Original investigation

# Are Nurses and Auxiliary Healthcare Workers Equally Effective in Delivering Smoking Cessation Support in Primary Care?

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## Abstract

**Introduction:** Smoking cessation support is increasingly delivered in primary care by auxiliary healthcare workers in place of healthcare professionals. However, it is unknown whether this shift might affect the quality and impact of the support delivered.

**Methods:** Data from the iQuit in Practice randomized control trial of cessation support in General Practice was used ($N = 602$). Analyses assessed whether cessation advisor type (nurse or healthcare assistant [HCA]) was associated with abstinence (primary outcome: self-reported 2-week point prevalence abstinence at 8 weeks follow-up), the advice delivered during the initial consultation, pharmacotherapies prescribed, patient satisfaction, initial consultation length, and the number and type of interim contacts.

**Results:** There were no statistically significant differences in abstinence for support delivered by HCAs versus nurses at 8 weeks (HCAs 42.8%, nurses 42.6%; unadjusted odds ratio [$OR$] = 1.01, 95% confidence interval [CI] = 0.73 to 1.40), or at 4 weeks or 6 months follow-up. There were no statistically significant differences in advice delivered, the types of pharmacotherapies prescribed or patient satisfaction. Compared with nurses, HCA consultations were longer on average (HCAs 23.6 minutes, nurses 20.8 minutes; $P = .002$) and they undertook more interim contacts (HCAs median 2, nurses median 1; $P < .001$), with contact more likely to be face-to-face than phone call (HCAs 91.2%, nurses 70.9%; $OR$ = 4.23, 95% CI = 2.86 to 6.26).

**Conclusions:** HCAs appear equally effective as nurses in supporting smoking cessation, although they do this with greater patient contact. Using auxiliary practitioners to deliver cessation support could free up nurse time and reduce costs.

**Implications:** This study found that primary care patients receiving smoking cessation support from auxiliary healthcare workers were just as likely to be abstinent up to 6 months later as those patients seen by nurses. While the auxiliary healthcare workers achieved this with slightly increased patient contact time, the advice delivered, pharmacotherapies provided and patient satisfaction were similar to that of nurses. Expanding the auxiliary healthcare worker role to include smoking cessation support could increase role satisfaction and reduce the costs of cessation support delivery in primary care.

## Introduction

The involvement of a health professional in an attempt to quit smoking is associated with increased likelihood of success.[1–3] In the English Stop Smoking Services there is a broad division between specialist Smoking Cessation Advisors (SCAs), where smoking cessation is their main role, and community SCAs such as nurses for whom it is only part of their role. Several studies show that specialist SCAs produce higher quit rates in the patients they see compared with community SCAs.[4,5] Furthermore, Brose et al.[6] found differences in smokers' carbon monoxide (CO) validated short-term (4-week) abstinence rates depending on which specialist SCA they saw, with individual success rates differing widely. However, beyond the division of specialist versus community SCA there are few studies looking at the effectiveness of specific types of community SCA in comparison with each other.

Primary care is the setting providing support to the highest number of smokers in the National Health Service (NHS) in England, with 227 624 smokers seen in 2013–2014.[7] While community SCAs in primary care have traditionally been nurses, healthcare assistants (HCAs) are increasingly being trained in the role and delivering cessation support. HCAs perform the role of a nursing auxiliary under the guidance of a qualified nurse. Compared to nurses, their qualification requirement and salary is lower. Although there is not an exact role specification, HCAs generally carry out more basic elements of the nurse role including tasks such as blood pressure checks, height and weight measurements, simple dressing etc. A review of a Stop Smoking Service database in 2011 found that there were around half as many HCAs as nurses supporting smoking cessation treatment episodes in England (5604 compared with 13 095).[8]

