

# **Digital Health Promotion:**

## **Two Reflective Blogs on Digital Technology in Health Promotion Interventions**

Assignment Title: Digital Health Promotion Blog Portfolio (Blog 1 & Blog 2)

**Student name:** Ardra Sudhan

**Student number:** 2529434

**Programme:** MSc Public Health and Social Care in Practice

**Module code and title:** LCHS7009- Population Health and Digital Health Promotion

**Lecturer:** Dr Ping Wu

## Can Your Smartphone Help Save Your Kidneys? How Digital Health is Transforming Early Detection of Chronic Kidney Disease

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### Why Should We Care About Kidney Health?

Chronic Kidney Disease (CKD) is often called the "silent killer" because many people experience no symptoms until significant kidney damage has already occurred. Globally, approximately 850 million people are living with kidney disease, while an estimated 3.5 million people in the UK have CKD, with many remaining undiagnosed (Kidney research UK, 2023; KDIGO, 2024). Left untreated, CKD can progress to kidney failure requiring dialysis or transplantation, placing enormous pressure on patients and healthcare systems.



Fig. 1: (Johnson, 2025)

### Who Is Most at Risk?

Although anyone can develop Chronic Kidney Disease (CKD), certain groups are at significantly higher risk. People living with diabetes, hypertension, cardiovascular disease, obesity, or a family history of kidney disease are more likely to develop CKD. Lifestyle factors such as smoking, physical inactivity, and high salt consumption can further increase the risk. Identifying these high-risk groups allows healthcare professionals to target early screening and preventive digital health interventions, reducing disease progression and improving long-term outcomes (National Kidney Foundation, 2023; NICE, 2021).

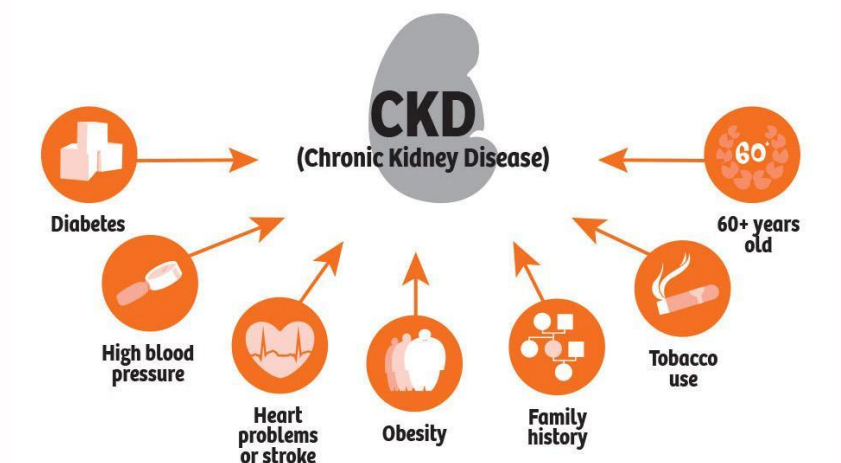


Fig: 2, (Smith, 2018)

