CSIRO PUBLISHING

RESEARCH ARTICLE
https://doi.org/10.1071/SH26077

SEXUAL HEALTH

Digital versus clinic-based sexual health services: patterns of use and equity implications from a UK-based evaluation

Fiona Robertson[A,*] and Shaun McGill[B]

For full list of author affiliations and declarations see end of paper

***Correspondence to:**
Fiona Robertson
NHS Greater Glasgow and Clyde, Glasgow, UK
Email: fiona.robertson13@nhs.scot

Handling Editor:
Alissa Davis

Received: 20 March 2026
Accepted: 6 May 2026
Published: 1 June 2026

Cite this: Robertson F and McGill S (2026) Digital versus clinic-based sexual health services: patterns of use and equity implications from a UK-based evaluation. *Sexual Health* **23**, SH26077. doi:10.1071/SH26077

ABSTRACT

Background. Digital sexual health services have expanded rapidly in England; yet, concerns remain regarding equitable access among different population groups. We compared demographic characteristics and outcomes between online and clinic-based sexual health service users in Leicester, Leicestershire, and Rutland. **Methods.** A retrospective analysis of data (April 2019–June 2023) compared online contacts, via SH:24, a UK online sexual health service providing postal sexually transmitted infection (STI) testing and remote contraception, with in-clinic attendances. Demographic variables included age, gender, ethnicity and Index of Multiple Deprivation (IMD 2019) decile, where Deciles 1–2 represent the most deprived areas. Ethnicity was recoded into Office for National Statistics categories. Reasons for attendance, contraception methods, and STI test outcomes were analysed. Risk ratios with 95% confidence intervals compared proportions between modalities. **Results.** Online users were younger than clinic attendees (mean age, 25.1 vs 31.4 years). A slightly higher proportion of women accessed online services although gender was unrecorded in 59.1% of online attendances. White and mixed ethnicity groups were more likely to use online services than Black, Asian and 'Other' ethnic groups. Individuals living in the most deprived areas were less likely to access online services. STI testing was more frequent online (56.8% vs 43.3%), while positivity rates for infections were lower. **Conclusions.** Complementary to clinic-based sexual health services, online pathways provide accessible STI testing and contraception. Differences in uptake by age, ethnicity and deprivation highlight the importance of monitoring equitable access as digital provision expands. Maintaining both online and face-to-face provision is likely to remain important for equitable sexual health care.

Keywords: contraception, digital health, health inequalities, inclusion health, public health, service evaluation, sexual health services, STI testing.

Introduction

The rapid expansion of digital health services in the UK has transformed how sexual and reproductive health care is delivered. National strategies including the National Health Service Long Term Plan and post-COVID digital recovery frameworks that have encouraged increased use of remote, online, and self-managed care models to improve access and reduce pressure on face-to-face services.[1,2] In sexual health, online platforms now commonly offer sexually transmitted infection (STI) testing kits, remote contraceptive prescribing, and asynchronous consultations, enabling users to access care discreetly and flexibly from home.

There is growing evidence that such services can maintain or even improve key outcomes, including STI screening uptake, patient satisfaction, and service efficiency.[3,4] Large-scale evaluations of online sexual health services in England have demonstrated high levels of demand and return rates for postal STI testing kits, supporting their feasibility and acceptability.[5] During the COVID-19 pandemic, digital sexual health care played a critical role in maintaining service continuity and managing risk, particularly for asymptomatic testing and contraception.[6,7]

However, concerns have emerged about who is using these services and who may be excluded. Research suggests that online sexual health services are more likely to be used by individuals who are White, women, younger, and from less deprived areas.[8,9] A 2022

analysis of online postal testing in England found that ethnic minority users were under-represented, while men and women in the least-deprived quintiles were significantly more likely to access online chlamydia screening than those in the most deprived quintiles.[8] Barriers to access include lack of digital devices or private Internet access, lower digital literacy, language constraints, and concerns about test accuracy or confidentiality.[10,11]

National guidance now emphasises the importance of hybrid service models that combine the convenience of online options with the inclusivity of face-to-face care. The 2023 UK Integrated Sexual Health Service Specification states that digital pathways must not replace in-person services, particularly for populations experiencing structural barriers or complex needs.[12] Additionally, experts call for more robust demographic monitoring and user-informed service design to ensure equity and responsiveness in digital health provision.[13,14]

Neighbourhood deprivation is strongly associated with patterns of healthcare utilisation, including sexual health service access, through mechanisms such as digital access, health literacy, and structural barriers to care.[15] Leicester, Leicestershire, and Rutland (LLR) include areas of substantial socio-economic and ethnic diversity, making it an appropriate setting to explore whether digital services are accessed equitably across population groups.