The small number of previous studies examining differences between nursing auxiliaries and nurses in supporting smoking cessation have yielded mixed findings. Katz et al.[9] carried out a secondary analysis of trial data and found no difference between medical assistants' and licensed practical nurses' performance of smoking cessation activities compared with registered nurses (asking about smoking, assessing willingness to quit, advising quitting or assessing quitting). In terms of abstinence, Hiscock et al.[8] analyzed quit attempts from a database of English Stop Smoking Services and found that patients who saw HCAs had higher success rates than those who saw nurses (odds ratio [*OR*] = 1.27; 95% confidence interval [CI] = 1.10 to 1.46). Although this study did not include any process measures, the authors speculated that this difference might have been because HCAs were able to spend more time with clients and may have been able to build rapport more effectively if they were from the same communities. Both previous studies have limitations, including an absence of the patients' perspective on the receipt of the smoking cessation intervention, the frequency and type of follow-up consultations and being limited to short-term smoking outcome measures.

The current study uses longitudinal data to look in detail at differences in the delivery and receipt of smoking cessation treatment and short and long term smoking abstinence rates between the two main types of community SCAs in England: practice nurses and HCAs. The study used data from both SCAs and patients.

## Methods

### Design

This study uses data from the iQuit in Practice trial (iQIP) in an observational cohort design. iQIP is a two parallel group randomized control trial with 1:1 allocation comparing usual care (control) with usual care plus the iQuit system (intervention) among smokers who attended their local General Practice (GP) surgery for smoking cessation support. Patients in both groups received an initial consultation after which their cessation advisor completed the first part of an online smoking related questionnaire on their behalf. Patients were then randomized by computer to either the control group, who were then informed their consultation had ended, or the intervention group who completed the second part of the questionnaire focusing on tailoring variables and then given the intervention. The intervention consisted of a program generated cessation advice report tailored to the smoker handed to them by their cessation advisor and a 3-month program of automated tailored text messages sent to the smoker's mobile phone. For more details see elsewhere.[10,11] Randomization was stratified by SCA to ensure that SCAs saw roughly equal numbers of intervention and control participants.

### Sample

GPs in the East of England with at least one SCA (a primary care nurse or HCA) trained to give "level 2" smoking cessation advice according to the English Department of Health guidance[12] with internet and printer access from their consultation room(s) were eligible. One hundred eighteen practices were contacted directly by the researchers between September 2009 and March 2011. Of the 104 eligible practices approached, 32 participated (30.8%). Mean list size for participating practices was 10 538 (*SD* = 3638). A deprivation measure, which combines 37 indicators of deprivation into a summary score (Index of Multiple Deprivation: IMD),[13] indicated that eight practices were in the top 50% of deprived small geographical areas in England (Lower Super Output Areas; mean IMD score for study practices 13.7; range 3.0–27.7; *SD* = 7.0).

Patients were eligible for inclusion if they met the following criteria: current smoker (usually smokes at least one cigarette a day, has smoked in the 7 days prior to randomization); able to read English and provide written informed consent; willing to set a quit date within 14 days after randomization; aged 18–75 years; has a mobile phone and is familiar with sending and receiving text messages; not enrolled in another formal smoking cessation study or program; and not using smoking cessation medications at randomization date. Participants were primarily recruited opportunistically, through self-referral or referred by a health professional, to receive smoking cessation advice. Practices were also encouraged to post study information to a random selection of patients identified as smokers from their practice database. See study protocol for further information.[11]

### Data Collection

Baseline data was collected from participants by SCAs at the initial consultation using a case report form and the online questionnaire. All participants were followed-up by an SCA 4 weeks after their quit date, as per usual care, and by postal questionnaire from the study centre at 8 weeks and 6 months after randomization. Nonresponders to the postal questionnaire were contacted by telephone by a researcher and given a choice of returning the questionnaire by post or completing it over the telephone. Participants unwilling to complete the full questionnaire were asked to complete the smoking outcomes questions only. Up to six attempts were made to contact participants by telephone at each follow-up.

