

Research Article

What the Numbers Tell Us: A Review of Nursing Course Applications, Acceptances and Attrition Rates for British South Asian Men

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ABSTRACT

Background: There is a recognised shortage of nurses globally and specifically in England. There is also a particular need to expand and diversify the current nursing workforce. Previous evidence shows that both South Asians and men have long been underrepresented on nursing courses and in the nursing workforce. This study aimed to carry out a secondary review of applications, acceptance and attrition data for nursing pre-registration courses in England to understand the relationship between sex, ethnicity and success rates.

Methods: Secondary descriptive analysis of national data on applications (n=150, 445 applicants), acceptances and attrition rates (n=416,457 enrolled students) in relation to nursing pre-registration courses in England from 2013 to 2016. Study conducted in January 2018. The sample was restricted to undergraduate courses.

Results: Using proportion ratios, using 95% confidence intervals, British South Asian men are significantly more likely to apply to nursing courses than their White counterparts. They

are half as likely to be accepted for those nursing courses. British South Asian men are also significantly more likely to leave their nursing course without any award than British White men. These results have implications for nursing educators and specifically those involved in widening participation policy for minority groups and the nursing profession.

Conclusion: These results indicate the need to further consider why British South Asian men are applying for nursing education courses in proportion to their prevalence in England, why are they so unlikely to be accepted on nursing courses in comparison to other groups? and why are they so likely to leave their nursing course without any award? This should be done to identify policy implications and organisational practice that may act as barriers for this cohort successfully completing their nursing education.

Keywords: Ethnicity; Gender; South Asian; Student nurse retention; Student nurse selection

Introduction

Ensuring that the nursing workforce is as culturally diverse as the population it serves has emerged as a key policy priority in recent years [1-3]. However, evidence shows that there is an overall deficit of qualified nurses globally and specifically working within the National Health Service (NHS) [4-8]. In response, Health Education England (HEE) launched a national framework *Widening Participation-it matters! Our Strategy and Initial Action Plan (HEE, 2014)*, with the aim of ensuring a stronger, more diverse NHS workforce [9]. This national framework also acknowledged the growing literature in this area that highlights increasing the diversity of the 'home grown' NHS healthcare workforce contributes towards providing culturally competent healthcare services, improvements in cost management, quality of care for patients and improved health outcomes [10-12].

However in order to develop an adequately diverse workforce, we need to consider the diversity of students engaged in relevant higher education. Unfortunately, the majority of previous evidence on University admissions largely presents descriptive data and shows that Black Asian and Minority Ethnic (BAME) groups are over represented in higher education but are underrepresented on healthcare courses [13,14]. Within this group, South Asians are overrepresented in medical and dental but underrepresented in nursing (HEE, 2014).

HEE acknowledge the British South Asian¹ (BSA) population as one of the largest and fastest growing minority ethnic groups in the country (HEE, 2014). Harnessing the potential of this 'home grown' community to contribute to the healthcare workforce will not only be beneficial to develop culturally competent services but also they represent a large resource to help stop reliance on unsustainable overseas recruitment strategies [15].

Alongside the previous studies that have identified the underrepresentation of the South Asian community within the nursing workforce, there is also a well reported lack of men in the profession [16-21]. Yet little is known about the numbers of BSA men specifically, across the key stages of applications, acceptances and attrition from nursing education. Focussing on these stages in the process is important as it gives us a wider understanding of the number of; 1) how many BSA men apply 2) how many are accepted on nursing courses and 3) how many then go on to successfully complete the course they have been accepted on.

¹The term British South Asian refers to those people of South Asian ethnicity, born and or socialised in the United Kingdom (41). For context, it is most closely aligned with the ethnic group definition used in the United Kingdom 2011 census (Office of National Statistics 2011) where Asian/Asian British refers to Pakistani, Indian and Bangladeshi (not including Chinese or any other Asian background)

A detailed analysis of applications to, acceptances of, and attrition from nursing courses provides much needed basic benchmarking information. This baseline data is required if we are to support workforce development and diversification, by better understanding the specific opportunities, experiences and outcomes for BSA men who are born or socialised in the United Kingdom, and therefore part of the potential 'home grown' nursing workforce.

Whilst there has been a longstanding recognition of the lack of nurses in the NHS; the existing evidence base suggests that a particular range of barriers exist for BAME people and men when trying to enter the nursing workforce [22-29]. These barriers include, lack of knowledge of nursing course requirements, poor experiences of nursing education, as well as lack of male nurse role models [2,30-32].