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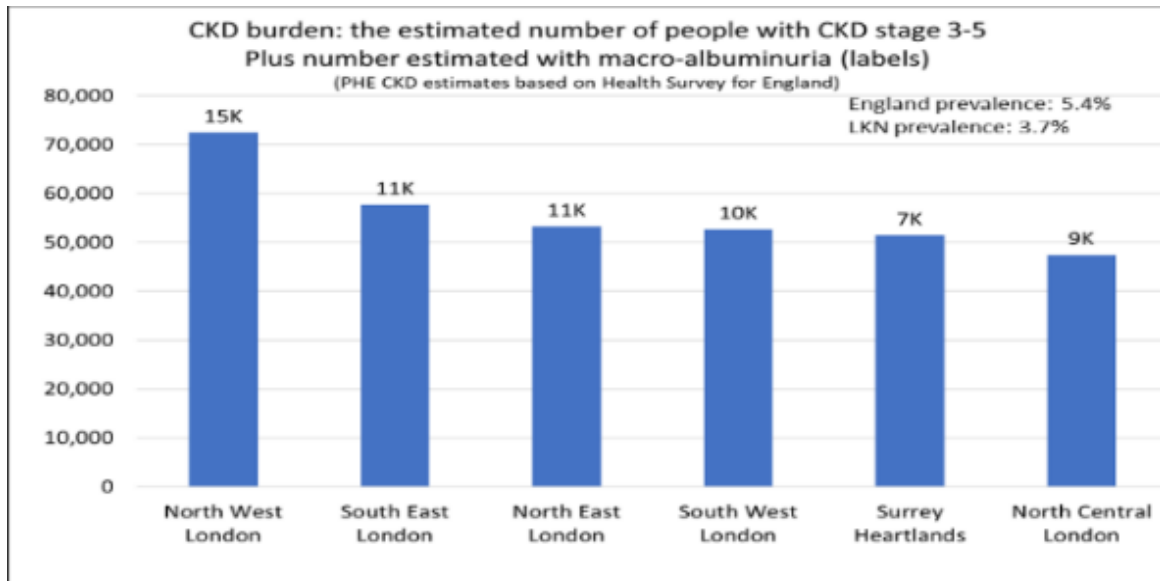


Fig. 3: Healthy.io and Reset Kidney Health Launch Virtual CKD Test (Kidneyluv, 2023)

### Digital Technology Making a Difference

One innovative example is Healthy.io, a smartphone-enabled home urine testing system integrated into NHS services. Individuals complete a urine albumin test at home using a dipstick, while their smartphone camera analyses the result and securely shares it with healthcare professionals (NHS England, 2023).

This digital intervention reduces the need for unnecessary clinic visits while encouraging earlier identification of kidney damage among people with diabetes or hypertension.

### Does It Really Improve Health?

Evidence suggests that digital home testing improves screening participation and patient engagement. Home-based testing increases convenience, reduces travel barriers, and supports timely referral for further investigation (Erez et al., 2022). Furthermore, NHS England reports that digital screening initiatives have increased the number of high-risk patients completing kidney health assessments (NHS England, 2023).

However, technology alone cannot eliminate health inequalities.

#### ► Watch

Healthy.io - smartphone selfcare for people with diabetes

[www.preventingdiabetes.nhs.uk/videos/digital-pathway-explainer](http://www.preventingdiabetes.nhs.uk/videos/digital-pathway-explainer)

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### ☑ Advantages

- ✓ Early diagnosis allows treatment before irreversible kidney damage occurs.
- ✓ Convenient home monitoring improves accessibility for patients with mobility difficulties.
- ✓ Increased patient engagement
- ✓ Reduced healthcare costs
- ✓ Supports self-management

### Challenges

Not everyone owns a smartphone or feels confident using digital technology. Older adults, individuals with limited digital literacy, and socioeconomically disadvantaged populations may be excluded (WHO, 2021). Concerns also remain regarding data privacy and over-reliance on digital systems without professional assessment. Another challenge is that smartphone-based technologies depend on reliable internet connectivity and compatible devices. Individuals living in rural communities or those experiencing financial hardship may not benefit equally, potentially widening existing health inequalities.

### Did You Know?

Healthy kidneys filter approximately **180 litres of blood every day**, helping remove waste products, regulate blood pressure, maintain electrolyte balance, and support overall health. Even mild reductions in kidney function can increase the risk of cardiovascular disease and other serious health complications (NIDDK, 2023).

