

REVIEW

The impact of ethnicity on asthma care

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Abstract

Asthma is a significant global health problem. Asthma prevalence, its related health outcomes, and associated healthcare utilisation, vary by population group both across and within nations. Evidence of ethnic variations in the prevalence and outcomes of asthma within nations have been well documented. This review examines the impact of ethnicity on asthma, with a focus on the literature from the UK and the USA. Explanations for the unequal burden of disease experienced by ethnic minority groups include: their health beliefs, attitudes, experiences and behaviours; the problem of poor health literacy, which tends to compound the challenges inherent in cross-cultural communication; concerns about the quality of care; and the relatively poor socio-economic position of minority ethnic groups and how this impacts on the wider determinants of health. We conclude by suggesting research priorities for asthma and ethnicity, along with practical actions within a collaborative care model.

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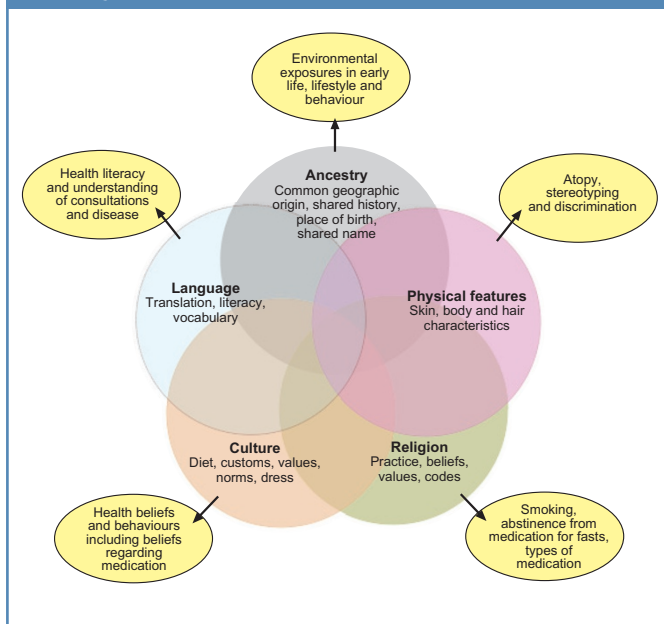
Introduction

Asthma is a significant and growing public health problem.^{1,2} In 2004, 300 million people worldwide were estimated to be affected by asthma, and this is projected to rise to 400 million

by 2025.³ In common with other burgeoning long-term conditions, the prevalence of asthma varies widely between nations. The impact of ethnicity on asthma is restricted not only to differences in prevalence, but is also apparent for

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Figure 1. Dimensions contributing to the concept of ethnicity in relation to asthma.



asthma-related outcomes including morbidity and mortality.^{2,4,5} Despite more than 20 years of data suggesting substantive ethnic inequalities in asthma, this field remains under-researched when compared to other chronic conditions such as diabetes and cardiovascular disease. In our current state of knowledge, there are more questions than answers. This paper provides a review of the current evidence on the impact of ethnicity on asthma care within the United Kingdom (UK) and internationally – mainly in the United States of America (USA), along with suggestions as to how this field of research may proceed.

Defining ethnicity

Ethnicity is a complex and contested concept, and definitions vary across nations. However, in order to address how ethnicity impacts on asthma, it is necessary to consider the different components that may be encompassed by the term 'ethnicity'. Ethnicity may incorporate some or all of the dimensions of culture, religion, ancestry, language and physical features. Furthermore, whether race should be incorporated within, or used alongside, ethnicity has been subject to debate. In this paper, we use the term 'ethnicity' while acknowledging that some may prefer the term 'ethnicity/race'. These dimensions are illustrated in Figure 1; examples are provided throughout the paper on how these dimensions may relate to asthma.

This broad definition of ethnicity and greater consideration of diversity is imperative when considering asthma care, since migration, acculturation, and context⁶ may all have important consequences for asthma-related outcomes.

Table 1. Prevalence of asthma according to ethnicity in the UK and USA (*Ethnic categories were taken directly from the papers cited)

Ethnicity *	UK (Netuveli <i>et al.</i> 2005) Pooled prevalence (95%CI)	USA (Gorman & Chu 2009) Prevalence
White	10.6% (4.6-16.7%)	8.2%
Black	15.0% (3.5-26.5%)	8.9%
South Asian	7.6% (3.7-11.4%)	Not Applicable
Asian	Not Applicable	4.0%
Hispanic	Not Applicable	6.1%
Native American	Not Applicable	13.1%

Epidemiology of asthma and the impact of ethnicity

Prevalence

The prevalence of asthma ranges from 1-18% of the population between nations, but this gap appears to be closing as the prevalence is increasing at a faster rate in regions such as Africa and South America where prevalence was traditionally low.⁷ Within ethnically diverse nations, such as the UK and USA, the prevalence of asthma has also been shown to vary by ethnicity (see Table 1).