Both BAME groups and men have been identified as being less likely to successfully complete relevant nursing education [18,33]. This paper presents the results of a review of secondary data accessed from the University and Colleges Admissions Service (UCAS) and the Higher Education Statistics Agency (HESA) on applications, acceptances and attrition data for nursing pre-registration courses with a focus on identifying any patterns in relation to ethnicity and sex, specifically in the case of BSA men. This is the first time, to our knowledge, that ethnicity and sex have been analysed as variables across the three stages of applications, acceptances and attrition for the relevant age for this target population.

Methods and Materials

The study used a quantitative approach. Secondary descriptive analysis was carried out on data relating to applications to nursing pre-registration courses (2013-2016), and attrition from, nursing pre-registration courses (2012/13 to 2014/15) in England. This was done with the aim of exploring the relationship between diversity variables such as sex and ethnicity and pre-registration nursing courses' application and attrition rates in England. The study had a specific focus on the outcomes for BSA men.

Having considered the available evidence base, three hypotheses were constructed, one for each stage of applications, acceptances and attrition from University nursing pre-registration courses:

Hypothesis 1: BSA men are significantly underrepresented in the overall applications to nursing courses in England

Hypothesis 2: BSA men are significantly less likely to be accepted than others when applying to nursing courses in England

Hypothesis 3: BSA men are significantly overrepresented in attrition rates from nursing courses in England

Participants

The data were derived from 150, 445 applicants and 416,457 enrolled students on nursing pre-registration courses at universities in England. The sample was restricted to undergraduate courses.

Data collection

All the data used in this study were routinely collected at

national level by two separate organisations. The applications data was obtained via the Universities and Colleges Admissions Service (UCAS). The attrition data was obtained via the Higher Education Statistics Agency (HESA).

All data was for UK domiciled applicants only. Sex was recorded as declared by the applicant/student. For applications data ethnic group was recorded as declared by the applicant under 'White', 'Black - Caribbean', 'Black - African', 'Black - Other Black background', 'Asian - Indian', 'Asian - Pakistani', 'Asian - Bangladeshi', 'Asian - Chinese', 'Asian - Other Asian background', 'Mixed - White and Black Caribbean', 'Mixed - White and Black African', 'Mixed - White and Asian', 'Mixed - Other mixed background', 'Other' and 'Unknown'. For attrition data ethnic group was recorded as declared by the applicant under 'White', 'Black - Caribbean', 'Black - African', 'Black - Other Black background', 'Asian - Indian', 'Asian - Pakistani', 'Asian - Bangladeshi', 'Asian - Chinese', 'Asian - Other Asian background', 'Mixed', 'Other - including mixed background' and 'Unknown'.

Applications outcomes were obtained and classified as: Applicants, applications (as each applicant could make up to five applications) and acceptances. Attrition outcomes were obtained and collapsed into two outcome categories: achieved intended award and left with no award.

Data analysis

Data for the rates of applications, acceptance and attrition were expressed as proportion ratios (PR) for the appropriate population, as shown below:

$$PR = \frac{x_1 / n_1}{x_2 / n_2} \quad (1)$$

where x_1 and x_2 are the number of applications/accepted students/or students leaving a course for the two populations (1 and 2) being compared and n_1 and n_2 are the total number of people in each population.

All analyses compared the White British and British South Asian populations, with males and females compared separately.

Application rates

Application rates were calculated as the percentage of nursing applicants for a given ethnic group compared to the English population of that ethnic group in the 2011 census. Application rates were calculated separately for each year, from 2013 to 2016.

Acceptance rates

Acceptance rates were calculated as the percentage of applicants accepted to a nursing course for a given ethnic group compared to the number of applicants for that ethnic group. Acceptance rates were calculated separately for each year, from 2013 to 2016.

Attrition rates

Attrition rates were calculated as the percentage of applicants leaving a nursing course with no award for a given ethnic group compared to the number of students studying a nursing course for that ethnic group [33]. Attrition rates and success rates were calculated for data for each academic year, from 2012-2013 to 2014-2015.

Differences in proportions between groups were expressed as ratios, with 95% confidence intervals for these ratios reported [34]. The confidence intervals were calculated for all proportions by calculating the standard error of the natural logarithm of PR, which approximates a normal distribution.

$$SE \ln(PR) = \sqrt{\frac{1}{x_1} - \frac{1}{n_1} + \frac{1}{x_2} - \frac{1}{n_2}} \quad (2)$$

where x_1 and x_2 are the number of applications/accepted students/or students leaving a course for the two populations (1 and 2) being compared and n_1 and n_2 are the total number of people in each population.

