Development and rapid prototyping of an illuminated mirror for waterbirths – from concept to prototype

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Background

Water immersion during labour and birth is recognized as a means of empowering women and reducing need for analgesia. Although waterbirth is a ‘hands off’ birth, midwives are required to monitor progress and assist controlled delivery of the head. Viewing using a handheld mirror can often be restricted due to maternal position or inadequate lighting, which has implications for infection control and manual handling. There is therefore an unmet clinical need for a mirror with an inbuilt light suitable for use in waterbirths.

Objectives

To: i) undertake a scoping exercise with midwives and expecting mothers to identify the appropriate product specifications; ii) develop and iii) test prototypes based on these specifications suitable for commercial manufacture.

Design Pathway and Results:

1) Device specification:

The device requirements were specified in consultation with midwives of different seniorities attending to their requests and experiences of waterbirths and other key healthcare professionals. Core design features were specified by consensus using on-line questionnaires, face-to-face discussions and poster voting (Figure 1).

2) Prototype development:

Schematics and Computer Aided Drawings of potential devices were used to inform the rapid prototyping techniques used to generate a Phase 1 prototype (Figure 3).

3) Prototype testing

Following feedback and further prototype developments (Figure 4), we are currently working with companies to specify a route for commercial manufacture and marketing. We have secured design protection rights for our Phase 3 prototype.

Conclusion

Using an innovative and interactive product design process, our multidisciplinary study team have developed an illuminated, flexible prototype mirror for use in waterbirths.

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