DESIGNING A NOVEL COST-EFFECTIVE DEVICE TO PREVENT PERINEAL TEARS DURING LABOR

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9 in 10 first-time births result in some form of perineal laceration. Such an injury can generate long-term challenges to a mother's mental and physical health. The goal of this project is to design a device that can decrease the risk of perineal tears during childbirth. Several designs and materials were tested on a CAD model of the female pelvic anatomy (the vaginal opening, perineum, and anal opening) until the optimal design was produced. First, the model was stress-tested without the device at forces of 22.3 N, 37.8 N, and 31.3 N. The model was then tested again with the device attached to determine the effectiveness of the design in reducing the stress at each level. Multiple stress tests were administered to ensure authentic results. Statistical analysis was then conducted between the mean stress values of each group. All three t-tests yielded a p-value less than the declared alpha value of 0.05, thereby indicating that the device significantly reduced the amount of strain placed on the perineum, and ultimately, minimized the risk of a perineal tear. Further testing and modifications will be continuously made to improve this device.