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DIY audiology at home: adults are interested in conducting self-administered hearing tests and trying fit-at-home hearing aids

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ABSTRACT

Objective: To survey public attitudes about self-administered home-based hearing tests and fit-at-home hearing aids.

Design: Online survey enquiring about willingness to try the above. Explanatory variables included sex, age, and education.

Study Sample: A representative sample of 2135 UK adults.

Results: Only 13% of respondents were unwilling to undertake a home-based hearing test. Perceived benefits of home-based testing were associated with convenience and ease, and its use as a precursor to a formal hearing test. Main concerns were associated with accuracy and reliability. Regarding hearing aid fitting pathways, 71%, 63% and 79% were willing to try a pre-programmed, self-programmed or audiologist-fit hearing aid, respectively. Respondents' preferred pathways were 37% fit-at-home (26% and 11% for pre-programmed and self-programmed, respectively) and 53% for audiologist-fit (10% responded "Don't Know"). Adults >65 years were less willing to complete and/or trust a home-based hearing test, and less willing to try fit-at-home hearing aids.

Conclusion: Most adults reported a willingness to conduct home-based hearing tests and to try fit-at-home hearing aids. These pathways have the potential to shift care closer to home and provide innovative sustainable pathways for a proportion of the public. Their effectiveness combined with user preference has yet to be evaluated.

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Introduction

Hearing loss is the most prevalent sensory impairment, with ageing being its primary contributing factor (Jacobs and Ellis 2025). The main intervention for hearing loss is amplification. An adult requiring a hearing aid will have multiple face-to-face consultations with a hearing professional involving: (i) assessment of hearing and listening needs, (ii) prescription and fitting of hearing aids, and (iii) ongoing support. Despite compelling evidence that hearing aids are effective (Ferguson et al. 2017), there are concerns that the traditional fitting pathway has been relatively ineffective with low and slow uptake of hearing aids (Davis et al. 2007).

Digital health technologies have the potential to complement existing hearing care pathways by

increasing choice and facilitating self-administered home-based hearing assessment and fit-at-home hearing aids. However, the views of the public have not been widely reported: this is the focus of the current study. The utility of alternative care was evident during the covid-19 pandemic, and there is continued interest in no and low-touch support from both hearing professionals and patients (Bennett et al. 2023; Blyth and Saunders 2024; D'Onofrio and Zeng 2021; Saunders and Roughley 2021). Digital technologies available today allow for care that can completely bypass hearing professionals. Such digital care pathways include: (i) hearing assessment websites and applications that can be downloaded onto smart phones and tablets (Almufarrij et al. 2023), and (ii) direct-to-consumer [DTC] hearing aids, sometimes referred to as over-the-counter [OTC] devices, that may be programmed by

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the user (Almufarrij et al. 2019). Despite growing interest in OTC hearing aids, data on their efficacy and effectiveness are primarily limited to small-scale studies with varying methodologies. As such, there is a need for high-quality evidence regarding their real-world benefits. With appropriate support, such as multimedia educational programmes, these options could be offered as alternative pathways within current care systems, many of which are overstretched in terms of staff and financial support. In addition to relieving stress on established systems, these alternative pathways may have the added benefit of increasing uptake of hearing care by: (i) allowing patient choice, (ii) increasing convenience, for example, time and frequency of engagement, (iii) reducing medicalisation and stigma, and (iv) encouraging help-seeking at a younger age when hearing loss is less marked.

In health and care systems, including those in countries within the Organisation for Economic Cooperation and Development (OECD), there are increasing concerns about long waiting lists and waiting times (OECD 2020). These have been triggered by the imbalance between the supply and demand of health services. In England, for example, the issue is particularly pronounced in non-urgent treatment, where the National Health Service (NHS) standard of treating >90% of patients within 18 weeks from referral has not been met since 2015 (Royal College of Surgeons England 2021). Delays in help seeking for hearing loss, which are exacerbated by long waiting times, worsen communication difficulties and overall quality of life, and may make adjustment to hearing aids more difficult. Since waiting times reflect the functioning of the health system as a whole, they provide an opportunity for policymakers to trigger changes to improve the appropriateness, responsiveness and efficiency in health service delivery and, in the process, making health systems more people-centred (OECD 2020). Self-administered home-based hearing assessment and fit-at-home hearing aids have the potential to boost the efficiency and effectiveness of service provision regardless of whether the hearing care system relies on private health insurance or socialised care.

There is growing evidence of the benefits of giving patients choice in management of their health. Shared decision-making in healthcare is a collaborative process where patients and healthcare professionals work together to make decisions combining evidence-based information with patient preferences. A Cochrane review on decision aids revealed that these can improve knowledge and confidence and, as a result,

patients are less likely to remain undecided about their care (Stacey et al. 2017). For example, a review on depression, anxiety and eating disorders by Johnson et al. (2025) revealed that offering patients a choice of interventions improved outcomes for depression and reduced therapy dropout in the combined sample across the three disorders. Likewise, incorporating patient preference in hearing care may improve hearing aid uptake and adherence.

Some governments have prioritised the move to digital care pathways for their health systems, for example, Department of Health and Social Care (2025). Public opinion about new digital care pathways is important because these have the potential to change the way the public will engage with hearing care. However, opinions as they pertain to the proposed hearing care pathways discussed above are largely unknown. There are a number of questions to be addressed before evaluating the effectiveness of providing a choice of service delivery pathways. Three of these questions were evaluated in an online survey. Specifically, we evaluated the proportion of potential future patients who would:

1. Be willing to conduct a self-administered home-based hearing assessment that was recommended by the healthcare system (here, the UK NHS);
2. Be willing to try home-based pre-programmed and/or self-programmed hearing aids provided by the healthcare system; and
3. Prefer audiologist-fit or home-fit (pre-programmed or self-programmed) hearing aids.

The aim of this exploratory online survey was to elicit the views of a representative sample of UK adults regarding the above. Although the survey was conducted within the UK, where the NHS is the dominant provider of health care, the findings may be relevant to different countries and other healthcare settings. The findings have the potential to shape future studies on the clinical and cost-effectiveness of alternative hearing care pathways, based on user preference, with a view to informing policy and clinical care.

Methods

Respondents

Respondents were adults living in the United Kingdom. These individuals were selected by YouGov PLC UK (an internet-based market research service) from members of their panel *via* a process designed

to produce a nationally representative sample with respect to age, gender, education level, geographical region of the United Kingdom, and social grade/socio-economic group. Of the 2192 individuals who completed the survey, data from 57 (2%) were removed from the analyses due the open-ended responses having content and response style that appeared to have been generated by AI (e.g. ChatGPT; see Supplementary File 1 for demographic information relating to these respondents and their responses). In any case, a sensitivity analysis showed that including these cases had minimal effects on estimates and would not have altered interpretation of the findings.

