

# **Systematic Literature Review: Do Socio-economic Barriers Exist in British Medical School Admissions?**

**Mr Desilva-Abeyasinghe K**

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Contact

: wjmer@doctorsacademy.org.uk

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## Systematic Literature Review: Do Socio-economic Barriers Exist in British Medical School Admissions?

**Mr Kosala Desilva-Abeyasinghe BSc (Hons)**

Medical Student

King's College London

*Address for correspondence:*

Mr Kosala Desilva-Abeyasinghe: [k0936623@kcl.ac.uk](mailto:k0936623@kcl.ac.uk)

### **Keywords:**

*Medical school admissions; Socio-economic barriers; UCAT; Inequality; Social classes*

### **Abstract**

The objective of this literature review is to explore the socio-economic disparity of undergraduate medical school admissions in Britain. The methods of snowball sampling, sifting (primary and secondary) and Boolean operators were employed in the Medline database to conduct the search.

This literature review provides a brief overview on the socio-economic barriers to medical school entry in the United Kingdom, which continues to play a key role in shaping the demographics of the population entering medical school. The presence of the UKCAT promotes a competitive disadvantage to those from lower socio-economic backgrounds and the presence of anti-academic values strengthens existing barriers.

Broadening participation promotes diversification and may enable medical students to develop global health competency skills. One of the main issues we have identified in this review is that those from non-traditional academic backgrounds encounter barriers such as a lack of orientation and integration issues.

### **Introduction**

Prior to gaining admission into a medical school in London, I experienced first-hand how intense the competition was to secure entry. Having successfully obtained my place, it has struck me that the vast majority of my peers come from highly reputable private schools and are generally situated at the higher end of the socio-economic spectrum.

By conducting this literature review I would like to identify and evaluate factors which play a key role in gaining entry to medical school and to subsequently if equalities exist.

### **Planning**

The following steps were employed when conducting this review:

1. Identification of relevant articles
2. Critically appraising the chosen articles
3. Collating evidence and constructing a conclusion

Initially I utilised the ECLIPSE framework, enabling me to fragment the key question into various terms aiding the generation of ideas within the sphere of medical school admissions:

*Expectations: identify normal intakes of medical students and observe any trends in socio-economic status, ethnic background and other factors.*

*Client group: past, and present undergraduate MBBS (Bachelor of medicine, Bachelor of surgery) students.*

*Location: Britain (applicants applying via UCAS (University and College Admission Services) to MBBS programme).*

*Impact of current system: inequality in access to undertake an MBBS degree.*

*Professionals involved: admissions staff across universities teachers.*

*Service goal: ensure fairer admissions policies so as to broaden participation.*

### **Pre-assessment**

By conjuring ideas from the ECLIPSE model, a pre-assessment to define the scope of the topic was conducted.

After doing an initial search by combining 'medical school admission' and 'widening access to medical school' in the Medline database, a large number of papers were collated.

Initially sifting through these papers highlighted recurrent theme based on the link between socioeconomic status and medical school entry, enabling me to hone and develop my question.

## Methods

### Developing the question

Mathers J. et al<sup>1</sup> carried out a cross sectional analysis on 30,654 UK medical students enrolled into traditional courses between 2002-2006. The data are summarised in figure 1.

Several themes are apparent. The numbers are unequal in terms of sex with 60% females and 40% males. Does this suggest that it is more advantageous to be a female when applying or are fewer males applying?

For universities offering traditional MBBS courses, multicultural diversity exists. Most strikingly, the

numbers of South Asians (Pakistan, Bangladeshi and Indian) who have successfully entered medical school in the given period are around 15%, and these specific minority ethnic groups make up approximately 3.6% of the UK population according to 2001 census data (whereas most other ethnicities have a comparatively lower success rate for their given population). These figures suggest that ethnicity may have a role in successful admissions, although socio-economic class may be a confounding factor as there may be more middle class South-Asians than African-Caribbean individuals for instance.

