Sustainable Case Study on Telehealth Devices

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According to the United Nations, world’s elderly population is growing at its fastest rate ever. By 2050, there will be more than 2 billion people aged 60 or over. (2012)


Telehealth is a broad term of remote healthcare used to describe the use of electronic communications to deliver clinical services and other types of health information, according to the American Telemedicine Association (ATA). (2012)

The Patient Protection and Affordable Care Act (Public Law 111–148) (PPACA), signed into law on March 23, 2010, describes the use of telehealth as a process to promote evidence-based medicine and patient engagement of delivering efficient and cost-effective health care in the United States. (2012)


Telehealth care is a home-based monitoring and support for treating patients with chronic conditions (Chiang, Chen et al. 2012) and for engaging older adults in self-care disease management. (Gellis, Kenaley et al. 2012)

Telehealth technology provides improved quality of life and independence in chronic disease patients. (Demiris, Thompson et al. 2012) (Herbert and Medd 2012)


Remote patient monitoring targets:
- reducing costs of hospitalization (Forducey, Glueckauf et al. 2012) (Herbert and Medd 2012),
- reducing the frequency of hospital admissions (Dinesen, Haesum et al. 2012), and
- increasing accessibility of interventions. (Pratt 2012)


These devices account for an enormous amount of the solid, industrial, and chemical waste in developed countries.

Sustainable design, a concept in which devices are evaluated in terms of financial, social, and environmental impact, could have a great benefit for medical-device industry (Kadamus 2008).

Proactive design for sustainability at the concept level reduces waste, packaging, and shipping costs. (Hede, Nunes et al. 2011) It also improves manufacturing efficiency and use of raw materials. The way to improve sustainability of medical devices is design of a product lifecycle, not just a product.


The purpose of this project is to improve the user experience of the telehealth device and evaluate environmental impact of current telehealth devices.

Moreover, this project aims at integrating a sustainable product design criteria into an improved telehealth device design.

The significance of this project is to advance new designs of telehealth devices aimed at improving its environmental impact.
Methodology

Phase 1 - Analysis: Taxonomy of the telehealth devices
1. Sorting of all telehealth devices
2. Choosing the specific telehealth device for redesign

Phase 2 – Synthesis: Anatomy of the specific device
1. Material analysis
2. Literature review
3. Application of Sustainable Design Methods
4. Analysis of the results

Phase 3 – Design development
1. Design criteria
2. Concept re-design
3. Final design
4. Influences on the final solution from a variety of perspectives

Phase 4 – Evaluation: Evaluation Tool
1. Evaluation tool: Sustainable Minds
2. Cost analysis
3. Comparison of the selected and improved telehealth devices

Phase 5 – Conclusion and Summary
1. Re-support of the original claim
2. Future design considerations
Thank you!