The University of Manchester considered the survey as ethically exempt because it fell within the category of de-identified and non-sensitive market research (ref: 2025-22849-40296).

Online survey

The 13 online survey questions with response options (in *italics*) are shown in the [Appendix](#). The questions were finalised in collaboration with YouGov colleagues who are experienced at the phrasing of survey questions for the public, but we did not pilot before use. The questions were embedded into a daily YouGov survey, which included questions on a variety of different topics, as well as questions about sex, age, highest education level, employment, household salary and geographical location. The survey was completed between 27th - 28th March 2025. Survey questions addressed the following topics:

- a. Rating of hearing and use of hearing aids;
- b. Willingness to have a hearing test;
- c. Opinions about home-based hearing testing using an NHS-recommended website/app,
- d. Willingness to try a hearing aid if needed; and
- e. Opinions about three potential fitting pathways: (i) hearing aid(s) sent from the NHS ready to use (i.e., pre-programmed); (ii) hearing aid(s) sent from the NHS ready to set up (i.e., self-programmed); and (iii) a visit to a hearing professional/audiologist for a standard hearing aid fitting (i.e., audiologist-fit).

To target the clinical population of potential users of the home hearing test, respondents who were unwilling to have a hearing test ($n=110$) or responded 'don't know' ($n=37$) to the question relating to willingness to try a hearing test, were not asked

questions specific to home-based testing. Those excluded tended to be younger and less likely to have had a previous hearing test (see [Supplementary File 2](#)). Of the 2135 respondents, 1988 were asked the question about willingness to have a self-administered hearing test at home. To target the clinical population of potential new hearing aid users, respondents who were unwilling to try hearing aids even if needed ($n=146$), responded 'don't know' to the question relating to willingness to try a hearing aid ($n=67$), or had previously been told that they needed a hearing aid ($n=196$), were not asked questions specific to hearing aid fitting pathways. Those excluded were less likely to self-report having a hearing loss, less likely to have had a hearing test and more likely to be male (see [Supplementary File 2](#)). Of the 2135 respondents, 1726 were asked about willingness to try the each of the three hearing aid pathways and their overall preferred pathway. All but two items were answered in closed-set format. The two items that requested open-ended responses asked about (i) perceived benefits and (ii) perceived problems of testing hearing at home.

Procedure

Members of the public who were signed up to the YouGov survey platform were invited to complete the survey via an email with a link to the survey. Consent is assumed if they click on the link that takes them to the survey questions. Completion rates of different demographics were monitored by YouGov to ensure the final sample was representative of the desired sample population – in this case, to be representative of the UK public in terms of age, gender, education level, geographical region of the United Kingdom, and social grade/socio-economic group. Once the desired number of respondents was reached the survey link became inactive.

Analysis

The figures presented in this manuscript from the online surveys have been analysed independently by the co-authors and use raw data without the YouGov weighting; results relate to clinical populations of potential users of the hearing test and hearing aids rather than the UK general population as a whole, and we do not have population data on these groups to enable weighting. For demographic tables and bar charts, categorical responses to questions were summarised with number and percentage, using the total

number of responders to that question as the denominator. Exploratory regression analyses were used to explore the relationship between our key outcomes and a set of explanatory variables (defined below) selected prior to analysis (but not before data collection) by the clinical collaborators based on prior knowledge as being likely to be related to the key outcomes and unlikely to be strongly correlated with each other. The number of covariates was restricted to ensure stable estimates (using a rough rule of thumb of 20 events per variable). Logistic regression was used for binary outcomes relating to willingness and trust. Multinomial logistic regression was used for the 3-level outcome of preferred hearing aid fitting pathway. The reference categories for regression were chosen to aid interpretation, using either the “first” group, or in the case of age, the target group for initiating intervention. Any respondent answering “*I don’t know*” to a key outcome was excluded from the relevant regression analysis. Respondents with missing covariate data relating to education, hearing difficulty or having a prior hearing test were included in regressions using a covariate to indicate missingness; the estimates relating to these covariates are not reported in tables or plots below. This approach was chosen to enable the inclusion of all participants with outcome data, without the use of imputation (due to the expectation that missing covariate data would be unlikely to be “missing at random”).

Key outcomes of interest:

- i. Being very or fairly willing to take a home-based test
- ii. Extent to which respondent would trust the results of home-based testing
- iii. Being very or fairly willing to try each of the three hearing-aid fitting pathways (self-fit pre-programmed, self-fit self-programmed and audiologist-fit).
- iv. The preferred pathway.

Explanatory Variables:

- i. Highest level of education completed, categorised as secondary school (reference), further (college), higher (university) or missing;
- ii. Gender categorised as female (reference) or male (no respondent selected other options);
- iii. Age in 7 categories, 18–24, 25–34, 35–44, 45–54, 55–64 (reference), 65–74, 75+;
- iv. Hearing difficulty categorised as not much/no (reference), fair amount/a lot or missing;

- v. Previously had a hearing test categorised as no (reference), yes or missing.

Responses to the two open-ended questions (‘*What do you think would be the main benefit of testing your hearing at home?*’ and ‘*What do you think would be the main problem of testing your hearing at home?*’) were analysed using inductive content analysis (Kyngäs 2020). This was achieved in a two-step process using NVivo 14 (QSR International 2025). First, the data were reduced by assigning open codes to each response. Where multiple concepts were described within a response, multiple codes were assigned. For example, the response “*Easy to access, can do when convenient, no need to book an appointment or take time off*” was given four codes “access”, “convenience”, “no appointment” and “no time off”. Second, similar codes were grouped together to form categories. The codes within each category were then further grouped into sub-categories, as considered appropriate. In a third step, the number of codes within each category was recorded because it is of interest here to learn which categories most commonly underlie the barriers and facilitators to home hearing testing.

Results

Table 1 provides a summary of the sample characteristics, which are representative of the UK (e.g. slightly more female than male, the majority between 25 and 74 years of age, largest number of respondents living in England).