### Outcome Measures

#### Smoking Outcomes

The primary outcome measure used was self-reported 2-week point prevalence abstinence at the 8-week follow-up. This was chosen

over the 4-week follow-up outcome measure because the research team had control over the outcome definition and quality of data collection. The 8-week follow-up resulted in a higher response rate (506/602, 84.1%) compared with the 4-week SCA-led follow-up (421/602, 69.9%).

Two secondary smoking outcome measures were used: (1) CO-verified 2-week point prevalence abstinence at 4 weeks following the quit date, recorded by the SCA. The English Department of Health defines a CO verified 4-week quitter as "a treated smoker whose CO reading is assessed 28 days from their quit date (–3 or +14 days) and whose CO reading is less than 10 parts per million."[14]; (2) Self-reported 6-month prolonged abstinence at 6 months follow-up after randomization.

Measurements of CO were recorded at the baseline consultation as well as at 4 weeks after a patient's quit date using a calibrated Smokerlyser (Bedfont) CO monitor.

#### Cessation Support Delivered and Received
Five types of measures of cessation support were used:

1. The time taken for the consultation, measured by the SCAs from the start of the consultation to the end to the nearest minute minus the time spent completing the online questionnaire as recorded by the web server hosting the iQuit intervention.
2. Patients' receipt of cessation support at their initial consultation in the 8-week follow-up questionnaire. Patients indicated (yes/no) whether they were invited to set a quit date, had their CO measured, were asked about current smoking behavior, asked about previous quit attempts, received information on pharmacotherapies and received advice on how to quit smoking.
3. Patient satisfaction with the initial consultation was also assessed in the 8-week questionnaire. This included three items using a five-point scale (1 = not at all, 5 = extremely): how clear they found the advice received on pharmacotherapies, the usefulness of cessation advice received and satisfaction with the consultation as a whole, one item on their satisfaction with the amount of time spent talking during the consultation (not enough, about right, too much) and a final item on whether they felt there was something missing from the consultation (yes/no).
4. Type of pharmacotherapy prescribed for each patient, recorded by the SCA using the study case report form.
5. The date of every interim contact with the patient and whether the contact was by phone or clinic appointment, recorded by the SCA up until the 4-week follow-up.

#### Analysis
The sample size for the trial (*n* = 300 per group) assuming a power more than 80% and an $\alpha < 0.05$ (two-sided test) was sufficient to detect a 10% increase in the primary abstinence outcome (from 20% to 30%) between trial arms.[11] Approximately the same power was provided to determine the impact of SCA type on the primary outcome measure for the same effect size. Intracluster correlation coefficients were calculated to assess whether patients from the same practice had more similar outcomes with patients in different practices. Intra cluster correlation coefficients were low (abstinence at 8 weeks < 0.0001, abstinence at 4 weeks = 0.02, abstinence at 6 months < 0.0001), therefore, adjustment for clustering was not undertaken in the analysis. However, the potential impact of clustering was assessed as part of a sensitivity analysis.

Patients supported by HCAs were compared with those supported by nurses for each of the outcome measures described. For smoking outcomes, logistic regression models were used. Adjusted logistic regression models were run for each smoking outcome adjusting for iQIP trial arm and potential confounders that were unbalanced between the two groups of patients (patient's occupational category and initial CO reading). A likelihood ratio test was carried out comparing the adjusted model with and without SCA type as a predictor to assess whether SCA type significantly increased the adjusted model's predictive ability. In addition, an interaction term of SCA type by iQIP trial arm was entered into the adjusted models to check whether the effect of SCA type on abstinence may have been different for those in the two trial arms. Smoking outcome analyses were intention-to-treat, where all those randomized were analyzed with participants lost to follow-up assumed to be still smoking.