In the UK, online sexual health services have been implemented to complement rather than replace face-to-face care. Digital triage pathways typically direct individuals with symptoms or more complex clinical needs towards in-person assessment. As a result, clinic cohorts are expected to include a higher proportion of individuals at increased likelihood of STI diagnosis, while online services may be used more frequently for routine testing and contraception. This distinction is important when interpreting differences in outcomes between modalities.

Despite these concerns, few studies have quantitatively compared patterns of service use between online and face-to-face settings within the same population. This service evaluation seeks to address this gap by comparing demographic patterns and service outcomes for individuals accessing online and clinic-based sexual health services in LLR. The aim is to understand whether digital services are equitably accessed across age, gender, ethnicity, and deprivation levels, and whether they expand reach or simply displace existing care.

Methods

Study design and setting

This retrospective service evaluation compared online and in-person sexual health service use in LLR from April 2019 to June 2023. Services were operated via the SH:24 online platform, a UK online sexual health service providing postal STI testing and remote contraception, and three physical sexual health clinics.

Data sources and preparation

Routinely collected and de-identified records were obtained for 123,195 interactions. Extracted variables included age, gender, ethnicity, disability status, attendance reason (STI testing vs contraception), contraception method, STI tests, and their results. The Index of Multiple Deprivation (IMD 2019) was used as a measure of neighbourhood socio-economic deprivation, where Decile 1 represents the most deprived areas and Decile 10 represented the least deprived. IMD was analysed categorically to align with public health reporting and facilitate interpretation across deprivation groups, avoiding assumptions of a linear relationship with service use.

Variables requiring reformatting to support analysis included ethnicity, which was recoded into Office for National Statistics five-category groups (White, Black, Asian, Mixed, and Other) to harmonise datasets.[16] Contraception analysis was limited to oral methods (progesterone-only pill (POP), combined oral contraception (COC), and emergency contraception (EC)). In addition, clinic attendances for long-acting reversible contraception (LARC) or barrier methods were excluded as these are not offered or able to be physically delivered by online services. STI outcomes were grouped as 'positive/confirmed/reactive' versus 'not confirmed' (clinic data recorded positives only whereas online included negatives, haemolysed, and unprocessed).

Statistical analysis

Descriptive statistics summarised user characteristics and service use by modality. Risk ratios (RR) with 95% confidence intervals (CI) compared proportions, using in-person clinic attendance as reference. Analyses were conducted using RStudio software (ver. 2023.03.1).

Ethics

Ethical approval was not required for this service evaluation, which used anonymised raw data and presented findings in aggregate only.

Results

Service use overview

A total of 123,195 service interactions were recorded between 2019 and 2023, with 60.5% being online and 39.5% in clinic.

Demographics

User characteristics are summarised in Table 1. Online users were younger than clinic attendees (mean age, 25.1 vs 31.4 years) and represented a broader age distribution than clinic users. A slightly higher proportion of women accessed online services (RR 1.04, 95% CI 1.03–1.05); however, gender was

Table 1. Demographic characteristics of online versus clinic-related attendances.