The 95% confidence intervals for $\ln(PR)$ can be expressed as:

$$PR \pm e^{1.96 \cdot SE \ln(PR)} \quad (3)$$

where 1.96 corresponds to the Z-score for a 95% confidence interval.

Confidence intervals are closely related to the concept of statistical significance for two-sided tests [34]. If the 95% confidence interval for the ratio of two proportions does not include zero, then a statistically significant difference between the proportions can be inferred. Results of chi-squared tests were reported to confirm statistical significance, with p-values adjusted using the Bonferroni method for all post-hoc tests.

Results

Application rates

Hypothesis 1: BSA men are significantly underrepresented in the overall applications to nursing courses in England.

Result: Hypothesis rejected

The application rates for nursing courses for all years, ethnic groups and sexes are shown in Table 1. When the results for each ethnic group and sex were compared between years, clear differences were observed. With respect to British White males, the proportion of applications between 2013 and 2016 decreased significantly by five percent (PR=0.95: 95% CI 0.91-0.98; $\chi^2=8.72$, df=1, p=0.003). In contrast, British White females showed a significant but negligible increase in application rate over the same period (PR=1.01: 95% CI 1.00-1.02; $\chi^2=4.58$, df=1, p=0.033). When application rates for BSAs were compared, males showed a significant increase of 59% (PR=1.59: 95% CI 1.42-1.79; $\chi^2=62.86$, df=1, p=0.000), while females showed a significant increase of 31% (PR=1.31: 95% CI 1.26-1.36; $\chi^2=196.51$, df=1, p=0.000).

The effect of sex on application rate is shown in Figure 1. Regardless of ethnicity, a greater proportion of females than males applied for nursing courses, with a larger ratio observed for British White applicants (PR=10.89: 95% CI 10.75-11.04; $\chi^2=185177$, df=1, p=0.000) than for BSA applicants (PR=9.41: 95% CI 9.03-9.81; $\chi^2=16720$, df=1, p=0.000). This result shows that BSA males were more likely to apply for nursing courses than their British White counterparts. With respect to the effect of year, the ratio of British White females to males applying increased slowly over time, with 2016 showing a significantly greater ratio than in both 2013 and 2014 (Figure 1). In contrast, the ratio of BSA females to males decreased slowly each year, with 2016 having a significantly lower ratio than 2013 (Figure 1).

The effect of ethnicity on application rate is shown in Figure 2. Regardless of sex, a greater proportion of BSA than British

Table 1: Application rates for nursing courses from 2013 to 2016. Values are proportions and 95% confidence limits. Total is the sum of all applications from 2013 to 2016.

Ethnic group	Sex	Year	Application rate
White	Male	2013	0.064% (0.062-0.066)
		2014	0.071% (0.069-0.073)
		2015	0.064% (0.062-0.065)
		2016	0.060% (0.058-0.061)
		Total	0.258% (0.256-0.260)
White	Female	2013	0.674% (0.669-0.680)
		2014	0.750% (0.743-0.756)
		2015	0.699% (0.693-0.705)
		2016	0.680% (0.674-0.686)
		Total	2.803% (2.797-3.2809)
British South Asian	Male	2013	0.1114% (0.103-0.125)
		2014	0.141% (0.129-0.153)
		2015	0.163% (0.150-0.176)
		2016	0.181% (0.167-0.194)
		Total	0.599% (0.586-0.611)
British South Asian	Female	2013	1.233% (1.197-1.269)
		2014	1.329% (1.292-1.367)
		2015	1.466% (1.427-1.505)
		2016	1.569% (1.529-1.609)
		Total	5.598% (5.560-5.635)

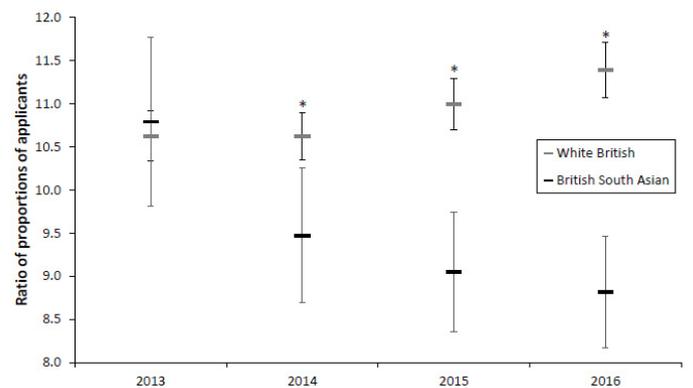


Figure 1: Comparison of proportion of applicants between males and females by ethnicity.

