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Public perceptions of community pharmacy roles in public health services: further content validity analysis of free text comments from the *PubPharmQ* Questionnaire

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Abstract

Objectives: Establishing the extent to which the public is ready to engage in community pharmacy (CP)-based public-health-related services in the UK is essential for maximizing uptake. The *PubPharmQ* was developed to measure public perceptions of these roles to identify the barriers to and facilitators for service uptake. The aim of this paper is to describe further content validity testing of the *PubPharmQ,* through analysis of the qualitative free-text comments provided by participants during the psychometric testing phase of questionnaire development.

Methods: Template analysis was undertaken of free-text comments provided by participants during the development and psychometric testing of the *PubPharmQ,* allowing for deductive and inductive analysis across the dataset.

Key findings: Of the 306 respondents who completed the *PubPharmQ*, 78 (25.5%) provided at least one free-text comment (total 172 comments). Six themes were constructed from the data. Four themes, *Role in Public Health*, *Relationship*, *Privacy, and Expertise*, were deductively mapped from *PubPharmQ* scales. Two new themes were identified inductively; *Perceived Capacity* (i.e. perceived staff capacity to deliver public health roles) and *Care-seeking Behaviour: Pharmacy First* (i.e. likelihood to access CP for advice before another healthcare provider).

Conclusions: These findings provide further underpinning support for the *PubPharmQ* content validity whilst highlighting one further potential perceived barrier to the public's engagement with public-health-related-services in the CP (i.e. *Capacity*). Future use of the *PubPharmQ* should consider adding questions relating to perceived capacity of CP staff to deliver public-health-related services, and the likelihood of seeking advice from CP first.

Keywords: template analysis; community pharmacy; public attitudes; public health (services); public perceptions; questionnaire development; service user perspectives; content validity.

Introduction

The role of community pharmacy (CP) in the UK is advocated as a central point of provision of public-health-related services, such as smoking cessation, vaccination, and emergency hormonal contraception [1–4]. Since 2010, CPs in England have supported the delivery of public-health-related services through Healthy Living Pharmacies [5]. Establishing the extent to which the public is ready to engage in CP-based public-health-related services is essential for maximizing uptake.

Previous research indicates public awareness of the CP's role in this area is poor, largely due to a lack of knowledge of the expertise of CP staff in providing public health advice, issues surrounding confidentiality and privacy, the type of pharmacy, and their general busyness [6–10]. More recently, Paloumpi *et al*. (2024) [11] found that whilst pharmacy users' perceptions of CP services and roles in England were positive, concerns were raised regarding the challenges faced. These included the need for more space, unplanned closures and confidentiality issues, yet the need for personalized, face-to-face contact with pharmacy staff was highly valued. Warren *et al*. in 2023 concluded that more integration of public health approaches into CP's professional practice is needed for these roles to be recognized by consumers [12].

The Public Perceptions of the Role of Community Pharmacy in Public Health Questionnaire (*PubPharmQ*) was developed and psychometrically tested in a sample of 306 respondents representing the general public in the UK [13]. The need for a robust measure for capturing public opinion of CP's roles in public health was recognized to identify what factors might prevent the public from engaging with these services and to establish any changes in perceptions over time. To this end, the *PubPharmQ* also provides an indication of the nature and frequency of the barriers to and facilitators for the uptake of public-health-related services delivered in the CP.

The *PubPharmQ* was designed in two stages: Stage 1 was informed by a review of the literature, semi-structured interviews, and focus group discussions [9] with subsequent synthesis of the themes identified [13]. During Stage 2, areas of alignment of key themes identified in Stage 1 informed the first iteration of the questionnaire (42-items) [13].

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Participants rated their agreement (using a 5-point Likert scale) to questions relating to six key areas: (i) Community Pharmacy's role in public health (13 statements), (ii) Reasons for visiting my Community Pharmacy (6 statements), (iii) My relationship with the local pharmacy (7 statements), (iv) Communicating with my local pharmacy team (5 statements), (v) Privacy in the local pharmacy (7 statements), and (vi) Types of pharmacy (5 statements).

Subsequent exploratory factor analysis of these quantitative data revealed a four-factor structure [13]. The resultant *PubPharmQ* therefore, consists of four scales i.e. *Role* (CP's role in public health), *Relationship* (with the CP team), *Privacy* (in the local pharmacy), and *Expertise* (CP team's expertise in public health). This 18-item questionnaire was shown to possess acceptable internal reliability and good face, content, and construct validity [13].

