

Wearable Technologies and Stigma in Diabetes: The Role of Medical Aesthetics

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In both clinical and commercial contexts, wearable medical devices now offer a wide and growing range of diagnostic, therapeutic and monitoring capacities. In the diabetes field, continuous glucose monitoring (CGM) sensors and continuous subcutaneous insulin infusion (CSII) pumps have revolutionised self-care regimes by dramatically increasing people's ability to respond effectively and flexibly to their changing blood glucose levels. In common with many medical wearables, however, such devices are often bulky and uncomfortable to wear, and can be difficult and time-consuming to use and maintain. Moreover, since medical wearables like insulin pumps are frequently visible to others, their aesthetic characteristics and visual attractiveness (or lack thereof) constitute important but often overlooked aspects of long-term usage. While the world of fashion and design may seem far removed from the clinical and technological complexities of medical wearables, recent developments in personalised diabetic technologies and associated garments highlight the increasingly productive synergy between these two spheres.

This synergy is of particular importance given the enduring societal and personal stigmas attached to diabetes. Societal stigma arises when people who do not have diabetes attribute negative identities and characteristics towards people with diabetes, identifying them as (e.g.) weak, sickly, incapable, self-indulgent, overweight, or otherwise blameworthy and responsible for their disorder. Personal stigma, or self-stigma, arises when people with diabetes attribute these negative identities and characteristics to themselves. When acted upon, both kinds of stigma can lead to negative experiences in a range of contexts, such as workplace discrimination against people with diabetes and concealment behaviours on the part of those with diabetes (e.g. delaying insulin injections or avoiding social occasions). In turn, these phenomena can result in sub-optimal blood glucose control and clinical complications for people with diabetes, in addition to heightened levels of depression and other kinds of psychological distress. Wearable diabetes technologies are implicated in this field of psychosocial experience, since wearable devices can signal the presence of diabetes to others (e.g. through visibility and/or audible alarms) while simultaneously reminding the wearer of their own disorder.

In this context, some people with diabetes have sought to challenge stigmas through visibility itself, an approach that places medical aesthetics front of stage. One of the best known examples of this approach took place during the Miss Idaho beauty pageant in 2014, when Sierra Sandison wore her insulin pump during the pageant's swimsuit catwalk. Sandison shared a photograph of the moment on social media together with the hashtag #showmeyourpump, prompting thousands of others to share images of their own pumps. By bringing her wearable device into the fashion world, Sandison challenged stigmas associated with diabetes and diabetic devices. Speaking in 2014, she stated: 'My message to everyone, diabetic or not, is that we all have something that doesn't measure up to the beauty standards set by the media – and that is ok. It does not make you any less beautiful.'

In addition to challenging stigma through visibility, many people with diabetes have also sought to make a virtue out of necessity by personalising their devices in aesthetically pleasing ways. A number of companies now offer products with which individuals may customise their

devices, such as the Pump Peelz adhesive stickers which can be placed over insulin pumps to make them more colourful and attractive. The company describes their mission as helping 'people with diabetes live with more confidence by turning insecurities associated with diabetic accessories into a form of individual self-expression.' Other companies such as Pump Wear and Pump Boutique also feature a range of visually appealing garments and jewellery for people with diabetes, while designer Jessica Floeh's 'Hanky Pancreas' range offers women a range of clothing and accessories with which to personalise and/or camouflage their wearable devices. Device manufacturers are also seeking to develop more attractive sensors and pumps. The t:slim Pump, for instance, is marketed as 'the slimmest pump on the market' with a 'sleek, modern design' which allows it to 'be worn discreetly under clothing.'

By augmenting the aesthetic aspects of living with diabetes, these innovations may help to challenge societal and personal stigmas associated with the disorder, much as the trend for thick-framed glasses has reduced the stigma of poor eyesight. Moreover, as 'smart clothing' (garments with embedded digital functionality) becomes more sophisticated and powerful, there is scope for high fashion pieces to raise awareness and challenge diabetes stigma in artistic circles. Designers such as Anouk Wipprecht have already incorporated emotion- and brainwave-sensing technologies into captivating 'smart dresses', and there seems no reason why an eye-catching 'diabetes dress' could not be designed with glucose-sensing capacities instead. Thus, whether in terms of high fashion or everyday experience, there is clearly a significant role for future collaborations between diabetic technology and the seemingly distant world of fashion and design – collaborations that may help to alleviate the negative impacts of diabetic stigma at both societal and personal levels.

References:

For more on diabetes stigma: see *Patient* 2013; **6**: 1-10

For more on Sierra Sandison see http://www.huffingtonpost.com/scott-benner/miss-idaho-sierra-sandison_b_5620049.html

For Sierra Sandison's comments see <http://www.bbc.co.uk/newsbeat/article/28400717/diabetic-us-model-sierra-sandison-wears-insulin-pump>

For Pump Wear see <http://www.pumpwearinc.com/>

For Pump Peelz see <http://pumppeelz.com/>

For Pump Boutique see <http://www.pumpboutique.com/>

For more on Jessica Floeh see <http://hankypancreas.com/meet-the-designer/>

For more on Anouk Wipprecht see <http://www.anoukwipprecht.nl/projects.HTML>