

3D printable stethoscope ready in hours for crisis zones



The utility of stethoscope may have diminished with the advent of more sophisticated diagnostic tools such as ultrasound and CT. However, in areas of the world where medical supplies are scarce, a stethoscope could mean the difference between life and death. This is why the development of a 3D-printed stethoscope has taken on a new significance.

The stethoscope was created by a team of researchers using free open source software to keep costs low and allow others to easily access the code. Based on their study, the researchers say their 3D printed model, called Gila, has the same acoustic quality as the best stethoscopes on the market. The study was led by Dr. Tarek Loubani, associate professor at Western's Schulich School of Medicine & Dentistry, associate scientist at Lawson Health Research Institute and an emergency room physician at London Health Sciences Centre.

Loubani spent time working as an ER physician in hospitals in Gaza during wartime when medical supplies were often scarce. "We wanted physicians and allied healthcare professionals to be able to have something that was high quality. This study found that the acoustic quality was the same in our stethoscope as in a premium brand stethoscope."

The idea to 3D print a stethoscope was born while playing with a toy stethoscope and noticing it performed its function quite well. That led Loubani and a team of engineers to design an open-access template for a 3D printed stethoscope that could be created using recycled plastic. Now, the team's stethoscope has been clinically validated, and their results have been published in the journal PLOS ONE.

With the Gila template, the stethoscope can be made in less than three hours and costs less than \$3 to produce. Anyone with a 3D printer and access to ABS – a plastic used to make Lego and lawn chairs – can create the device.

"Use of the open source approach in every aspect of this project contributes powerfully to the body of medical device research," said Gabriella Coleman, PhD, noted scholar on technology and open source software. "This research gives a guide for others to create medical-grade open access devices that can reduce costs and ultimately save lives."

Loubani noted the importance of the stethoscope especially in war torn and low-income communities. "Stethoscope utility goes up as other resources go down," he says. "In Gaza, ultrasounds are not available in emergency departments, or are dilapidated, so the stethoscope becomes an inexpensive tool that allows us to make life-saving decisions."

The hope now is to create templates for other medical devices that can be made or improved on-site in locations with scarce resources.

Source: [University of Western Ontario](#)
Image Credit: Schulich Medicine & Dentistry

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