Nurses and HCAs were compared on patient consultation time using a t-test and the number of interim contacts using Mann–Whitney *U* tests due to a nonnormal distribution. Logistic regression was used to compare nurses and HCAs on patients' recalled receipt of support, types of pharmacotherapy prescribed and patient satisfaction with the consultation (split into those scoring 4 or 5 on the 5-point scales or giving a positive response for the other two items vs. the rest).

### Results

#### Recruitment, Baseline Characteristics and Attrition
There were 313 participants who saw a HCA at their initial appointment and 289 participants who saw a nurse (*N* = 602). Participants had a mean age of 42 years (*SD* = 13) at baseline and 53% were female. Two-thirds smoked within 30 minutes of waking (Table 1). Two participants withdrew from the study. Attrition (noncumulative), defined as not obtaining smoking status or a completed questionnaire by post or over the telephone, was 30% (4 weeks), 16% (8 weeks), and 22% (6 months). As Table 1 shows, patients seen by HCAs had similar baseline characteristics to those seen by nurses. The only statistically significant difference was the mean level of CO in exhaled breath and, although this was higher in the HCA group by 2.9 parts per million, this was not considered clinically meaningful.[15]

#### Smoking Outcomes
There were no statistically significant differences between HCAs compared with nurses in the primary outcome measure of 2-week point prevalence abstinence at 8 weeks follow-up in both the unadjusted (*OR* = 1.0, 95% CI = 0.7 to 1.4) and adjusted models (*OR* = 1.1, 95% CI = 0.8 to 1.5). Moreover, there were no statistically significant differences in abstinence at 4 weeks and 6 months between patients who saw HCAs and those who saw nurses (Table 2). There was no interaction between SCA type and intervention group, that is, whether patients saw an HCA or nurse did not modify the effect of the iQIP intervention. No differences were observed when analyses were further adjusted for clustering at the GP practice level.

#### Support Provided in the Initial Consultation
HCAs took on average 3 minutes longer than nurses for the consultation (nurses = 21 minutes, HCAs = 24 minutes, *P* = .002; Table 3). The content of the consultation was very similar for both SCA types. Over 95% of patients for both HCAs and nurses reported that their SCA invited them to set a quit date (HCA 96%, nurses 96%), measured CO levels (HCAs 96%, nurses 98%) and asked about current

**Table 1.** Baseline Characteristics

| | HCA ($n$ = 313)[a] | Nurse ($n$ = 289)[a] | Total ($n$ = 602)[a] | $P$ |
|---|---|---|---|---|
| Female | 170 (54.3%) | 147 (50.9%) | 317 (52.7%) | .39 |
| Mean (*SD*) age | 42.3 (13.4) | 41.2 (12.5) | 41.8 (13.0) | .26 |
| White ethnic group | 306 (97.8%) | 284 (98.3%) | 590 (98.0%) | .70 |
| Occupational category | | | | |
|   Not working (student/home carer/retired/sick disabled) | 88 (28.1%) | 52 (18.0%) | **140 (23.3%)**[b] | .06 |
|   Never worked/long term unemployed | 25 (8.0%) | 15 (5.2%) | 40 (6.6%) | |
|   Routine and manual | 94 (30.0%) | 88 (30.4%) | 182 (30.2%) | |
|   Intermediate | 24 (7.7%) | 27 (9.3%) | 51 (8.5%) | |
|   Managerial/professional | 76 (24.3%) | 80 (27.7%) | 156 (25.9%) | |
| Median (IQ range) number of cigarettes smoked per day | 20 (14, 20) | 18 (15, 20) | 18.5 (14, 20) | .81 |
| Patients who smoked first cigarette within 30 minutes of waking | 217 (69.3%) | 192 (66.4%) | 409 (67.9%) | .13 |
| Mean (*SD*) carbon monoxide in exhaled air (parts per million) | 22.5 (12.0) | 19.6 (12.0) | 21.0 (12.1) | .007 |
| Motivation to quit (answering extremely or very much to "How much do you want to quit?") | 297 (94.9%) | 274 (94.8%) | 571 (94.9%) | .96 |
| Previously quit smoking for 3 months or longer | 177 (56.5%) | 166 (57.4%) | 343 (57.0%) | .83 |
| Median (IQ range) practice list size of SCA | 10 314 (8607, 11 981) | 10 141 (9177, 11 959) | 10 296 (9177, 11 959) | .26 |
| Median (IQ range) practice Index of Multiple Deprivation (IMD) score | 11.4 (9.2, 15.2) | 13.3 (8.6, 20.0) | 11.2 (9.2, 16.9) | .50 |
| Patients in the trial intervention arm | 155 (49.5%) | 144 (49.8%) | 299 (49.7%) | .94 |

