

MSc Public Health and Social Care in Practice

Component 2- Poster

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1-Background

CVDs are a category of conditions that affect the heart and blood vessels (NHS, 2026). CVD is one of the leading causes of death and comorbidities globally (Joseph *et al.*, 2025) (see Figure 1).

CVD in the UK: It is the leading cause of death and there are 7.6 million cases increasing medical burden (Cheema *et al.*, 2022)

Example of a public intervention: Soft Drinks Levy charges manufacturers for extra amount of sugar in drinks. This has helped households to stop or reduce buying soft drinks improving their lifestyle (Cobiac *et al.*, 2024).

Chosen digital health intervention: Smart wearable sensors (see Figure 3). Utilising these allows close monitoring of heart rate meaning that patients will be able to track if their heart is functioning well through data analysis (Williams *et al.*, 2023).

2-Health Promotion Values and Principles:

Health promotion are strategies to create physical and social conditions for individuals, society and institutions to improve the health sector by improving empowerment over modifiable factors (Caron *et al.*, 2023).

Values and Principles include: **empowerment, holism, empathy, autonomy and involvement** (Solberg, 2021).

Smart wearable sensors allow these to occur through constant collection of data which is used to remotely detect CVD and possible complications.

This method promotes a personalised care approach as patients will participate more in their care planning compared to traditional methods.

Smart wearable sensors will assist identifying harmful or beneficial habits through data.

From there health professionals can apply empathy while empowering patients to make decisions (see Figure 5).

Cardiovascular Diseases (CVDs) and Smart wearable sensors

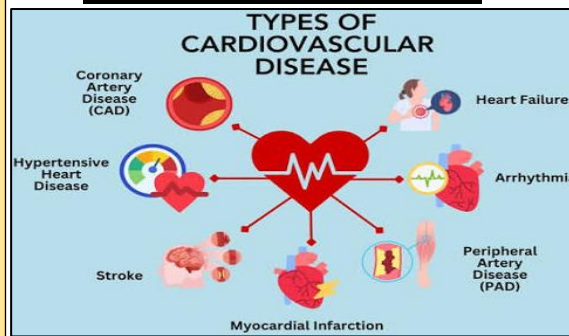


Figure 1: CVDs. These are the most common types of CVD.



Figure 2: CVD risk factors. These are the main causes of CVD.



Figure 3: Smart wearable sensors. These are devices help collect physiological data for analysis.

3- Behavioural change theory-Social cognitive theory (SCT):

SCT: A framework focused on how experiences, actions and environmental factors affect a person's choices and how cognition affects certain behaviours (Zhai *et al.*, 2023).

SCT and health promotion: This occurs through sharing individuals' experiences to encourage change of lifestyle as experiences include the consequences of a lifestyle and the benefits of quitting the habits. This prompts others to avoid that negative habit. This shows the link between the factors observed in SCT and how they shape behaviours (see Figure 4).

SCT and smart wearable sensors: SCT enables individuals to monitor and change harmful behaviours through readings obtained by the smart wearable sensors.

Example: Patients with CVD will be able to track their physical activity levels which is crucial in reducing risks of mortality (Nystoriak and Bhatnagar, 2018). If the levels are low the patient will decide whether to exercise or not. This decision shows how cognition influences behaviours as decision-making is part of cognitive processes (Prezenki *et al.*, 2017).

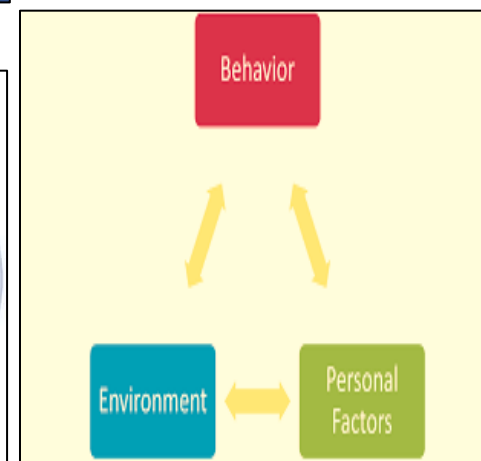


Figure 4: SCT factors. This diagram shows the links between the factors contributing to the theory.

4-Expected Outcome:

Through sharing experiences with smart wearable sensors, there is likelihood of positive outcomes as others might follow the example. Shared patient experiences improve services (Novak *et al.*, 2020) and provide more centred care by providing a smart wearable sensor specific to a patient's CVD.

There might be patients unable to improve their lifestyle due to social factors such as economy. Those in deprived areas are less likely to access to health care (Barlow *et al.*, 2021) and smart wearable sensors due to lack of resources (Yao *et al.*, 2022).

This might also be unsuccessful as those in deprived areas are more likely to make poor lifestyle choices such as smoking. Along with lack of accessibility, poor lifestyle increases mortality rate of populations in deprived areas (NHS, no date).

To ensure effective implementation of smart wearable sensors, authorities must use SCT to detect patterns that lead to CVD and ensure equal access to care for all populations as poverty is a cause CVD (Lang *et al.*, 2016).

5-Conclusion:

Smart wearable sensors affect policies, education and research in different ways that shape the addressing of CVD within the population.

Policies: Smart wearable sensors improve policies by protecting patient data however there are risks of cybersecurity, unequal distribution and inaccuracy (Narain and Lally, 2025). This decreases effectiveness.

Education: Smart wearable sensors allow learning of CVD to be more effective as they allow learning and interpretation of different patterns of data. This enables patients to learn using the technology effectively and to monitor CVD causing the decrease of hospital burden.

Research: This technology allows professionals to predict if a patient will develop CVD (Moshawrab *et al.*, 2023). This would improve intervention planning, however, there could be errors due to inaccuracy. Due to this, hospital tests cannot be replaced.