Self-administered home-based hearing test

Figure 1 shows responses to questions about willingness to conduct a self-administered hearing test at home and trust in the results by age group. Of the 1988 respondents who were willing to or neutral about having any form of hearing test, 1342(68%) said they would be willing or very willing to take a self-administered home-based hearing test (top panel) and 1267(63%) said that they would trust in the results either a lot or a little (bottom panel). A minority of respondents (257, 13%) said they would be unwilling to perform a home-based hearing test (top panel), and 574 (29%) said they would not trust the findings of a home-base hearing test very much or at all (bottom panel). There was some variability by age-group with the proportion of respondents unwilling to conduct a self-administered test highest amongst those in the 75+ age group (33% vs 13% overall). The proportion of respondents who would not trust

Table 1. Summary of sample characteristics.

	n (%)
Total number	2,135 (100%)
Gender	
female	1,102 (51.6%)
male	1,033 (48.4%)
Age	
18–24	225 (10.5%)
25–34	320 (15.0%)
35–44	378 (17.7%)
45–54	337 (15.8%)
55–64	389 (18.2%)
65–74	358 (16.8%)
75+	128 (6.0%)
Self-reported hearing loss	
not much/no	1,794 (84.0%)
fair amount/a lot	282 (13.2%)
not recorded	59 (2.8%)
Previous hearing test	
no	1,078 (50.5%)
yes	931 (43.6%)
not recorded	126 (5.9%)
Highest level of education	
secondary	721 (33.8%)
further	498 (23.3%)
higher	805 (37.7%)
Not recorded	111 (5.2%)
Gross household income	
£34,999 or less	724 (33.9%)
£35,000 to £59,999	444 (20.8%)
£60 000 or more	480 (22.5%)
Don't know/prefer not to answer	487 (22.8%)
Region	
Southern England	740 (34.7%)
Northern England/ Midlands	1,055 (49.4%)
Scotland/Northern Ireland/Wales	340 (15.9%)

the results at all/very much was also highest in the 75+ age group (46% vs 29% overall).

Figure 2 (top panel) shows the odds ratios and 95% confidence intervals from the logistic regression analysis of factors related to willingness to take a self-administered home-based hearing test (left panel) and the extent to which respondents would trust the results (right panel) (see Supplementary file 3 for full results of analysis).

Adults who had been in higher education were more likely to trust the results of a home-based hearing test (OR 1.33; 95% CI 1.04 to 1.59) than those whose highest level of education was secondary level.

Respondents in the older age groups tended to be less likely to be willing to conduct a home-based hearing test and less likely to trust the results than those in the 55–64 age group: willingness to conduct self-administered home hearing test 75+ vs 55–64 OR 0.42; 95% CI 0.27 to 0.65; Trust in the results: 65–74 vs 55–64 OR 0.67; 95% CI 0.48 to 0.94 and 75+ vs 55–64 OR 0.37; 95% CI 0.24 to 0.59.

There was no evidence that gender, having had a prior hearing test, and self-rated hearing were related to the likelihood of being willing to complete a self-administered home hearing test or trust the results.

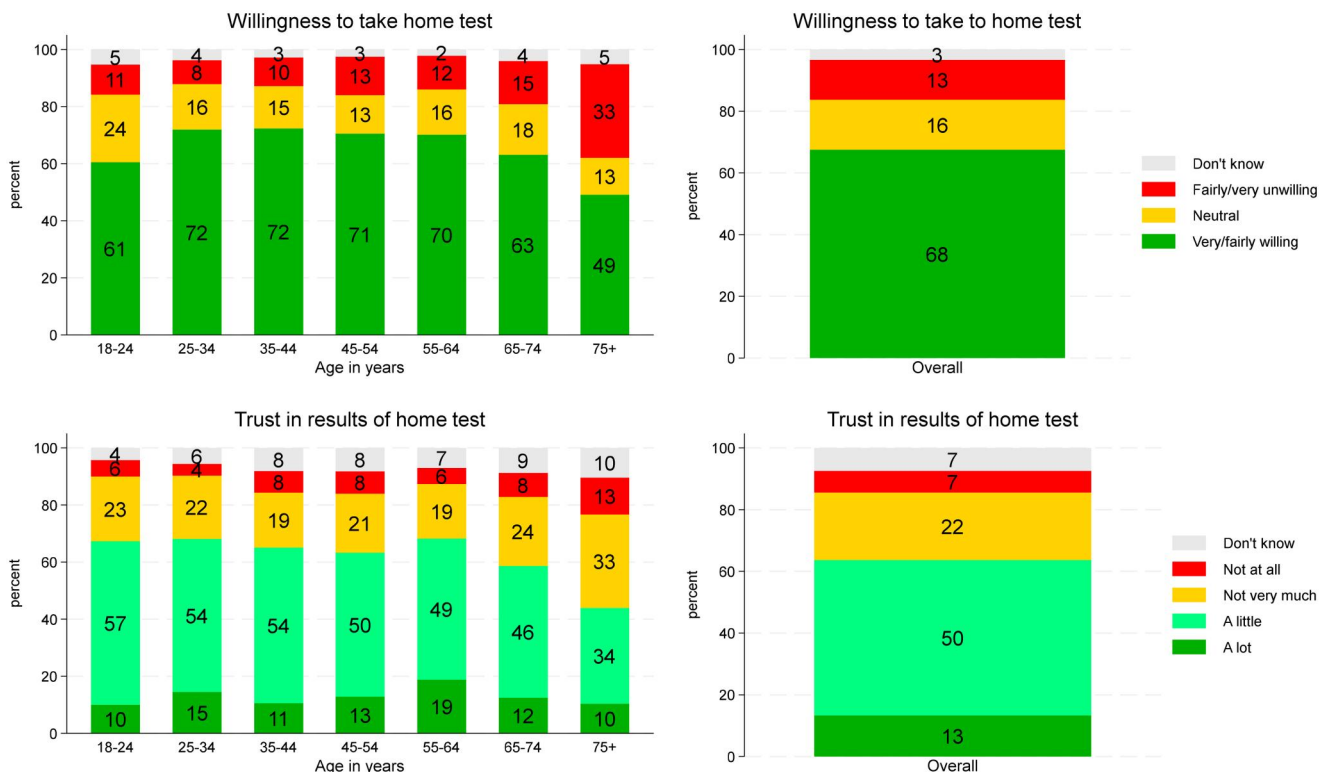


Figure 1. Willingness to complete a self-administered home-based hearing test (top panels) and trust the findings (bottom panels). Numbers on bars represent percentage of responses. N = 1988 respondents who were willing or neutral to taking a hearing test.