SCA = smoking cessation advisor.

[a]Percentages may not add up to 100 due to rounding.

[b]$P$ value for the comparison between groups on occupational category (single variable).

**Table 2.** Smoking Outcomes Applying the Intention to Treat Principle by Smoking Cessation Advisor (SCA) Seen

| | HCA, $n$ = 313 | Nurse, $n$ = 289 | Unadjusted odds ratio (95% CIs) | Adjusted odds ratio (95% CI)[a] |
|---|---|---|---|---|
| Primary outcome | | | | |
|   Self-reported 2-week point prevalence abstinence at 8-week follow-up | 134 (42.8%) | 123 (42.6%) | 1.01 (0.73–1.40) | 1.07 (0.76–1.51); $P$ = .68[b] |
| Secondary outcomes | | | | |
|   CO-verified 2-week point prevalence abstinence at 4-week follow-up after quit date | 83 (26.5%) | 69 (23.9%) | 1.15 (0.80–1.66) | 1.26 (0.86–1.87); $P$ = .23[b] |
|   Self-reported 6-month prolonged abstinence at 6-month follow-up | 35 (11.2%) | 37 (12.8%) | 0.86 (0.52–1.40) | 0.93 (0.55–1.56); $P$ = .78[b] |

CI = confidence interval; CO = carbon monoxide.

[a]Adjusted for patients' occupational category, initial CO reading and trial intervention arm.

[b]Likelihood ratio test comparing the adjusted model with and without SCA as a predictor.

smoking (HCAs 97%, nurses 98%). High proportions of patients (over 85% in both groups) were also given information on pharmacotherapies, asked about previous attempts and given advice on how to quit smoking. There were no statistically significant differences between HCAs and nurses in any of the above elements of support provided in the initial smoking cessation consultation.

There were also no significant differences in prescribing patterns for any of the pharmacotherapies provided to the patients. Patients were just as likely to be prescribed two forms of nicotine replacement therapy when seen by HCAs as nurses (*OR* = 0.9, 95% CI = 0.6 to 1.2) and for the prescription to be Varenicline (*OR* = 1.2, 95% CI = 0.9 to 1.7) or Bupropion (*OR* = 0.7, 95% CI = 0.2 to 2.8).

### Patient Satisfaction With Support Provided

Patients who saw either type of SCA gave positive evaluations of the support they received. Ninety-three percent of patients who

saw HCAs and 91% who saw nurses said they were happy or extremely happy with the consultations, and 90% and 85% of patients who saw HCAs and nurses respectively reported finding the advice they received useful or extremely useful. There were no statistically significant differences in any aspect of patient satisfaction by SCA type.

### Ongoing Support Provided

Patients who saw HCAs were as likely to have interim contact following the initial consultation compared with patients who saw nurses (HCAs 84%, nurses 78%; *OR* = 1.5, 95% CI = 1.0 to 2.2; Table 3). However, HCAs were more likely to have a larger total number of contact occasions with their patients overall (median number of contacts = 2 for HCAs, 1 for nurses; $P$ < .001) and these contacts were more often clinic appointments (HCAs 91%, nurses 71%; *OR* = 4.2, 95% CI = 2.9 to 6.3) than phone calls.