The impact of ethnicity on asthma prevalence is complex. The prevalence of asthma may vary according to people's ethnic classification (i.e. 'Chinese', 'African-American', etc), nativity (i.e. where they were born) and, if they have migrated, the number of years since migration.⁸ As an example, Mexican Hispanics born outside of the USA have been shown to have a lower prevalence of asthma compared to all USA Hispanics.⁸ Similarly, non-UK born people have been shown to have a reduced risk of new or first consultation for asthma than people of the same ethnic group born in the UK.⁹ These findings suggest that changes in environmental exposures (e.g. pollutants and allergens) and conditions (e.g. housing and diet),¹⁰ or changes in lifestyle (e.g. Westernised diet) and behaviour (e.g. smoking) upon migration and settlement can alter susceptibility, especially in early life.¹¹ Early life exposure to chronic infection has been hypothesised to increase the prevalence of asthma in migrant ethnic minority populations.¹² A contrary 'hygiene hypothesis' has also been proposed, linking reduced microbial exposure in early life to increased asthma risk.^{13,14}

It has recently been observed that increasing obesity may also be associated with asthma and contribute to ethnic variations in prevalence.¹³ A possible mechanism for this could be the differential effects of obesity – particularly central adiposity – on different ethnic groups.

When considered alongside findings that point to the importance of genetic factors (e.g. filaggrin gene defect),^{15,16} it is clear that the actual risk of developing asthma is in many cases

likely to be attributable to gene-environment interactions which may be detrimental or protective for asthma.

Presentation

Differences in asthma phenotypes have been observed by ethnic group, particularly in relation to differing degrees of atopy and asthma severity.¹⁵ For example, greater atopy has been observed in South Asian populations in the USA¹⁷ and in general among migrant populations in developed countries.¹⁰

South Asian children in the UK were found, in an epidemiological survey, to be more likely than White children to have multiple wheeze, which is associated with chronic atopic asthma.¹⁸ The results of this study were strengthened through adjustment for a range of potential confounders, including environmental exposures (e.g. tobacco smoke), socio-economic deprivation and genetic factors¹⁵ and represent an important area for further investigation.

Health outcomes

Evidence from the USA and UK demonstrates that ethnic minorities have poorer asthma-related outcomes despite some evidence of a lower prevalence of disease.^{15,19} For example, in the USA, the prevalence of asthma is lowest among (East) Asian and Hispanic adults; however, Hispanic adults demonstrate greater morbidity when compared to (East) Asian and White adults.^{4,20}

Poorer outcomes begin with an increased likelihood of under-diagnosis in the healthcare system²¹ and, once diagnosed, include an increased risk of exacerbations,²² emergency admissions, hospitalisations^{5,23,24} and near fatalities.²² These trends have also been observed among ethnic minority populations for a range of chronic diseases.²⁵⁻²⁷

Explaining the unequal impact of ethnicity on asthma

A variety of possible explanations have been suggested for the observed ethnic inequalities in the burden of disease; these including lifestyle and environmental factors, cultural factors, communication issues, and the nature of doctor/patient interactions.²⁸ It is likely that inequalities are in fact the combined result of these "complex multilevel and intertwined factors",²⁹ some of which are considered in more detail below.

Health beliefs, attitudes, experiences and behaviours

Factors underpinning health behaviour include divergent health beliefs, attitudes and experiences arising from particular social and cultural backgrounds,³⁰ with explanatory models of disease – including spiritual models of disease – which in some instances may be contrary to biomedical explanations. Health beliefs, alone or in conjunction with attitudes and experiences, may also influence people's reluctance or willingness to accept a diagnosis or adhere to a prescription (e.g. inhaled medications or a self-management

plan) and consequently, may increase the burden of disease.

For example, South Asians in the UK tend to be less familiar with the idea of preventative treatment and the use of asthma management plans than the majority of the population,^{31,32} this being most notable amongst first-generation and recent migrants. This could be attributed to a belief that asthma is an acute rather than chronic condition and that they only have asthma when they are symptomatic.² Another explanation could be that in their countries of origin, reactive and curative care is the norm rather than preventive care. Furthermore, the concept of collaborative care or self-management plans may be novel to some, and thus they may be unaccustomed to, or disconcerted by, participating in key decisions relating to their own care.

In seeking strategies to cope with illness, South Asians have been shown to be more likely to manage exacerbations through consultation with their families rather than altering their medication dosage.³² There may also be differing attitudes towards medication;¹⁹ the likelihood of complementary and alternative medicine (CAM) use has been found to be higher amongst South Asians in the UK,³² as well as African-Americans in the USA,³³ when compared to the majority White populations. It is of interest to note that, when utilised, CAM tends to be used with, not instead of, biomedical medicine.^{32,34}

However, putting too much emphasis on differing beliefs and behaviours may be inappropriate, since a range of other factors no doubt play a role. For example, adherence with medication may relate to the drug itself. Fear of side-effects, inappropriate responses to doses not taken on time,³⁵ and insufficient knowledge about medications,³⁶ may all affect adherence. These factors are more closely related to health communication, and once identified may be potentially modifiable.³⁶

Cross-cultural communication and health literacy

The increased burden of disease may also be attributable to possible bias and stereotyping of ethnic minority populations by healthcare practitioners and providers.³⁷ Although this may be unconscious, it is likely to affect the care provided. This issue may also be compounded by a lack of cultural competence on behalf of providers in cross-cultural consultations,³⁸⁻⁴⁰ and an inability to comply with language preferences,⁴¹ which may also contribute to poorer outcomes.^{39,42}