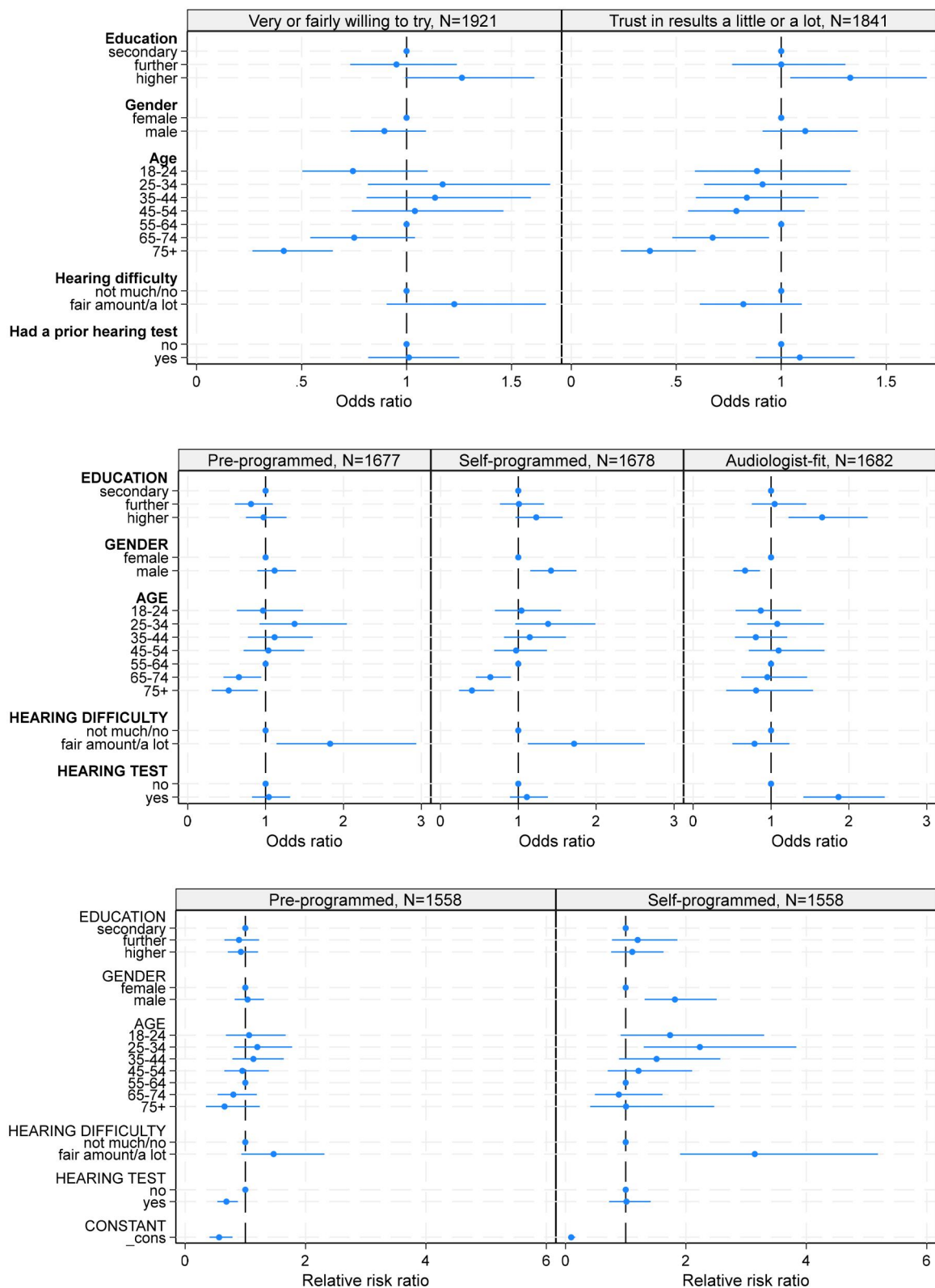


Figure 2. Odds ratios and 95% confidence intervals from logistic regression exploring covariates relating to willingness to have a remote test and willingness to trust in results (top panel) and willingness to have a pre-programmed, self-programmed and audiologist-fit hearing aid (middle panel). Relative risk ratios (RRR) from multinomial regression exploring covariates related to preference for hearing aid fitting pathway (bottom panel). RRRs represent ratio of relative risks for preference for pre-programmed and self-programmed hearing aid fitting pathways in comparison to relative risks for the standard pathway requiring an audiologist-fit.

Table 2. Categories and subcategories for reported benefits and problems of self-administered home-based hearing test. Value shown (in percent) is the percentage of the total number of codes assigned (Benefits $n = 2180$; Problems $n = 1736$).

Category		Sub-categories	% total codes
What do you think would be the main benefit of testing your hearing at home?			
Convenience/ Ease		Non-specific Test at own convenience Appointment not needed Not having to leave home	36.3
Time		Non-specific Waiting for an appointment/at hospital No need to take time off work Save on travel time	18.6
Surroundings		More familiar, comfortable, safer Less stigma More control over environment Autonomy in decision-making More privacy/Data confidentiality	14.4
Distal benefits		Test would be better, easier, quicker Will permit early identification, screening, monitoring Increased uptake Rapid results	13.7
Cost savings		Non-specific Childcare Travel and parking NHS resource	6.6
Easier access		Non-specific Easier for mobility Less reliance on others	5.7
Less stress		Non-specific Less social anxiety, Less need to deal with others Travel-related	4.8
What do you think would be the main problem of testing your hearing at home?			
Distrust in results		Concern about data accuracy, quality and consistency Use of uncalibrated equipment Concern about testing environment Lack of trust in results	51
User-related issues		Difficulty following instructions Dishonest responses, biases Lack of confidence in own ability to conduct testing Inability to understand results User inaccuracy and user errors in testing	23
Lack of expertise/ professional input or oversight		Non-specific Testing and interpretation will be limited No opportunity to ask questions, receive advice No support Home testing in inappropriate	15
Lack of access		Limitations of home technology and equipment Getting round to doing the testing Cost	10

Inductive analysis of open-ended questions

Main benefits:

Of the 2554 codes assigned, 374 (14.6%) responses fell outside of the coding framework. One hundred and

thirty-one (5.1%) responses referred to there being no benefits to home testing; 81 (3.2%) responses were uninterpretable or did not reflect an answer to the question, and 162 (6.3%) were unsure/do not know responses.

Main problems:

Of the 2216 codes assigned, 480 (21.7%) responses fell outside of the coding framework. 194 (8.8%) responses referenced there being no problems with home testing and 35 (2%) implied the respondent assumed a tester would come to their home to conduct testing. 220 (9.9%) were unsure/don't know responses and 31 (1.4%) reflected responses that did not answer the question.

The categories and subcategories generated from the remaining codes for each question are shown in Table 2, along with percentages of codes within each category. Examples of statements within each category and subcategory, along with further explanation of each is below.

(i) main benefits

Convenience/ease. Most codes were associated with the convenience and ease home-based testing would bring. In many instances the response was non-specific such as *"More convenient"* or *"Easier"*. More specific responses were related to being able to do the test at a time convenient to the respondent (*"Ability to do at a time that suits you"*), not needing an appointment (*"Don't have to book an appointment"*), or not having to leave home to conduct the test (*"Don't need to go anywhere"*).

Time. In the time category, there were non-specific responses such as *"Less time consuming"* or *"Less waiting time"*, but also descriptive responses, many of which referred to not needing to wait for an appointment (*"Get an appointment a lot quicker"*) or at the clinic itself (*"No need to sit in a waiting room"*), and some were associated with not needing to take time off work to attend an appointment (*"Not needing to go to an appointment during working hours"*). The vast majority, however, referred to savings on travelling time (*"Don't have to visit a clinic. Save journey cost and time"*).