White applied for nursing courses, with a larger ratio observed for males (PR=2.18: 95% CI 2.09-2.27; $\chi^2=1403$, df=1, p=0.000) than for females (PR=1.89: 95% CI 1.87-1.92; $\chi^2=8572$, df=1, p=0.000). With respect to the effect of year, the ratio of BSAs to British White increased significantly each year from 2014 onwards (Figure 2). A similar effect was also observed for males, with significantly more BSAs applying for nursing courses than British White each year from 2014 onwards (Figure 2).

Acceptance rates

Hypothesis 2: BSA men are significantly less likely to be accepted than others when applying to nursing courses in England.

Result: Hypothesis accepted

The acceptance rates for nursing courses for all years, ethnic groups and sexes are shown in Table 2. When the results for each ethnic group and sex were compared between years, no differences were observed, regardless of sex or ethnicity. Accordingly, the results for the sex and ethnic comparisons are only presented for the total of all the four years in the sample.

With respect to sex, there was no significant effect on acceptance rate for either White candidates (PR=1.02: 95% CI 0.98-1.05; $\chi^2=1.007$, df=1, p=0.316) or for BSA candidates (PR=1.08: 95% CI 0.94-1.25; $\chi^2=1182$, df=1, p=0.297). However, there was a significant effect of ethnicity on acceptance rates for both male (PR=0.50: 95% CI 0.43-0.58; $\chi^2=88.9$, df=1, p=0.000) and female candidates (PR=0.53: 95% CI 0.51-0.56; $\chi^2=669.9$, df=1, p=0.000). This equates to an acceptance rate for BSA candidates that was close to half that of White candidates, irrespective of gender.

Attrition rates

Hypothesis 3: BSA men are significantly overrepresented in attrition rates from nursing courses in England.

Result: Hypothesis accepted

The attrition rates for nursing courses for all three years for which data was available are presented in Table 3, with results for both ethnic groups and sexes shown. When the results for each ethnic group and sex were compared between years, no differences were observed, regardless of sex or ethnicity, except for British White males. For this group, attrition rates decreased by 15% from 2012-2013 to 2014-2015 (PR=0.85: 95% CI 0.84-0.86), which was due to a higher attrition rate in the 2012-2013. Given that this was the only one of the 16 comparisons in which a significant difference was observed, all years were combined before making comparisons between sex and ethnic groups.

With respect to sex, there was a significant difference in attrition rate between British White candidates (PR=1.39: 95% CI 1.30-1.48; $\chi^2=101.9$, df=1, p=0.000) and BSA

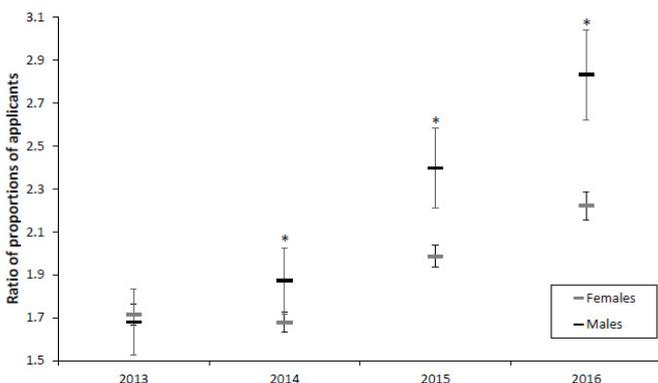


Figure 2: Comparison of proportion of applicants between ethnic groups by sex.

Table 2: Acceptance rates for nursing courses from 2013 to 2016. Values are proportions and 95% confidence limits. Total is the sum of all accepted candidates from 2013 to 2016.

