

Parental use of community pharmacy for childhood illness in the UK: a cross-sectional study of help-seeking, trust and readiness for an expanded primary care role

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Abstract

Background

Community pharmacies in the United Kingdom are increasingly recognised as accessible providers of primary care. Recent policy initiatives, including Pharmacy First, have expanded pharmacists' roles in managing common conditions traditionally seen in general practice. However, contemporary evidence regarding parental use of pharmacies for child health remains limited.

Objective

To examine patterns of parental pharmacy use for child health, identify trusted sources of advice and assess demographic and behavioural predictors of pharmacy advice-seeking, trust and willingness to use pharmacy-delivered services.

Methods

A quota-based cross-sectional online survey of UK parents and caregivers ($n = 545$) was conducted as part of the Pharmacy PITCH project. Participants completed a 17-item questionnaire examining pharmacy use, advice-seeking behaviour, confidence in pharmacist-delivered advice, trust in pharmacy information and attitudes towards enhanced pharmacy services. Descriptive, bivariate and multivariable regression analyses were performed.

Results

Over half of respondents (55%) visited pharmacies at least monthly. Prescriptions (72%) and self-care medicines (54%) were the most common reasons for attendance, while 35% sought pharmacist advice. Pharmacies were most consulted for colds (32%), sore throat (34%) and skin rash (29%). Confidence in pharmacist advice was highest for self-limiting respiratory conditions (74–79%) and lowest for injuries (40–51%). Older respondents were more likely to seek pharmacy advice (OR 4.50, 95% CI 1.97–10.28 for age 55–64 vs 18–24), whereas males were less likely (OR 0.47, 95% CI 0.29–0.75). Willingness to vaccinate children at a pharmacy was high (88.5%) and associated with prior pharmacy advice-seeking behaviour.

Conclusions

UK parents frequently use community pharmacies for common childhood conditions and report substantial confidence in pharmacist-delivered advice. These findings support ongoing expansion of pharmacy-based paediatric minor illness and vaccination services within UK primary care.

Introduction

Community pharmacies have moved from a primarily dispensing role to a more clinical, front-door function in UK primary care. Policy now explicitly positions pharmacy as part of the access solution: the

NHS's Delivery plan for recovering access to primary care set out a package to make same-day help easier and to redirect appropriate demand from general practice to community pharmacies. In England, Pharmacy First launched on 31 January 2024, enabling pharmacist assessment and treatment for seven common conditions (sinusitis, sore throat, earache, infected insect bite, impetigo, shingles and uncomplicated urinary tract infection in women) backed by ring-fenced funding and an ambition to release up to 10 million GP appointments annually (1, 2). These developments build on the Community Pharmacy Contractual Framework (CPCF) 2019–2024, which established pharmacy's expanded clinical remit within the NHS Long Term Plan (1, 3).

Accessibility is pharmacy's structural advantage. NHS communications cite that around four in five people live within a 20-minute walk of a pharmacy, while spatial analyses show approximately 89% of the English population is within a 20-minute walk, with coverage highest in more deprived areas. This "positive pharmacy care law" makes pharmacies unusually well placed to deliver equitable access for common conditions (1, 4). Despite pressures and net closures in recent years, community pharmacy remains a ubiquitous part of the primary care estate, 12,009 active community pharmacies were recorded in 2023/24 (5).

Child health is a frequent driver of primary care contact, yet parents' help-seeking occurs across a complex ecosystem that includes general practice, NHS 111, emergency and urgent care, pharmacies and online resources. Qualitative work in England documents parental uncertainty and risk appraisal during acute childhood illness, with decisions shaped by perceived urgency, past experiences and the availability of trusted advice (6, 7). Quantitative evidence suggests that for minor ailments many parents prefer the GP, but a substantial minority would choose community pharmacy, indicating a contested but real role for pharmacists in children's everyday health needs (8, 9)

Digital information now co-determines these choices. In 2024, the NHS reported a surge in searches for childhood conditions on the NHS website, with hand, foot and mouth pages seeing a 46% year-on-year increase to 2.8 million views, placing paediatric topics among the most visited national content (10).

Reviews of parents' online health information seeking show high prevalence and mixed impacts on consultation behaviour, clinical interactions and trust; social media and search engines provide immediacy but also variable quality, reinforcing the need for accessible, credible offline sources such as pharmacies (10, 11)

Evidence accumulated over two decades indicates that when common ailments are managed in community pharmacy, outcomes are generally good, consultations are rapid and opportunity costs to the wider system fall. A multisite cost analysis across three English primary care trusts estimated significant monthly NHS savings by substituting pharmacist-led care for GP and emergency department attendances (12). Subsequent evaluations of pharmacist delivered common ailment consultations report high symptom resolution, low onward referral and positive patient experience, reinforcing the appropriateness of pharmacy as a first-line option for many self-limiting condition-s (12–14).

The devolved nations provide additional context. NHS Pharmacy First Scotland has normalised pharmacy consultations for minor illness and uncomplicated infections, with clear pathways and formulary support (15). In Wales, the Common Ailments Service has scaled nationally and, more recently, added sore-throat test-and-treat pathways, illustrating how structured pharmacy services can absorb large volumes of low-acuity care (16). These models anticipate the direction of travel now being embedded in England (15).

Pharmacy's role also intersects with antimicrobial stewardship and evidence-based self-care. NICE guidance for acute sore throat emphasises conservative antibiotic use and the safety of delayed or no antibiotic strategies, which aligns with pharmacy delivered triage and advice (17). Pharmacy based sore throat test and treat pilots and national rollouts have demonstrated safe pathway delivery and appropriate antibiotic supply when indicated, suggesting pharmacists can operationalise stewardship at scale (17, 18).

Beyond minor ailments, pharmacies have proven capacity for preventive interventions. The national community pharmacy flu vaccination service has expanded year on year, with 3.77 million NHS flu vaccinations administered in 2023/24 and > 4 million in 2024/25, evidencing reach and public demand (19). During the COVID19 programme, community pharmacies delivered a substantial share of vaccines, including 62% of all doses in December 2023, underscoring operational capability and public trust in pharmacy teams (19, 20).

Despite these system level shifts and service evaluations, there remains a specific evidence gap on how UK parents and caregivers use pharmacies for their children's health under contemporary policy conditions, which sources they trust compared with GPs, NHS 111, or websites and which factors predict readiness to use pharmacy delivered care for common paediatric conditions. General population tracking shows consistently positive perceptions of community pharmacy and high comfort with receptionist led referral to pharmacists for minor illness, but does not drill into child specific behaviours, preferences, or the determinants of future use (21). Generating up to date, child focused evidence is therefore timely and policy relevant: it can inform targeted communication, guide pathway design and ensure that Pharmacy First delivers value for families as well as for system capacity (21).