Surroundings. The most common responses in the *"Surroundings"* category were associated with the benefits of testing in a familiar comfortable location (*"Patient is in comfort of own home"*). Privacy was also noted (*"It would be more private"*), as was having more control over the environment (*"control surrounding noise a lot easier"*, *"there will be less to distract you"*). There were also mentions of there being less stigma (*"Less embarrassing"*, *"No judgement"*), more autonomy regarding decisions (*"No pressure to get a hearing aid, unless you felt it would truly help*

you") and data being more confidential (*"The results will remain within my house"*).

Distal benefits. The majority of codes in this category were associated with home testing allowing earlier detection of hearing loss (*"Early warning to get a further examination"*), ability to monitor hearing over time (*"Keeping a regular check on your hearing"*), and the notion that the home test would be a useful precursor to a clinic-based hearing test (*"To know whether it would be worth my while to see a professional for a proper hearing test"*). There were also responses reflecting the view that home testing would be *"Quicker"*, *"Easier to do"*, or *"Superior"* (*"It would be a test of my hearing in my normal environment"*), that results would be available sooner (*"Instant results"*), and that more people would test their hearing (*"Higher uptake of people testing their hearing"*).

Cost savings. Many of the benefits associated with the category cost were non-specific (*"It will reduce cost"*, *"Cost-effective"*) but some specified that it would remove costs of parking and travel (*"Not having to drive somewhere and be ripped off for parking"*), and childcare (*"Not needing baby sitters"*), and that it would save NHS resources and money (*"Saves an appointment that can be given to another person"*).

Easier access. Some content in this category was non-specific (*"More accessible"*), some was around mobility (*"More accessible to people who maybe can't travel to get their ears tested"*) and some around not needing to rely on others for transportation (*"It means I wouldn't have to get someone to take me"*).

Less stress. Content in the less stress category was mostly nonspecific (*"More relaxed"*, *"Less stressful"*), with some specifying benefits around decreased social anxiety (*"Less daunting as I don't have to interact with people"*, *"Better for social anxiety"*), and travel anxiety (*"No worry about being late if your journey gets held up"*).

(ii) main problems

Distrust in results. The largest proportion of concerns with home testing were associated with not trusting the results of a home test, with reference to a lack of accuracy and reliability of the results (*"It would not be as accurate as an in person test due to differences in equipment"*), concerns that the testing environment would be problematic (*"External noises"*, *"Distractions"*, *"Having a quiet space"*), that results

would be inconsistent or poor quality (*“Lower quality”, “Inferior testing”*), and that there would be uncertainties about the results (*“Being sure that the test is correct”, “Not sure it could be trusted”*).

User-related issues. Codes in this category were associated with concerns about conducting the test incorrectly or difficulty following instructions (*“I might get the test wrong or not follow instructions”, “Fear of not doing it properly”*), understanding the results (*“I may not get the proper interpretation I would need for the test results”*), lack of confidence about completing the testing (*“I could not be sure I was doing it correctly”*), and cheating on the test (*“People not being honest with their responses”*).

Lack of expertise/professional input or oversight. This category referenced lack of professional input during testing (*“no competent professional overseeing the test”, “Doing it without an[d] expert would be an issue”*), the inability to discuss the findings or ask questions after testing (*“No one to give information or support”, “needing to ask questions about the results”*), and the fact that home based testing would be limited in scope (*“Ears would not be examined”, “Not being able to do all the tests completed at hospitals”*). There

were some individuals who stated that home-based testing was simply unacceptable (*“Home is not the place to test your hearing in my opinion”*).

Lack of access. In the access category, the main concern was not having access to appropriate test equipment (*“Lack of specialist equipment”*) and the need for technical support (*“Technology can be challenging to use especially if you are older”*), with some referring to concerns about getting around to doing the testing (*“Actually making the time to do it”*) and the cost of equipment (*“The app may cost money to download”*).

Willingness to try each of the hearing aid fitting pathways

Respondents who were neutral or willing to try a hearing aid and who did not already need a hearing aid, were asked about their willingness to try each hearing aid fitting pathway (Figure 3). Overall, there was a willingness to try all three pathways. Those unwilling to try pre-programmed, self-programmed and audiologist-fit were 146 (8%), 265 (15%) and 72 (4%), respectively. There was very little variability by age group although the proportion who were very/fairly unwilling to try self-programmed hearing aids



Figure 3. Willingness to try each of the three hearing aid fitting pathways (pre-programmed, top panel; self-programmed, middle panel; audiologist, bottom panel) N = 1726 respondents who were neutral/willing to try a hearing aid and not already needing a hearing aid.

was noticeably higher among the 75+ age group (34% vs 16% overall).

Figure 2 (middle panel) shows the odds ratios and 95% confidence intervals from the logistic regression analysis of factors to being willing to try each type of hearing aid fitting pathway (see Supplementary file 2 for full results of analysis).

Respondents who had received higher education were more willing to try a hearing aid that was audiologist-fit than those who finished education at secondary level (OR = 1.66, 95% CI 1.22 to 2.24).

Males were more likely than females to be willing to try a self-programmed hearing aid (OR = 1.42; 95% CI 1.15 to 1.75) and less likely than females to be willing to try an audiologist-fit hearing aid (OR 0.67; 95% CI 0.52 to 0.86).

Relative to respondents age 55–64 yr. (reference group), respondents age 65–74 yr. and 75+ yr. age groups were less willing to try pre-programmed hearing aids (Age 65–74: OR = 0.66; 95% CI 0.46 to 0.94; Age 75+ 0.53; 95% CI 0.31 to 0.90) or self-programmed hearing aids (Age 65–74: OR 0.64; 95% CI 0.46 to 0.90; Age 75+: OR = 0.40; 95% CI 0.24 to 0.69).

Respondents who reported hearing difficulties were more likely to be willing to try a pre-set hearing aid (OR 1.83; 95% CI 1.14 to 2.93) and more likely to be

willing to try a self-fit hearing aid (OR 1.71; 95% CI 1.12 to 2.62) than those without.

Respondents who had had a prior hearing test were more likely to be willing to try a hearing aid that was audiologist-fit (OR 1.87; 95% CI 1.87 to 2.46) than those that had not.

Preferred hearing aid fitting pathway for those willing to try the different pathways

Figure 4 shows preferred fitting pathway broken out by age and gender. When asked which of the three hearing aid fitting pathways they would prefer, the majority of respondents selected the audiologist-fit hearing aid pathway (current NHS standard) ($n = 919$, 53%) with $n = 448$ (26%) saying they would prefer a pre-programmed hearing aid pathway, $n = 191$ (11%) preferring a self-programmed hearing aid pathway and 168 (10%) responding ‘don’t know’. There were some differences by age and gender with the highest proportion of respondents preferring self- and pre-programmed hearing aids amongst the 25–34 and 35–44 year old groups, and more males than females choosing pre-programmed hearing aids (14% vs 9%).