Variable	Clinic (*n*, %)	Online (*n*, %)	Risk ratio (95% CI)
Age (years)			
Mean	31.4	25.1	–
Median	29	23	–
Range	12–85	15–77	–
Gender			
Women	29,410 (62.4%)	19,679 (64.9%)	1.04 (1.03–1.05)
Men	17,586 (37.3%)	10,635 (35.1%)	0.94 (0.92–0.96)
Not known	1908 (3.9%)	43,876 (59.1%)	15.19 (14.53–15.88)
Ethnicity			
White	30,484 (63.7%)	53,321 (71.2%)	1.12 (1.11–1.31)
Black	4975 (10.4%)	7228 (9.6%)	0.92 (0.90–0.97)
Asian	7002 (14.6%)	5583 (7.5%)	0.51 (0.49–0.53)
Mixed	2560 (5.3%)	6574 (8.8%)	1.65 (1.60–1.75)
Other	804 (1.7%)	466 (0.6%)	0.36 (0.33–0.42)
Not known	2036 (4.3%)	1018 (1.4%)	0.33 (0.31–0.36)
Deprivation decile (IMD 2019)[A]			
IMD 1	5052 (10.4%)	6891 (9.3%)	0.89 (0.86–0.92)
IMD 2	4287 (8.8%)	6017 (8.1%)	0.92 (0.90–0.94)
IMD 3	6841 (14.1%)	10,833 (14.6%)	1.04 (1.01–1.07)
IMD 4	4692 (9.7%)	6885 (9.3%)	0.96 (0.93–1.00)
IMD 5	4458 (9.2%)	7573 (10.2%)	1.11 (1.07–1.15)
IMD 6	3695 (7.6%)	5899 (8.0%)	1.05 (1.00–1.09)
IMD 7	5031 (10.4%)	7596 (10.2%)	0.99 (0.96–1.02)
IMD 8	5185 (10.7%)	8331 (11.2%)	1.05 (1.02–1.09)
IMD 9	4648 (9.6%)	7220 (9.7%)	1.02 (0.98–1.05)
IMD 10	4635 (9.6%)	6876 (9.3%)	0.97 (0.94–1.01)

[A]IMD 1, most deprived; IMD 10, least deprived.

not recorded in 59.1% of online attendances compared with 3.9% of clinic visits. When contraception-related visits were excluded, gender remained unrecorded in 16.5% of online contacts (RR 4.22, 95% CI 4.06–4.74). Non-binary gender data were not recorded in any online service records.

White (RR 1.12, 95% CI 1.11–1.31) and mixed ethnicity groups (RR 1.67, 95% CI 1.60–1.75) were more likely to access online services, whereas Black (RR 0.92), Asian (RR 0.51), and 'Other' ethnic groups (RR 0.36) were under-represented.

Individuals living in the most deprived areas (IMD Deciles 1 and 2) were less likely to access online services (RR 0.89 and 0.92), with overall online uptake increasing as deprivation decreased.

Contraception

Contraception-related attendances differed between service types. A lower proportion of online attendances were contraception-related compared with clinic attendances (42.2%, $n = 31{,}625$ vs 43.9%, $n = 21{,}535$; RR 0.97, 95% CI 0.96–0.98). Methods used during contraception-associated visits are summarised in Table 2. These totals include LARC, which is delivered in clinic settings and not fully represented in Table 2.

All oral methods of contraception were used more frequently online compared with clinic attendances, with POP, COC, and EC used 3.04, 4.50, and 6.65 times more often, respectively. In contrast, the proportion selecting 'no method' was significantly lower online compared with clinic attendances (RR 0.13, 95% CI 0.11–0.14). In this context, 'no method' includes individuals using non-prescribed or clinic-dependent methods such as barrier contraception or LARC (intrauterine devices, implants and injections), which are not routinely provided through online services.

STI testing

The proportion of STI compared to contraception-related attendances was higher online versus in clinic (56.8% ($n = 42{,}565$), vs 43.2% ($n = 21{,}217$), respectively, RR = 1.31), with a lower proportion of positive STI test results being recorded online compared to in clinic, as outlined in Table 3. Of note, no positive hepatitis B/C results were recorded; however, testing was more frequent online (RR 1.30).

Discussion

This evaluation highlights demographic differences in digital versus clinic-based sexual health services in LLR. Increased

Table 2. Contraception outcomes by service modality (oral methods; excluding long-acting reversible contraception (e.g. intrauterine devices, implants and injections).