Ethnic group	Sex	Year	Acceptance rate
White	Male	2013	14.6% (13.6-15.7)
		2014	15.4% (14.4-16.5)
		2015	16.0% (14.9-17.2)
		2016	16.5% (15.3-17.7)
		Total	15.6% (15.1-16.2)
White	Female	2013	15.8% (15.5-16.2)
		2014	15.6% (15.2-15.9)
		2015	15.9% (15.5-16.2)
		2016	16.4% (16.0-16.7)
		Total	15.9% (15.7-16.1)
British South Asian	Male	2013	8.1% (5.4-10.8)
		2014	8.5% (6.0-11.0)
		2015	8.1% (5.9-10.4)
		2016	8.8% (6.6-11.1)
		Total	8.4% (7.2-9.6)
British South Asian	Female	2013	8.0% (7.2-8.8)
		2014	8.8% (7.9-9.6)
		2015	9.0% (8.2-9.8)
		2016	10.4% (9.6-11.3)
		Total	9.1% (8.7-9.5)

Table 3: Attrition rates for nursing students from 2012-2013 to 2014-2015. Values are proportions and 95% confidence limits. Total is the sum of all candidates leaving nursing courses from 2012-2013 to 2014-2015.

Ethnic group	Sex	Year	Attrition rate
White	Male	2012-2013	4.09% (3.94-4.24)
		2013-2014	3.65% (3.50-3.79)
		2014-2015	3.48% (3.34-3.62)
		Total	3.74% (3.66-3.83)
White	Female	2012-2013	5.35% (4.86-5.85)
		2013-2014	4.95% (4.45-5.46)
		2014-2015	5.24% (4.73-5.75)
		Total	5.19% (4.90-5.48)
British South Asian	Male	2012-2013	4.91% (4.12-5.86)
		2013-2014	4.71% (3.91-5.51)
		2014-2015	3.63% (2.95-4.31)
		Total	4.41% (3.96-4.86)
British South Asian	Female	2012-2013	8.71% (5.87-11.55)
		2013-2014	5.39% (3.33-7.44)
		2014-2015	8.83% (6.22-11.44)
		Total	7.56% (6.12-9.00)

candidates (PR=1.72: 95% CI 1.36-2.16; $\chi^2=1182$, df=1, p=0.000). This corresponds to a greater attrition rate for females than males for both ethnic groups, with a greater effect observed for BSAs. When ethnicity was compared, there was a significant effect on attrition rates for both males (PR=1.18: 95% CI 1.06-1.31; $\chi^2=8.623$, df=1, p=0.004) and female candidates (PR=1.46: 95% CI 1.18-1.81; $\chi^2=12.060$, df=1, p=0.001). This equates to

an attrition rate that was 18% higher for male BSA students and 46% higher for female BSA students.

Discussion

Application rates

Previous studies have identified that men are underrepresented in nursing course applications; however BSA men do not seem to align with this trend according to this review [24]. They are increasing in numbers of applications and are more likely to apply than their British White male counterparts. This review also found that overall; females are ten times more likely to apply than males, however the gap between the numbers of BSA females and BSA males applying is decreasing.

The results indicating that BSA men do apply to nursing courses in greater proportion than their British White counterparts is significant and worthy of further discussion. This result rejects hypothesis one. As referenced above a significant similar study carried out by Iganski found that South Asian men were underrepresented in nursing applications, these results included an age criterion of those likely and eligible to apply for nursing courses (as did this study) but did not consider South Asian men born in the UK as a criterion [18]. However Iganski did exclude all overseas applicants from the discussion, as he also posited that applicants resident in Great Britain would arguably be more likely to share cultural characteristics with communities resident in Britain than overseas applicants. This approach also aligns with the focus on 'home grown' BSA men born or socialised in the UK as used in this review.

Another study carried out in the same year specifically into improving the recruitment and retention of Asian students on nursing, midwifery, radiography and physiotherapy courses suggested that there was South Asian underrepresentation on relevant courses [35]. Darr reported that at the time, less than 3% of Bradford nursing students were of South Asian background. The study used the local city's (Bradford) population as a benchmark for representation. This benchmark of approximately 17% was not broken down by age criteria, nor was it broken down by gender (unlike in this review).

Darr went on to carry out a similar but more comprehensive study considering improving the recruitment of people of South Asian origin into nursing [17]. This study analysed the number of South Asian nursing students in nine institutions over four years. The results showed that on average less than 1% of students were of South Asian background. The study used the 2001 Census to identify a 4% benchmark for the South Asian population in the UK. This benchmark was not broken down by age criteria, nor was it broken down by gender (unlike in this review).