Figure 2 (bottom panel) shows the relative risk ratios and 95% confidence intervals from the multinomial logistic regression of covariates related to

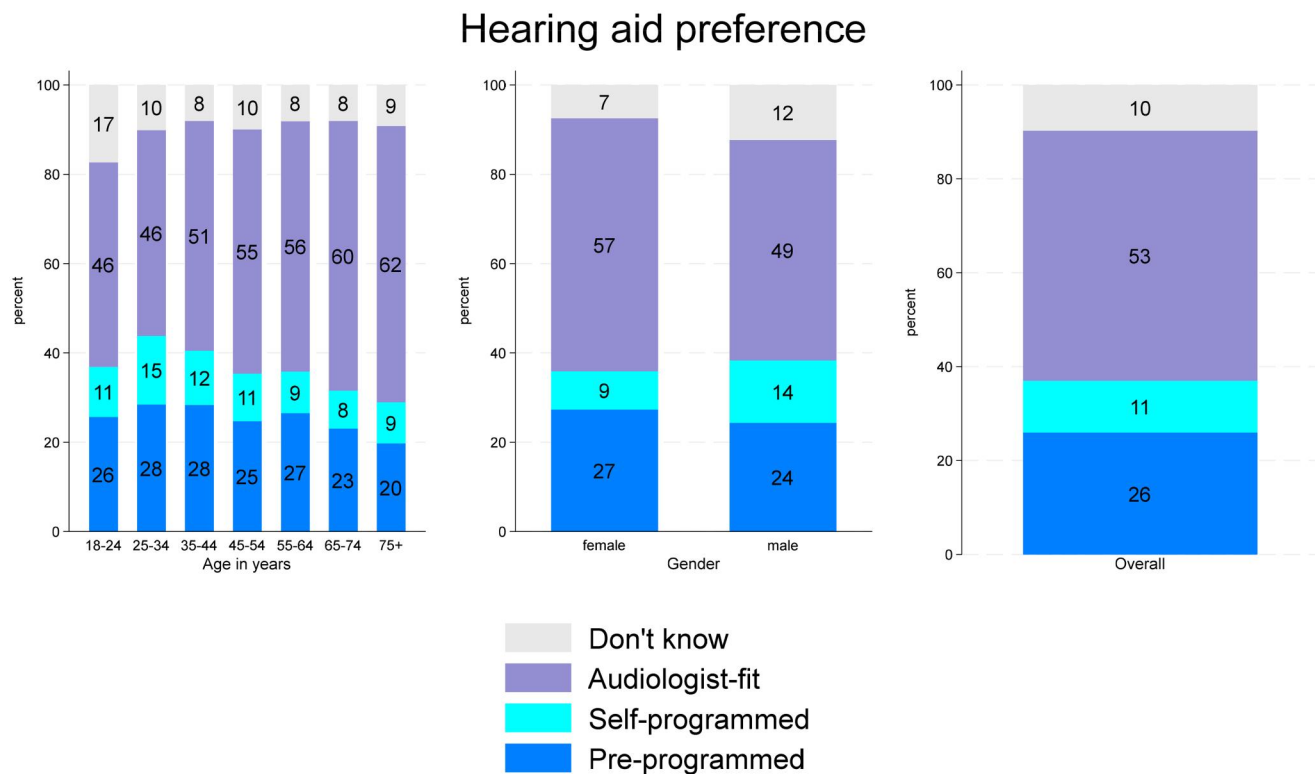


Figure 4. Summary of preferred hearing aid fitting pathway by age group and gender. Numbers on bars represent percentages. $N = 1726$ respondents who were neutral/willing to try a hearing aid and not already needing a hearing aid.

preference for type of hearing aid fitting pathway, for respondents who had not previously been told they need a hearing aid, but who said they would be willing or neutral about trying one if they did (See Supplementary file 2 for full results of analysis).

When asked to choose which of the hearing aid options they would prefer, both a pre-programmed hearing aid fitting pathway (29%, RRR 0.56; 95% CI 0.41 to 0.79), and a self-programmed hearing aid fitting pathway (13%, RRR 0.09; 95% CI 0.06 to 0.16) were less often preferred than the standard NHS audiologist-fit pathway (59%). The self-programmed hearing aid fitting pathway also appears less likely to be preferred than the pre-programmed hearing aid fitting pathway, as suggested by the non-overlapping confidence intervals.

Several covariates were related to preference. Respondents who reported having had a prior hearing test were less likely to choose the pre-programmed hearing aid pathway than those that had not had a hearing test (24% vs 32%, RRR (vs standard pathway) 0.69; 95% CI 0.54 to 0.88), males were more likely than females to choose the hearing aid pathway that required self-programming (17% vs 9%, RRR 1.82; 95% CI 1.31 to 2.51), people who reported a fair amount or a lot of hearing difficulty were more likely to choose the self-programmed pathway than those who reported not much or no hearing difficulty (24% vs 11%; RRR 3.14; 95% CI 1.90 to 5.19), and respondents aged 25–34 yr. were more likely to have a preference for the self-programmed pathway than those in the 55–64 reference category (17% vs 10%; RRR 2.23; 95% CI 1.29 to 5.19).

Discussion

The findings of this online survey, using a representative sample of 2135 UK adults, revealed that most respondents were willing to conduct a self-administered NHS hearing test at home, and/or try a fit-at-home hearing aid provided by the NHS. In other words, they were willing to try what could be referred to as a no/low-touch, digital, home-based NHS hearing care solution. The findings are consistent with previous research showing that the public are interested in remote health monitoring. For example, nearly 4 out of 5 UK adults say they would be happy to use different types of monitoring equipment to help manage their health if an NHS professional recommended it to them (NHS Confederation 2023).

Based on the push from policymakers to move healthcare from the clinic into the community (Department of Health and Social Care 2025), this is a positive indication that such a model would be welcomed by at least a good proportion of the population. However, both the effectiveness of home-based testing and hearing aid fitting, as well as patient willingness to engage with each if/when the hypothetical was to become reality, must be examined before they could be implemented.

Self-administered home-based hearing test

Respondent willingness to test hearing at home was primarily motivated by the convenience and ease of doing so, and the associated time and cost savings, along with feelings that testing at home would be more comfortable, more accessible, and less anxiety-provoking. Respondents also believed that home testing would be ‘better’ and ‘easier’, that it may result in increased uptake of hearing tests and would allow self-monitoring of hearing over time. There is little doubt that home-testing would allow individuals to test their hearing at the time most convenient for them, that it would reduce the need for a clinic visit and the associated issues of waiting time, travel and other costs and reduce potential stress. Whether or not a home-based test would be ‘better’ and ‘easier’ is an unknown; however, based on prior studies uptake might be greater. For example, Iyengar et al. (2016) showed medication adherence to be 23% higher among patients whose medications were home delivered relative to those who obtained their medications through a retail pharmacy.