Method	Clinic (*n*, %)	Online (*n*, %)	Risk ratio (95% CI)
Progesterone-only pill (POP)	1094 (5.1%)	10,865 (34.4%)	3.04 (2.86–3.21)
Combined oral contraceptive (COC)	521 (2.4%)	7700 (24.3%)	4.50 (4.14–4.91)
Emergency contraception (EC)	440 (2.0%)	9676 (30.6%)	6.65 (6.12–7.36)
No method	7597 (35.3%)	3384 (8.0%)	0.13 (0.11–0.14)

Table 3. STI outcomes by service modality.

Test	Clinic tested	Online tested	Clinic positive	Online positive	Risk ratio (RR)	95% CI
Gonorrhoea	21,217	42,565	2161	482	0.11	0.10–0.12
Chlamydia	20,943	42,565	2736	2585	0.47	0.44–0.49
Syphilis	17,102	30,558	797	151	0.11	0.09–0.13
HIV	16,621	20,166	147	81	0.45	0.35–0.60
Hepatitis B/C	8661	9907	0	0	–	–

HIV, human immunodeficiency virus.

online access was observed among younger individuals, those of White or mixed ethnicity, and residents of less deprived areas. These findings mirror national and international evidence of digital exclusion among ethnic minority and socio-economically disadvantaged populations.[8,9,17]

These findings indicate that online services are more frequently used for STI screening and oral contraception, with significantly lower STI positivity rates compared to clinic-based testing. This likely reflects differences in service pathways and case mix. Online services may be more commonly used for routine or opportunistic testing, whereas clinics may see a different case mix, potentially including a higher proportion of individuals with complex or symptomatic presentations. However, reasons for testing were not captured in the dataset, and other explanations such as differences in health-seeking behaviour between users cannot be excluded.[6,10]

The significantly higher uptake of oral contraception through online services reflects potential differences in service design and accessibility. Online provision allows rapid access to repeat or short-term contraception without clinic attendance, which may particularly benefit individuals seeking timely access following contraceptive lapses or requiring ongoing contraception. Similar advantages may apply to STI testing, where online services offer convenience, privacy and timely access, potentially lowering barriers to testing for some users. While lower STI positivity suggests online users may represent a lower-risk group for infection, higher uptake of contraception may also reflect unmet contraceptive need among digitally engaged users rather than lower overall sexual health risk.

National guidance now emphasises the importance of hybrid service models that combine the accessibility of digital platforms with the inclusivity of face-to-face care.[12,14] These findings suggest that online and clinic-based services serve complementary roles within sexual health systems. Differences in demographic characteristics and positivity rates are likely influenced by both user preference and service design, including triage processes that direct symptomatic or higher-risk individuals toward in-person care. Rather than indicating substitution of one modality for another, the results support the interpretation that hybrid models enable different patient needs to be met across pathways. Continued monitoring of equity of access and improved demographic data completeness remain important as digital provision expands.

Strengths and limitations

Strengths of this evaluation include the use of a large, real-world dataset spanning 4 years and the direct comparison of online and clinic-based services within the same geographic population. This allowed for robust analysis of demographic patterns and service outcomes across modalities.

A limitation of the online dataset was the high level of missing demographic data. Gender was not recorded in 59.1% of online attendances, compared to just 3.9% in clinic records. Even when excluding contraception-related visits, 16.5% of online records still lacked gender data. Additionally, no non-binary gender identities were recorded online, and disability status was poorly captured across both modalities. These gaps hinder our ability to fully assess equity of access and may introduce bias, particularly if missing data are systematically associated with specific user groups. The harmonisation of ethnicity categories allowed for comparison of both datasets but may have obscured more granular differences. Additionally, differences in outcome recording such as the inclusion of unprocessed or haemolysed STI tests in online data versus confirmed positives in clinic data limit direct comparability. Further qualitative research (e.g. interviews with underserved groups) would complement these findings and help inform more inclusive service design.

Conclusion

Online sexual health services in LLR now represent a substantial component of service delivery and play a significant role alongside clinic-based care in delivering STI testing and contraception. Differences in uptake by ethnicity and deprivation highlight the need to monitor equitable access as digital provision expands. Hybrid models that combine online and face-to-face services are likely to remain important for delivering equitable sexual health care.

