**Research Paper** 





# The impact and user experience of a student-led clinic providing preventative services

Sophie Chin, Charlotte Lucy Richardson\* , Adam Gardner, Hamde Nazar

School of Pharmacy, Newcastle University, Newcastle upon Tyne, NE1 7RU, United Kingdom

\*Correspondence: School of Pharmacy, King George VI, Newcastle University, Newcastle upon Tyne, NE1 7RU, United Kingdom. E-mail: charlotte. richardson2@newcastle.ac.uk

#### **Abstract**

Objectives: Preventative services are required to address the risk factors for chronic conditions such as cardiovascular disease. The National Health Service Health Checks in England were introduced to provide such services. One School of Pharmacy established a student-led clinic to provide this service to the local community. The clinic was provided by undergraduate pharmacy students and delivered free of charge within a central city locality. The aim was to explore the impact of the clinic on user thoughts and motivations around healthy living and investigate user

Methods: A sequential explanatory mixed methods approach was used consisting of a survey that measured users' thoughts about their health and well-being and experience of the clinic. Qualitative interviews explored the user experience and barriers and facilitators to making healthier lifestyle choices.

Results: One hundred and fifty-four members of the public accessed the clinic over the evaluative period. Ninety-six (60%) completed the pre-post survey and 12 participated in follow-up interviews. Users reported statistically significant improvements in how informed, competent and motivated they felt towards making healthier lifestyle choices after the clinic consultation. Interview findings highlighted the positive user experience, reported appreciation for clinic accessibility, availability of healthy lifestyle education, and a desire for more preventative services being as readily available.

Conclusions: The student-led clinic has demonstrated positive impacts on user experience, knowledge, competence, and motivation to make healthier lifestyle choices. The clinic provides proof-of-concept for pharmacy students to deliver preventative community services that aim to improve population health at a time when primary care is experiencing unprecedented challenges.

Keywords: cardiovascular disease; health checks; primary healthcare; public health; student-led clinic

### Introduction

Antihypertensive and blood cholesterol-lowering drugs are among the most cost-effective interventions to reduce the risk of cardiovascular disease (CVD) events and deaths, however, the implementation of these preventative measures is not sufficient [1, 2]. Intervention strategies are needed for other interrelated risk factors including preventing diabetes, reducing tobacco use, maintaining a healthy body-mass index, engaging in physical activity, and a healthy diet [3]. In 2009, the English National Health Service (NHS) started an NHS Health Check programme aiming to reduce CVD risks and events. This consisted of a structured clinical assessment and consultation for those aged 40-75 years old with no preexisting diabetes or CVD. The check involved a review of CVD risks including blood pressure, blood glucose, blood cholesterol, alcohol intake, physical activity, and diet [4]. The United Kingdom (UK) government has been evaluating this initiative given that it was implemented wholesale without underpinning high-quality evidence [5].

The latest report found that millions of people have accessed the service and been assessed. Uptake has generally been representative of the socio-economic and ethnic diversity of the population. Many attendees (>75%) recorded at least one

elevated risk factor, even those under 50 years of age. Referral to onward services, such as General Practice (GP), has also been high. Based on these success factors, the report includes six recommendations which include focussing more on preventative care, starting younger, improving engagement and participation, enhancing the offer through digital technology, addressing more conditions, and creating a learning system [6]. However, these recommendations come against the backdrop of primary care which is already challenged with the after-effects of the COVID-19 pandemic.

One School of Pharmacy in the UK has feasibility tested the potential for undergraduate student pharmacists to run a community-based, student-led clinic (Young@Heart clinic) to offer the equivalent of the NHS health check to members of the public [7]. The national service has an eligibility criterion which was not adhered to as the main purpose of the clinic was to provide students with a practical clinical experience. As described in our previous work, the clinic is delivered in a city centre location within a covered market [7]. A completed TIDier (Template for Intervention Description and Replication) has been included in the Supplementary information to give more details about the clinic. This study aims to report the impact of this clinic on service users in relation 238 Chin et al.

to their knowledge and motivation about healthier lifestyle choices and experience and perceptions of accessing preventative services in this way. The Capabilities–Opportunity–Motivation–Behaviour model was used to inform the data collection and analysis in this study. The COM-B model is widely used to identify what might need to change for a behaviour change intervention to be effective [8]. The NHS health check involves advice and signposting for people to improve their health and well-being and reduce the risk of disease, therefore the use of the COM-B model was deemed appropriate.