Despite the willingness to test hearing at home, respondents did have some concerns about home testing, primarily related to distrust around data accuracy (only 13% said they would have a high level of trust in the results), lack of home equipment or insufficiently functional home equipment, and concerns about sound control in a home environment, along with worries about a lack of support and oversight leading to problems with completing the test and interpreting the results, and concerns that a home test would be limited in terms of what it would assess. These concerns are similar to those identified by Keidser, Matthews, and Convery (2019) among individuals reporting opinions about user-driven app-controlled hearing technology.

Web-based solutions for self-administered home-based hearing tests are possible in the UK because internet access is near universal in working age adults

(Department for Culture and Media and Sport 2024). However, connectivity starts to fall from age 75 years, as does digital proficiency. Global penetration is around 69% and growing, although there are access gaps due to income, geography, gender and age (<https://www.itu.int/itu-d/reports/statistics/facts-figures-2024/> accessed 18 June 2025). Therefore, digital solutions are an option for many but not all. A potential unintended consequence of relying solely on digital solutions is increased inequality.

Digital literacy (i.e., the ability of individuals to understand and use digital technologies for meaningful actions within life situations) is linked to age and education level (Department for Digital, Culture, Media and Sport, 2023). This might, therefore, explain why older individuals (age > 64) and those who did not pursue education after high school are less willing to try and trust a home-based hearing test. In other words, those most in need of hearing care (individuals over age 64 years) may be those most hesitant about their ability to perform a home-based hearing test successfully and will be least trusting of the findings. Therefore, it is important that considerations around digital literacy and the messaging that accompanies the test are carefully designed and there remains a need for solutions to the lack of professional support and oversight inherent in home-based testing.

Concerns about the accuracy of home-based hearing tests are certainly warranted when it comes to measuring pure tone thresholds using uncalibrated equipment in a home environment. This was illustrated by Hassan, Wiil, and Ebrahimi (2025) who reviewed the diagnostic accuracy of pure tone applications in 12 different studies. Sensitivity of the applications ranged from 18% to 100%, specificity from 35.5% to 99.1% and diagnostic accuracy from 14% to 97.4%.

An alternative for home-based testing is to use a suprathreshold speech-in-noise test, such as the digits-in-noise test (DiN), in which digits are presented in the presence of background noise (e.g. hearWHO, <https://www.who.int/teams/noncommunicable-diseases/sensory-functions-disability-and-rehabilitation/hearwho>). DiN results are not impacted by differing testing devices and earphone types (Vlaming et al. 2014), and correlate strongly with pure tone hearing thresholds (Smits, Kramer, and Houtgast 2006). While DiN tests do not provide frequency-specific information (although see Motlagh Zedeh et al. 2025) they could be used as a home-based precursor to a standard clinic-based diagnostic hearing assessment.

Interestingly, many respondents said they would consider home-based testing to be a precursor to a “proper” hearing test.

As noted by a few respondents, the lack of direct involvement with a hearing professional can also potentially create a risk for individuals with ear disease that requires medical intervention. One solution would be to use a tool such as the 15-item Consumer Ear Disease Risk Assessment (CEDRA) designed for use by the public to assess their risk of ear disease (Klyn et al. 2019). While a large-scale study of CEDRA on the general hearing-aid seeking population has yet to be reported, initial sensitivity and specificity was 90 and 72%, respectively (Klyn et al. 2019), with data from a Danish version showing similar findings (Siggaard et al. 2023).

Hearing aid fitting pathways

Willingness to try each of the three hearing aid pathways was high, with just 8%, 15% and 4% of respondents being unwilling to try the pre-set, self-fit pathways and audiologist-fit, respectively. However, it is highly unlikely that these proportions would translate into practice and/or that all individuals who were willing to try home-based fittings would succeed in doing so. This was highlighted in work by Convery et al. (2011, 2019) who showed that up to 40% of individuals who followed a set of instructions to independently assemble a pair of ‘over-the-counter’ hearing aids were unsuccessful, and while the authors noted that many of the errors were minor and would not have impacted actual hearing aid outcomes, there is little doubt that there will always be instances in which an individual requires professional support. Knoetze, Manchaiah, and Swanepoel (2025) also investigated the usability of a selection of self-fit devices in 43 adults with self-reported mild-to-moderate hearing loss. The study demonstrated similarly high levels of usability across the different devices. Examples of challenges included Bluetooth connectivity and device handling and insertion issues. Some respondents could not perform the self-fitting independently and required assistance. There is a need to investigate the real-world effectiveness in a representative sample of the population and for a wide range of self-fitting devices.

Again, this emphasises the importance of maintaining in-person services for those individuals who either cannot, or do not want to, engage in alternative hearing care pathways. In other words, while an alternative low-touch pathway may be sufficient for some,

others may need to transfer to an audiologist-fit pathway. It will be important to determine the proportions of individuals for whom each pathway is successful, as well as exploring how this varies by demographic characteristics.

It is noteworthy that respondents who had previously had a hearing test were almost twice as likely to choose an audiologist-fit hearing aid as their preferred pathway than those who had not previously had a hearing test. Similarly, when selecting their preferred pathway, those who had had a prior hearing test were less likely to choose the pre-programmed pathway than the audiologist-fit pathway. This is perhaps not surprising – people generally prefer what they know over what they don't know. This is known as the familiarity heuristic. But it highlights that those without prior experience with hearing care are willing to try home-based care, albeit with the caveat that some note concern precisely because they have no prior experience. Examples of this were seen in responses to an optional question asking whether respondents had anything else they would like to add. For instance, one individual noted *'The only reason I would want a professional is because I've never used a hearing aid so it's new and I wouldn't know if I was doing it right. After that one time I would be willing to have it just sent through from the NHS or whoever.'* And another said *'If I needed a hearing aid, I would definitely want to see a professional in person to get it fitted. For subsequent aids I think I'd be happy having one sent in the post.'*

Sex, age and self-reported hearing difficulty were predictors of willingness to try the three hearing aid pathways. Compared to females, males were more willing to try self-fit hearing aids and less willing to have an audiology-fit hearing aid. Studies across a range of disciplines have revealed that men show a higher willingness than women to explore new technologies, especially in older age groups (Kotze, Anderson, and Summerfield 2016). Also, many studies have revealed that men underutilise both primary and secondary care services compared to women (Höhn et al. 2020). The reason for this is multifactorial and is often reported that men have greater self-reliance, stoicism and a higher threshold for help-seeking; however, this might be an over-generalisation and has contributed to stereotypical expectations (MacLean et al. 2017).

Compared to the 55–65 age group, older adults were less willing to try both fit-at-home options, perhaps related to reduced digital proficiency, as discussed above. Finally, those who reported hearing difficulty were more willing to try both fit-at-home

hearing aid options compared to those who did not report hearing difficulty. This is an important finding since the pathways are aimed at adults who recognise a hearing difficulty because they are more likely to seek help, accept a hearing aid and report better outcomes (Knoetze et al. 2023).

