

**A CROSS-SECTIONAL ANALYSIS OF ETHNIC
INEQUALITIES IN CERVICAL SCREENING
UPTAKE IN THE UK USING UNDERSTANDING
SOCIETY**

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INTRODUCTION



- Globally, cervical cancer is the fourth most common cancer in women (WHO, 2018)
- From 2008 a UK-wide Human Papilloma Virus (HPV) vaccination programme was also introduced to reduce incidence of cervical cancer. (Mesher et al 2019)
- However, the vaccine does not prevent all cervical cancers and so cervical screening is important (Jo's Cervical Cancer Trust, 2017)
- The 10-year survival rate of cervical cancer, however, is only at 51% in the UK (CRUK, 2019)
 - 49% of women die within 10 years of being diagnosed
- It is estimated that approximately 5,000 deaths are prevented each year with the relatively simple procedure of cervical screening (National Services Scotland, 2020)

CERVICAL SCREENING FLOW CHART

Women 25-64 years old invited for cervical screening

Patient cervix examined through speculum

Pap smear taken and sent to Histopathology Lab

Infection

Normal

Abnormal

Patient given a
Colposcope and/or
Biopsy

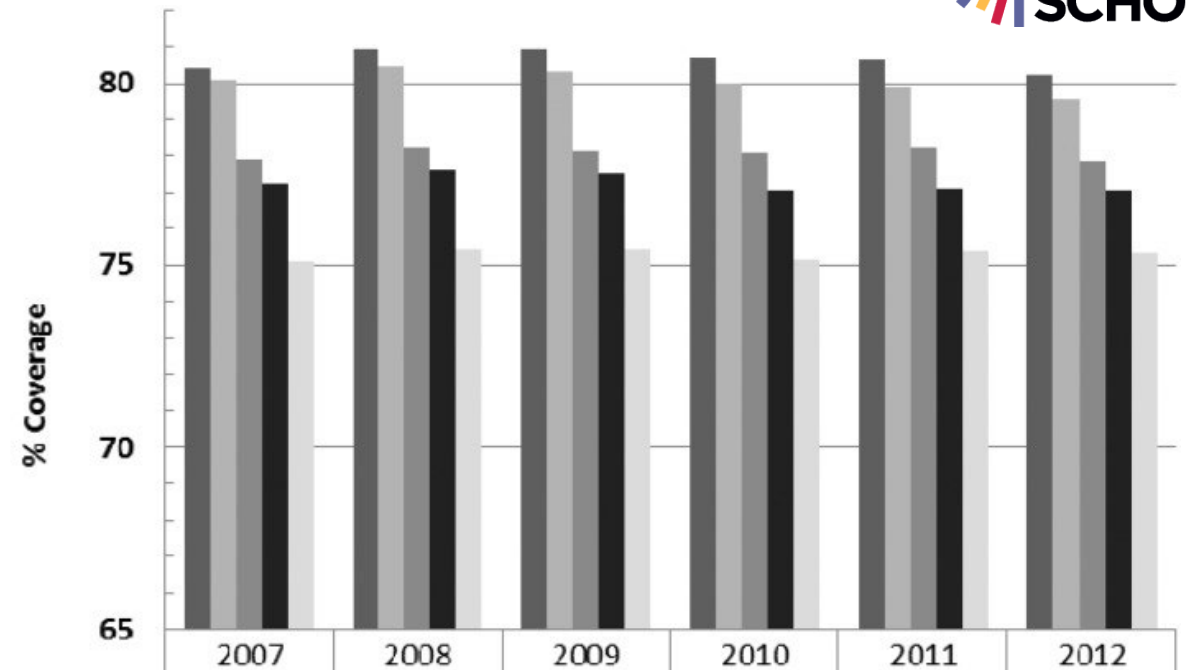
Repeat every 3-5 years



LOW ATTENDANCE IN CERVICAL SCREENING

- Cervical screening attendance is at a 19-year low in England and going down across all age groups (Jo's Cervical Cancer Trust, 2017)
- Socio-economic inequalities as a contributor to cervical screening uptake have been extensively studied,(Douglas et al 2015)
- Cancer Research UK states that cervical cancer mortality is more common in females living in deprived areas (CRUK, 2019)

STUDY SHOWING CERVICAL
SCREENING COVERAGE IS
LOWEST IN THE LOWEST
QUINTILE OF INCOME
DEPRIVATION IN ENGLAND



	2007	2008	2009	2010	2011	2012
■ 1 - Least Deprived	80.4	80.9	80.9	80.7	80.7	80.2
■ 2	80.1	80.4	80.3	80.0	79.9	79.5
■ 3	77.9	78.2	78.1	78.1	78.2	77.9
■ 4	77.2	77.6	77.5	77.1	77.1	77.0
■ 5 - Most Deprived	75.1	75.5	75.5	75.1	75.4	75.3