### Materials and methods

### Study design

A sequential explanatory mixed methods approach was utilised [9]. Quantitative data collection acted as the base upon which the qualitative data collection phase was developed.

## Pre-post surveys

Clinic users were approached by a researcher upon entry to take part in the study. They were provided with a participant information sheet outlining the aims and remit of the study and a survey which included a preclinic section and postclinic section to complete if they chose to. Users were also provided with a consent form to complete and sign to indicate their willingness to participate in the study. Users could consent to the qualitative or the quantitative parts of the study. If the user did not wish to take part in the study, they could still access the services. The pre-post survey was employed to measure the clinic users' perceptions of their health and well-being before and after the health check. (The survey has been included in the Supplementary information.) The survey consisted of Likert-scale statements (strongly agree-strongly disagree) that mapped to the elements of the COM-B model [8]. This included knowledge about their current health status (capability), awareness of healthy lifestyle interventions they thought they needed to adopt (capability), barriers and facilitators to engaging with healthier lifestyle choices (capability and opportunity) and how motivated they were to make or maintain active changes in relation to their health and wellbeing (motivation). Supplementary data (free text) were collected about their expectations of and reasons for attending the clinic, current health, and wellbeing concerns (preclinic) and overall satisfaction with their experience (post-clinic). In the first two days of the evaluative period, the researcher provided the survey to consenting participants and offered to provide any advice or clarity on the survey. This piloting of the survey led to the reformatting of the Likert scales in the survey to improve clarity.

### Semi-structured interviews

All clinic users completing the survey were invited to provide their contact details for a follow-up interview. All those who provided their details and had provided consent were contacted within 2-weeks of attending the clinic and invited to a face-to-face or telephone interview at their convenience. Participants were incentivised with a £20 gift voucher.

An interview topic guide was developed to capture feedback about their experience at the clinic and explore if and how the clinic had an impact on their thoughts and approach to health and lifestyle. Participants were asked about any barriers and facilitators to engaging in healthier lifestyle choices and about any engagement with health and social care services because of the clinic.

Interviews were audio-recorded with consent and transcribed verbatim for analysis. No identifiable information was recorded. Where required, observational notes were made during the interviews to record nuances, impressions, and behaviours.

The consolidated criteria for reporting qualitative (COREQ) studies have been used to inform the reporting of the qualitative aspects of the study. The completed checklist is included in Supplementary file 1.

## Quantitative analysis

Descriptive statistics was used to analyse quantitative survey data. The Likert-scaled items were scored on a scale of 1–5 with a lower score indicating a more positive user belief, attitude, and opinion towards their health and lifestyle. Participant scores pre–post clinic was compared, where a negative difference indicated a more positive response to the COM-B statements. McNemar's chi-square analysis was carried out on the categorical Likert scale responses of the paired statements with statistical significance levels set *a priori* at 0.05.

### Qualitative analysis

Qualitative content analysis (QCA) was employed to analyse the data. QCA has been described as a 'sibling to thematic analysis', with commonalities that include its subjective interpretative nature through the systematic process of coding and identifying themes or patterns [10].

Following QCA, data were coded using deductive thematic framework analysis [11], where the constructs of the topic guide formed the initial codebook. Subsequently, inductive thematic analysis was adopted to identify further codes and modify the framework for analysis. Two researchers [PS and HN] independently coded the first three interviews and met to discuss the analysis, review the codebook and agree on the subsequent approach to analysing the remainder of the transcripts. The remainder was coded by one researcher [PS]. The research team met once all transcripts were coded to generate themes from the data. Theoretical saturation was deemed to have been met when no new open codes could be extrapolated from the data.

Institutional ethical approval was granted for this study.

### Results

Data were collected from 18 October 2022 to 24 November 2022 when 154 members of the public accessed the clinic services over 10 days of operation.

Of these users, 96 completed the pre-post survey producing a response rate of 60%. Participants were mainly those identifying as white, over the age of 60 and with no pre-existing CVD (Table 1).