The primary aim of this study was to investigate how parents & caregivers in the UK access and use community pharmacies for their children's health needs and to assess behavioural & attitudinal factors influencing their trust in pharmacists, patterns of advice-seeking, & willingness to use pharmacy-based services for common conditions. Specifically we sought to (i) describe the frequency & reasons for pharmacy visits among parents/caregivers, (ii) compare the relative trust placed in pharmacies versus other healthcare sources such as GPs, NHS 111, or online platform, (iii) evaluate parents' confidence in pharmacists' ability to manage a range of child health conditions], (iv) identify demographic & behavioural predictors of advice-seeking from pharmacies and (v) explore associations between prior pharmacy use, perceived trust, & willingness to accept future pharmacy-delivered interventions (e.g. vaccinations).

Methods

Study design and setting

A cross-sectional online survey was conducted as part of the Pharmacy PITCH project to explore how parents and caregivers in the United Kingdom use community pharmacies for children's health needs, their patterns of advice-seeking, levels of trust and readiness to use pharmacy-based services. The survey captured both descriptive and analytical data aligned with the objectives of NHS England's *Pharmacy First* and wider community pharmacy policy reforms (22). The design adhered to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) checklist for cross-sectional studies (23). The study adhered to the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) (24) and followed best practices for public health survey reporting (**Supplementary file 1**).

Participants and recruitment

Participants were recruited primarily via the Prolific Academic panel using quota sampling to approximate the UK adult population by age, gender and ethnicity. Prolific is an online research recruitment platform that maintains a large pool of registered participants who volunteer for academic studies in exchange for modest compensation. The platform is widely used in health and behavioural research and enables demographic quota sampling. Although the primary recruitment route was the Prolific panel (closed survey), a small number of additional respondents were recruited through publicly available social media links. Recruitment materials briefly described the study as an investigation of parental use of community pharmacies for child health and included a survey hyperlink.

The survey was implemented as a closed panel study, with access restricted to Prolific participants via unique panel identifiers. No targeted incentives beyond standard panel compensation were used. Because recruitment was conducted through a closed panel, survey view and participation rates are defined by the panel provider rather than site visitor counts; completion among eligible respondents is reported below. This sampling approach prioritised internal validity and comparability across respondents over maximising reach.

Eligibility screening criteria were identical across recruitment channels. Respondents were required to be aged 18 years or older, residing in the UK and identified as a parent or primary caregiver of at least one child under 18 years. Recruitment was conducted via an established online research panel, applying demographic quotas by region, age and gender to approximate the UK parent population. Participation was voluntary and anonymous.

Item non-response varied by question and was addressed using pairwise deletion. The achieved sample permitted 5% precision estimation for proportions at 95% confidence. Data collection between 12 July 2025 and 27 August 2025 using online recruitment through Prolific and community-based dissemination channels.

Platform and delivery

The instrument was implemented in the Qualtrics XM Platform (Qualtrics International Inc., Provo, UT). The platform captured timestamps, device metadata, IP address and coarse geolocation if permitted by the browser. These variables were used solely for data quality checks and are not reported at an identifiable level. The instrument used concise items, varied stems and mandatory responses with neutral options where appropriate. Device type and completion time distributions were inspected to flag implausible submissions; no thresholds triggered exclusion. No randomisation, no review step and no adaptive questioning was used.

Questionnaire development

The survey 25-item instrument was developed by the study team in collaboration with community pharmacy practitioners and behavioural scientists. Question domains were guided by the literature on public pharmacy use (25), help-seeking in child illness (7) and determinants of trust in healthcare advice (26). The questionnaire comprised 17 core items organised into six thematic blocks: (i) Demographics and household composition (age, gender, ethnicity, education, employment, marital status, number of children, chronic illness). (ii) pharmacy usage (visit frequency, type of pharmacy used, reasons for visits), (iii) advice-seeking preferences (where advice is typically sought for child illness, including GP, NHS 111, pharmacy, websites, or social media), (iv) Condition-specific help-seeking (reported sources of advice for a list of common child symptoms such as fever, cough, rash, sore throat, vomiting/diarrhoea, injuries), (v) Confidence and trust (Likert-scale ratings of confidence in pharmacists' advice across conditions, perceived trustworthiness of pharmacy information) and (vi) attitudes to enhanced pharmacy services (agreement with statements about paediatric training, free over-the-counter (OTC) medication supply and willingness to vaccinate children at a pharmacy). The final question of the survey included a consent to contact form where participants could leave their name and contact details if they were happy to be contacted by the study team to arrange time for interview. The full survey is included in **Supplementary File 2**.

All items were piloted with a convenience sample of 20 parents to confirm clarity and face validity. Minor wording changes were made to improve comprehension. The questionnaire was distributed across 6 survey screens/pages. The final version of the survey required approximately 5 minutes to complete. No study-specific cookies were deployed by the investigators. Duplicate response prevention was managed through Prolific participant identifiers and Qualtrics survey controls. IP addresses were examined solely for duplicate detection and data quality assessment.

Measures and variable derivation

The primary outcomes were Advice-seeking from community pharmacy (binary: selected community pharmacy among sources used), trust in pharmacy information (categorical: high, fairly high, low, none

and willingness to vaccinate at a community pharmacy (binary: yes vs. no). Secondary measures included confidence scores (continuous), pharmacy visit frequency (ordinal), general practice access difficulty (five-point scale) and demographic variables.

Data management and analysis

Data were anonymised and processed in STATA 17. Continuous variables were summarised as means and standard deviations; categorical variables as frequencies and percentages. Partially completed questionnaires were retained where respondents provided sufficient outcome data. Analyses used pairwise deletion to maximise use of available responses. No questionnaire was excluded on the basis of completion time. Descriptive analyses were generated for all key outcomes. Cross-tabulations explored alignment between help-seeking behaviour and confidence ratings. Bivariate analyses were tested using chi-square tests (categorical variables) and independent-samples t-tests (continuous outcomes), with significance defined as $p < 0.05$ (two-sided).

Multivariable models examined three primary outcomes: (i) pharmacy advice-seeking, (ii) trust in pharmacy information and (iii) willingness to vaccinate at a community pharmacy. Independent variables included age group, gender, educational attainment, pharmacy visit frequency and presence of a child with chronic illness. Odds ratios and 95% confidence intervals were reported. An ordinal logistic regression assessed predictors of support for paediatric-trained pharmacy consultation. Model fit was evaluated using log-likelihood, Akaike Information Criterion and (for the ordinal model) the proportional odds assumption via likelihood-ratio testing. Complete cases were analysed for each model, with diagnostic testing confirming acceptable fit.

