

1 **Title:** Opportunistic community-based health checks

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15 **Introduction**

16 Cardiovascular disease (CVD) remains the most common cause of premature death in the
17 UK, with considerable social inequalities and predicted increases (1). It is estimated that 80-
18 90% of CVD is preventable (1), but this is contingent on effective programmes for screening,
19 prevention (through modifiable risk factors) and treatment.

20 In the UK, there are large scale CVD screening programmes delivered in primary care by
21 health professionals. Their aim is early identification of risk or disease, which allows more
22 effective subsequent management (2). For example, in England, the NHS Health Check
23 programme involves screening adults aged 40-74 years who are thought to be free from CVD
24 to identify (and subsequently manage) potential CVD risk or disease; the Scottish Keep Well
25 initiative similarly aims to tackle CVD starting with health assessments in 45-64 year olds.

26 The viability and effectiveness of such programmes depends on sufficient uptake. Evidence
27 from large scale and national CVD health check initiatives indicates that uptake through
28 traditional postal invitation is low (e.g., 43-49%) (3-5) with various reasons posited (e.g.,
29 invitation not reaching target population; literacy/health literacy barriers; competing time
30 commitments; preventive health not a priority; psychosocial barriers) (6). In recognition of
31 this challenge, a number of programmes have included community outreach activity (e.g.,
32 Keep Well; Greenwich NHS Health Check PLUS; Islington Community Pharmacy).

33 Although there is some evidence that these additional activities can improve reach (4),
34 community models often require individuals to attend appointments at specific facilities to
35 complete the assessments (e.g., clinical measures such as fasting glucose).

36 We report brief findings from an evaluation of a programme that targeted mid-life adults (age
37 45-65 years) from deprived communities through opportunistic community health

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

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

58 **Who received opportunistic health assessments**

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

61 and hypertension). Participant mean age was consistent with the target group (54.2±5.7
62 years). Low ethnic diversity (94% White British) and high deprivation (44% in most deprived
63 20% of national rankings) were consistent with the area profile, although women were over-
64 represented (69%). Mean BMI for the sample was in the overweight range (28.4±5.1 kgm⁻²).
65 Seventy-one per cent were classified as overweight or obese according to BMI (≥25 kgm⁻²).
66 Over one-third of participants had a waist circumference in excess of the ‘healthy’ range.
67 Blood pressure measurements revealed that 60% of participants had hypertension, and one in
68 five had moderate or severe hypertension (Table 1). The proportions of attendees with these
69 CVD risk factors reflected relative success in reaching the target population. In terms of
70 hypertension (e.g., 51%), overweight (e.g., 67-69%) and obesity prevalence (e.g., 26%) (3,
71 8), the programme population health risk profile indicated a similar or higher level of risk in
72 this opportunistically recruited population, compared with some published data from NHS
73 Health Checks, which specifically target high risk patients (3, 8).

74 ***Table 1 near here***

75 **Experiences of opportunistic community health assessment**

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

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

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

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

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

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

103 **The role of opportunistic, non-clinician community health assessment**

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

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

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

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

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

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

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141 **Acknowledgments**

142 The authors would like to acknowledge Lee Hand, Linda Burns, Lynne Weallens and all
143 participants. This work was supported by the NHS Stoke-on-Trent. The opinions expressed
144 are those of the authors and not necessarily those of the funders.

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146 Funding: This work was supported by the NHS Stoke-on-Trent. The opinions expressed are
147 those of the authors and not necessarily those of the funders.

148 Competing interests: None declared

149 Ethical approval: Study design and protocols were approved by Staffordshire University

150 Ethics Committee.

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152 **References**

- 153 1. Capewell S, Allender S, Critchley J, Lloyd-Williams F, O'Flaherty M, Rayner M, et al.
154 Modelling the UK burden of cardiovascular disease to 2020. A Research Report for the
155 Cardio & Vascular Coalition and the British Heart Foundation. London: British Heart
156 Foundation; 2008.
- 157 2. Department of Health. Putting Prevention First – NHS Health Check: Vascular Risk
158 Assessment and Management Best Practice Guidance. London: Department of Health; 2009.
- 159 3. Dalton ARH, Bottle A, Okoro C, Majeed A, Millett C. Uptake of the NHS Health
160 Checks programme in a deprived, culturally diverse setting: cross-sectional study. *Journal of*
161 *Public Health*. 2011 September 1, 2011;33(3):422-9.
- 162 4. Sinclair A, Alexander HA. Using outreach to involve the hard-to-reach in a health
163 check: What difference does it make? *Public Health*. 2012;126(2):87-95.
- 164 5. Cochrane T, Gidlow CJ, Kumar J, Mawby Y, Iqbal Z, Chambers RM. Cross-sectional
165 review of the response and treatment uptake from the NHS Health Checks programme in
166 Stoke on Trent. *Journal of Public Health*. 2013 March 1, 2013;35(1):92-8.
- 167 6. Mackenzie M, Turner F, Platt S, Reid M, Wang Y, Clark J, et al. What is the
168 'problem' that outreach work seeks to address and how might it be tackled? Seeking theory in
169 a primary health prevention programme. *BMC Health Services Research*. 2011;11(1):350.
- 170 7. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in*
171 *Psychology* 2006;3(77-101).
- 172 8. Artac M, Dalton ARH, Majeed A, Car J, Millett C. Effectiveness of a national
173 cardiovascular disease risk assessment program (NHS Health Check): Results after one year.
174 *Preventive Medicine*. 2013;57(2):129-34.

- 175 9. Scoular A. Evaluation of 'Keep Well' programme in NHS Greater Glasgow & Clyde.
176 Glasgow: NHS Scotland; 2012.
- 177 10. Halcox J. Vascular Risk Management in Wales: A report from the Vascular Project
178 Group. Cardiff: Welsh Assembly Government; 2010.
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185 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

186 ^aWaist circumference, where 'high' is >102 cm for men and >88cm for women187 ^bWeight category (based on BMI), where 'Normal weight ≤25.0, Overweight 25.0-29.9, Obese 30.0-39.9,188 Morbidly obese ≥40.0 kgm⁻²189 ^cHypertension, where Normotensive SBP<140 and DBP<90, Mild SBP≥140 or DBP≥90, Moderate SBP≥160

190 or DBP≥100, Severe, SBP≥180 or DBP≥110 mmHg

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