At the end of each set of statements, respondents could provide further comments relating to each of the six areas. Content analysis of these free-text comments has been reported elsewhere [14]; however, this was limited to a didactic approach which was restricted to the six sections of the questionnaire (i.e. before factor analysis). The present study uses Template analysis [15], permitting a hybrid inductive/deductive analysis of the qualitative data [16]. Using this approach provides an understanding of the context which underpins the *PubPharmQ* scales and allows further exploration of the content validity of the *PubPharmQ*.

This paper aims to describe further content validity testing of the *PubPharmQ,* through analysis of the qualitative free-text comments provided by participants during the psychometric testing phase of questionnaire development.

Methods

Recruitment

The *PubPharmQ* was hosted online via Qualtrics™ [17] and distributed via social media platforms (e.g. Facebook, Twitter [X]) in May and June 2021 to recruit an opportunistic self-selecting sample representing the general public [18].

Ethics

Ethical approval was gained from Cardiff Metropolitan University, Cardiff School of Sports and Health Sciences Ethics Committee (PG-4163). Participants provided written informed consent before completing the questionnaire. All data were de-identified.

Data Analysis

Template analysis [15] was chosen as the method of analysis. This form of qualitative thematic analysis has similarities to Framework Analysis [19] in that analysis often, but not always, starts with a 'template' of themes decided *a priori*, for example, informed by theory, previous research, or survey questions. This template is iteratively developed during data analysis, creating a hierarchical template linking themes and sub-themes. *A priori* themes, where used, may remain in the final template if the data continues to support them or revised and/or removed if no longer considered appropriate. New themes may also be added where necessary. In this way, Template Analysis provides a flexible hybrid deductive-inductive approach, supporting unexpected insights and encouraging depth and nuance in data analysis. As such, Template Analysis is well suited for content analysis of survey free-text data, offering the flexibility to incorporate varied responses. The blend of inductive and deductive coding enables content validity testing of pre-existing themes from survey questions, yet allows new themes to be constructed where appropriate, highlighting aspects not fully captured by the quantitative questions. This method also enables analysis of both simple (e.g. '*Not aware of the services they provide*'. P12,F,23,England) and complex comments (e.g. '*… Can they help with obesity, hypertension, well-being etc.? I knew about smoking cessation. Alcoholism and diet problems? Be great if they did*'. P51,M,48,England) through the construction of sub-themes, making it suitable for survey free-text data with mixed-complexity responses. In contrast, Framework Analysis uses a fixed matrix 'framework' to guide data analysis, therefore it is more suited to a deductive approach where a structured comparison of data is required.

As the aim of this analysis was to further explore the content validity of the questionnaire, the four scales of the *PubPharmQ* were used as the initial template. Responses were initially coded line-by-line on a question-by-question basis to allow comparison of views for each question. However, there was some overlap in the views expressed and a potential repetition of themes between questions. To ensure that nuances in response were adequately considered and appropriately coded, responses were subsequently considered as a single dataset. For example, when asked to comment on their relationship with the pharmacy staff, one respondent said '*One pharmacist discussed personal medical matters in front of other customers. Lacked confidentiality*' (P50,F,47,England). As this was a response to the 'relationship' question, it was initially coded to the 'relationship' theme. However, when the dataset was viewed as a whole, the team felt that this comment spoke more to the respondent's views about the professionalism of the pharmacist than their relationship, so it was recoded to the 'Professionalism' theme. The data were coded by one researcher (JS). Research team members (SB, JS, and DJ) discussed coding, conceptualization of themes/sub-themes and resolved coding disagreements. Each participant was given a participant identification key using the format: participant identifier, gender, age (in years), and nation of the UK (e.g. P1,M,26,Wales).

Results

Sample characteristics

A total of 78 respondents (25.5%) provided at least one free-text comment (172 total comments). This subgroup's mean age was 36.6 years (SD = 16.20; 19-78). Of these, 76.9% (n = 60) identified as female, 20.5% (n = 16) as male and 2.6% (n = 2) preferred not to say. Most lived in England (57.7%; n = 45), 39.7% (n = 31) in Wales, 2.6% (n = 2) in Scotland. No additional comments were provided by respondents from Northern Ireland. The descriptive characteristics of the subgroup were similar to those of the whole sample (Table 1).

Six themes were constructed from the data: *Role in Public Health*, *Relationship*, *Privacy*, *Expertise*, *Perceived Capacity* and *Care-seeking Behaviour: Pharmacy First*. The first four themes corresponded to the scales of the *PubPharmQ*; *Capacity* and *Care-seeking Behaviour: Pharmacy First* were newly developed themes (Table 2).