Statistical power and rationale

A priori power calculations assumed an expected prevalence of 40% for pharmacy advice-seeking based on prior UK surveys (27, 28). A sample of 385 respondents was required to estimate this proportion with $\pm 5\%$ precision at 95% confidence. The achieved sample of 545 participants exceeded this requirement, allowing adjusted logistic regression models with up to six predictors while maintaining an events-per-variable ratio > 20 . To minimise response and social desirability bias, the survey used neutral wording, randomised question ordering within thematic sections and framed pharmacy use as one of several legitimate healthcare options. Analytical code and anonymised summary data are available upon request through Imperial College's institutional repository to enable secondary analysis and meta-research replication.

Analytic framework

Descriptive analyses characterise the landscape of parental pharmacy use. Inferential analyses identify predictors of advice-seeking, trust and vaccination willingness, reflecting behavioural constructs within

the Capability, Opportunity, Motivation and Behaviour (COM-B) model (29). By quantifying demographic and experiential correlates of behaviour, the framework links empirical evidence to actionable levers for policy and practice, consistent with the MRC guidance on complex intervention development and evaluation (30).

Ethics and governance

Ethical approval

for this study was obtained from the Imperial College London Research Ethics Committee (ICREC; reference 7802918). NHS Research Ethics Committee review was not required because the study involved anonymous survey data from non-patient participants and no clinical intervention. All participants were provided with an electronic participant information sheet describing the purpose of the study, voluntary nature of participation, data handling and retention arrangements before accessing the survey. Electronic informed consent was obtained from all participants prior to participation. The study was conducted in accordance with relevant institutional and national ethical guidelines and regulations, including the principles of the Declaration of Helsinki, and with applicable data-protection legislation, including the UK Data Protection Act 2018 and the UK General Data Protection Regulation.

Public and patient involvement

Two parent representatives from the SCARU engagement panel contributed to questionnaire refinement, ensuring the relevance and clarity of questions. Results will be disseminated through community pharmacy networks and open-access publication.

Results

Participant characteristics

The analysis included 545 respondents described in Table 1. The full survey findings are included in **Supplementary Table 1**.

Of 592 eligible panel members who accessed the survey, 545 completed the questionnaire, yielding a completion rate of 92.1%. No duplicate submissions were identified. Among 436 participants who provided demographic data, female respondents predominated, comprising approximately three-quarters of the sample 322 (73.9%), with males representing just over one-quarter 113 (25.9%) and one respondent (0.2%) preferring not to state gender. Data were missing for 109 respondents (20.0%). The modal age group was 35–44 years 178 (40.8%), followed by 45–54 years 122 (28.0%), 55–64 years 67 (15.4%), 25–34 years 54 (12.4%), 65–74 years 12 (2.8%), 18–24 years 1 (0.2%) and 75 years or older 2 (0.5%). The sample was predominantly White 348 (79.8%), with minority ethnic backgrounds including Asian 31 (7.1%), Black or Black British 24 (5.5%), mixed/multiple groups 21 (4.8%), Arab 6 (1.4%), other 4 (0.9%) and unreported ethnicity 2 (0.5%).

Educational attainment was high, with three-fifths 265 (60.8%) reporting university-level qualifications. Further education (A-level/BTEC) was held by 115 respondents (26.4%), secondary education to age 16 by 53 (12.2%), primary only by 2 (0.5%) and one did not state a level (0.2%). Employment was substantial: 235 respondents (53.9%) had full-time jobs, 118 (27.1%) part-time, 27 (6.2%) retired, 32 (7.3%) unemployed, 18 (4.1%) other arranged, 2 (0.5%) students and 4 (0.9%) did not disclose.

Just over one-half lived with a partner 252 (57.8%), one-third with family 150 (34.4%), 32 (7.3%) alone and 2 (0.5%) in flat-share or with relatives. Among 515 participants reporting on children, nearly one-half 251 (48.7%) had two children; 111 (21.6%) had one, 85 (16.5%) had three, 28 (5.4%) had four, 15 (2.9%) had five or more and 23 (4.5%) had none. Of 477 respondents reporting child health status, 111 (23.3%) cited chronic medical conditions in a child and 366 (76.7%) did not.

Table 1
Participants' demographics

Overall (N = 545)	N (%)
Q18 What is your age group?	
N-Miss	109
18–24 years	1 (0.2%)
25–34 years	54 (12.4%)
35–44 years	178 (40.8%)
45–54 years	122 (28.0%)
55–64 years	67 (15.4%)
65–74 years	12 (2.8%)
75 years or older	2 (0.5%)
Q19 What is your gender? - Selected Choice	
N-Miss	109
Female	322 (73.9%)
Male	113 (25.9%)
Prefer not to say	1 (0.2%)
Q20 What is your ethnicity? - Selected Choice	
N-Miss	109
Arab	6 (1.4%)
Asian	31 (7.1%)
Black, Black British, Caribbean or African	24 (5.5%)
Mixed or Multiple ethnic groups	21 (4.8%)
Other ethnic groups (please specify)	4 (0.9%)
Prefer not to say	2 (0.5%)
White	348 (79.8%)
Q24 What is your highest level of education?	
N-Miss	109
Higher or further education (A-levels, BTEC, college etc.)	115 (26.4%)
Prefer not to say	1 (0.2%)

Overall (N = 545)	N (%)
Primary school	2 (0.5%)
Secondary school up to 16 years	53 (12.2%)
University or higher (Bachelors, Masters, PHD)	265 (60.8%)
Q22 What is your employment status? - Selected Choice	
N-Miss	109
Employed full-time	235 (53.9%)
Employed part-time	118 (27.1%)
Other (please specify)	18 (4.1%)
Prefer not to say	4 (0.9%)
Retired	27 (6.2%)
Student	2 (0.5%)
Unemployed	32 (7.3%)
Q21 Do you co-habit or live alone?	
N-Miss	109
I live alone	32 (7.3%)
Living with family	150 (34.4%)
Living with others (flat share, relatives etc.,)	2 (0.5%)
Living with partner	252 (57.8%)
Q3 How many children do you have or look after?	
N-Miss	30
0	23 (4.5%)
1	111 (21.6%)
2	251 (48.7%)
3	85 (16.5%)
4	28 (5.4%)
5	2 (0.4%)
5+	15 (2.9%)
Q4 What are the age bands of your child(ren)? 401	

Overall (N = 545)	N (%)
Under 1 year	30 (7.4%)
1–3 year	96 (23.9%)
4–5 year	99 (24.6%)
6–10 years	193 (48.1%)
11–15 years	189 (47.3%)
16 years or older	188 (46.8%)
Q5 Do any of your children have chronic (longstanding) medical conditions?	
N-Miss	68
No	366 (76.7%)
Yes	111 (23.3%)

Pharmacy utilisation: frequency and setting

Supplementary Table 2. indicated that among 477 respondents supplying frequency data, 142 (29.8%) visited a pharmacy once per month, 98 (20.5%) a few times per month, 63 (13.2%) weekly or more, 170 (35.6%) less than once per month and 45 (9.4%) rarely or never. High-street chain pharmacies were used by 284 (52.1%), while 308 (56.5%) used independent pharmacies; many accessed both.