Two-thirds of users reported not having attended an NHS health check (n = 65, 67.7%) at the point of completing the survey. Reasons for this were largely a lack of awareness (n = 39, 60%), followed by non-specific reasons (n = 15, 23.1%) such as not making the time to attend or difficulty with access to general practices. Ineligibility, i.e. individuals not within the age range or inclusion criteria, was reported by nine

**Table 1.** Clinic user demographics, characteristics, and information about use of the clinic.

Data taken from clinic	User demographics and characteristics	Number (%
record	Sex	
(n = 154)	Men	63 (48.1)
	Women	68 (51.9)
	Not stated	23 (14.9)
	Age	
	19–30	12 (9.2)
	31–40	7 (5.3)
	41–50	23 (14.9)
	51–60	29 (18.8)
	61–70	36 (23.3)
	>70	47 (30.5)
	Ethnicity	
	Arab	3 (2.2)
	Asian	14 (9.1)
	Black	4 (2.6)
	Mixed	4 (2.6)
	White	116 (88.5)
	Not stated	13 (8.4)
	Diagnosed cardiovascular condition	
	Yes	42 (27.3)
	No	112 (72.7)
	High blood pressure measurement (≥ 140/90 mmHg)	
	Yes	65 (42.2)
	No	89 (57.8)
Data from pre-post	Reasons for clinic uptake (could select more than one)	
survey $(n = 96)$	Convenience	34 (35.4)
	Address health concerns	24 (25.0)
	Helping student education	59 (61.5)
	Other	6 (6.3)
	Awareness of the clinic (could select more than one)	, ,
	Recruited by students	72 (75)
	Posters/flyers around the clinic venue	14 (14.6)
	Recommendation from family/friends	2 (2.1)
	Other	12 (12.5)
	Services received from the clinic (could select more than one)	, ,
	Healthy lifestyle advice	36 (37.5)
	BMI calculation (height and weight)	21 (21.9)
	Blood pressure assessment	94 (97.9)
	Blood glucose measurement	81 (84.4)
	Blood cholesterol measurement	77 (80.2)
	Referral to primary care provider	4 (4.2)
	Previous use of NHS health checks	, ,
	Attended	31 (32.3)
	Not attended	65 (67.7)
	Reasons for non-attendance	()
	Ineligibility	9 (13.8)
	Lack of awareness	39 (60.0)
	Inconvenience	3 (4.6)
	Other	14 (21.5)
		1. (21.0)

**Table 2.** Mean scores of clinic users pre-post clinic (n = 96).

Survey item	Preclinic mean (SD)	Post-clinic mean (SD)	P-value
I feel well-informed about my current health and wellbeing	2.2 (0.8)	1.6 (0.6)	<.01
I think I know what I need to know and have what I need to make healthier lifestyle choices	2.1 (0.7)	1.9 (0.7)	.019
I feel motivated to make healthier lifestyle choices.	2.1 (0.8)	1.9 (0.8)	.007

(13.8%) and inconvenience was reported by a further three (4.6%) users (Table 1).

## User experience

Overall, users felt that their health and well-being concerns were well-managed during their consultation and that their expectations of the clinic were well met. To the statements 'I felt my health and wellbeing concerns were well managed during my consultation,' and 'My experience at the clinic met my expectations,' 93/96 (96.9%) and 92/96 (96.4%) users agreed or strongly agreed respectively.

Written feedback was provided on both the positive and negative aspects of the clinic. Positive comments were provided by 76 participants (79.2%) and related to (n = number of comments) staff affability (n = 28); beneficial experience (n = 22); quality of services (n = 10); general positive feedback (n = 6), feelings of reassurance (n = 4) and health intervention (n = 3). Negative comments or constructive feedback was provided by 10 participants (10.4%) relating to the environment (n = 5), and quality of the services (n = 4), and one comment was general feedback (Supplementary information 1).

### Pre-post measures

The scores of McNemar's chi-square analysis of the three items about: how informed users felt about their health, how competent they were to make any necessary changes to their lifestyle, and how motivated they were to make these changes, showed statistically significant (P < .05) improvements after attending a consultation at the clinic (Table 2).

## Key themes

A total of 12 interviews were conducted with service users, five of which were in-person and seven *via* phone call. Each interview lasted between 5 min and 35 min. Theoretical saturation was reached after seven interviews. Six overarching themes were identified from the data: making changes because of the clinic consultation, cognitive effects of attending the clinic, opportunity and motivational barriers to leading a healthier lifestyle, frustrations with primary care enhancing the acceptability of the clinic, reasons for clinic uptake, and aspects of user experience.

# Making changes because of the clinic consultation

Users disclosed if and how they had made any changes as a consequence of attending the clinic and obtaining their clinical assessments.

