Abstract

Previous research indicates low screening uptake among South Asian women. We aimed to generate contemporary evidence of uptake by ethnicity using the screening records of eligible women resident in Manchester (n = 72,613). Uptake among South Asians was lower than among other women, a difference explained by area- and practice-level confounding. A higher proportion of South Asians were recorded as ‘never screened’, an effect only partially explained by confounding. In practices with relatively large South Asian populations, uptake was higher among South Asians. Women born in a diverse range of overseas countries had uptake rates below 60 per cent and approximately a third of women born overseas were recorded as ‘never screened’. If comprehensive coverage is to be achieved in inner city areas attention should now focus on the needs of a diverse range of ethnic minority groups other than South Asians. The routine collection of ethnicity data in primary care is also indicated.

Keywords: cervical screening, ethnicity, needs assessment, primary care

Introduction

Over a thousand deaths from invasive cervical cancer occur annually in England and Wales,1 most of which are potentially avoidable through detection and treatment of pre-cancerous cell changes. However, comprehensive population screening coverage has proved elusive. Between 1989 and 1995 national uptake rose from 44 to 84 per cent and has remained at this level since.2 The challenge to public health professionals now lies in identifying and targeting ‘hard-to-reach’ groups with especially low uptake.

Existing evidence suggests that South Asian women have low uptake.3–5 In 1992–1993 the Health Education Authority carried out a national survey which estimated uptake of only 33 per cent among Bangladeshis, 45 per cent among Pakistanis, and 63 per cent among Indians, compared with 79 per cent among African-Caribbeans and 74 per cent in the general population.6 These findings should not be generalized to the present; a more recent study found a smaller difference in uptake between South Asians and other women (67 versus 75 per cent) in West Yorkshire.7

Our aims were threefold. First, to compare uptake between South Asians and other women within the eligible population of a Health Authority area, including adjustment for area- and practice-level confounding effects. Secondly, to assess whether variation in uptake varies according to relative size of South Asian population. Finally, to estimate uptake for other ethnic minority groups according to place-of-birth.

Methods

During February 2001 the electronic screening records of all eligible women aged 30–64 years (n = 72,613) were obtained from Manchester Health Authority. The standard Cervical Screening Programme ineligibility criterion (having no cervix) and the standard definition for calculation of uptake (at least one ‘adequate’ smear result within the last 5 years) were applied.

The Nam Pehchan computer program was used to classify women by South Asian ethnicity.8 Validation of the program found good sensitivity (90 per cent) but a high false positive rate and poor positive predictive value (63 per cent), indicating against its use as a stand-alone classification system.9 Place-of-birth reported at patient registration was used to enhance the program’s accuracy. Probable program false positives (defined as program positives born outside South Asia or Great Britain)
and probable false negatives (defined as program negatives born in South Asia) were identified. The place-of-birth data were recorded for only 34 per cent of all women although completeness was higher (50 per cent) among program positives. The effectiveness of this exercise in enhancing the program’s accuracy was assessed, by comparing our false positive rate with that estimated by Cummins et al.9

Socio-demographic variables at enumeration district level were created using 1991 National Census data. Practice-level variables were obtained from the Health Authority and from the National Database of Primary Care Trusts held at the University of Manchester School of Primary Care. The area-level variables measured deprivation, transience and social isolation; the practice-level variables reflected practice workload, structure and GP characteristics. These variables were fitted as confounders of the association between South Asian ethnicity and uptake at individual woman level.

The uptake rate (per cent screened within last 5 years) and ‘never screened’ rate (per cent with no screening history recorded) were calculated. Comparisons were made for South Asians versus other women and by place-of-birth category (using born in Great Britain as the reference). Multivariate logistic regression models were generated to examine whether variation in uptake between South Asians and other women was independent of area- and practice-level confounding. Comparisons of uptake rates were also made according to relative size of South Asian population per practice (per cent of all women: <5, 5–10, 10–20, 20–50, 50 per cent or above).

Results

The *Nam Pehchan* program classified 7848 women (10.8 per cent of the total) as being South Asian. Using the place-of-birth data 1249 false positives and 184 false negatives were identified, giving a false positive rate (16 per cent) that was substantially less than the expected rate of 37 per cent.9 The refinement process was therefore probably only partially successful, identifying ~40–50 per cent of all false positives. A new identifier was generated that classified 6783 women as being South Asian, representing 9.3 per cent of all women in the data set, 10.4 per cent of those not screened in the last 5 years, and 12.8 per cent of those ‘never screened’.