Reasons for visiting pharmacies

Prescription fulfilment was the leading reason for attendance, chosen by 394 (72.3%) of 545. Self-care for minor conditions was reported by 295 (54.1%), pharmacist consultation by 188 (34.5%), purchase of skincare by 127 (23.3%) and photo service by 9 (1.7%) as reported in **Supplementary Table 2**.

Advice-seeking preferences

When asked about where they would go to seek advice regarding their child's illness or for general advice, of 545 respondents 421 (77.2%) identified GPs, 265 (48.6%) selected websites, 233 (42.8%) NHS 111, 229 (42.0%) community pharmacy and 226 (41.5%) family or friends; **Supplementary Table 2**. Hospital 123 (22.6%), A&E 145 (26.6%) and digital sources such as apps 34 (6.2%) were less frequently named.

Access to general practice

Of 443 respondents (102 missing, 18.7%), access to general practice was described as easy by 184 (41.6%), somewhat easy 154 (34.8%) and extremely easy 30 (6.8%). Access was difficult for 183 (41.3%)—somewhat difficult for 133 (30.0%), extremely difficult for 50 (11.3%)—and neutral for 76 (17.2%);

Supplementary Table 1.

Help-seeking in the most recent illness episode (condition-specific)

Among 545 respondents, for fever, 159 (29.2%) consulted a GP, 111 (20.4%) pharmacy, 72 (13.2%) NHS 111 and 24 (4.4%) attended A&E. For generally unwell children, proportions were 147 (27.0%) GP and 110 (20.2%) pharmacies. Vomiting/diarrhoea prompted consultation with GPs for 134 (24.6%) and pharmacy for 109 (20.0%). For cough without wheeze, pharmacy was used more than GPs (n = 154, 28.3% vs n = 100, 18.3%). For cough with wheeze, GP contact was higher (236, 43.3% vs 69, 12.7%). With cold symptoms, pharmacy use was 174 (31.9%) versus 53 (9.7%) for GPs. For rash, GP (n = 190, 34.9%), pharmacy (n = 159, 29.2%). Sore throat: pharmacy (n = 183, 33.6%), GP (n = 89, 16.3%). Family advice (n = 196, 36.0%) was frequent after non-serious falls. For limb/musculoskeletal issues, GPs were accessed by 132 (24.2%); urgent/walk-in centres by 54 (9.9%), A&E by 53 (9.7%), all represented in Table 2. The Full condition-specific help-seeking distributions, including urgent care, family/friends and healthcare specialist responses, are provided in **Supplementary Table 3**.

Table 2
Preferred sources of help-seeking for common childhood conditions

Condition	GP n (%)	Community pharmacy n (%)	NHS 111 n (%)	A&E n (%)
Fever	159 (29.2)	111 (20.4)	72 (13.2)	24 (4.4)
Vomiting/diarrhoea	134 (24.6)	109 (20.0)	45 (8.3)	15 (2.8)
Cough without wheeze	100 (18.3)	154 (28.3)	19 (3.5)	2 (0.4)
Cough with wheeze	236 (43.3)	69 (12.7)	46 (8.4)	19 (3.5)
Cold symptoms	53 (9.7)	174 (31.9)	10 (1.8)	4 (0.7)
Skin rash	190 (34.9)	159 (29.2)	41 (7.5)	11 (2.0)
Sore throat	89 (16.3)	183 (33.6)	14 (2.6)	5 (0.9)
Minor injury	132 (24.2)	47 (8.6)	46 (8.4)	53 (9.7)

Confidence in pharmacists by condition and life stage

Among 399 responding, high/fairly high confidence in pharmacy advice for colds was reported by 316 (79.2%), 140 (35.1%) high and 176 (44.1%) fairly high. Sore throat: 297 (74.4%) high/fairly high confidence. For cough without wheeze, 269 (67.5%) expressed high confidence; fever 259 (64.9%). Lower confidence proportions were observed for cough with wheeze 194 (48.6%), minor falls 203 (50.8%) and limb problems 159 (39.9%). Confidence in child vaccination advice was high/fairly high in 226 (56.6%). General infant health: 210 (52.6%); Fig. 1 & **Supplementary Table 4**.

Perceived acceptability of enhanced pharmacy services

As illustrated in Fig. 2, of 399 that responded to this question, 374 (93.8%) agreed/strongly agreed they would seek advice from a pharmacist trained in child consultations 240 (60.2%) agreed, 134 (33.6%) strongly agreed; 5 (1.3%) disagreed; **Supplementary Table 5**. Endorsement remained high for the offer of free over-the-counter medicines 356 (89.2%). Among 438 queried on cost, 154 (35.2%) disagreed that cost discouraged pharmacy access, 112 (25.5%) agreed/strongly agreed, 90 (20.5%) were neutral and 82 (18.7%) strongly disagreed.

Vaccination behaviours and pharmacy vaccination willingness

Of 436 reporting parental vaccine behaviour, 427 (97.9%) vaccinated or intended to; 9 (2.1%) declined. Willingness to vaccinate at the pharmacy was reported by 386 (88.5%). Non-vaccination reasons (n = 50; 11.4%) included preference for GP/nurse, concern about training, or pharmacy environment; **Supplementary Table 6**.

Predictors of selecting pharmacy for advice (multivariable analysis)

The results of the multivariable analysis itemised in Table 3 identified that age 25–34 (OR 2.78, 95% CI 1.34–5.77, $p = 0.006$), 45–54 (OR 3.53, 1.65–7.56, $p = 0.001$) and 55–64 (OR 4.50, 1.97–10.28, $p < 0.001$) were associated with higher odds of pharmacy selection compared to 18–24 years (reference). Males had reduced odds (OR 0.47, 0.29–0.75, $p = 0.002$). *Every increase in pharmacy visit frequency reduced the odds of seeking advice* (OR 0.72 per category, 0.58–0.90, $p = 0.003$). Education and child chronic condition were not significant.