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Among the 12 users who were interviewed, seven had been referred to either attend a second appointment at the clinic or to contact their GP. Six reported that they had followed through with this advice.

"I'm going to India in January with a group from church and I thought, "Oh, I'll just wait [to see the GP] until after then," but when I came back in [to the clinic], they [the students] said, "Well, I suggest you do it within the fortnight." (Laughs) Because I was just thinking "Oh, me insurance will go up," but then afterwards, I thought, well, this is ridiculous, I'm going to have to go get it sorted. It's [GP appointment] tomorrow." (User 5)

Where clinic readings had been outside the healthy range such as high blood pressure or cholesterol, some revealed they would have otherwise not been aware had they not attended the clinic. Most users voiced general appreciation towards receiving their results and information about a healthier lifestyle, irrespective of whether this was implemented.

"We've got that printed letter with our blood sugar levels, our blood pressure, and our cholesterol levels. So that was helpful to us, too. Because my blood pressure's quite high. It's never been that high." (User 4)

Where users reported having made changes to their lifestyle, this was mostly dietary changes to reduce weight, such as consuming more fruit or vegetables or reducing consumption of food products with high sugar or salt content.

"I think so, yes. I think we're more aware of food we eat, you know, like when I'm buying a packet of biscuits." (User 4)

One user described the uptake of ambulatory blood pressure monitoring due to being more interested.

"So... I've been thinking about getting a blood pressure monitor, and just, not being paranoid over it. You know, but just being aware of things." (User 7)

### Cognitive effects of attending the clinic

Participants described their feelings and impact on their outlook on their health after attending the clinic. They expressed feelings of reassurance from broadly positive health screening results; increased motivation to make healthier lifestyle choices, and appreciation of the opportunity to receive screening and healthy lifestyle information.

Feelings of reassurance were expressed often followed with the acknowledgement that there was no need to access their GP in the immediate future.

"And I've been wondering about me cholesterol for a long time because I haven't got the best of diet, and I thought me cholesterol might have been high, but it was, you know, nothing to worry about. I don't have to go see the GP so that was good. It's just the reassurance really." (User 8)

In users who reported not having made any changes to the way they perceive their health, this usually coincided with

practising pre-existing healthy habits with no health issues raised during their consultation.

# Opportunity and motivational barriers to leading a healthier lifestyle

Participants shared more specific information about how the clinic experience impacted their knowledge about their health and well-being and how this may (or may not) have impacted their motivation to make any changes.

Generally, most participants reported they felt sufficiently informed about their health to know what changes they were required to make to improve their health and lifestyle. Collectively, users described a comprehensive understanding of the benefits of practising healthy lifestyle habits, both physically and mentally.

"They [the students] told me things about what I need to, which I kind of already know. I know I should eat more fruit and veg and really get out and about a bit more." (User 8)

"It's all stuff that will keep out of the doctors and off the medicines. Eat well and keep fit. Stopping smoking will help too, of course!" (User 3)

Users also described a general increase in motivation to make positive changes to their health, and some reported that the experience acted as a reminder to maintain a healthy lifestyle, regardless of what their results had been.

"But when it comes to sort of cooking healthily, I just sometimes think "Oh crikey, it's just too much hard work," but when you've done something like that and you're confronted with your height, your weight, your BMI, you stop and think about it more." (User 2)

One participant described their chronic pain preventing them from increasing their levels of physical activity.

"No, I mean, I do try to walk to the shops and if it gets too much, I get the bus back, but I mean, I do try and walk and move about. It's just when the pain is really bad. I just sit at home, you know, can't do anything." (User 9)

Time constraints and low energy levels were the most reported barriers to making healthier lifestyle choices.

"Yeah, there are things that I need to try and change at the moment, but it's just work constraints at the moment and time. So, I know I need to get a bit more exercise done and things like that, but it's just work and time at the moment." (User 6)

"I need to focus more on my health, and I feel I know, I feel I know what needs to be done, but I don't always have time to do it." (User 12)

"It's not that I haven't been able to, it's that I haven't done it. I know what I need to do. It's putting it into practice that's the hard part for me." (User 2)

# Frustrations with primary care enhancing acceptability of the clinic

Where users expressed beneficial aspects of the clinic, these statements were commonly found to come in tandem with dissatisfaction with NHS services, most prominently due to the current strains in primary care.

Most users reported appreciation towards the ease of access to the clinic and the promptness of the services, such as receiving their clinical results in a timely manner. This was especially valued in users who perceived difficulties in arranging an appointment with their GP or in individuals who simply did not wish to contact their GP when not acutely ill.