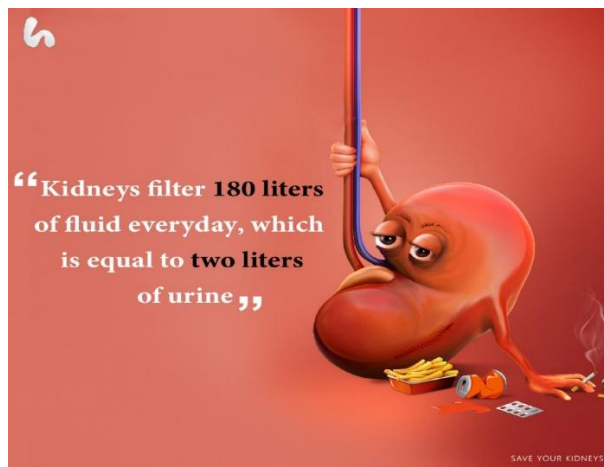


Fig:4, (CSS, 2024)

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### Looking Ahead

Future digital kidney screening programmes may incorporate artificial intelligence, wearable devices and predictive analytics to provide personalised prevention strategies.

To maximise impact, digital kidney screening should be combined with community education, multilingual support, digital literacy programmes and integration with GP services. Digital innovation should complement—not replace—clinical judgement.



Fig: 5 (Repose healthcare, 2026)

## Would you complete a five-minute kidney test at home if it could help prevent kidney failure?

### Reference List – Blog 1

CSS (2024). *We have two kidneys when we can live with one*. [online] Ccssprepforum. Available at: <https://cssprepforum.com/why-do-we-have-two-kidneys-when-we-can-live-with-one/> [Accessed 27 July 2026].

Erez, D.L., Derwick, H., Furth, S., Ballester, L., Omuemu, S., Adiri, Y., Mink, J. and Denburg, M. (2022). Dipping at home: Is it better, easier, and more convenient? A feasibility and acceptability study of a novel home urinalysis using a smartphone application. *Pediatric nephrology*. doi:10.1007/s00467-022-05556-8.

Johnson, O. (2025). *New study reveals increase in kidney disease identification using smartphone technology*. [online] Med-Tech insights. Available at: <https://med-techinsights.com/2025/06/23/new-study-reveals-increase-in-kidney-disease-identification-using-smartphone-technology/> [Accessed 22 July 2026].

KDIGO (2024). *CKD evaluation and management – kdigo*. [online] *Kdigo.org*. Available at: <https://kdigo.org/guidelines/ckd-evaluation-and-management/> [Accessed 22 July 2026].

Kidney research UK (2023). *Home*. [online] *Kidney Research UK*. Available at: <https://www.kidneyresearchuk.org/> [Accessed 22 July 2026].

Kidneyluv (2023). *Healthy.io and reset kidney health launch virtual CKD test*. [online] *Kidneyluv.com*. Available at: <https://www.kidneyluv.com/post/healthy-io-and-reset-kidney-health-launch-virtual-ckd-test> [Accessed 22 July 2026].

London kidney facts and figures (2023). *London kidney facts and figures*. [online] *LKN*. Available at: <https://londonkidneynetwork.nhs.uk/kidney-facts-and-figures/> [Accessed 22 July 2026].

National Kidney Foundation (2023). *Chronic kidney disease (CKD)*. [online] *National Kidney Foundation*. Available at: <https://www.kidney.org/kidney-topics/chronic-kidney-disease-ckd> [Accessed 27 July 2026].

NHS England (2023). *NHS England » NHS trials home testing for chronic kidney disease*. [online] *www.england.nhs.uk*. Available at: <https://www.england.nhs.uk/2023/12/nhs-trials-home-testing-for-chronic-kidney-disease/> [Accessed 22 July 2026].

NICE (2021). *Chronic kidney disease: Assessment and management | guidance | nice*. [online] *www.nice.org.uk*. Available at: <https://www.nice.org.uk/guidance/ng203> [Accessed 27 July 2026].

NIDDK (2019). *Chronic kidney disease (CKD)*. [online] *National Institute of Diabetes and Digestive and Kidney Diseases*. Available at: <https://www.niddk.nih.gov/health-information/kidney-disease/chronic-kidney-disease-ckd> [Accessed 27 July 2026].

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### ***How Digital Health is Transforming Early Detection of Chronic Kidney Disease***

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Repose healthcare (2026). *How to check kidney function at Home a practical UK guide*. [online] Repose healthcare. Available at: <https://reposehealthcare.co.uk/how-to-check-kidney-function-at-home/> [Accessed 24 July 2026].