Table 3
Logistic Regression - Predictors of Community Pharmacy Advice-Seeking

Variable	Odds Ratio (OR)	95% CI	P-value
Age Group (ref: 18–24)			
25–34 years	2.78	1.34–5.77	0.006
35–44 years	1.70	0.84–3.42	0.141
45–54 years	3.53	1.65–7.56	0.001
55–64 years	4.50	1.97–10.28	< 0.001
65–74 years	2.96	0.76–11.48	0.116
Gender (ref: Female)			
Male	0.47	0.29–0.75	0.002
Education (ref: University+)			
Secondary	0.78	0.42–1.46	0.439
A-levels/BTEC	0.65	0.40–1.06	0.086
Pharmacy Visit Frequency	0.72	0.58–0.90	0.003
Child Chronic Condition	0.72	0.45–1.15	0.165
Model Statistics: N = 399; Log-likelihood=-251.4; AIC = 520.8; Model fit: $\chi^2=24.3$, $p < 0.001$			

Predictors of Trust and Vaccination Willingness

Logistic regression for trusting pharmacy information itemised in Table 4 shows higher odds among ages 35–44 (OR 2.71, 1.22–6.00, $p = 0.014$) and 55–64 (OR 2.57, 1.16–5.71, $p = 0.020$); other predictors were not significant. Another model investigating predictors of willingness to vaccinate at pharmacy identified a strong association for willingness to vaccinate at pharmacy for age 35–44 (OR 5.54, 1.61–19.04, $p = 0.007$); other findings were not significant (Table 4).

Table 4
Multivariable predictors of trust and vaccination willingness

	Model 1: predictors of trusting pharmacy information			Model 2: predictors of willingness to vaccinate at pharmacy		
Variable	OR	95% CI	P-value	OR	95% CI	P-value
Age Group (ref: 18–24)						
25–34 years	1.70	0.84–3.42	0.141	1.31	0.56–3.05	0.532
35–44 years	2.71	1.22–6.00	0.014	5.54	1.61–19.04	0.007
45–54 years	1.57	0.75–3.28	0.231	2.35	0.72–7.67	0.154
55–64 years	2.57	1.16–5.71	0.020	2.34	0.25–21.72	0.453
65–74 years	2.76	0.74–10.32	0.131	—	—	—
Gender (ref: Female)						
Male	1.09	0.69–1.73	0.715	2.21	0.87–5.59	0.094
Education (ref: University+)						
Secondary	1.29	0.70–2.39	0.412	2.13	0.60–7.54	0.239
A-levels/BTEC	0.86	0.53–1.39	0.533	1.03	0.49–2.17	0.939
Child Chronic Condition	1.15	0.75–1.77	0.514	1.99	0.98–4.02	0.055
Model statistics	N = 166 Log-likelihood=-96.2; AIC = 206.4			N = 229; Log-likelihood=-146.8; AIC = 313.6; Significant pathway: advice-seeking → vaccination consideration		

Bivariate analyses

Ordinal regression analyses (**Supplementary Table 7**) identified no significant demographic or behavioural predictors of support for specialist paediatric pharmacy consultations. However, χ^2 analyses demonstrated significant variation in pharmacy advice-seeking behaviour by gender and age group. Female respondents were significantly more likely than males to seek advice from community pharmacies for their child's health needs (39% vs 21%; $\chi^2=9.87$, $p = 0.002$). Advice-seeking also varied significantly across age groups, peaking among respondents aged 45–54 years (48%; $\chi^2=8.93$, $p = 0.030$). Educational attainment was not significantly associated with pharmacy advice-seeking behaviour.

Independent-samples t-tests demonstrated significantly higher overall confidence in pharmacist-delivered child health advice among female respondents compared with males (mean difference + 0.34, $t = 2.18$, $p = 0.031$). This pattern was particularly evident for acute minor illness presentations, where females reported higher confidence scores than males (mean difference + 0.42, $t = 2.41$, $p = 0.017$). No significant differences in confidence were observed according to ethnicity or the presence of chronic medical conditions in a child; **Supplementary Table 8**.

Discussion

Principal findings

Parents and caregivers reported frequent use of community pharmacies. Prescriptions and OTC medicines dominated reasons for attendance, with one in three seeking pharmacist advice. In the most recent child illness, pharmacies were commonly chosen for colds, sore throat, uncomplicated rashes and non-wheezy cough, while GPs were preferred for wheeze and injuries. Confidence in pharmacist advice mirrored these patterns: highest for upper-respiratory symptoms and lowest for injuries. Trust in pharmacy information and selection of pharmacy for advice were more likely in older age groups; females reported higher confidence and were more likely to choose pharmacy. Willingness to accept pharmacy-delivered vaccinations was high and acceptability rose further when paediatric consultation was framed as specialist-trained and bundled with free OTC supply.

Qualitative and mixed-methods studies describe parental risk appraisal, the search for trustworthy advice and the influence of service access on decisions during child minor illness (7). Our findings are consistent in that parents used multiple channels and often prefer GP contact for respiratory red flags or injuries, while selecting pharmacy for self-limiting presentations and for medicines advice. The observed parallel use of websites is congruent with systematic reviews of parental online health information seeking, which report high prevalence but variable effects on trust and care-seeking (11). In this landscape, community pharmacies function as accessible, credible offline sources that can reinforce self-care and stewardship (7).

Comparison with existing literature and policy context

These findings are consistent with the policy direction that positions pharmacies as a front-door for common conditions. England's Pharmacy First service authorises pharmacist assessment and treatment across seven pathways (sore throat, sinusitis, otitis media, infected insect bite, impetigo, shingles and uncomplicated UTI in women), with the stated aim of releasing GP capacity and improving same-day access (1, 22, 31). The Delivery plan for recovering access to primary care explicitly leverages community pharmacy to absorb low-acuity demand (2). Together these policies align with our observed patterns: parents already use pharmacies for the same symptom clusters that Pharmacy First targets (1).

Structural accessibility underpins this shift. Area-level analyses show that ~ 89% of people in England live within a 20-minute walk of a pharmacy, with better coverage in more deprived areas (4). This so-called “positive pharmacy care law” (4) persists despite recent contraction in premises, as the network remains extensive with 12,009 active community pharmacies recorded in 2023/24 (5). Accessibility and ubiquity likely explain why parents in our sample commonly include pharmacy among first-line options for child minor illness (4).

Condition-specific results also map onto clinical guidance. NICE recommends conservative antibiotic use for acute sore throat and otitis media and supports self-care with safety-netting; pharmacists are well placed to deliver this triage and education (17, 32). Real-world evaluations of sore-throat test-and-treat in UK pharmacies report safe implementation, reduced GP consultations and appropriate antibiotic supply (18, 33). Our finding that parents often select pharmacies for sore throat and colds and feel confident in that advice, accords with this evidence base and the Pharmacy First clinical pathways (17).