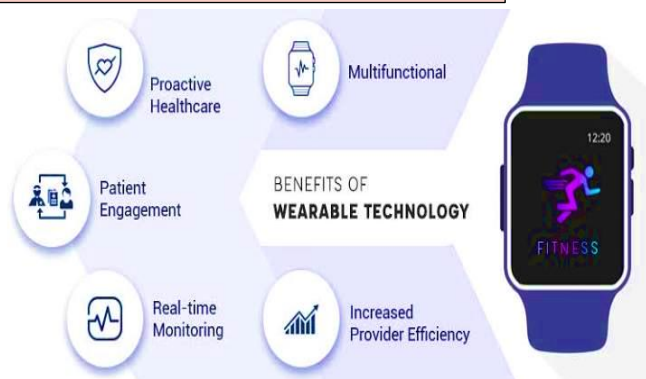


Figure 5: Benefits of wearable sensors. These assist patients becoming more empowered.

References

- Barlow, P. *et al.* (2021) "Area-level deprivation and geographic factors influencing utilisation of General Practitioner services," *SSM - population health*, 15. Available at: <https://doi.org/10.1016/j.ssmph.2021.100870>.
- Caron, R.M. *et al.* (2024) "Health Promotion, Health Protection, and Disease Prevention: Challenges and Opportunities in a Dynamic Landscape," *AJPM Focus*, 3(1). Available at: <https://doi.org/10.1016/j.focus.2023.100167>.
- Cheema, K.M. *et al.* (2022) "Long-term trends in the epidemiology of cardiovascular diseases in the UK: insights from the British Heart Foundation statistical compendium," *Cardiovascular research*, 118(10), pp. 2267–2280. Available at: <https://doi.org/10.1093/cvr/cvac053>.
- Cobiac, L.J. *et al.* (2024) "Impact of the UK soft drinks industry levy on health and health inequalities in children and adolescents in England: An interrupted time series analysis and population health modelling study," *PLoS medicine*, 21(3), p. e1004371. Available at: <https://doi.org/10.1371/journal.pmed.1004371>.
- Joseph, P. *et al.* (2025) "Cardiovascular disease in the Americas: the epidemiology of cardiovascular disease and its risk factors," *Lancet Regional Health - Americas (Online)*, 42. Available at: <https://doi.org/10.1016/j.lana.2024.100960>.
- Lang, S.-J. *et al.* (2016) "Impact of socioeconomic deprivation on screening for cardiovascular disease risk in a primary prevention population: a cross-sectional study," *BMJ open*, 6(3), p. e009984. Available at: <https://doi.org/10.1136/bmjopen-2015-009984>.
- Moshawrab, M. *et al.* (2023) "Smart Wearables for the Detection of Cardiovascular Diseases: A Systematic Literature Review," *Sensors (Basel, Switzerland)*, 23(2), p. 828. Available at: <https://doi.org/10.3390/s23020828>.
- Narain, V. and Lally, C. (2025) *Consumer wearable devices and disease prevention*. Available at: <https://post.parliament.uk/research-briefings/post-pn-0741/> (Accessed: 20 June 2026).
- NHS (2026) *Cardiovascular disease*. Available at: [https://www.nhs.uk/conditions/cardiovascular-disease/#:~:text=Cardiovascular%20NHdisease%20\(CVD\)%20is%20often,lead%20to%20a%20blood%20clot](https://www.nhs.uk/conditions/cardiovascular-disease/#:~:text=Cardiovascular%20NHdisease%20(CVD)%20is%20often,lead%20to%20a%20blood%20clot). (Accessed: 13 June 2026).
- NHS (no date) *Cardiovascular disease (CVD)*. Available at: <https://www.england.nhs.uk/ourwork/clinical-policy/cvd/> (Accessed 16 June 2026).
- Novak, L.L. *et al.* (2020) "Patient Stories Can Make a Difference in Patient-Centered Research Design," *Journal of patient experience*, 7(6), pp. 1438–1444. Available at: <https://doi.org/10.1177/2374373520958340>.
- Nystoriak, M.A. and Bhatnagar, A. (2018) "Cardiovascular Effects and Benefits of Exercise," *Frontiers in cardiovascular medicine*, 5, p. 135. Available at: <https://doi.org/10.3389/fcvm.2018.00135>.
- Prezenski, S. *et al.* (2017) "A Cognitive Modeling Approach to Strategy Formation in Dynamic Decision Making," *Frontiers in psychology*, 8, p. 1335. Available at: <https://doi.org/10.3389/fpsyg.2017.01335>.

Solberg, B. (2021). The ethics of health promotion: from public health to health care. *Health promotion in health care—Vital theories and research*, pp.23-32. Available at: https://doi.org/10.1007/978-3-030-63135-2_3.

Williams, G.J. *et al.* (2023) “Wearable technology and the cardiovascular system: the future of patient assessment,” *The Lancet. Digital health*, 5(7), pp. e467–e476. Available at: [https://doi.org/10.1016/S2589-7500\(23\)00087-0](https://doi.org/10.1016/S2589-7500(23)00087-0).

Yao, R. *et al.* (2022) “Inequities in Health Care Services Caused by the Adoption of Digital Health Technologies: Scoping Review,” *Journal of medical Internet research*, 24(3), p. e34144. Available at: <https://doi.org/10.2196/34144>.

Zhai, S. *et al.* (2023) “Analysis, evaluation, and reformulation of social cognitive theory: Toward parent-child shared management in sleep health,” *Journal of pediatric nursing*, 73, pp. e65–e74. Available at: <https://doi.org/10.1016/j.pedn.2023.07.011>.