**Table 3.** Smoking Cessation Support Provided by Smoking Cessation Advisor (SCA)

| | Patients seen by HCA (*n* = 313) | Patients seen by nurse (*n* = 289) | Odds ratio (95% CIs)/*P* value |
|---|---|---|---|
| Time taken for initial consultation (*SD*) minutes[a] | 23.6 (11.9) | 20.8 (9.8) | .002 |
| Patients' recollections of SCA behavior in the initial consultation[b] | | | |
|   Invited to set a quit date | 212 (96.4%) | 209 (96.3%) | 1.01 (0.37–2.75) |
|   Gave information on pharmacotherapies | 198 (90.0%) | 195 (89.9%) | 1.01 (0.54–1.89) |
|   Measured CO levels | 212 (96.4%) | 212 (97.7%) | 0.63 (0.20–1.94) |
|   Asked about current smoking behavior | 213 (96.8%) | 212 (97.7%) | 0.72 (0.22–2.30) |
|   Asked about previous attempts | 204 (92.7%) | 198 (92.1%) | 1.22 (0.61–2.44) |
|   Given advice on how to quit smoking | 198 (90.0%) | 189 (87.1%) | 1.33 (0.74–2.41) |
| Prescribing patterns | | | |
|   Prescribed at least one NRT | 162 (51.8%) | 163 (56.4%) | 0.83 (0.60–1.14) |
|   Prescribed two forms of NRT | 76 (24.3%) | 79 (27.3%) | 0.85 (0.59–1.23) |
|   Prescribed Varenicline | 138 (44.1%) | 115 (39.8%) | 1.19 (0.86–1.65) |
|   Prescribed Bupropion | 4 (1.3%) | 5 (1.7%) | 0.73 (0.20–2.77) |
| Patient satisfaction with support[c] | | | |
|   Found advice on pharmacotherapy and NRT clear or extremely clear | 188/217 (86.7%) | 188/216 (87.0%) | 0.98 (0.55–1.69) |
|   Found advice useful or extremely useful | 197/220 (89.5%) | 180/213 (84.5%) | 1.57 (0.88–2.77) |
|   Were happy or extremely happy with the consultation | 204/219 (93.2%) | 196/215 (91.2%) | 1.32 (0.65–2.67) |
|   Thought the amount of time spent talking was about right | 201/217 (92.6%) | 195/213 (91.5%) | 1.15 (0.57–2.34) |
|   Felt that there was not anything missing from the consultation | 201/219 (91.8%) | 194/211 (91.9%) | 0.98 (0.49–1.95) |
| Interim contacts | | | |
|   Had any interim contact | 262 (83.7%) | 225 (77.9%) | 1.46 (0.97–2.20) |
|   Interim contact was clinic rather than phone[d] | 455/499 contacts (91.2%) | 232/327 contacts (70.9%) | 4.23 (2.86–6.26) |
|   Median (IQ range) number of contacts | 2 (1, 3) | 1 (0, 2) | <.001 |

CI = confidence interval; CO = carbon monoxide; HCA = healthcare assistant; NRT = nicotine replacement therapy.

[a]There were times missing for 24 patients (patients seen by HCAs = 297, nurses = 281).

[b]Collected at the 8-week follow-up (patients seen by HCAs = 220, nurses = 217).

[c]The denominator for each question varied as indicated.

[d]For 63 participants, the type of contact was not recorded (patients seen by HCAs = 279, nurses = 260).

## Discussion

This study found that HCAs are equally effective as nurses in supporting smoking cessation quit attempts, as indicated by smoking cessation outcomes across multiple timepoints. In addition, the content of the support delivered including medication provision and as reported by the patients, did not differ by healthcare staff type. While HCAs took more time to deliver the initial consultation and were more likely to provide a greater number of interim contacts and for these contacts to be clinic rather than phone appointments, patients were equally satisfied with the support they received. Strengths of this study include the use of a range of clinically relevant process measures, inclusion of the patients' perspective and use of abstinence outcomes collected across multiple timepoints including the use of biochemical verification.