Smith, D. (2018). *Chronic kidney disease: A global crisis*. [online] Siemens-healthineers.com. Available at: <https://www.siemens-healthineers.com/no/news/chronic-kidney-disease.html> [Accessed 27 July 2026].

WHO (2021). Global strategy on digital health 2020-2025. In: *WHO*. [online] Available at: <https://www.who.int/docs/default-source/documents/g4dhdaa2a9f352b0445bafbc79ca799dce4d.pdf> [Accessed 22 July 2026].

## Meet KidneyGuardian AI

### *A Future Digital Health Companion Designed to Prevent Chronic Kidney Disease*

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#### Why Did I Design KidneyGuardian AI?

##### Imagine Knowing Your Kidney Risk Before Symptoms Begin...

“What if your phone could identify your kidney disease risk months—or even years—before symptoms appear?”

My previous experience working in nephrology showed me that many patients sought medical attention only after irreversible kidney damage had occurred. This inspired me to design a digital solution focused on prevention rather than treatment. KidneyGuardian AI aims to empower individuals to recognise their personal risk earlier, improve self-management, and encourage healthier lifestyle behaviours through personalised digital support.

I designed KidneyGuardian AI, an intelligent digital health platform that combines artificial intelligence, wearable technology and personalised health coaching to prevent Chronic Kidney Disease (CKD). Artificial intelligence (AI) analyses patient data to estimate CKD risk and provide personalised recommendations. AI has the potential to improve preventive healthcare by supporting earlier risk prediction, personalised interventions and clinical decision-making (Topol, 2019).



Fig. 1: AI-Powered Smartwatch Health Monitoring (Syarifuddin, 2025)

#### How Does KidneyGuardian AI Work?

The app collects information from wearable devices and patient-reported data, including:

- ♥ Blood pressure
- 🩸 Blood glucose
- 🚶 Daily physical activity

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💧 Water intake

⚖️ Body weight

🍎 Dietary habits

Artificial intelligence analyses these data to estimate an individual's CKD risk and delivers personalised recommendations based on the **Health Belief Model**, encouraging users to recognise their susceptibility while motivating healthier behaviours (Rosenstock, 1974).

If abnormal patterns are detected, the app automatically recommends GP review and integrates securely with NHS digital health records.

#### **A Day with KidneyGuardian AI**

Throughout the day, KidneyGuardian AI continuously supports users in managing their kidney health. It records blood pressure from wearable devices, reminds users to drink adequate water, monitors physical activity, and provides personalised dietary recommendations. At the end of each day, the AI updates the individual's kidney risk score and provides tailored health advice. Regular personalised digital feedback has been shown to improve patient engagement and support healthier behaviours (Sarker et al., 2022).



Fig:2, (Ayurveda, 2025)

#### **How Could KidneyGuardian AI Transform Public Health?**

Unlike traditional health apps that simply count steps, KidneyGuardian AI focuses on **prevention**, helping individuals modify risk factors before kidney damage occurs.

Potential benefits include:

## Meet KidneyGuardian AI

### *A Future Digital Health Companion Designed to Prevent Chronic Kidney Disease*

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- ✓ Earlier identification of high-risk individuals
- ✓ Improved medication adherence
- ✓ Better lifestyle behaviours
- ✓ Reduced hospital admissions
- ✓ Lower NHS expenditure
- ✓ Increased patient empowerment

This supports the WHO vision of digitally enabled preventive healthcare (WHO, 2021).

#### **But No Technology is Perfect**

Artificial intelligence depends on high-quality data and may not perform equally across different populations. Individuals with limited digital literacy or poor internet access could experience digital exclusion (NHS England, 2022). Privacy and cybersecurity also remain significant ethical considerations.

While AI offers personalised care and earlier risk prediction, its effectiveness depends on data quality, user engagement and equitable access. Without addressing digital exclusion and privacy concerns, technological innovation alone may unintentionally widen health inequalities.

