they will have one General Electric portable Ultrasound machine, which is projected onto a large plasma screen. We dim the room lights to get better quality screen images. Our session lasts for 90 minutes, where the first 20 minutes will be an introduction of how to use the machine and probe orientation, as well as some anatomy landmarks. Every student will have the chance to scan their peers at least one time during our session. Each group will have a total of four ultrasound session on their first year curriculum.

Our objective is a pure "hands on" scanning of the neck and the abdomen performed by the students. With the correlations to their anatomy background knowledge (Medical foundation level), they were able to identify normal Thyroid Glands and major neck vessels, Liver, Gall Bladder, and the Kidneys.

Conclusion/Result

Result

A questionnaire was handed to the first year undergraduate medical students at the end of session four, to evaluate their hands on ultrasound session experience. Answers were collected and data was analyzed into multiple graphs (as illustrated on this poster). The comments that we got from this survey were mainly positive; here

are a few of the constructive comments that we received:

- "This was a great learning experience"
- "It was a great learning opportunity"
- "Very useful, leaned a lot"
- "loved the hand on experience"
- We also received some comments about recommendations and ways to improve the sessions (listed below):
- "I wish we had a longer session time, more practice time"
- "personally would not want to be scanned, but thankful to classmates who are"
- "Add some procedures to this learning experience, like Thoracocentesis"
- "Presentations should start with more anatomy, such as the liver/spleen, as they are relative to the diaphragm"
- "less number of students/ group"
- "having standardised patients in case students aren't comfortable being scanned"
- "shorter and more frequent sessions"
- "more one to one teaching"
- "provide slides that contrast normal pathological findings"
- "first session was overwhelming, but now I find them helpful"
- "Visual aids should be used to help orientation of images, as it can be very confusing"
- "More frequent sessions to practice ultrasound imaging relevant to each medical foundation would be ideal"

Conclusion

POCUS has shown to be an extremely important diagnostic/ therapeutic tool for different medical specialities. Allowing undergraduate medical students to scan their peers as part of their "hands on" experience provides a more interactive learning environment. The introduction of POCUS was very successful, as students were strongly engaged in our training sessions.

Students valued their experience when scanning each other that they even requested for more scanning/teaching time added into their curriculum in the future. As a result, all students were able to enhance their basic Ultrasound and scanning knowledge. They appreciate the integration of Anatomy/Clinical Skills teaching value of this session, as it is a helpful tool to teach Clinical Anatomy.

Students always find the interpreting Sonogram images as a difficult task, especially with changing probe position. Sometimes, ultrasound interpretation is extremely challenging for some learners.

As previously mentioned, adding "hands on" Ultrasound scanning sessions as part of the Undergraduate Medical School Clinical Skills/ Anatomy Curriculum will complement their Medical/Anatomical knowledge, which will definitely change the future of the medical world.

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