The last critical factor observed from the table and forming the basis of my literature review, are the socio-economic backgrounds of those successful applicants. Most significantly, around two thirds of those enrolling, originate from a parental occupation within the 'higher and lower managerial professional' bracket.

|                                     | Traditional courses            |   |                              |
|-------------------------------------|--------------------------------|---|------------------------------|
|                                     | All universities<br>(n=30 654) | Established<br>universities<br>(n=28 136) | New universities<br>(n=2518) |
| <b>Sex:</b>                         |                                |   |                              |
| Male                                | 12 311 (40)                    | 11 286 (40)                               | 1025 (41)                    |
| Female                              | 18 343 (60)                    | 16 850 (60)                               | 1493 (59)                    |
| <b>Age (years):</b>                 |                                |   |                              |
| Mean                                | 19.2                           | 19.0                                      | 21.5                         |
| Median (IQR)                        | 18 (18-19)                     | 18 (18-19)                                | 19 (19-23)                   |
| Range                               | 17-51                          | 17-51                                     | 17-51                        |
| <b>Ethnicity*:</b>                  |                                |   |                              |
| White                               | 21 415 (70)                    | 19 459 (69)                               | 1956 (78)                    |
| Mixed                               | 971 (3)                        | 890 (3)                                   | 81 (3)                       |
| Other                               | 519 (2)                        | 486 (2)                                   | 33 (1)                       |
| Black Caribbean                     | 86 (0.3)                       | 80 (0.28)                                 | 6 (0.24)                     |
| Black African                       | 602 (2)                        | 536 (2)                                   | 66 (3)                       |
| Black other                         | 33 (0.1)                       | 29 (0.10)                                 | 4 (0.16)                     |
| Pakistani                           | 1342 (4)                       | 1252 (4)                                  | 90 (4)                       |
| Bangladeshi                         | 288 (1)                        | 268 (1)                                   | 20 (1)                       |
| Indian                              | 2917 (10)                      | 2778 (10)                                 | 139 (6)                      |
| Chinese                             | 720 (2)                        | 704 (3)                                   | 16 (1)                       |
| Other Asian                         | 1265 (4)                       | 1199 (4)                                  | 66 (3)                       |
| Not known                           | 496 (2)                        | 455 (2)                                   | 41 (2)                       |
| <b>Parental occupation:</b>         |                                |   |                              |
| Higher managerial-professional      | 12 528 (41)                    | 11 715 (42)                               | 813 (32)                     |
| Lower managerial- professional      | 7615 (25)                      | 6934 (25)                                 | 681 (27)                     |
| Intermediate occupations            | 2949 (10)                      | 2677 (10)                                 | 272 (11)                     |
| Lower supervisory-technical         | 576 (2)                        | 533 (2)                                   | 43 (2)                       |
| Routine occupations†                | 522 (2)                        | 478 (2)                                   | 44 (2)                       |
| Semiroutine occupations‡            | 1730 (6)                       | 1573 (6)                                  | 157 (6)                      |
| Small employers-own account workers | 1227 (4)                       | 1123 (4)                                  | 104 (4)                      |
| Not stated                          | 3507 (11)                      | 3103 (11)                                 | 404 (16)                     |

Figure 1: 'Characteristics of students admitted to medical degree programmes, 2002-6'<sup>1</sup>

Mathers J. et al<sup>1</sup> stated that anonymised data obtained from UCAS was adjudged to be 100% accurate and counted students who had a UK postcode supporting a high study quality. One limitation of this paper is that within the results, a large number was unaccounted for as 'not stated', which could compromise the internal validity of the paper. This retrospective cohort study had over 3500 participants who did not state their parental occupation. This could be due to the stigma associated with the job, or it could be attributed to unemployment or retirement.

However the detailed study design and large sample size, increases the study quality, which is further validated by utilising other literature in the field.

**Inclusion and exclusion criteria**

Following this, I decided to implement and combine the following three terms: *medical schools, socioeconomic factors, and admission.* (See appendix).

Using 'Medline', a hundred and forty results were obtained from preliminary sifting. Thirty-four papers

were found to be relevant by evaluating the abstracts (secondary sifting).