To address these challenges, KidneyGuardian AI would incorporate multilingual interfaces, voice-guided support, offline functionality, community digital education and robust NHS-approved encryption standards.

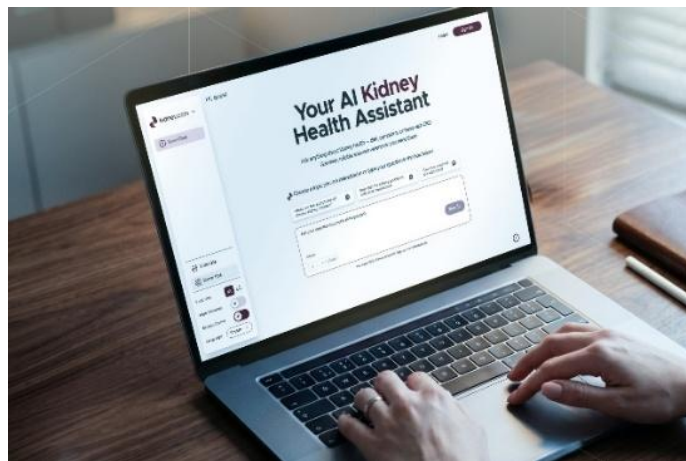


Fig:3 (M42, 2026)

KidneyGuardian AI demonstrates how artificial intelligence, wearable technology and personalised health promotion could shift kidney care from reactive treatment towards proactive prevention. Future evaluation through clinical trials would be necessary before implementation within NHS services.

## Meet KidneyGuardian AI

### *A Future Digital Health Companion Designed to Prevent Chronic Kidney Disease*

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 **What feature would you like to see in a future AI health app?**

#### Reference list:

Ayurveda, K. (2025). *AI in Kidney diagnosis: Game-Changer in 2025?* [online] Karma ayurveda. Available at: <https://www.karmaayurveda.in/ai-in-kidney-diagnosis-can-it-be-a-game-changer/> [Accessed 27 July 2026].

M42 (2026). *M42 launches kidney.com, bringing AI-powered education to the global fight against chronic kidney disease.* [online] M42.ae. Available at: <https://m42.ae/media-resources/news/m42-launches-kidneycom-bringing-ai-powered-education-to-the-global-fight-against-chronic-kidney-disease/> [Accessed 24 July 2026].

Rosenstock, I.M. (1974). *Historical origins of the health belief model on jstor.* [online] Jstor.org. Available at: <https://www.jstor.org/stable/45240621> [Accessed 24 July 2026].

Sarker, M.H.R., Moriyama, M., Rashid, H.U., Rahman, M.M., Chisti, M.J., Das, S.K., Saha, S.K., Arifeen, S. El, Ahmed, T. and Faruque, A.S.G. (2022). Chronic kidney disease awareness campaign and mobile health education to improve knowledge, quality of life, and motivation for a healthy lifestyle among patients with chronic kidney disease in Bangladesh: Randomized controlled trial. *Journal of Medical internet research*, 24(8), p.e37314. doi:10.2196/37314.

Syarifuddin, N.I. (2025). *AI-Powered smartwatch health monitoring.* [online] Dreamstime. Available at: <https://www.dreamstime.com/futuristic-smartwatch-generated-ai-displays-vital-health-metrics-like-heart-rate-blood-oxygen-levels-offering-real-image387334008> [Accessed 24 July 2026].

Topol (2019). *Topol, E.J. (2019) deep medicine how artificial intelligence can make healthcare human again. Basic books. - References - scientific research publishing.* [online] Scirp.org. Available at: <https://www.scirp.org/reference/referencespapers?referenceid=3758241> [Accessed 24 July 2026].

WHO (2021). Global strategy on digital health 2020-2025. In: *Global strategy of digital health.* [online] Available at: <https://www.who.int/docs/default-source/documents/gsdhdaa2a9f352b0445bafbc79ca799dce4d.pdf> [Accessed 24 July 2026].