Title: Opportunistic community-based health checks

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Introduction

Cardiovascular disease (CVD) remains the most common cause of premature death in the UK, with considerable social inequalities and predicted increases (1). It is estimated that 80-90% of CVD is preventable (1), but this is contingent on effective programmes for screening, prevention (through modifiable risk factors) and treatment.

In the UK, there are large scale CVD screening programmes delivered in primary care by health professionals. Their aim is early identification of risk or disease, which allows more effective subsequent management (2). For example, in England, the NHS Health Check programme involves screening adults aged 40-74 years who are thought to be free from CVD to identify (and subsequently manage) potential CVD risk or disease; the Scottish Keep Well initiative similarly aims to tackle CVD starting with health assessments in 45-64 year olds. The viability and effectiveness of such programmes depends on sufficient uptake. Evidence from large scale and national CVD health check initiatives indicates that uptake through traditional postal invitation is low (e.g., 43-49%) (3-5) with various reasons posited (e.g., invitation not reaching target population; literacy/health literacy barriers; competing time commitments; preventive health not a priority; psychosocial barriers) (6). In recognition of this challenge, a number of programmes have included community outreach activity (e.g., Keep Well; Greenwich NHS Health Check PLUS; Islington Community Pharmacy). Although there is some evidence that these additional activities can improve reach (4), community models often require individuals to attend appointments at specific facilities to complete the assessments (e.g., clinical measures such as fasting glucose).

We report brief findings from an evaluation of a programme that targeted mid-life adults (age 45-65 years) from deprived communities through opportunistic community health

assessments. The programme was based in a UK city with widespread deprivation and above average rates of mortality from CVD. Programme workers delivered health assessments in popular community locations (e.g., supermarkets, community centres, events) and work places. These involved anthropometric and physiological measures (Body Mass Index (BMI), waist circumference, blood pressure and resting heart rate), followed by a series of lifestyle questions. The checks were distinct from the national NHS Health Check model through the model of non-clinician delivery, opportunistic recruitment, community location and the range of measures that were feasible in community venues.

This evaluation had two main aims: (i) to explore reach through profiling health assessment participants using routinely gathered health and demographic data; (ii) to determine acceptability, possible strengths and limitations of the delivery model, participant experiences using qualitative data from focus groups and semi-structured interviews with participants (n = 21) and stakeholders (n = 3). To minimize selection bias, participants were contacted and invited to take part in a randomly generated order. Interviews and focus groups were semi-structured and moderated by an experienced qualitative researcher. Discussions were recorded and transcribed *verbatim* for Thematic Analysis (7), using an inductive approach to develop themes that reflected participant opinion. This involved a process of data familiarisation, generation of codes, identification of preliminary themes, and subsequently refinement. Study design and protocols were approved by Staffordshire University Ethics Committee.

Who received opportunistic health assessments

Over 12 months, 512 individuals completed a health assessment. Quantitative data indicated engagement with people from deprived areas with CVD risk factors (i.e., overweight/obesity

and hypertension). Participant mean age was consistent with the target group (54.2±5.7 years). Low ethnic diversity (94% White British) and high deprivation (44% in most deprived 20% of national rankings) were consistent with the area profile, although women were over-represented (69%). Mean BMI for the sample was in the overweight range (28.4±5.1 kgm^{-2}). Seventy-one per cent were classified as overweight or obese according to BMI (≥25 kgm^{-2}). Over one-third of participants had a waist circumference in excess of the 'healthy' range. Blood pressure measurements revealed that 60% of participants had hypertension, and one in five had moderate or severe hypertension (Table 1). The proportions of attendees with these CVD risk factors reflected relative success in reaching the target population. In terms of hypertension (e.g., 51%), overweight (e.g., 67-69%) and obesity prevalence (e.g., 26%) (3, 8), the programme population health risk profile indicated a similar or higher level of risk in this opportunistically recruited population, compared with some published data from NHS Health Checks, which specifically target high risk patients (3, 8).

Table 1 near here

Experiences of opportunistic community health assessment

Qualitative data confirmed that health assessments identified health issues and raised awareness, often in those previously unaware:

> I was going to [supermarket] for something else and they were there so I was like 'oh right I'll have that', which was actually quite good because it told me to go to my doctors... which I did do and it [blood pressure] was up.

The convenience of the opportunistic, community-based approach appeared important for programme reach and acceptability. For most participants, location of the health assessment

within workplaces and community settings facilitated access: “I just happened to be there... I thought... it won’t do any harm... I haven’t been to the doctors for quite a while”. The combination of convenience, the service on offer within a “non-clinical environment”, and a perceived choice in whether or not to take up the opportunity, were all seen as programme strengths: “You go voluntarily, nobody is forcing you to go”. Use of workplaces also gave some participants a sense of not “using their time”, which was felt to benefit both employer and employee: “I wouldn’t like to take time off work... to go somewhere else... I wouldn’t probably have done it”.