Having a set inclusion and exclusion criteria, enabled justification in selecting relevant articles. The inclusion criteria encompassed papers, and the entry programme to medical school had to be traditional MBBS, (as graduate entry schemes were not highly researched). Fundamentally the review centered on admissions into medical schools in the UK.

Exclusion criteria were papers not published in English and countries outside the United Kingdom, as the entry to medical school globally is not in a standardised format. Papers older than ten years were excluded because up to date information was needed.

**Discussion**

To further evaluate the question, other studies were reviewed in detail. Seyan et al<sup>2</sup>, a retrospective study highlighted the existence of socio-economic inequalities in medical school admissions. Figure 2 below summarises their findings:

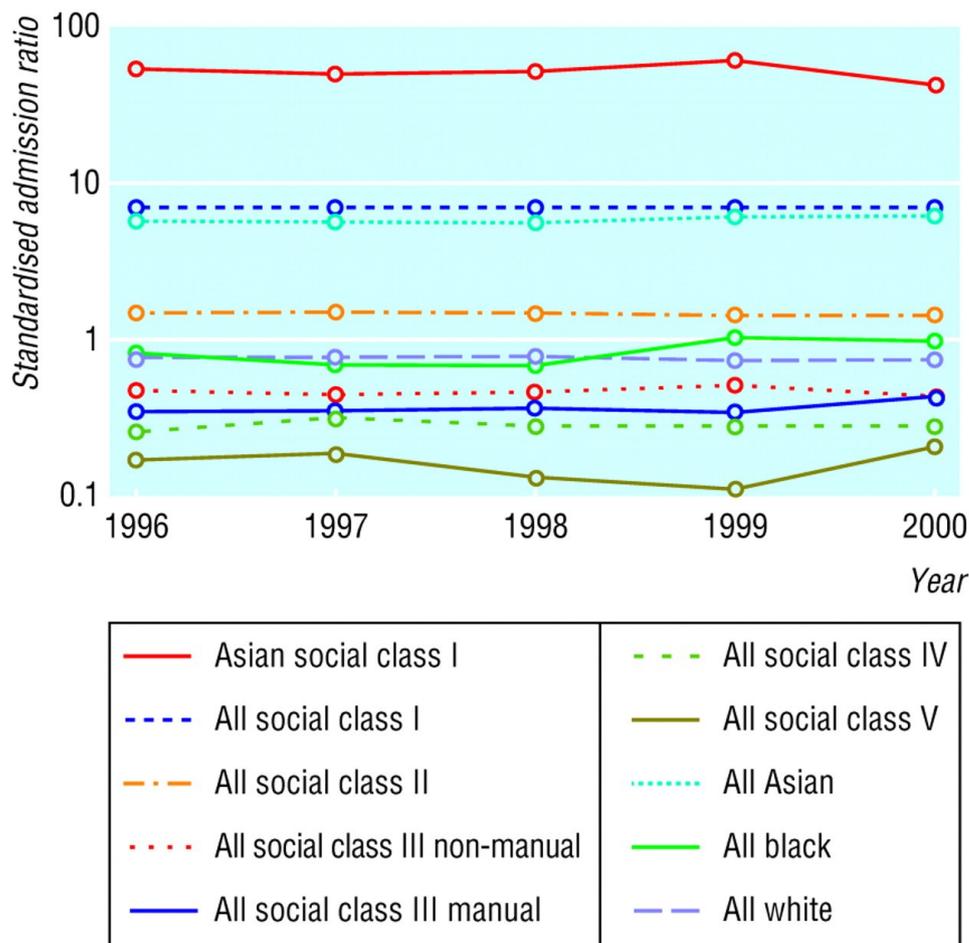


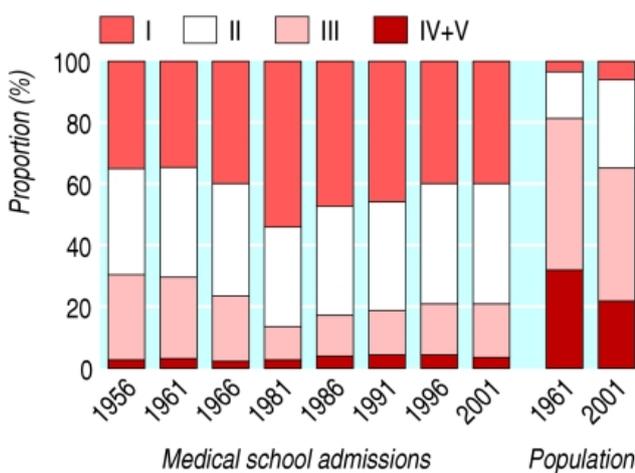
Figure 2: 'Standardised admission ratios by social class and ethnicity for UK medical school admissions 1996-2000 (log scale)<sup>2</sup>'

Combining ethnicity and social class, there is a 600-fold discrepancy from the most underrepresented 0.07 (black people from social class 4) and the most overrepresented 41.73 (Asians from social class 1).

Furthermore, white and black students from the highest social class were consistently around 100 times more likely to complete successful admission compared with those from social classes IV and V, over the five year period.

The graphical representation clearly demonstrates a large disparity between the social classes. Statistical reliability is assumed due to the large sample size used, however the outcome measure uses a 'standardised admissions ratio' which is a composite index, thus questioning the credibility of the results. This term is briefly defined in the paper, however the numerator is rather vague and the denominator is devised from entirely different data meaning that the figures produced are not entirely reliable.

McManus<sup>3</sup> describes the presence of a meritocracy since 1945 in Britain. The meritocracy acts as an indicator for exam performance and subsequently impacts admissions. Unsurprisingly those who are from higher classes are over-represented in medical school presumably because they are able to pay the fees for education in better schools. Figure 3 emphasizes that medical school admission for social class IV and V has continually remained relatively low.



**Figure 3:** 'Proportion of UK medical students in social classes I, II, III, IV and V, from 1956 to 2001 compared with population proportions for 1961 and 2001<sup>3</sup>'

The retrospective nature of the study illustrates the historical constancy in medical school admissions enabling the rigid 'meritocracy' to be observed and highlights the potential need for a change in policy, for instance, setting a quota system for each socio-economic