Table 1. Comparing respondents' age, gender, ethnicity, and location between the full sample and the free-text subgroup.

Characteristic		Full sample *N* (%)	Free-text respondents *N* (%)
Age		34.3 years	36.6 years
Gender	Female	235 (76.8%)	60 (76.9%)
	Male	67 (21.9%)	16 (20.5%)
	Prefer Not to Say	2 (0.7%)	2 (0.7%)
	Other	2 (0.7%)	0 (0%)
Ethnicity	Asian/Asian British	23 (7.5%)	2 (2.6%)
	Black/African/Caribbean/Black British	7 (2.3%)	1 (1.3%)
	Mixed	8 (2.6%)	1 (1.3%)
	White	263 (85.9%)	71 (91%)
	Other	5 (1.6%)	3 (3.8%)
Location	Wales	106 (34.6%)	31 (39.7%)
	England	189 (61.8%)	45 (57.7%)
	Scotland	10 (3.3%)	2 (2.6%)
	Northern Ireland	1 (0.3%)	0 (0%)

Theme 1: Role in public health

This theme describes the public's perception of the CP's role in delivering public health services, organized into two sub-themes: '*Perceived role*' and '*Awareness of public health services*'. There was a strong awareness of CP's medication dispensing role, with pharmacies also seen by some as a source of advice regarding minor ailments and well-being. However, there was a lack of awareness of CP's role in public health and little knowledge of the available public-health-related services. Despite this, there was openness to receiving public health advice and services from CP. Several suggested that services should be better publicized, and some noted the differing service provisions across geographical areas.

Theme 2: Relationship

This theme discusses factors that underpin the relationship between service users and CP staff. Sub-themes were '*Opportunity to build a relationship*', '*Approachability*', '*Trust*', and '*Perceived professionalism of pharmacy staff*'. Several respondents indicated they did not currently have a relationship with their CP team, with some stating that they did not visit the CP often enough to build a relationship. Others felt that a lack of staff continuity impacted the opportunity to develop relationships. There was variation among respondents regarding the approachability of CP staff, where friendly staff were seen as approachable and appearing busy made staff seem less approachable. Others indicated that physical barriers, such as the pharmacy counter or a safety screen, reduced approachability. Some lacked the confidence to ask to speak to a pharmacist, with one respondent describing their unfamiliarity with staff as a barrier to approachability.

There were mixed comments regarding trust, with some reporting a level of trust and others appearing less confident in staff trustworthiness. Similarly, respondents reported conflicting views on staff professionalism which were closely linked to perceived trustworthiness. While many described a good standard of pharmacy team professionalism, others queried the confidentiality of their interactions after hearing staff discuss personal information in public, questioning whether pharmacy staff were bound by the same ethical duty of confidentiality as general practitioners (GPs).

Theme 3: Privacy

This theme encapsulates the public's perceptions of privacy in the CP. Sub-themes were '*Being overheard*' and '*Private consultation rooms*'. Respondents expressed concerns over privacy within the CP and being overheard in communal areas. Respondents were uncomfortable with the potential for sensitive conversations to be overheard, particularly in smaller pharmacies. Several recounted CP staff discussing medication in front of others, causing embarrassment. There was good awareness of the private consultation rooms in CPs, however, concerns were raised over the degree of privacy that consultation rooms provide. Several suggested that they were poorly designed, with inadequate soundproofing.

Theme 4: Expertise

This theme explores the public's perception of the CP's expertise in public health. Most comments about the expertise of the pharmacy team concerned their medication dispensing role. There were varying opinions regarding how well CP fulfils this role, with some referring to medication errors and others describing positive encounters, demonstrating the variations in experiences. Only one participant specifically mentioned the CP's expertise in the provision of public health. Furthermore, respondents did not know which staff members had the expertise to offer advice and services.