Cervical screening coverage by quintile of deprivation within PCTs, England, age 25–64 (2007–12), Douglas et al (2015)

LOW ATTENDANCE IN CERVICAL SCREENING

- Less attention, however, has been paid to ethnic inequalities as a contributor to cervical screening uptake
- This is, in part, largely due to poor recording of ethnicity in primary care.
- Some studies have attempted to examine the association between ethnicity and cervical screening uptake using national survey data adjusting for socio-economic status, e.g.
 - Moser et al. (2009) found that white British women were more likely to attend cervical screening compared to minority ethnic women
- However, these studies have limitations in that they are unable to disaggregate ethnicity beyond white British due to limited sample size of minority ethnic women.

OBJECTIVE



- In this study we used the national Understanding Society dataset which allowed us to compare a wider population of ethnic groups
- **This study aimed to look whether ethnicity is an independent predictor of cervical screening uptake in the U.K.**
- To do this, we controlled for other socio-demographic factors

METHOD

- We used the nationally representative survey, Understanding Society (Wave 10, 2018-20), which has over sampled minority groups
- Sample consisted of 12,006 women aged 25-64 living in the U.K.

STEP 1

- Cross tabulations were examined to determine the relationship between sociodemographic variables (right) and cervical screening uptake
 - Statistical tests used were Chi-squared and Mann-Whiney U test

STEP 2

- Multivariant analysis using logistic regression was then performed to determine if ethnicity was an independent predictor of cervical screening uptake.

Sociodemographic variables examined

Age

Ethnicity

Religion

Educational Status

Economic Activity

IMD Score

Access to a car or van

Number of GP visits in 12 months

Born outside the U.K.

English as first language

NS-SEC

Long-standing Illness or Disability

Region

STEP 1 RESULTS OF CROSS TABULATION ANALYSIS

- Cross tabulation analysis showed that ethnicity among other sociodemographic variables were significantly related to whether women attended cervical screening
- This was the case for both weighted and unweighted data

Table I. Cervical screening uptake across the U.K. Year 2018-2019

Sociodemographic variables	Women eligible (n or M)	Screening uptake (% or SD)	p*
Age (M and \pm SD)	43	10.7	<0.001
IMD Score (M and \pm SD)	21.7	8.36	<0.001
Ethnicity	9437	27.7	<0.001
- white	1484	17.6	
- Asian (not incl. Arab)	571	24.5	
- Black	334	28.4	
- Other (incl. Arab) & Mixed			
Religion	5457	28.7	<0.001
- None	6199	23.9	
- Belongs to religion			
Educational Status	5057	29.4	<0.001
- Post-secondary	3552	35.5	
- Secondary	1503	23.2	
- Inapplicable	1733	21.6	
- None of the above			
Economic Status	8642	28.2	<0.001
- Employed	2332	21.9	
- Not economically active	657	18.0	
- Retired	209	24.4	
- Studying (other)			
National statistics socioeconomic classification	877	30.6	<0.001
- Large employers & higher management/higher professional	2913	29.9	
- Lower management & professional	1411	28.5	
- Intermediate	554	26.7	
- Small employers & own account	2365	25.0	
- Lower supervisory & technical/ Semi-routine/Routine	3415	21.7	
- Inapplicable			
Access to a car or van	2388	21.6	<0.001
- No	9454	27.4	
- Yes			
Number of GP visits	2989	18.8	<0.001
- 0	4881	27.4	
- 1 or 2	2446	31.0	
- 3 to 5	857	30.1	
- 6 to 10	658	29.2	
- >10			
Born outside the U.K.	9520	27.1	<0.001
- No	2097	22.2	
- Yes			
First language other than English	6897	26.6	<0.001
- No	1572	21.0	
- Yes			