class. The data acquisition and actual figures for social class are not specified thus questions the study's quality. However it highlights the theme of socio-economic differences by graphical representation.

In the current situation for medical education in the UK, fees are increasing and widening participation is a key target for the British government.

The UKCAT (UK Clinical Aptitude Test) is a further financial burden (starting from £65 per exam) and competitive disadvantage to students from lower socio-economic classes.

The BMAT (bio medical admissions test) is another costly entrance exam for Oxbridge, Imperial and UCL medical programs. Whilst the BMAT is a proven source of admissions information, it contributes to further intimidation and economic barriers for state school applicants. Further identification of implications surrounding the BMAT would have been helpful to advance this literature review.

The UKCAT can prove valuable if it enables the overcoming of the private school attendants who invariably have additional facilitation in their medical school applications. However the UKCAT has virtually no evidenced based approach and many doubt that this unpiloted test counters the middle class bias<sup>5</sup>. The UKCAT consortium maintains that all universities utilize the test as part of a 'well rounded admissions policy'.

The aforementioned studies, whilst raising key questions, fail to provide quantifiable evidence to see the effect of admissions before and during UKCAT examinations on applicant diversity. Prospective studies would have been more informative in this instance, as opposed to the assumptions being made about the nature of the UKCAT. The external validity cannot be verified as statistics are not present and more research into the area is required.

Utilisation of snowball sampling from Cassidy's paper lead me to a focus group study by Greenhalgh et al<sup>6</sup>, which focused on perceptions of 68 students from a diverse range of ethnic and socio-economic backgrounds.

Greenhalgh et al<sup>6</sup> used the Jarman score as a measure of social deprivation and qualitative interviews were employed to obtain responses. Marked differences in perceptions between socio-economic backgrounds were observed. Those in the lower socio-economic strata associated their cultural-identity to anti-academic values and those pupils from a working class background saw medicine as unreal and financially constraining. It was often found that individuals from lower socio-economic backgrounds were usually first time choosers with no

family tradition, as opposed to the embedded medical student, having parents as active participants, as well as possessing diverse sources of both formal and informal information regarding the application process.