Theme 5: Perceived capacity

This theme discusses service users' perceptions of the pharmacy team's capacity to provide public-health-related services, suggesting a perceived system-level barrier to service provision. Respondents commented on the busyness of the CP creating an environment where there was a reluctance to ask for advice and services. One noted that pharmacies had become busier since the COVID-19 pandemic. Some believed that dispensing prescriptions took priority, while others felt that the time needed and *ad hoc* nature of service provision (i.e. the fact that no appointment is needed) detracted from

Table 2. Themes from Template Analysis with Definitions and Indicative Quotes

Theme	Sub-theme	Indicative quotes
Theme 1: Role in Public health This theme describes the public's perception of the community pharmacy team's role in delivering public health services.	1.1 Perceived Role of Community Pharmacy in Public Health This sub theme explores the respondent's perceptions of the responsibilities of community pharmacy.	'Community pharmacists are important assets for the provision of public health since they are often the first point of contact' (P21, F, 25, England). '… There is a perception (that I also have) that pharmacies are only there to dispense medicine' (P8, F, 22, England).
	1.2 Awareness of Public Health Services This sub-theme explores the respondent's awareness of public health services available in community pharmacy.	'...Can they help with obesity, hypertension, well-being etc.? I knew about smoking cessation. Alcoholism and diet problems? Be great if they did'. (P51, M, 48, England). 'I find the pharmacist service extremely valuable but from the questions obviously don't have a full understanding of all the services they offer'. (P53, F, 49, Wales).
Theme 2: Relationship This theme encapsulates the factors that underpin the relationship between service users and CP	2.1 Opportunity to Build Relationships This sub-theme explores how lack of interaction with community pharmacy influences the relationship between community pharmacy and service user.	'No relationship with pharmacist because they change so often' (P48, F, 46, Wales). 'I don't go often enough to have a personal relationship with them' (P10, F, 22, England).
	2.2 Approachability This sub-theme explores factors that influence respondent's perceptions of approachability of staff	'The pharmacist is a man so that would impact on what I would choose to discuss' (P55, F, 50, Wales). 'I think the main barrier of me visiting a community pharmacy is the unfamiliarity - I suffer with anxiety so it's difficult for me to feel comfortable in new environments." (P6, F, 22, England).
	2.3 Trust This sub-theme explores the issue of trust and how trust impacts the relationship between community pharmacy staff and service users.	"I don't have any issues with it, and feel that my information will be treated confidentially and professionally' (P20, F, 24, England). 'I feel comfortable speaking with staff at a pharmacy, but to trust them with my private medical information. I'm unsure if they fall under doctor-patient confidentiality'. (P11, PNS, 23, Wales).
	2.4 Professionalism This sub-theme explores how professionalism of staff in community pharmacy can influence the relationship between community pharmacy and service users.	'I have overheard counter staff (not the pharmacist) gossiping about other people who have been in the pharmacy so I would not divulge personal info to these people' (P71, F, 63, England). 'I find the experience more positive, professional and helpful than what I receive from my GP' (P53, F, 49, Wales).
Theme 3: Privacy This theme encapsulates the public's perceptions of privacy in the CP.	3.1 Being Overheard This sub-theme explores respondent's worries surrounding private conversations being overheard by other service users in the community pharmacy.	'The problem is you often have to explain your health issue with other members of the public listening and it is uncomfortable' (P27, F, 26, Wales). 'Feeling comfortable talking depends on how busy the pharmacy is' (P29, F, 27, England).
	3.2 Private Consultation Rooms This sub-theme explores respondent's perceptions and awareness of private consultation rooms.	'The private room isn't very insulated so I would be concerned about someone overhearing if it was very personal' (P55, F, 50, Wales). '[I] was unaware that consultation rooms could be used other than for vaccination' (P9, F, 22, England).
Theme 4: Expertise This theme explores the public's perception of the community pharmacy team's expertise in public health matters.		'I would perceive an 'experienced' pharmacy assistant to be able to offer appropriate public health advice within their limitations'. (P72, F, 65, Wales). 'It can be difficult to know who you are talking to and whether they have the knowledge and expertise required'. (P58, F, 52, Wales).

Table 2. Continued

Theme	Sub-theme	Indicative quotes
Theme 5: Perceived Capacity This theme encapsulates the perceived capacity issues in CP; specifically, the impact that perceived capacity can have on service users and other healthcare providers.	5.1 Pharmacy Capacity Issues This sub-theme explores respondent's perceptions about the busyness of community pharmacy.	'My community pharmacy is always busy and not enough staff to help'. (P46, F, 46, Wales). 'Sometimes advice service takes a considerable time and without appointment. This can impact on the amount of time other customers have to wait for the medication management service they expect from pharmacy services. In the past this has sometimes made me reluctant to access advice from this source' (P66, F, 60, Wales).
	5.2 Impact on Other Health Care Provider Capacity This sub-theme explores respondent's perceptions about how using community pharmacy can influence capacity of other healthcare providers.	'I think that they are an important place for offering public health advice, as it will take strain off GPs' (P20, F, 24, England). 'Could be better utilized by other healthcare professionals like doctors' (P47, F, 46, Wales).
Theme 6: Care Seeking Behaviours: Pharmacy First This theme explores the behaviour of visiting community pharmacies before other healthcare providers.		'I would always go there first and wait for them to tell me if I need an appointment with the GP'. (P53, F, 49, Wales). 'If I had a mild health issue, such as a verruca I would seek advice from my pharmacist' (P55, F, 50, Wales).

