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Title: Digital Health Innovations: Imagining Opportunities to Support People with a Learning Disability Experiencing Menopause

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Abstract: Fitness trackers, apps and associated wearable devices have grown in popularity as ways for individuals to improve their health by increasing their activity levels, managing their weight, or tracking biomedical data such as heart rate and blood sugar levels. Apps that track menstrual cycle and ovulation have proliferated in the digital health marketplace, though there are fewer offerings for those experiencing the post-fertility time period. However, within the female technology sector there has been no consideration specifically for women with a learning disability who are experiencing the menopause. People with a learning disability are a heterogeneous group who face additional challenges to those of the general population. This commentary discusses how the growth of female digital technology could be used to benefit this group and highlights some of the potential issues that would need to be addressed.

Main Text:

Digital Health

In the field of women's digital health, the term FemTech (female technology) is used to define products or services such as wearables, ingestibles and embeddable technologies which are marketed for women's health, self-care and wellbeing (Balfour, 2023; Farahani et al, 2025). Online platforms, apps and wearable technology designed to inform on aspects of health, track lifestyle choices or capture biometric data are becoming more widely available and used. Such digital health devices range from simple pedometers to external wearable devices that upload data on body weight, daily nutrition, heart

rate, activity levels, skin temperature, sleep and menstrual cycle tracking to a smart phone app which may then provide insights into ways the user may act upon the data.

Menopause

Whilst there are a range of apps that cater for reproductive health, the population who are going through the menopause transition is less well served. Once a taboo subject in our society (Gunter, 2021), menopause is becoming more widely recognised and discussed by individuals, the media, as well as at corporate and governmental levels. This growth of interest has sparked some attention from the FemTech marketplace offering products to appeal to pre- and post-menopausal women. The benefits of these digital health innovations may be to reduce menopausal symptoms (e.g. cool down the body during hot flushes), identify and track symptoms, share data/learning with medical professionals, provide educational resources, provide an online community for sharing lived experiences and many more.

Learning Disability and Menopause

Although the inclusion of females in the development of technological advancements is a step in the right direction, it is vital that we consider the needs of oft-overlooked marginalised groups who face a unique set of barriers to gaining support for their menopausal symptoms. Individuals with a learning disability are more likely to experience an early onset of menopause (Martin et al, 2001) but lack knowledge of the reproductive life stages to be able to identify what is happening to them (Trueland, 2023). Whilst the general population would enhance their understanding of menopause by searching the internet, reading healthcare literature or discussing it with friends, those with a learning disability have limited social networks (Willis et al, 2010) and may be hindered by poor language, reading, digital literacy and cognitive processing skills. Menopause and learning disabilities can exacerbate mental health and behavioural issues (Adams et al, 2025). There is also the potential for diagnostic overshadowing where presenting symptoms are viewed through the lens of their learning disability. For example, delayed or incorrect treatment may occur as psychological symptoms of menopause such as mood swings, brain fog and anxiety may give rise to behaviour that challenges and can appear very similar to those of a learning disability or mental health disorder (Taggart et al, 2010).

59 *An Unmet Need*

60 There has been limited research on the use of FemTech with the pre-and post-menopausal general
61 population, but there is a stark knowledge gap - and thus an opportunity - for investigating whether
62 these smart devices may also benefit menopausal individuals who have a learning disability.

63

64 Although existing technologies have been appropriated for menopause support (Lopez Burst et al,
65 2024), it is critical that FemTech created specifically for people with a learning disability include
66 'empathy' - a term coined by Human-Computer Interaction (HCI) developers for the initial design
67 process being human-centred and underpinned by an understanding of the lived experiences of the
68 population of intended users (Bennett and Rosner, 2019). Thus, in the development of commercial
69 products to support their menopause transition, a clear link is required with the particular concerns and
70 barriers to access faced by people with a learning disability.

71

72 Psychological and physical symptoms of menopause can lead those with a learning disability to self-
73 isolate and avoid the activities they would normally enjoy such as socialising or taking part in physical
74 activities. Research has shown that women use online social media platforms to connect with supportive
75 communities which, by sharing similar concerns, allows them to become better informed and
76 normalises their experiences (Lopez Burst et al, 2024). As people with a learning disability already feel
77 very different to the general population, bringing them together via an online forum or 'Menopause
78 Cafe' style format may help to create a similar effect. Combating low mood and weight gain in
79 menopause by using a fitness tracker to encourage physical activity or meditation breaks (Lopez Burst et
80 al, 2024) might also help to motivate those with a learning disability to increase their general activity
81 levels.

82

83 The symptomology of menopause in people with a learning disability is similar to that of the general
84 population but is often under-recognised and thus under treated (Martin et al, 2001; Moore, 2024).
85 Frequently unable to advocate for themselves, this creates difficulties in getting a diagnosis and
86 appropriate treatment for them. Where an individual is unable to explain what is wrong, their
87 biometrics on sleep tracking, heart rate and skin temperature could indicate the frequency and impact
88 of night sweats on sleep quality (Okpete and Byeon, 2025) and assist in effective diagnosis and

treatment management. Additional tracking features such as mood diary or symptomology pictograms may facilitate differentiation between potential causes that could be used to support a diagnosis.

Important Considerations to Innovation

Presented below are some considerations that innovators would need to consider in developing FemTech for menopausal individuals with a learning disability.

- Ethical considerations: Informed consent from the wearer and understanding that recording and sharing of personal data requires consideration of who owns or can access the data.
- Individuality: Those with a learning disability are a heterogeneous group, as such experiences of menopause will differ between individuals, and any digital innovation should encompass a broad set of needs and symptomology.
- Compliance: Usable, translatable data would rely on compliance from the wearer.
- Digital accessibility and digital literacy: Any system should be designed to be easy to learn to use and accessible for everyone.
- Quality of information: Information on menopause must be evidence-based and also relevant to the experiences of those with a learning disability.
- Presentation of Information: Information must be appropriately presented for people with a learning disability (e.g. appropriate reading levels, EasyRead formats, larger font size, use of pictures and pictograms, accessibility features in app etc.).
- Costs: Consideration for who will pay the costs associated with buying/using an app and for such as wearable devices. Digital poverty may be a barrier to accessibility, especially for those in lower socio-economic areas. This may have ethical ramifications as to who has access to the data.
- Clinicians and carers: Having appropriate communication skills to engage with individuals about their data and to also have sufficient training in menopause as it applies to women with learning disability.
- Stigma: Stigma has long surrounded menopause and aging, thus design of FemTech for menopause should be consciously designed to normalise and support this natural life stage.

119 *Final Thoughts*

120 With the demographic shift towards an aging population the ability to support women in post
121 reproductive life stages is increasingly relevant. As technology advances it is vital that we exploit these
122 avenues for women with a learning disability experiencing menopause to ensure that there is equity and
123 healthcare support for all.

124

125 **Competing Interests**

126 No competing interest was reported by the author

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