Consideration would need to be given to the support services provided to adults opting for no/low-touch hearing aid pathways. For example, this could utilise a chatbot or remote support from a hearing professional. Accessible educational support could be provided by, for example, M2Hear a home-delivered, multimedia, educational programme configured for mobile technologies (Ferguson et al. 2021) to provide personalised support to promote patient-directed self-management strategies.

Preferred hearing aid fitting pathways

Fifty-three percentage of respondents said that, given a choice, they would prefer the audiologist-fit pathway. This may be because this is the tried and tested pathway. The responses may have been different if, for example, it was explained that the waiting list is longer for this pathway and, in any case, if they run into difficulty with a home-fit pathway, support would be available. A substantial minority (38%) of respondents said, given a choice, they would prefer a home-fit pathway. Some respondents gave reasons for this in response to the question "Do you have any further comments about hearing test and hearing aids?". Statements reflected a variety of thoughts about home-fit versus audiologist fit such as prior positive experiences (*"Because of my husband's positive experience I would be eager to be tested abd[and] equipped by a professional"*), ambivalence and trade-offs (*"Strangely I am sure it would be better to have a hearing aid fitted professionally but would find it much easier to be just sent one."*), a lack of trust in the system (*"I would be suspicious to use a hearing aid sent out to me following an at-home test as I'd be concerned about it not being suitable"*) and worries of causing additional problems (*"I feel the option to set up your own hearing aid could lead to complications and could damage your hearing more."*)

Unanswered questions

A limitation of the survey is that no definition of what was meant by a home hearing test was provided. Likewise, there was little description of what each hearing aid pathway might be, so it is unclear how pre-set

and self-fit were interpreted by respondents. Indeed, as reflected in the open-ended responses, some respondent interpreted a home hearing test to imply the audiologist came to the home to test hearing. Further work is required to find out what respondents understood by these terms. Another important limitation is the fact that the survey was only available online to individuals with sufficient digital literacy to have registered with the YouGov online research company and while our population broadly reflects the opinions of a nationally representative sample with respect to several demographics, the views of individuals with less digital literacy and those without online access are almost certainly underrepresented. Therefore, our findings might be overly skewed towards acceptance of home-based hearing testing and hearing aid fitting. Finally, YouGov's recruitment approach, that of inviting additional people until the target number of respondents is reached, does not allow us to comment on the response rate. However, the data were collected over the period of 24 hours so we are confident that the response rate was high.

The findings of this exploratory study provide compelling evidence that adults are willing to self-test their hearing at home and to try fit-at-home hearing aids. However, in future research it will be important to answer a number of additional questions including the following:

1. What proportion of adults will attempt and successfully complete a self-administered, home-based hearing test with/out support?
2. When offered a choice, what proportion of adults opt for no/low-touch pre-set or self-fit hearing aids?
3. How to target segments of the population that are suitable/willing to try specific pathways?
4. What proportion of new adult fittings are successful with no/low-touch pathways?
5. Are patient outcomes non-inferior to the existing audiology-fit pathway?

If home-based hearing testing and self-fit hearing aids are to be adopted by healthcare systems, it will be important that hearing care providers are supportive of such pathways. This survey did not seek the opinions of hearing care providers but in the future it will be critical to do so.

Conclusions

Ensuring access to hearing care, including adult hearing aid services, is an increasing challenge and will

likely increase over time because of the expected increase in hearing loss in a growing and ageing population. The findings of this exploratory study provide compelling evidence that adults are willing to self-test their hearing at home and try fit-at-home hearing aids, although many continue to prefer an audiologist-fit pathway. This is also a strong indication that adult hearing services should evaluate the clinical and cost-effectiveness of these care pathways because these: (i) have the potential to shift care closer to home, and (ii) provide innovative solutions that are popular with the public. If successful, home care pathways could go some way to addressing the increasing demand.

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Author contribution statement

CRedit: **Kevin J. Munro**: Conceptualization, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing; **Sarah Rhodes**: Formal analysis, Writing – review & editing; **Lucy Ferrie**: Formal analysis, Writing – review & editing; **Gabrielle H. Saunders**: Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing.

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Disclaimer

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Data availability statement

Data available from the authors on request.

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Appendix

Questions in the online survey

- Overall, how much difficulty, if any, do you have with your hearing?
A lot of difficulty/A fair amount of difficulty/Not very much difficulty/No difficulty at all/Don't know/Prefer not to say
- Have you ever had a hearing test?
Yes/No/Don't know/can't recall/Prefer not to say
- Generally speaking, how willing or unwilling would you be to have a hearing test?
Very willing/Fairly willing/ Neutral/Fairly unwilling/Very unwilling/Don't know
- Have you ever been told you need a hearing aid?
Yes/No/Don't know/can't recall/Prefer not to say
- Which ONE of the following statements apply to you? (Please select the option that best applies)
I have never tried hearing aids/I have tried hearing aids but no longer use them/I have hearing aids but rarely use them/I have hearing aids and use them regularly/Don't know/Prefer not to say.
- Please imagine you did need a hearing aid. Generally speaking, how willing or unwilling would you be to get a hearing aid if you needed it?
Very willing/Fairly willing/ Neutral/Fairly unwilling/Very unwilling/Don't know
- If you needed a hearing test ... How willing or unwilling would you be to test your hearing at home using an App or website that is recommended by the NHS?
Very willing/Fairly willing/ Neutral/Fairly unwilling/Very unwilling/Don't know
- What do you think would be the main benefit of testing your hearing at home? (Please type your answers in the box below, providing as much details as possible)
- What do you think would be the main problem of testing your hearing at home? (Please type your answers in the box below, providing as much details as possible)
- Please imagine that you yourself did a hearing test at home ...

In general, to what extent, if at all, would you trust the results of that test?

A lot/ A little/Not very much/Not at all/Don't know

11. If a hearing test showed you need a hearing aid ...

How willing or unwilling would you be to try each of the following hearing aids? (Please select one option in each row)a. A hearing aid that was sent to you from the NHS ready to use.b. A hearing aid that was sent to you from the NHS ready for you to set up by yourself.c. A hearing aid that required you to visit a hearing professional/audiologist to have it fitted

Very willing/Fairly willing/Neutral/Fairly unwilling/Very unwilling/Don't know

12. If the hearing test showed you need a hearing aid ...

Which ONE, of the following options would you prefer? (Please select the option that best applies)

A hearing aid that was sent to you from the NHS ready to use/ A hearing aid that was sent to you from the NHS ready for you to set up by yourself/A hearing aid which required you to a visit a hearing professional/audiologist to have it fitted/Don't know

13. Based on the questions related to hearing test and hearing aids which you have just seen ... Do you have any further comments about hearing test and hearing aids? (Please type your answers in the box below, providing as much details as possible)