"And yeah, as I say just getting the results of the blood tests, and, you know, really rapidly and the cholesterol and the diabetes check as well. That was really good. Everything was immediate, we didn't have to wait for a phone call or whatever." (User 12)

Frustrations about not being able to make an appointment with their GP within a reasonable period were also a reoccurring theme among users.

"So, if I wanted them done, I would have to ring my GP, probably see a practice nurse, you can't get into the doctors, you've got to wait ages to see anybody. I mean it's just a total nightmare now trying to get things done." (User 8)

Some users voiced apprehensions towards the uptake of primary healthcare, such as having a distrust in their GP to make effective healthcare interventions in a timely manner.

"They [the students] said, you need to contact your doctor. It's pointless contacting my doctor; what will he do? [...] I don't see the point in going to the doctor, to wait for two weeks for an appointment, to sit there and be told, "Oh your blood pressure's a bit high. We'll see how it goes, come back in a month." Because that's exactly what would happen." (User 4)

Some participants described the need for more readily available preventative services.

"I think it would be a good idea if GPs gave everyone a health check every year. Because I think- I was a maintenance electrician, and maintaining, regular maintenance on the machines was much, much preferable to machines breaking down. Same with bodies I assume, isn't it? And I don't know why I struggled to get a health check once a year." (User 7)

## Reasons for clinic uptake

Users were, in general, enthusiastic engaging with and contributing to student learning.

"I've always been one to help where I can, and you knowpeople have to learn. And you're doing your studies and I thought, "What's the harm?" that's fine yeah, I've got time!" (User 2)

Self-interest or curiosity in one's health was also identified as a motivator for users to attend the clinic, as well as, social influences from family and friends.

"It's always nice to know if you've got any underlying problems. So, it was just a good way to do a health check." (User 11)

## Aspects of user experience

All 12 interviewees had some positive general experiences to share, particularly about the clinics being delivered by students. These findings closely aligned with the comments provided in the survey.

"It was very interesting from a novice point of view, because we're not health experts or anything. It's very interesting for them[students] to do that and explain why they were doing it and they're very good at explaining what they were doing. They were very friendly, very polite." (User 4)

Users described empathetic and approachable students and reported feeling more comfortable in the clinic, owing to the lack of time constraints usually seen in primary care, the familiarity of the setting, and flexibility for questions or queries to be openly asked and answered.

"And you[students] all were listening to us and giving us your time whereas sometimes the local nurses are just so rushed off their feet, they can't really focus on things. We felt as though we could talk to you. We both felt as though it was a positive experience, just because we could ask questions." (User 12)

Users felt that the clinic consultations contained useful information, such as dietary or healthy lifestyle advice to improve blood pressure levels, blood cholesterol levels, and blood glucose levels. One user highlighted how receiving explanations about their health from a healthcare professional was much more ideal than seeking out this information themselves, owing to the use of simplistic, easy-to-understand language and provision of explanations where required.

"Us older people, need to get told every now and again because we didn't know all the facts when we were your age, we didn't know the facts about not smoking, not drinking, you know, cutting back on sugar and things. So no, I think it's a good idea and it's brilliant to bring it to older people's attention, that they need to be looking out for their health." (User 2)

Most interviewees were very enthusiastic about the availability of the clinic to the public.

"I just think it's a really good idea, it's a brilliant idea, it really does bring to your attention when you've done it what you need to change, whether you implement it or not it tells you what you do need to do." (User 2)

"And I just hope it continues for a long time really to help other people. Because I think a lot of people will be, they'll avoid going to the doctor's or the nurses' because things get left on the record. Maybe they just want to nip in and check and see what's going on sort of informally. So, it gives them an idea of, you know, the state of play at that point in time for themselves." (User 12)

Where constructive criticism was raised, this related to the environment of the venue or the waiting times such as when the clinic had reached full capacity.

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### **Discussion**

Users of the student-led Young@Heart clinic report positively about the care they received and the impact on knowledge and motivation to make healthier lifestyle choices. Many users had not accessed an NHS health check previously due to a lack of awareness and inability to make an appointment with their GP, which concurs with previous work [12]. This approach to preventative service provision appears to be very well accepted by members of the public who self-report positive effects on knowledge and motivation around health behaviours. Of particular note is that users did not report any concerns or negative feedback that the checks were provided by undergraduate students rather than qualified professionals.