Note. Grey highlighting = Themes deductively derived from the PubPharmQ.

the timely provision of services or medication provision for other users, influencing their decision to seek advice from CP. Despite this, there was a common perception that the public could better utilize CPs for public health-related services before using other healthcare providers (HCPs), for example, GPs, creating capacity elsewhere in the healthcare system.

Theme 6: Care-seeking behaviours: pharmacy first

This theme explores the action of visiting CPs before seeking help from other HCPs. Care-seeking behaviours varied amongst respondents. Many used the pharmacy as their first port-of-call before accessing a GP, with one respondent commenting that they visited a GP first only by habit. As previously noted, there was variation in the choice of HCP based on the presenting issue.

See Supplementary Table S1 for further details.

Discussion

This paper presents further analysis of data exploring public perceptions of CP services relating to public health, providing additional evidence to support the content validity of the *PubPharmQ*. Six themes were constructed using a combination of deductive and inductive analysis. Four themes directly matched the four scales of the *PubPharmQ* (*Role in Public Health, Relationship, Privacy and Expertise*), thus strengthening its content validity. '*Perceived Capacity*' and '*Care-seeking Behaviours: Pharmacy First*' were developed as additional themes. While issues around accessibility, location, and busyness have been previously discussed in the literature [20], this is the first time that issues around pharmacy teams' perceived capacity have been identified. While this study demonstrates a robust Template analysis of free-text comments, some limitations must be considered. Only 25% of respondents provided comments; therefore, opinions may not represent the whole sample; however, their demographic characteristics were comparable. Assessing geographical differences in public perceptions across the four nations of the UK, where different contractual services exist, was difficult due to the small number of respondents from Scotland and Northern Ireland. Furthermore, using written text removed the opportunities for clarification that an interview or focus group affords; therefore, some comments may have been open to interpretation, although group coding discussions mitigated this to some extent.

Considering CP's role within public health, the data presented supports the *PubPharmQ* quantitative findings, which indicated that many consumers are unfamiliar with the public health services available. Respondents more readily associated the CP with medicine supply than public health advice and service provision. The lack of public awareness of CP-based services has been reported elsewhere in the literature [21, 22]. This lack of cognizance of CPs' role has also been shown to extend to policymakers [23]. A recent qualitative study found that patients experiencing public health services in CP learned about services through pharmacy-based advertising material [11]. This could partly explain why respondents in our study who did not regularly visit a CP held a more traditional view of the CP role, as they would not have been exposed to local advertising material or been directly offered services. The relatively young mean age of respondents (36.6 years) potentially explains why they visited CP less often, as they are less likely to be prescribed regular medication than older people.

In terms of the relationship with CPs, the qualitative data also provided further support for the *PubPharmQ* findings. Respondents reported that relationships with the CP team were key, saying that a lack of permanent staff or infrequent contact with CP influenced their relationship. Mirzaei *et al.* also found that relationships with the pharmacy team were

important, with a positive relationship creating a sense of trust [24]. As with this study, the availability of pharmacists and pharmacy staff using a proactive approach was valued. Similarly, Abdul Aziz *et al.* [25] found that trust in the pharmacy team encouraged patients to access pharmacy services, with a perception that staff were appropriately qualified and continuity of staff increasing trust.

The qualitative data also supported the *PubPharmQ* findings regarding privacy in the CP, providing a greater understanding of privacy and confidentiality issues, with the adequacy of consultation rooms being questioned. Privacy concerns in CP have been noted previously [11, 26, 27]. An Australian study found that staff judged the level of privacy necessary and utilized the pharmacy layout accordingly; however, consumers still preferred not to discuss personal issues in some pharmacies due to the perceived lack of privacy [28].

Quantitative *PubPharmQ* findings regarding perceptions of the CP's expertise in public health were also supported. However, respondents often conflated their views regarding the pharmacy team's competence in medicine supply with expertise in public health. Additionally, there was little understanding of expertise and roles within the pharmacy team. This provides an important insight for the pharmacy profession and policymakers, highlighting the need to raise awareness of the expertise of pharmacists and the wider pharmacy team, particularly as roles and responsibilities change over time.

