Development of Biodegradable Sanitary Pads from Indigenous Plant Fibres With Biodegradable Moisture and Removable Reusable Electronic Sensors for Hygiene Monitoring

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Purpose: In Zimbabwe 72% of schoolgirls can’t affordable sanitary products. Globally, 500 million women and girls have inadequate access to sanitary products contributing to period poverty. Conventional plastic pads take 500-800 million years to decompose. Using fake test fluid, I tested the hypothesis that the absorbency of the fibre-based pads will be equal to or better than the commercial pad. The fibre-based pad and the commercial pad were buried under a controlled environment to test the hypothesis that the fibre-based pad would show greater degradation than the commercial pad. Procedure: Blood was represented by a mixture of water, cornstarch and red food colouring. Fluid was dispensed from a plastic syringe in 5ml increments until each pad was fully saturated. To test for biodegradability, each pad was buried in plastic containers with perforated lids filled with moist soil. Data was analysed using t tests, confidence intervals, p-value and null hypothesis and standard deviation. A Monte Carlo simulation was carried out for cost analysis. Results: Mean absorbency for: 25cmx8cm maize-cornstarch pad: 37.5ml 25cmx8cm commercial pad: 35.0ml 31cmx9cm maize-cornstarch pad: 53.3ml 31cmx9cm commercial pad: 48.8ml 16cmx7cm maize-cornstarch pad: 21.0ml 16cmx7cm commercial pad: 19.6ml Conclusion: Absorbency of the biodegradable pads was within a 20% margin of commercial pads. Biodegradable pads are not only comparable but slightly better proving plant-based pads can be effective.

Awards Won:

Third Award of $1,200