This observational study is well presented with a comprehensive range of sources. Utilisation of a focus group may have lead to external validity issues with generalisations being made. However adequate details regarding subject recruitment, outcome measures and relevant questionnaire were all specified in the paper methodology. Questions do remain over the small number of participants in the study, thus results may not be entirely generalizable.

The aforementioned papers all illustrate socio-economic inequalities, but how can diversity increase on enrolment into medical school?

From the search results on Ovid, we obtained papers relevant to widening participation schemes.

Initiatives to widen participation at medical school have been deployed. The UK's flagship program: Extended Medical Degree Programme (EMDP) at Kings College London, recruits able pupils from low achieving state schools in inner city London.

Figure 4, illustrates the diversity when comparing socio-economic class between MBBS and EMDP students.

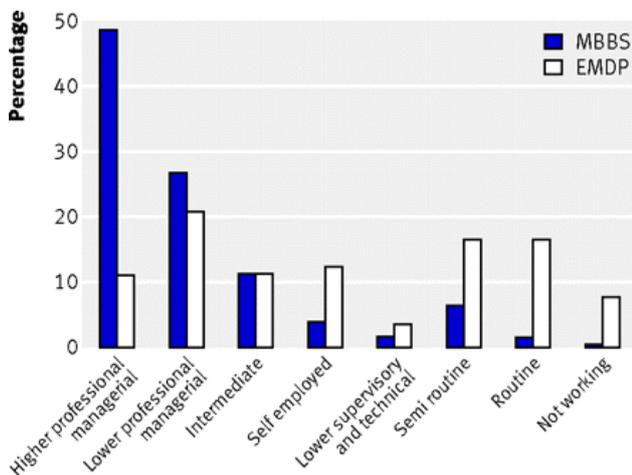


Figure 4: 'Socioeconomic classification of King's College London medical students 2002-6'<sup>7</sup>

Around 40% of successful candidates on the EMDP scheme come from a lower socio-economic status as illustrated by parental occupation *i.e.* 'semi-routine, routine and not working'. Conversely, over 40% alone on the MBBS course, have parental occupation classified in the 'higher professional managerial' bracket.

The quantifiable depiction of comparing both traditional and EMDP schemes adds valuable knowledge to this field of literature. Detailed interpretation of graphs and interviews via a pragmatic approach gives the paper a good credibility rating. Results are clearly presented and the discussion does not deviate too far beyond what is depicted in the study.

Socio-economic diversity is being encouraged via courses such as EMDP, but do these non-archetypal individuals overcome barriers, such as adapting to the reality of the middle class medical vocation?

Ball et al<sup>8</sup> highlight via qualitative methods the various dimensions behind a 'contingent chooser' and an 'embedded chooser'. In addition to this, the study underlines the metamorphosis of becoming a medical student, which leads to masking of sub-cultural identities.

Relating to, and reinforcing this idea, Brown et al<sup>9</sup> depict how non-traditional learners acclimatise to medical school. On interviewing EMDP students this paper suggests that there was a feeling of a class divide and an element of snobbery conveyed from those on the traditional MBBS course highlighting the need for effective pastoral care.

The qualitative methods (interviews) identified in these observational studies, could provide biased opinions, as those branded as EMDP students, may have already felt stigmatized leading to a questionable internal validity of the papers. The study designs are sensible as they encourage perceptions to be evoked in real life circumstances, however Brown 2007 may have a source of bias as it is compiled by directors of the EMDP scheme rather than objective interviewers hence encompassing an element of unaccounted reflexivity (researcher bias). The results are also discussed with reference to other valid literature in the field, which consolidates the papers findings.

**Conclusion**

This literature review details socio-economic barriers to medical school entry, which continues to play a large role in shaping the demographics entering medical school.

The UKCAT presents financial barriers as well as enabling those in private schools to have a competitive advantage as the school's expertise and ambition is geared towards sending their students to medical school.