The observed advice-seeking split between GPs, pharmacies, NHS 111 and websites reflects the multi-channel nature of contemporary help-seeking. Surveys of the English public report high satisfaction with community pharmacy and openness to expanded roles (21). Parents’ parallel use of online sources is well documented; a systematic review shows widespread parental online health information seeking with mixed impacts on trust and consultation behaviour (11). These patterns suggest that pharmacy-delivered advice competes with and can complement, digital sources reinforcing the need for coherent messaging and clear thresholds for escalation (21).

Our findings on vaccination uptake align with the proven role of pharmacies in immunisation. English community pharmacies delivered 3.77 million NHS flu vaccinations in 2023/24, with > 4 million in 2024/25 and they administered 62% of all COVID-19 vaccinations in December 2023 (19, 20). The high stated willingness in our sample is therefore credible and operationally feasible (19).

Evidence on minor ailments also supports pharmacy as a cost-effective first contact. UK reviews and evaluations report high rates of symptom resolution, low re-consultation and potential NHS savings when pharmacy substitutes for GP or ED care for minor conditions (12, 34). These data provide external validity for our observed readiness to use pharmacies for self-limiting presentations (34).

Implications for policy and practice

First, the condition-specific confidence gradients observed in our study support targeting Pharmacy First communications at presentations where parent confidence is already high (sore throat, colds, non-wheezy cough), while providing clear triage cues for higher-risk symptoms (wheeze, injury). Aligning public messaging with NICE criteria (for example, use of FeverPAIN or Centor thresholds) can help parents understand when pharmacy is appropriate and when escalation is warranted (17).

Second, the strong acceptability of specialist paediatric pharmacist training and bundled free OTC supply indicates two levers. Workforce development should prioritise paediatric assessment, red-flag recognition and communication skills. Commissioners can consider selective cost-offsets for self-care

treatments within defined pathways to lower the perceived cost barrier as already reflected in Pharmacy First protocols and patient group directions (35)

Third, high willingness to vaccinate at pharmacies suggests a route to improve convenience and uptake for routine and seasonal immunisations. Operational experience from flu and COVID-19 programmes shows that pharmacies can deliver volume at pace, including in deprived communities (19, 20). Embedding paediatric vaccination offers alongside Pharmacy First consultations for eligible families could leverage the same access advantages.

Finally, access planning must account for service capacity and local availability. While national coverage remains high, NHS data and independent analyses show sustained net closures and reduced opening hours in some areas, which may attenuate the accessibility advantage and create local bottlenecks (5, 36). To address this, commissioners could leverage local openings-and-closures datasets to align Pharmacy First demand with capacity (5).

Strengths and limitations

The study offers granular, condition-specific evidence on how UK parents use pharmacies for child health, coupled with multivariable models of advice-seeking, trust and vaccine willingness. The measures align with current policy pathways and clinical guidance, improving interpretability. The principal limitations of our study are concerned with cross-sectional design, self-reporting and item non-response on some scales, which limit causal inference and may introduce selection and recall bias. We acknowledge also that the survey did not measure awareness of Pharmacy First or quantify value trade-offs between attributes such as convenience, expertise, waiting time, privacy and cost; these omissions constrain interpretation of RQ3 and RQ5. Multivariable models were also not powered to test interactions or mediation. It is also notable that the dynamic policy environment may change baseline behaviours over time, necessitating periodic reassessment as Pharmacy First matures.

To address these limitations, future studies should incorporate direct awareness and understanding measures for Pharmacy First and test how awareness mediates service use. Survey studies could also include a stated likelihood-to-use outcome by condition and scenario, then model it against beliefs, trust, confidence by condition, prior pharmacy use and perceived GP access. It would also be helpful if the progressed data collection tools would elicit preferences for pharmacy attributes using established methods (MaxDiff or DCE). UK evidence shows that trained staff, symptom management support and short waits drive stated preferences for pharmacy in minor ailments (37). Parallel quasi-experimental or interrupted time-series designs could evaluate Pharmacy First's impact on help-seeking and equity as service coverage and capacity evolve (37, 38).

Conclusion

Parents in this study already use pharmacies for common child conditions and express confidence in pharmacist advice in scenarios targeted by Pharmacy First. Trust and advice-seeking rise with age and willingness to vaccinate at pharmacies is high. These patterns are coherent with national policy, clinical guidance and prior evaluations of pharmacy-managed minor ailments and immunisation.

Implementation should focus on clear triage messaging, paediatric training and local capacity management, while future work measures awareness and preferences directly to optimise uptake and equity.

Declarations

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Patient and Public Involvement

No patient was involved. The survey was co-produced by three pharmacy practitioners and a behavioural scientist. The penultimate version was cross-checked for readability by two parent representatives from the SCARU engagement panel.

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Author Contributors

MA, SL and AEO conceptualized the study. AEO and SL conducted the literature review. MA and MZ conducted the quantitative data analysis. All authors approved the final version of the manuscript and agree to be accountable for all aspects of the work. AEO is the guarantor.

Data sharing statement

The datasets generated and/or analysed during the current study are not publicly available because they contain participant-level survey data collected under the conditions of the study's ethical approval and informed consent, but anonymised data may be available from the corresponding author on reasonable request, subject to applicable ethical, institutional and data-governance requirements.