This study is strengthened by its mixed methods approach meaning explanatory data collection has provided a more in-depth understanding of the initial quantitative data collection. The response rate of the survey was satisfactory; however, more responses would have improved generalisability. Interviewees were those who volunteered and consented meaning participation was dependent on motivations to share views and experiences. The opportunity to interview more randomly across the service user population again may have revealed some further diversity of perspectives. Lastly, this is a small-scale study, based on one clinic in one location and a limited data collection period. However, this study does provide proof-of-concept of a student-led, community-based clinic that provides CVD preventative services contributing to the wider agenda for public health in the UK.

Other studies evaluating student-led clinics have either reported on learning from the design and implementation [13, 14], student experience [15], or comparability of care being provided between students and qualified pharmacists [16]. One interprofessional clinic around posthospital discharge care was well received by patients and student teams provided useful education and self-management information [17]. A systematic review found that the quality of care provided by students was adequate, but more research was required about the impact on the students' developing skills, knowledge, and behaviours [18]. Another systematic review reported, when comparing attendees to matched nonattendees, there is an associated small increase in disease detection above routine practice, an increased likelihood of statin and antihypertensive prescribing, and small decreases in modelled CVD risk (one cardiovascular event is prevented per 4762 attendees, equating to >1400 events across the country during a 5-year cycle). This same review highlighted the scarcity of evidence about the impact of attendance on health-related behaviours [19]. The interviews provide some insight into onward access to healthcare services; however, this was not recorded for all users. Also, the impact of the clinic services on clinical outcomes, e.g. reduction in blood cholesterol, blood pressure and other CVD risk factors, has not been captured. This would require longitudinal data collection and most probably digital infrastructure to control for/measure other confounders, e.g. access and uptake of services elsewhere in the system. Other research investigating patient perspectives of the NHS health check also found that users found the experience positive, like a wake-up to consider aspects of their behaviour. Users also reported unmet expectations, confusion about the purpose of the check and information provided being too vague and generic [20]. Another study also described that users did not fully understand the risk scores

generated from the check [21]. These findings did not resonate with our study.

Our study provides proof-of-concept for student-led clinics to deliver CVD preventative services in the community which has a positive impact on service users' self-reported knowledge and motivation to choose healthier behaviours, is well-accepted and valued. The findings of this study in combination with our previous work, demonstrate that there is an opportunity for closer working between local authorities, higher education institutes and service designers and commissioners to explore how undergraduate and training healthcare students can be trained and deployed to deliver valuable care to communities which meet local needs but also meet educational and training requirements for the future workforce.

More initiatives focused on preventative care being available for the public to engage with will contribute to the recommendations from the recent NHS Health Check evaluation. The first recommendation was to build sustained engagement. Having clinics in community centres and locations with high public footfall will increase the opportunity for potential interactions with people to measure and understand risks and motivate change. Also, by making Health Checks easier to access through community locations (drawing lessons from the national COVID vaccination programme), there should be increased participation (the locality of the clinic was used as a vaccination centre during the pandemic). Lastly, this student-led model can be a relatively low-cost endeavour if the right collaborations and partnerships are established. This could mean these sites offer a milieu for further pilots to be trialled and evaluated in a controlled and scientific way, e.g. adding a digital offer, increasing the conditions being addressed, etc.

# **Conclusions**

Users of a student-led public health screening and healthy lifestyle clinic reported positively about their experiences in accessing CVD preventative services in this way. Users demonstrate statistically significantly improved self-reported knowledge, competence, and motivation in making healthier lifestyle choices. This study provides proof-of-concept for the delivery of preventative services within the community that limit adding burden to existing primary care services and offer a testbed for piloting further services before wider implementation.

## Supplementary data

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

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## **Author contributions**

H.N. designed and supervised the study conduct. S.C. undertook all data collection, and data analysis and prepared a first

draft of the manuscript as part of an undergraduate research project. A.G. and C.L.R. were involved in data analysis and preparing the final manuscript with H.N.

### **Conflict of interest**

There are no competing interests to declare.

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# **Ethical approval**

Institutional ethical approval was granted for this study (REF: 25456/2022).

## **Data availability**

All qualitative and quantitative data is available from the corresponding author upon reasonable request.