Some of those from a lower socio-economic status, whilst having a competitive disadvantage also tend to link their cultural identity to anti-academic values. Negative perceptions, and various contextual dimensions all strengthen barriers to entry.

Widening participation schemes enables further culturally sensitive healthcare is diminishing and socio-diversification at medical college, but with the proposed economic barriers will continue to exist and solidify. increase in tuition fees, the objective of providing

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### Appendix

Search Thread: [Ovid SP- MEDLINE]:

*After conduction an initial pre-assessment and developing my question, the following search string was used in Ovid SP-Medline database:*

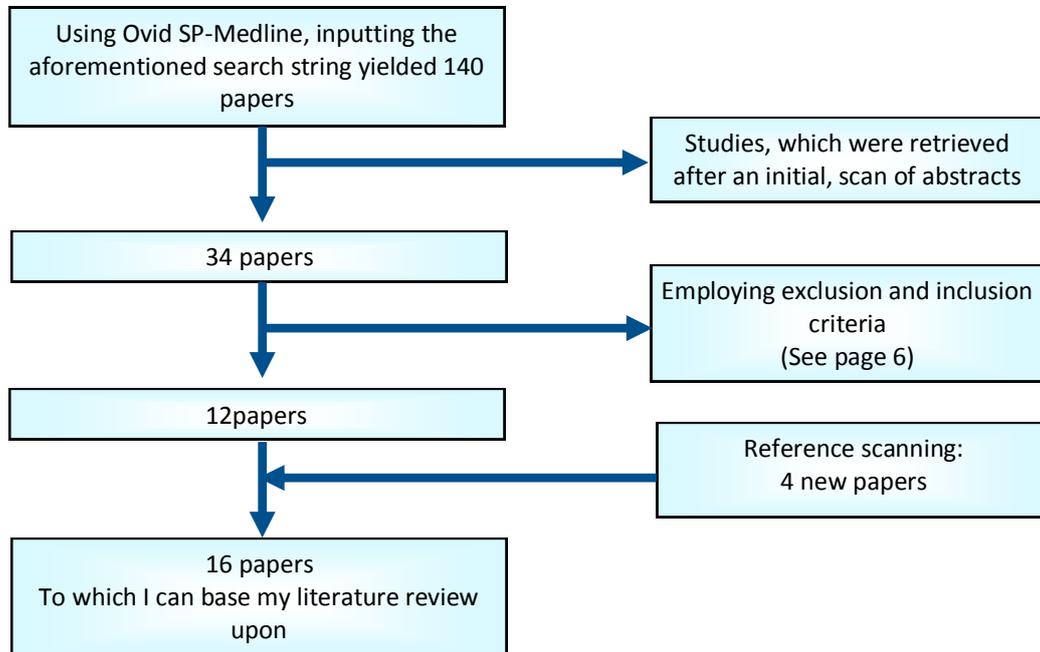
1. exp. Medical schools (included all subheadings)
2. exp. Socioeconomic factors (included all subheadings)
3. 1 or 2
4. 1 and 2
5. admissions (included all subheadings)
6. 4 and 5

Using 'The Pubmed database' I obtained 109 results but via preliminary sifting (observing the titles of the articles), hardly any of these results were of relevance.

Using 'Medline' I obtained 140 results. 34 papers were found to be relevant by evaluating the abstracts (secondary sifting), thus providing justification for the usage of the 'Medline' database in this literature review.

Exploding terms helped broaden my search. The aforementioned inclusion and exclusion criteras was then implemented, yielding 12 suitable papers to base my literature review upon. Reference scanning later on in the process helped discover a further 4 papers which I could critically review.

### Summary of Search strategy





The World Journal of Medical Education & Research (WJMER) is the online publication of the Doctors Academy Group of Educational Establishments. It aims to promote academia and research amongst all members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from all parts of the world. The journal intends to encourage the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting-edge technology and those who need to innovate within their resource constraints. It is our hope that this interaction will help develop medical knowledge & enhance the possibility of providing optimal clinical care in different settings all over the world.



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