Table 2. Weighted cervical screening uptake across the U.K. Year 2018-2019

Sociodemographic variables	Women eligible (n or M)	Screening uptake (% or SD)	p*
Age (M and \pm SD)	43	11.1	<0.001
IMD Score (M and \pm SD)	21.3	8.28	<0.001
Ethnicity			
- white	7887	27.1	0.028
- Asian (not incl. Arab)	416	20.7	
- Black	175	25.1	
- Other (incl. Arab) & Mixed	167	29.3	
Religion			
- None	4600	28.7	<0.001
- Belongs to religion	3960	24.5	
Educational Status			
- Post-secondary	3697	29.9	<0.001
- Secondary	2867	25.6	
- Inapplicable	825	22.9	
- None of the above	1258	22.9	
Economic Status			
- Employed	6430	28.5	<0.001
- Not economically active	1591	22.6	
- Retired	489	19.0	
- Studying (other)	136	25.0	
National statistics socioeconomic classification			
- Large employers & higher management/higher professional	633	28.6	<0.001
- Lower management & professional	2125	30.9	
- Intermediate	1074	28.3	
- Small employers & own account	449	25.8	
- Lower supervisory & technical/ Semi-routine/Routine	1832	26.3	
- Inapplicable	2314	22.4	
Access to a car or van			
- No	1865	22.4	<0.001
- Yes	6781	28.0	
Number of GP visits			
- 0	2266	19.1	<0.001
- 1 or 2	3546	28.0	
- 3 to 5	1759	31.9	
- 6 to 10	615	34.5	
- >10	453	25.6	

STEP 2. LOGISTIC REGRESSION RESULTS (ADJUSTED)



Table 3. Weighted results of logistic regression predicting cervical screening uptake with significant sociodemographic variables.

Sociodemographic variables	OR	(95% CI)	<i>p</i> *
Age	0.97	(0.96-0.97)	<0.01
Asian women (vs. white women)	0.68	(0.53-0.88)	0.003
Access to a car or van (vs. no access)	1.34	(1.17-1.53)	<0.001
Number of GP visits (vs 0)			
- 1 or 2	1.66	(1.45-1.89)	<0.001
- 3 to 5	2.12	(1.18-2.47)	<0.001
- 6 to 10	2.39	(1.94-2.94)	<0.001
- >10	1.82	(1.42-2.33)	<0.001

SUMMARY OF RESULTS

- After adjusting for confounding variables, ethnicity is an independent predictor as to whether women attend cervical screening
- The likelihood of participating in cervical screening was lower among Asian women compared to white women (OR 0.68, $p < 0.05$).
 - 32% lower in adjusted data
- Interestingly, other factors directly affects uptake of cervical screening
- Women were more likely to go for cervical screening if:
 - They had access to a car (OR 1.34 $p < 0.05$)
 - Had visited the GP (compared to no visits to the GP: 1-2 visits, OR 1.66, $p < 0.05$, 3-5 visits OR 2.12, $p < 0.05$, 6-10 visits OR 2.39 $p < 0.05$, >10 visits OR 1.82 $p < 0.05$)

SENSITIVITY ANALYSIS

Table 4. Unweighted cervical screening uptake across the U.K. Year 2018-2019

Sociodemographic variables	Women eligible (n)	Screening uptake %
White		
- British/English/Scottish/Welsh/Northern Irish	8834	27.7
- Irish	112	27.9
- Other white	476	27.6
Asian		
- Indian	503	22.1
- Pakistani	508	14.4
- Bangladeshi	256	11.7
Black		
- African	294	25.2
- Caribbean	254	24.4
Mixed	255	26.3
Other	321	24.6

$p < 0.001$

SENSITIVITY ANALYSIS



Table 5. Unweighted cervical screening uptake across the U.K. Year 2018-2019

Sociodemographic variables	Women eligible (n)	Screening uptake %
No Religion	5457	28.7
Religion		
- Anglican	1930	25.3
- Catholic	1037	26.0
- Other Christian	1254	25.9
- Muslim	948	15.9
- Other	723	23.9

$p < 0.001$

SENSITIVITY ANALYSIS

Table 6. Unweighted cervical screening uptake across the U.K. Year 2018-201

Sociodemographic variables	Women eligible (n)	Screening uptake %
Muslims by Ethnicity		
- Indian Muslim	99	23.2
- Pakistani Muslim	472	14.8
- Bangladeshi Muslim	224	10.7
- African Muslim	63	19.0
- Other Muslim	89	24.7

IMPLICATIONS

- Our study supports previous research that ethnicity is a significant factor in predicting cervical screening uptake after adjusting for socio-economic deprivation in the U.K.
- In highlighting ethnic inequalities in cervical screening, this study shows the importance of ensuring uptake of screening reaches all parts of the population
- This has implications for future research and practice in terms of identifying barriers to uptake amongst Asian women
 - Language barriers preventing lack of awareness (Grandahl et al. 2015)
- And psycho-social barriers that may be in relation to ethnicity and religion
 - Some studies suggest that immigrant women felt their health was not considered a priority in their home country (Marlow et al 2015)
- A review of interventions to improve cervical screening uptake could be of benefit to ethnic minority women
- A limitation of this study is that it was unable to be conducted longitudinally due to the use of cervical screening questions only being asked in wave 10 of UKHLS data

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