Consent to publish: Not applicable

Competing interests: None declared

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References

1. New N. Over 10,000 NHS pharmacies begin treating people for common conditions: NHS England; 2024 [Available from: <https://www.england.nhs.uk/2024/01/over-10000-nhs-pharmacies-begin-treating-people-for-common-conditions/>]
2. England N. Delivery plan for recovering access to primary care 2023 [updated 24/10/2024. Available from: <https://www.england.nhs.uk/long-read/delivery-plan-for-recovering-access-to-primary-care-2/>]
3. DHSC C. Community Pharmacy Contractual Framework: 2019 to 2024 2023 [updated 22/07/2019. Available from: <https://www.gov.uk/government/publications/community-pharmacy-contractual-framework-2019-to-2024>]
4. Todd A, Copeland A, Husband A, Kasim A, Bambra C. The positive pharmacy care law: an area-level analysis of the relationship between community pharmacy distribution, urbanity and social deprivation in England. *BMJ open*. 2014;4(8):e005764.
5. NHSBSA S. General Pharmaceutical Services in England 2015-16-2023-24 2024 [Available from: <https://www.nhsbsa.nhs.uk/statistical-collections/general-pharmaceutical-services-england/general-pharmaceutical-services-england-2015-16-2023-24>]
6. Rashed AN, Mohamud N, Lam A, Hamadallah H, Terry D, Tomlin S. Community pharmacy role in children's health in England: Experiences and opinions of parents and young people. *Health Soc Care Community*. 2022;30(6):2362–71.
7. Neill SJ, Jones CH, Lakhanpaul M, Roland DT, Thompson MJ. Parents' help-seeking behaviours during acute childhood illness at home: A contribution to explanatory theory. *J Child Health Care*. 2016;20(1):77–86.
8. Benzaken T, Oligbu G, Levitan M, Ramdarshan S, Blair M. Community Pharmacy Minor Ailment Service (PMAS): An Untapped Resource for Children and Their Carers. *Pharm (Basel)*. 2021;9(2).
9. Seston EM, Anoliefo CJ, Guo J, Lane J, Okoro Aroh C, White S, Schafheutle EI. Community Pharmacist Consultation Service: A Survey Exploring Factors Facilitating or Hindering Community Pharmacists' Ability to Apply Learnt Skills in Practice. *Pharm (Basel)*. 2022;10(5).
10. New NE. Searches for NHS advice on childhood illnesses surge in 2024 2025 [Available from: <https://www.england.nhs.uk/2025/01/searches-for-nhs-advice-on-childhood-illnesses-surge-in-2024/>]
11. Kubb C, Foran HM. Online Health Information Seeking by Parents for Their Children: Systematic Review and Agenda for Further Research. *J Med Internet Res*. 2020;22(8):e19985.
12. Baqir W, Learoyd T, Sim A, Todd A. Cost analysis of a community pharmacy 'minor ailment scheme' across three primary care trusts in the North East of England. *J Public Health (Oxf)*. 2011;33(4):551–5.

13. Hall G, Cork T, White S, Berry H, Smith L. Evaluation of a new patient consultation initiative in community pharmacy for ear, nose and throat and eye conditions. *BMC Health Serv Res.* 2019;19(1):285.
14. The Pharmaceutical Journal. Pharmacy First passes 5 million consultations landmark. 2025.
15. CPS. NHS Pharmacy First Scotland. 2025 [Available from: <https://www.cps.scot/nhs-pharmacy-first-scotland>]
16. Update WGSS. Community pharmacy services: April 2023 to March 2024 2024 [Available from: <https://www.gov.wales/community-pharmacy-services-april-2023-march-2024-html>]
17. guideline N. Sore throat (acute): antimicrobial prescribing 2018 [Available from: <https://www.nice.org.uk/guidance/ng84/resources/sore-throat-acute-antimicrobial-prescribing-pdf-1837694694085>]
18. Mantzourani E, Evans A, Cannings-John R, Ahmed H, Hood K, Reid N et al. Impact of a pilot NHS-funded sore throat test and treat service in community pharmacies on provision and quality of patient care. *BMJ Open Qual.* 2020;9(1).
19. England CP. Flu Vaccination Service – Statistics 2015 [updated 04/09/2025. Available from: <https://cpe.org.uk/national-pharmacy-services/advanced-services/flu-vaccination-service/flu-vaccination-statistics/>]
20. Association CCs. Community pharmacy hits milestone of 40m Covid-19 vaccines at the end of 2023 2024 [Available from: <https://thecca.org.uk/community-pharmacy-hits-milestone-of-40m-covid-19-vaccines-at-the-end-of-2023/>]
21. Duxbury K, Fisher K, Jefferson A. Public perceptions of community pharmacy 2023: Findings from a survey with adults in England conducted on behalf of NHS England. National Health Services, England. 2023.
22. England N. Pharmacy First 2024 [Available from: <https://www.england.nhs.uk/primary-care/pharmacy/pharmacy-services/pharmacy-first/>]
23. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *PLoS Med.* 2007;4(10):e296.
24. Eysenbach G. Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). Gunther Eysenbach Centre for Global eHealth Innovation, Toronto, Canada; 2004. p. e34.
25. Maidment I, Young E, MacPhee M, Booth A, Zaman H, Breen J, et al. Rapid realist review of the role of community pharmacy in the public health response to COVID-19. *BMJ open.* 2021;11(6):e050043.
26. Hummelinck A, Pollock K. Parents' information needs about the treatment of their chronically ill child: a qualitative study. *Patient Educ Couns.* 2006;62(2):228–34.
27. Waring J, Latif A, Boyd M, Barber N, Elliott R. Pastoral power in the community pharmacy: A Foucauldian analysis of services to promote patient adherence to new medicine use. *Soc Sci Med.* 2016;148:123–30.

28. Kyonka EGE, Tutorial. Small-N Power Analysis. *Perspect Behav Sci.* 2019;42(1):133–52.
29. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implement Sci.* 2011;6:42.
30. Skivington K, Matthews L, Simpson SA, Craig P, Baird J, Blazeby JM, et al. A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *Int J Nurs Stud.* 2024;154:104705.
31. England N. Community Pharmacy advanced service specification 2023 [Available from: <https://www.england.nhs.uk/wp-content/uploads/2023/11/PRN00936-i-Community-pharmacy-advanced-service-specification-NHS-pharmacy-first-service-November-2023.pdf>]
32. NICE. Otitis media (acute): antimicrobial prescribing 2018 [updated 11/03/2022. Available from: <https://www.nice.org.uk/guidance/ng91>]
33. Mantzourani E, Wasag D, Cannings-John R, Ahmed H, Evans A. Characteristics of the sore throat test and treat service in community pharmacies (STREP) in Wales: cross-sectional analysis of 11 304 consultations using anonymized electronic pharmacy records. *J Antimicrob Chemother.* 2023;78(1):84–92.
34. Paudyal V, Watson MC, Sach T, Porteous T, Bond CM, Wright DJ, et al. Are pharmacy-based minor ailment schemes a substitute for other service providers? A systematic review. *Br J Gen Pract.* 2013;63(612):e472–81.
35. England N. Community pharmacy advanced service specification: NHS Pharmacy First Service 2023 [updated September 2025. Available from: <https://www.england.nhs.uk/publication/community-pharmacy-advanced-service-specification-nhs-pharmacy-first-service/>]
36. England CP. Briefing on reduced opening, and closures, of community pharmacies 2024 [Available from: <https://cpe.org.uk/wp-content/uploads/2024/03/Briefing-on-reduced-opening-and-closures-of-community-pharmacies-January-2024.pdf>]
37. Porteous T, Ryan M, Bond C, Watson M, Watson V. Managing minor ailments; the public's preferences for attributes of community pharmacies. A discrete choice experiment. *PLoS ONE.* 2016;11(3):e0152257.
38. Trust TKsFN. A vision for community pharmacy 2023 [Available from: https://cpe.org.uk/wp-content/uploads/2023/09/Nuffield-Trust-and-The-Kings-Fund-A-vision-for-community-pharmacy_WEB_FINAL.pdf]