Acceptance rates

BSA men were significantly less likely to be accepted (almost half) as their White male counterparts. This reflects a wider and longstanding issue, as early as 1987 a Commission for Racial Equality report found that applicants from BAME

communities were less likely to be accepted for nursing courses in comparison to their White counterparts. There has been a reported tendency for BAME applicants to be less likely to be offered a university place in general and specifically for nursing courses since [32,36,37]. The summary conclusions we can draw from these results indicate that BSA men are significantly less likely to be accepted on nursing courses. Although researchers such as Watson (2014) have noted the lower acceptance rates for ethnic groups such as African Caribbean applicants, such analyses have only been done based on ethnicity and not considered gender as a variable. Furthermore there may be multiple factors contributing to the disparity between the acceptance rates for BSAs and other groups including entry qualifications, age, subjects studied and school attended [38].

Attrition rates

Over a three year period, BSA males were 18% more likely to have left their course without any award. However this likelihood was even higher for BSA females at 46% more likelihood compared to White females and 72% more likelihood than BSA males. Previous research has reported the higher likelihood of men leaving nursing courses without any award [33]. There has also been research on attrition rates which suggests that not only men, but non-White students were around twice as likely to leave their course without achieving the award [39]. This study's results suggest that BSA men are more likely to leave their nursing course without any award than White men; however the results for BSA females are more striking. Considering 'the human resources performance framework, published in 2000, set a target of 13% attrition for students entering nurse training in 2000– 2001' the fact that BSA males and females are still leaving their courses with no award is concerning [33]. Figure 3 sets out the key results relating to BSA men across the three stages of applications, acceptances and attrition, and nursing education. There may be multiple factors contributing to the disparity between the outcomes for BSAs and other groups including student motivation, teacher expectation, and institutional policy [40,41].

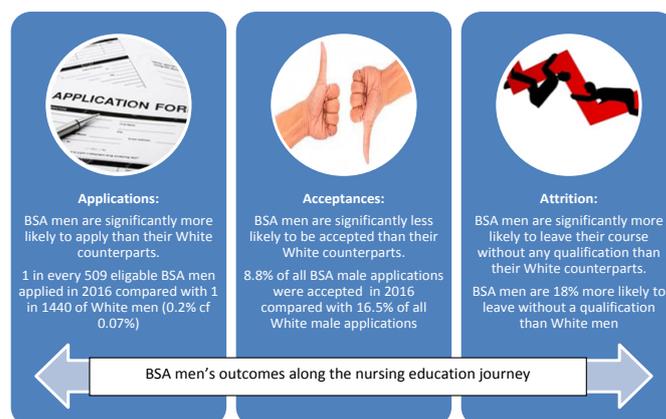


Figure 3: Key results from the three stages of the nursing education journey.

Study limitations

The main limitations were in relation to availability of data. The small numbers of applications from some ethnic groups and data confidentiality policy meant that UCAS cohort data was only made available to us rounded to the nearest five. This meant less accuracy in actual results. The National Census was used for population data, based on figures recorded for 2011. However the timescales for cohort data for applications, acceptance and attrition was over the period of 2013 to 2016. This meant a discrepancy in the timeframe for comparison between population data and applications, acceptance and attrition data.

Conclusion

A secondary review of applications, acceptances and attrition data provides a useful perspective on the outcomes for BSA men. Using this approach and analysing the figures including variables such as ethnicity and sex provides new and interesting results which show that BSA men are applying proportionately but are disproportionately being rejected by Universities and leaving courses without any award. This review has shown that BSA men do apply for nursing pre-registration courses in proportion to the number of them in the relevant population in England. In comparison, British White men in England are half as likely to apply for the same courses in proportion to their respective number. BSA men are almost half as likely to be accepted on pre-registration courses in England as their White counterparts. BSA men are also significantly more likely to leave their nursing course with no qualification.

These results indicate the need to further consider a number of questions including firstly, if BSA men are applying for nursing education courses in proportion to their prevalence in England, how can we learn from what is motivating them to do so? This should be done in order to apply any learning to further efforts to widen participation for men in general. Secondly, why are BSA men so unlikely to be accepted on nursing courses in comparison to other groups? This should be done in order to identify any structural or other barriers for this cohort accessing places on nursing courses. Thirdly, why are BSA men so likely to leave their nursing course without any award? This should be done to identify policy implications and organisational practice that may act as barriers for this cohort successfully completing their nursing education.

These questions will be addressed as part of the wider study this paper is taken from. However, the fact that this quantitative exercise has raised so much scope for qualitative enquiry is significant. Therefore those engaged in widening participation work for NHS nursing should investigate further aspects of University acceptance and retention practices in order to better tackle potential barriers to widening participation for BSA men.

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