Template analysis identified an area of divergence regarding the content validity of the *PubPharmQ*; a new barrier relating to *Perceived Capacity*. While most respondents agreed that CP could be better utilized, the perceived capacity of the pharmacy team influenced whether they requested advice or services. Believing the pharmacy to be busy or seeing the team engaged in other activities such as dispensing discouraged individuals from requesting services. Another study also found that pharmacy workload impacted pharmacy users' decisions to request non-dispensing services [11]. Changes to an individual's threshold for seeking care based on perceived or actual availability of services have also been demonstrated in general practice [29]. This analysis suggests that an extension of the questionnaire that enabled further quantitative exploration of perceptions of CP staff capacity would be beneficial.

A second additional theme was '*Care-seeking Behaviour: Pharmacy First*'. This theme did not describe barriers but relates to the action of using CP as the first port-of-call, with respondents describing visiting the CP first for medication queries and minor ailments. Similar care-seeking behaviour was also seen in a 2023 IPSOS survey, where 68% of respondents visited pharmacies for medicines advice and 54% sought advice on minor ailments from a pharmacy before other sources [27]. Notably, the IPSOS survey respondents were more likely to visit their GP than CP for influenza vaccination and blood pressure checks, and only 19% stated they would visit CP for smoking cessation support. While this theme discussed trends in initial care-seeking behaviour, it is recognized that drivers of behaviour are multifaceted [30], indicating that a full exploration of care-seeking behaviour should consider wider system influences in addition to perceptions of CP as a provider of public health services, and is therefore beyond the scope of the *PubPharmQ*. However, as the landscape of healthcare systems changes, understanding care-seeking behaviour, including where care is first sought, is an important area for further research.

Implications for practice

A 2010 qualitative study [6] showed similar results to the current findings, suggesting that public views in the UK have not changed markedly in the intervening 14 years. Notably, having completed the survey, over three-quarters of respondents in the 2010 study agreed they would consider pharmacy a source of public health advice, compared to under a quarter beforehand. This suggests that the underutilization of pharmacy services is driven more by a lack of awareness than a lack of willingness to engage. The lack of clarity on the role of CP within public health is an interesting finding, particularly given that the Healthy Living Pharmacy Framework in England, designed to support public health through CP, has been in place since 2010. This suggests that wider advertising of pharmacy-based public-health-related services to those who infrequently access CP is necessary. Encouragingly, our analysis showed that respondents receiving a public health-based service in CP were positive about the experience.

This analysis highlights the influence of the perceived capacity of CP staff on respondents' decisions to seek advice and services. The lack of protected time for service delivery also added to the reluctance to seek advice, suggesting that alternative approaches may need to be considered to support the expanding CP service provision. This analysis also provides confirmation and further insight into the importance of privacy and confidentiality for pharmacy users, suggesting the adequacy of consultation spaces should be considered, and opportunities for overhearing conversations should be minimized.

Conclusion

The original study and this more in-depth analysis of qualitative responses provide further underpinning support for and confirm the content validity of the four original scales of the *PubPharmQ*, whilst highlighting one further potential perceived barrier to the public's engagement with public-health-related services in the CP (i.e. *Capacity*). This analysis indicates the value of further exploration of the perceived capacity as a barrier to delivering public health services within CP. Future use of the *PubPharmQ* should consider adding questions relating to the perceived capacity of CP staff to deliver public-health-related services, as well as asking about their likelihood of seeking advice from CP first.

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Supplementary material

Supplementary data are available at *International Journal of Pharmacy Practice* online.

Author contributions

Conceptualization D.H.J; methodology, D.H.J, S.L.B, J.E.S; validation, D.H.J, S.L.B; formal analysis, J.E.S, S.L.B, D.H.J; investigation, R.R; resources, D.H.J; data curation, J.E.S, R.R, S.L.B, D.H.J; writing – original draft preparation, S.L.B, J.E.S., D.H.J; writing – review and editing, S.L.B, J.E.S., D.H.J, A-L.P, R.R; supervision, D.H.J, S.L.B, project administration,

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Conflict of interest

The author(s) declare that there are no conflicts of interest.

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Ethical approval

Ethical approval was gained from Cardiff Metropolitan University, Cardiff School of Sports and Health Sciences Ethics Committee (PG-4163) as part of the original PubPharmQ development in 2021.

Data access statement

All research team members had access to the data that supported this publication.

Data availability

The de-identified free-text data used in this analysis are included as supplementary material.

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