Figures

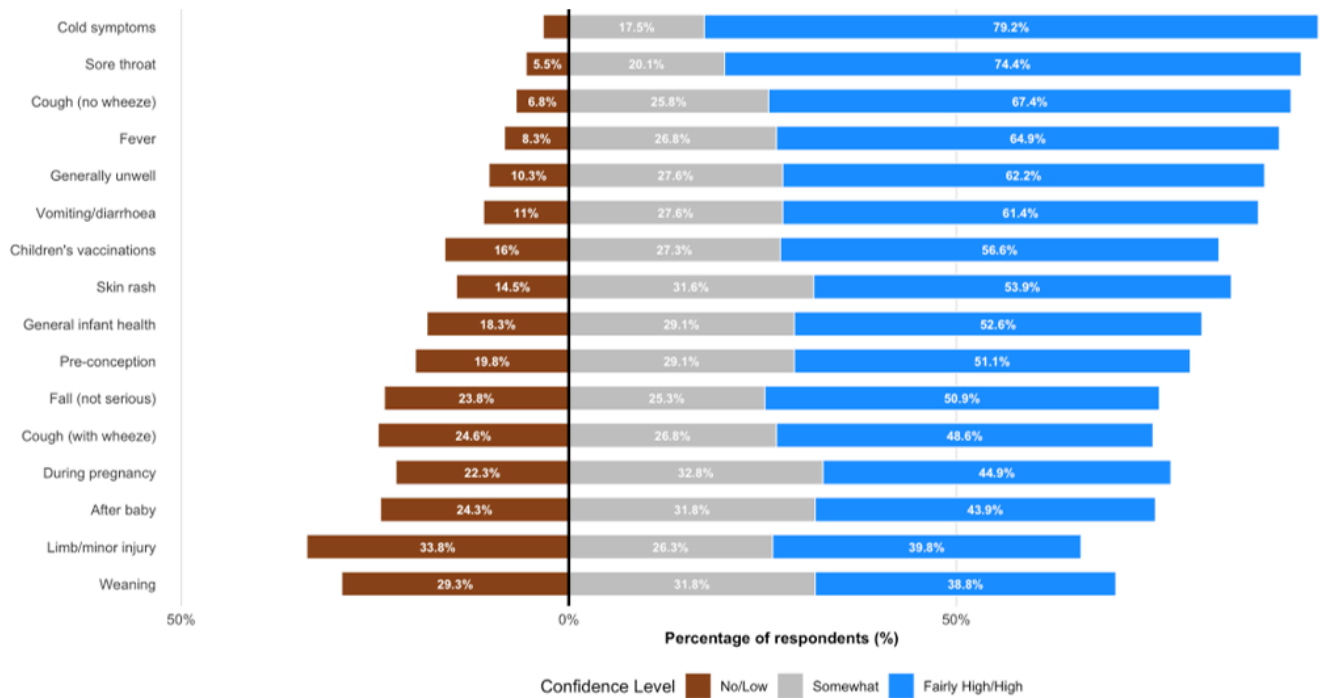


Figure 1

Confidence in pharmacists by condition and life stage

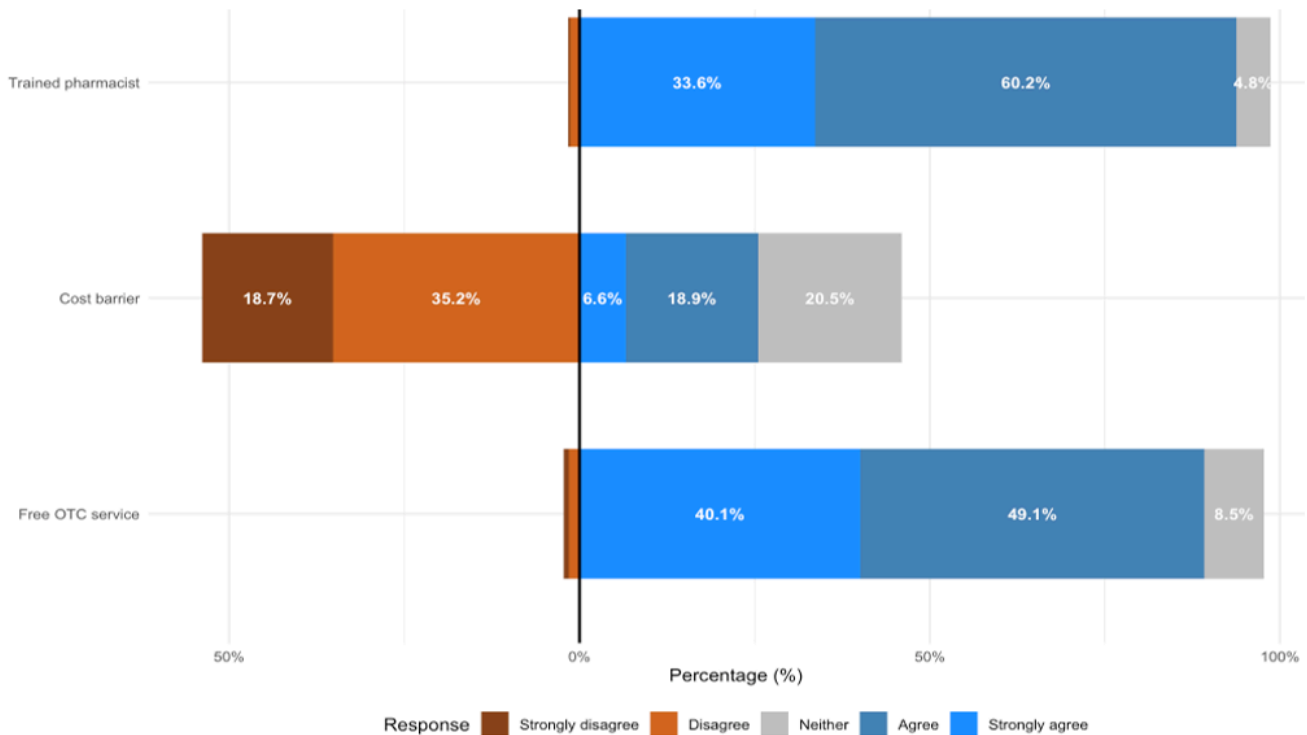


Figure 2

Perceived acceptability of pharmacy services

Supplementary Files

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- [SFile1CHERRIESChecklist.docx](#)
- [SFile2Survey.docx](#)
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