![Table 1](https://academic.oup.com/jubhealth/article-abstract/26/3/293/1540889/Downloaded-from-academic.oup.com)
number of women born overseas will have been underestimated. Uptake was lower in women born in the Indian subcontinent than in the remaining South Asian women (65.5 versus 71.4 per cent, \( p < 0.001 \)). There was substantial variation in uptake between South Asians and other women by size of South Asian population per practice. The deficit in uptake among South Asians was greatest in practices with small South Asian populations (<5 per cent of all women: 68.8 versus 75.1 per cent). As the relative numbers of South Asians increased the deficit narrowed. At practices where between a fifth and half of all women were South Asian, South Asians had higher uptake than other women (69.9 versus 67.6 per cent); where this proportion was a half or more uptake for South Asians was much higher (70.1 versus 51.6 per cent, \( p < 0.001 \)).

Uptake rates were heterogeneous by place-of-birth category (Table 1). For all categories (except Great Britain, Caribbean, South Asia, Ireland and Africa ‘other’) uptake was below 60 per cent. For several sub-groups the ‘never screened’ rate was between a third and a half (Asia ‘other’: 49 per cent; North Africa: 44 per cent; Eastern Europe/Russia: 44 per cent; South East Asia: 39 per cent; Somalia: 37 per cent; Middle East/Arab Gulf: 35 per cent). Overall, women born outside Great Britain represented 12.3 per cent of all eligible women, almost a fifth of those not screened in the last 5 years, and almost a third of those ‘never screened’.

**Discussion**

South Asian women had a slightly lower uptake that was entirely explained by multilevel confounding effects. The difference in the ‘never screened’ rate between South Asians and other women, however, was not fully explained by confounding. This has important public health implications, as the absence of a screening history is the most important risk factor for developing invasive cervical cancer. Uptake varied greatly by place-of-birth, with a diverse range of groups having markedly low uptake below 60 per cent, and almost a third of all women recorded as ‘never screened’ were born overseas.

The study was truly population-based with all eligible registered women completely enumerated thereby ensuring that fundamental types of bias (e.g. selection and ascertainment bias) were avoided. External validity is also high provided that the findings are generalized appropriately to inner city populations.

However, there are also a number of limitations. First, an imperfect South Asian classification system was used, and despite partial refinement, the numbers of South Asians will have been overestimated due to a residual presence of false positives. Furthermore, the dichotomous South Asian ethnicity variable lacks specificity. In contrast, due to missing data, the number of women born overseas will have been underestimated. Finally, we could not account directly for denominator error due to practice list size inflation, as this information was unavailable at practice level.

That area- and practice-level confounding effects explained the modest deficit in uptake among South Asians is a novel finding. Studies published during late 1980s and early 1990s found a markedly lower uptake in these women, but these were small studies lacking adjustment for confounding. The latter criticism also applies to the larger studies. Ours is the first published study to compare uptake between South Asians and other women at population level with comprehensive adjustment, and also to investigate variation by place-of-birth.

Targeted health promotion may have succeeded in narrowing the large deficit in uptake among South Asians previously reported. As a corollary, at practices with large South Asian populations, uptake in these women was substantially higher than for other women, again perhaps indicating the effectiveness of targeting. The development of stronger social networks among South Asian women, or high deprivation among white women in these localities, could also explain this phenomenon.

Tackling health inequality in relation to cervical screening should now focus on ‘hard-to-reach’ groups other than South Asians. These groups might include refugees, asylum seekers, overseas students and a diverse range of ethnic minorities. The low uptake rates may be a transient phenomenon restricted to newly arrived immigrants, as suggested by the higher uptake among second and third generation than first generation South Asians. There is also a need to assess the specific needs of each ethnicity minority group. For example, Chinese women had very low uptake despite the fact that this is a long established community in Manchester. It has been reported elsewhere that this population has low rates of utilization for all health services.

Our findings indicate the need for routinely collecting accurate and specific ethnicity data for all patients registered in primary care. Routine calculation of uptake rates by ethnicity would enable evidence-based health promotion targeting and service planning for cervical screening.

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**References**


8 Bradford Health Authority and City of Bradford Metropolitan District Council (MDC). *Nam Pehchan* [computer program]. July, 1996, version 1.1.


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