#### References

- GBD 2017 Causes of Death Collaborators. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet* 2018;392:1736– 88. https://doi.org/10.1016/S0140-6736(18)32203-7
- World Health Organization. The World Health Report 2002: Reducing Risks, Promoting Healthy Life. World Health Organization, 2002. https://iris.who.int/handle/10665/67454 (9 April 2024, date last accessed).
- Murray CJ, Lauer JA, Hutubessy RC et al. Effectiveness, and costs of interventions to lower systolic blood pressure and cholesterol: a global and regional analysis on reduction of cardiovascular-disease risk. Lancet (London, England) 2003;361:717–25. https://doi. org/10.1016/S0140-6736(03)12655-4
- 4. Robson J, Dostal I, Sheikh A *et al.* The NHS Health Check in England: an evaluation of the first 4 years. *BMJ Open* 2016;6:e008840. https://doi.org/10.1136/bmjopen-2015-008840
- NHS Health Check, Evidence. Available at: NHS Health Check Evidence
- Office for Home Improvement and Disparities. Preventing Illness and Improving Health for All: A Review of the NHS Health Check Programme and Recommendations. Available at: Preventing illness and improving health for all: a review of the NHS Health Check programme and recommendations – GOV.UK. www.gov.uk (9 April 2024, date last accessed).

- 7. Nazar H, Rathbone AP, Richardson CL *et al.* Young@Heart clinic: a feasibility study of an undergraduate pharmacy studentled blood pressure and healthy lifestyle clinic. *Int J Pharm Pract* 2021;29:277–84. https://doi.org/10.1093/ijpp/riab008
- 8. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implement Sci: IS* 2011;6:42. https://doi.org/10.1186/1748-5908-6-42
- 9. Ivankova NV, Creswell JW, Stick SL. Using mixed-methods sequential explanatory design: From theory to practice. *Field Methods* 2006;18:3–20. https://doi.org/10.1177/1525822x05282260
- Braun V, Clarke V. Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other patternbased qualitative analytic approaches. Couns Psychother Res 2021;21:37–47. https://doi.org/10.1002/capr.12360
- 11. Gale NK, Heath G, Cameron E *et al.* Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Methodol* 2013;13:117. https://doi.org/10.1186/1471-2288-13-117
- 12. Usher-Smith J, Mant J, Martin A, et al. NHS Health Check Programme rapid evidence synthesis. Report for Public Health England, 2017. Available at: NHS Health Check Programme Rapid Evidence Synthesis | RAND
- 13. Dang CJ, Dudley JE, Truong HA *et al.* Planning and implementation of a student-led immunization clinic. *Am J Pharm Educ* 2012;76:78. https://doi.org/10.5688/ajpe76578
- Lee BJ, Wang SK, So C et al. A student-led health education initiative addressing health disparities in a Chinatown community. Am J Pharm Educ 2015;79:132. https://doi.org/10.5688/ajpe799132
- 15. Turgeon RD, Koshman SL, Seubert JM *et al.* Pharmacy student-led blood pressure clinic as part of a comprehensive approach to teaching blood pressure assessment. *Curr Pharm Teach Learn* 2019;11:609–13. https://doi.org/10.1016/j.cptl.2019.02.023
- Dalal K, McCall KL, Fike DS et al. Pharmacy students provide care comparable to pharmacists in an outpatient anticoagulation setting. Am J Pharm Educ 2010;74:139. https://doi.org/10.5688/aj7408139
- 17. Kent F, Keating J. Patient outcomes from a student-led interprofessional clinic in primary care. *J Interprof Care* 2013;27:336–8. https://doi.org/10.3109/13561820.2013.767226
- 18. Schutte T, Tichelaar J, Dekker RS *et al.* Learning in student-run clinics: a systematic review. *Med Educ* 2015;49:249–63. https://doi.org/10.1111/medu.12625
- 19. Martin A, Saunders CL, Harte E *et al.* Delivery and impact of the NHS health check in the first 8 years: a systematic review. *Br J Gen Pract* 2018;68:e449–59. https://doi.org/10.3399/bjgp18X697649
- Usher-Smith JA, Harte E, MacLure C et al. Patient experience of NHS health checks: a systematic review and qualitative synthesis. BMJ Open 2017;7:e017169. https://doi.org/10.1136/bmjopen-2017-017169
- 21. Tanner L, Kenny R, Still M *et al.* NHS Health Check programme: a rapid review update. *BMJ Open* 2022;**12**:e052832. https://doi.org/10.1136/bmjopen-2021-052832