References

1 Department of Health and Social Care. Fit for the future: 10 year health plan for England. NHS England; 2025.
2 Hutchings R. The impact of COVID-19 on the use of digital technology in the NHS. Nuffield Trust; 2020.
3 British Association for Sexual Health and HIV (BASHH). Standards for Online and Remote Providers of Sexual and Reproductive Health Services. BASHH; 2018.
4 Melville C. Digital provision of sexual and reproductive healthcare: promising but not a panacea. *BMJ Sex Reprod Health* 2020; 46(4): 239–241. doi:10.1136/bmjsrh-2020-200668
5 Gibbs J, Stirrup O, Tostevin A, *et al.* Sexually transmitted infection testing and key outcomes following implementation of online postal self-sampling into sexual health services in England: a retrospective observational study of routinely collected service-level healthcare data. *Lancet Reg Health Eur* 2025; 61: 101541. doi:10.1016/j.lanepe.2025.101541
6 Bennett C, Kelly D, Dunn C, Musa MK, Young H, Couzens Z, *et al.* 'I wouldn't trust it . . .' Digital transformation of young people's sexual health services: a systems-informed qualitative enquiry. *BMJ Public Health* 2023; 1: e000259. doi:10.1136/bmjph-2023-000259
7 Ma R, Foley K, Saxena SK. Access to and use of contraceptive care during the first COVID-19 lockdown in the UK: a web-based survey. *BJGP Open* 2022; 6(3): BJGPO.2021.0218. doi:10.3399/BJGPO.2021.0218
8 Howarth A, Harb A, Mohammed H, *et al.* Inequalities in uptake of online postal STI testing in England: a cross-sectional study. *Lancet Publ Health* 2022; 7(10): e825–e834.

9 Estacio EV, Whittle R, Protheroe J. The digital divide: socio-demographic factors and health literacy. *J Health Psychol* 2019; 24(12): 1668–1675. doi:10.1177/1359105317695429

10 Paddison CAM, McGill I. Digital primary care: improving access for all? Nuffield Trust; 2022.

11 Almathami HKY, Win KT, Vlahu-Gjorgievska E. Barriers and facilitators that influence telemedicine-based, real-time, online consultation at patients' homes: systematic literature review. *J Med Internet Res* 2020; 22(2): e16407. doi:10.2196/16407

12 Department of Health and Social Care. Integrated Sexual Health Service Specification. UK Government; 2023.

13 Bennett, C, Musa, MK, Carrier, J, *et al.* The barriers and facilitators to young people's engagement with bidirectional digital sexual health interventions: a mixed methods systematic review. *BMC Digit Health* 2023; 1(30). doi:10.1186/s44247-023-00030-3

14 Jones J, Seaborne M, Cowley L, *et al.* Population birth outcomes in 2020 and experiences of expectant mothers during the COVID-19 pandemic: a 'born in Wales' mixed methods study using routine data. *PLoS One* 2022; 17(5): e0267176. doi:10.1371/journal.pone.0267176

15 Marmot M, Allen J, Goldblatt P, Herd E, Morrison J. Build Back Fairer: The COVID-19 Marmot Review – The Pandemic, Socioeconomic and Health Inequalities in England. London: Institute of Health Equity; 2020.

16 Race Disparity Unit. Standards for Ethnicity Data. UK Government; 2023. Available at https://www.gov.uk/government/publications/standards-for-ethnicity-data

17 Spurway C, Williams I, Ayinde OC, *et al.* Remote consultations in sexual and reproductive health services: a systematic review of evidence on effectiveness, cost-effectiveness, experiences, access and equity. *Sex Transm Infect* 2026; 102(2): 109–122. doi:10.1136/sextrans-2024-056458

Data availability. The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy restrictions.

Conflicts of interest. The authors declare no conflicts of interest.

Declaration of funding. This study received no external funding.

Acknowledgements. The authors thank Clare Mills from Leicester City Council for support, and David Cupit and Kimberley Davies on behalf of the MPFT for granting access to and sharing their data.

Author affiliations

[A]NHS Greater Glasgow and Clyde, Glasgow, UK.

[B]Leicestershire County Council, Leicester, UK.