Participants reported that they did not regularly visit their GP and would not consider doing so in the absence of specific symptoms: “You only go to the doctors if you’re really poorly”. Some felt that their GP would not be interested in preventive issues: “you probably couldn’t get an appointment to see the doctor with those [preventive/lifestyle] issues”. Others had additional reservations based on previous negative experiences of primary care: “they are going to be judgemental”. For many participants, the health assessment provided a catalyst to access further medical advice: “[people] are a bit reluctant to go to the doctors and this is the first step”.

Finally, the non-clinicians who delivered the health assessments were described as “friendly”, “not intimidating or patronising” and “knowledgeable”, making the health assessment “unobtrusive” and “informal”. Some noted benefits compared with clinician delivery: “I felt that I could talk to her whereas I couldn’t talk to the doctor”.

The role of opportunistic, non-clinician community health assessment

Overall programme acceptability appeared high. The opportunistic intervention identified a population with considerable health risk and helped to raise awareness. Qualitative data

suggested that, for some, this was a community-based catalyst for accessing mainstream health services: "[programme worker] told me to go to my doctors... I wouldn't have gone otherwise". This is important given the prevalence of overweight/obesity and hypertension in the programme population (Table 1). Moreover, our data confirm that a reliance on recruitment through primary care carries a risk of important target groups being under-represented given the lower uptake of preventive services by those with genuine need.

Our findings resonate with the reported benefits of community outreach for CVD prevention through health checks (4). Key differences between the usual CVD health check model and that described here were the less stringent targeting (based on age only), lack of participant invitations/appointments, and the brief, less comprehensive health assessment; a model which should be considered as an adjunct to the more traditional health check programmes. The community location and opportunistic recruitment (i.e., without the need for appointments at specific facilities) were less conducive to some clinical measures, such as total- and high density lipoprotein (HDL)-cholesterol, which enable CVD risk scores to be calculated (e.g., Framingham, QRisk). This is a limitation for clinical risk assessment, which could be overcome through use of portable equipment. Moreover, the brief health assessment could provide a more appropriate first step to engage with, and undertake initial risk assessment in, those most difficult to reach, even if subsequent referral to primary care to complete assessments is unrealistic (9).

The costs of full systematic CVD assessments are considerable. Additional outreach activities may be seen as further expense in the absence of much needed evidence of cost-effectiveness (4). To further explore the use of opportunistic community health checks, a basic health assessment (similar to that reported here) offers a means of reducing the financial burden of

large scale CVD risk assessment, whilst still reaching and supporting those most in need. Full assessments could then be performed selectively in those most likely to be at high risk (e.g., - where multiple risk factors are identified, such as obesity, hypertension, smoking or a family history of premature CVD or diabetes) (9); an approach suggested elsewhere (10).

To provide the evidence to justify investment in this type of outreach approach, robust, controlled research and evaluation is required to better understand: the additional *reach* of community-based programmes; programme *effectiveness* in terms of subsequent changes in health, perceptions of health risk, health behaviour and use of health services; and *cost-effectiveness*. This could be achieved most feasibly by collaborating with existing services, to enable 'natural experiments' that compare clinic- and community-based outreach programmes.

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Table 1. Participant anthropometric and physiological outcomes

		Mean	SD
Body Mass Index (kgm$^{-2)}$		28.4	5.1
Waist circumference (cm)		89.1	13.8
Systolic blood pressure (mmHg)		142.9	18.4
Diastolic blood pressure (mmHg)		84.4	11.0
		n	**(%)**
[a]Waist circumference	Normal	334	65.2
	High	178	34.8
[b]Weight category	Normal weight	146	28.5
	Overweight	194	37.9
	Obese	159	31.1
	Morbidly obese	11	2.2
	Missing	2	0.4
[c]Hypertension	Normotensive	204	39.8
	Hypertensive-mild	200	39.1
	Hypertensive-moderate	82	16.0
	Hypertensive-severe	22	4.3
	Missing	4	0.8
BP medication	No	436	85.2
	Yes	76	14.8

[a]Waist circumference, where 'high' is >102 cm for men and >88cm for women

[b]Weight category (based on BMI), where 'Normal weight ≤25.0, Overweight 25.0-29.9, Obese 30.0-39.9, Morbidly obese ≥40.0 kgm^{-2}

[c]Hypertension, where Normotensive SBP<140 and DBP<90, Mild SBP≥140 or DBP≥90, Moderate SBP≥160 or DBP≥100, Severe, SBP≥180 or DBP≥110 mmHg