ABSTRACT

This study analyzed the effect of printing process parameters on the transparency of medical demonstration models made from polyethylene terephthalate glycol (PETG) using 3D Printing technology with the Fused Deposition Modeling (FDM) method. Optimization was conducted using the Taguchi method with the "larger is better" criterion to enhance print transparency. The varied parameters included print speed, layer high, nozzle temperature, and infill angle, while ANOVA was applied to determine the significant influence of each parameter. The results indicated that the optimal parameter combination consisted of print speed 15 mm/s, layer high 0.3 mm, nozzle temperature 240°C, and infill angle 90°. Print speed had the most dominant effect on transparency, followed by layer high, nozzle temperature, and infill angle. This study served as a reference for the development of 3D Printing in medical applications. Future research was recommended to explore additional parameters to improve transparency and optimize the use of CAD software and FDM techniques in creating more accurate and precise medical demonstration models.

Keywords: *3D Printing, FDM, PETG, Transparency, Taguchi.*