Our findings are in contrast to Hiscock et al.[8] who found that HCAs had a higher success rate than nurses. One limitation with Hiscock et al's study is that the majority of support episodes logged in the Quit Manager database they used for analysis did not have a healthcare staff type indicated (57 282 unknown type vs. 5604 HCAs and 13 095 nurses). Therefore, it is possible that a nonreporting bias could have influenced the results. Our findings are in line with Katz et al. who found no differences in the performance of smoking cessation activities carried out by different primary care professional grades. Our study shows not only that HCAs carried out the same basic content in smoking cessation interventions according to patients but patient satisfaction was equally high.

These findings of broad equivalence between the two types of community SCA supports increasing the opportunities for HCAs to become trained in this role. This could have several advantages. It could reduce waiting times by increasing availability and enable nurses to concentrate on patients with complex clinical needs, long-term conditions, and preventative work. These effects have been shown to take place on the introduction of HCAs into primary care skill mix.[16–19]

Qualitative studies have pointed to a value laden hierarchy in primary care where GPs and nurses have described the HCA role as "routine," "menial," "basic," "straightforward," and "lower-end"[20] and with HCAs themselves referring to their tasks as "menial," "silly," and "mundane."[16] Training HCAs to undertake smoking cessation treatments may increase job satisfaction and in turn increase employee retention, although this remains speculative.

HCAs were found to use more time to deliver support than nurses for no observed improvement in cessation outcomes. To determine whether HCAs deliver more cost-effective support than nurses, this additional time cost would need to be offset by their lower staff costs. In addition, how the released time of nurses might be put to use should also be taken into account, that is, the higher the value of the task that the nurse performs instead of delivering smoking cessation treatments, the more cost effective the substitution would be.[21]

This study has several limitations. While the 4-week smoking outcome was biochemically verified using a CO breath test, the 8-week and 6-month outcomes were self-report only. Ideally participants would be followed up beyond 6 months and have their abstinence biochemically verified, although for this study it was not considered feasible. In addition, receipt of cessation support provided and satisfaction with the initial consultation was collected from patients 8 weeks after the initial consultation potentially increasing the risk of recall bias.[22]

Although randomization was stratified by SCA, resulting in roughly equal numbers of participants assigned to nurses and HCAs,

the type of SCA seen by participants was not determined at random. While the participants in each SCA group had similar characteristics, it is possible that there were unmeasured confounders, such as a high number of other smokers in a participant's environment[23] or high levels of negative affect.[24] There may also have been unmeasured SCA characteristics that were confounders, such as experience in delivering cessation support,[25] training received,[26] role satisfaction,[9] and personal ability to build rapport.[27]

In terms of representativeness, the index of multiple deprivation scores for the practices that participated in the trial showed that only 8 of the 32 practices were in the highest 50% of deprived small geographical areas for England (lower super output areas). Therefore, there were fewer practices in areas of deprivation than would be expected for a representative sample taken from across England. The relatively low participation rate among practices approached (31%) could have contributed to this issue and could have reduced sample representativeness overall if there were differences in the characteristics of practices participating and those not. Analysis of the study participants showed that they were generally similar in characteristics to the Stop Smoking Service nationally[28] though there were higher rates of employment (iQIP 65%; national 43%) and people classifying themselves as from a white ethnic group (iQIP 98%; national 88%).

## Conclusion

HCAs appear to be equally as effective as nurses in supporting smoking cessation quit attempts, though they do this with more patient contact. Increasing skill mix in the area of smoking cessation in primary care could potentially save nurse time and costs, improve patient access and provide enhanced services without compromising outcomes. Further studies looking at the knock-on effects of HCAs providing a larger proportion of smoking cessation consultations in primary care would help determine this.

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## Declaration of Interests

*None declared.*

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