Beyond cultural competence and language, more complicated issues arise when attempting to translate medical concepts into languages in which there are no equivalent terms;⁴³ for example, there may be no word or direct translation for "wheeze" in many South Asian languages.⁴⁴ This is then both a linguistic and health literacy⁴⁰ concern. Patients' lack of understanding of symptoms and diagnostic

criteria may hinder the patient-physician interaction during the consultation. Clinicians have, for example, been shown to be more verbally dominant and less focused on patient-centred communication when consulting with ethnic minority patients when compared to White patients.⁴⁵ As a consequence of poorer face-to-face treatment and the experience of discrimination, ethnic minority patients may lack confidence in healthcare practitioners³² and their recommended treatments.^{19,46}

This lack of confidence is compounded by little discussion on appropriate treatments and whether or not treatment regimes are compatible with patients' beliefs and cultural and religious practices.⁴⁷ For example, Muslim asthma patients may be reluctant to accept inhaled treatments containing alcohol and may have a preference for oral medication.⁴⁸

Patients may also have different preferences for management and care approaches,⁴⁰ which may or may not be informed by their culture or religion. Providers need to be aware of – and where appropriate, ask about – these preferences, since they can greatly impact on health behaviour and adherence to treatment and care plans; for example, attitudes towards medication may change for Muslim patients during periods of fasting⁴⁷ and alternatives should be explored in advance to ensure continuation of medication use during these times.

Quality of care

The quality of healthcare received by ethnic minority groups has overall been shown to be poorer than that received by the majority population and this is likely to contribute to their poorer health outcomes. Ethnic minority asthma sufferers are less well managed by specialist and preventative care,^{19,28} less likely to be prescribed guidance-based treatments,² and are more likely to leave consultations without care plans or appropriate prescription.^{5,49}

Ethnic minority populations also have poorer continuity with healthcare providers⁵⁰ and less familiarity with primary healthcare practitioners.³² They are more likely to present to the Emergency Department (ED) as a primary source of care,⁵ and in this setting are less likely to have their history and reason for presentation explored.³² Tsai and colleagues looked at the quality of care for acute asthma in EDs in the USA and discovered that, although not stratified by ethnicity, in general there was a lack of concordance with asthma treatment guidelines in the ED.⁵¹ Over half of the people presenting to the ED with asthma had no peak expiratory flow (PEF) measured and over a fifth of people who might have benefited from corticosteroid therapy had none prescribed. There is thus an intrinsic disadvantage for those utilising the ED in place of primary care consultation.

Access to appropriate healthcare may also be geographically limited. In inner cities, where ethnic minority populations tend to be concentrated,^{21,52} services can be costly

in fee-for-service systems, creating a situation where the ED is preferentially utilised.⁵³ For those living in rural areas, culturally appropriate services may be unavailable or be poor in quality.⁵³

Socio-economic position

Socio-economic position is also inextricably linked with ethnicity and poorer health outcomes.¹⁵ In the USA, a study showed that increase in co-payments for medication under the Medicaid system correlated with a decrease in the number of prescriptions filled for asthma.⁴⁰ In another study, income only explained differences in hospitalisation and ED use in non-Black children, but not in Black children.⁵⁴ Therefore, ethnic disparities are linked to more than just income, as ethnic disparities are evident in both countries with fee-based systems and in those with universal health care.⁵⁵

Socio-economic position can also serve as a proxy measure for environmental exposures,⁵⁶ with poorer health outcomes linked to inferior housing, poor neighbourhood social structures⁵⁷ and differential exposures to environmental risks and stressors.⁴⁰ Neighbourhood influences have been linked to asthma severity through levels of neighbourhood violence and negative life events.⁵⁵

Research on the impact of ethnicity and potential interventions

Research has clearly demonstrated the existence of ethnic inequalities in asthma and – as outlined in this paper so far – has explored multifaceted contributory factors. In order to move forward we must translate this research into effective interventions and healthcare services.

To date, a substantial amount of research has been dedicated to developing effective models of asthma care and global guidelines for asthma management for the general population.⁵⁸ The Global Initiative for Asthma (GINA) was established in 2003 and coordinates the international effort to reduce asthma prevalence, morbidity, and mortality.⁷ Strategic areas proposed by GINA and other researchers in the field include preventive management (control of environmental triggers), controller medication, asthma action plans, and specialist referral and care,⁴⁰ along with outreach workers, self-management training, e-consulting, pharmacy prescribing,²² use of pictorial rather than written asthma plans⁵⁹ and family-centred or home-based interventions.⁶⁰ However, more research is needed to evaluate whether these are effective for ethnic minority populations.

Paradoxically, despite an unequal burden of disease falling on ethnic minority populations, consideration of these populations has been largely excluded from research on asthma.⁶¹ Studies conducted in the USA are more likely to report on ethnicity than studies conducted in Europe.⁶¹⁻⁶³ However, ethnic minority representation in USA trials remains low and less than adequate in light of national policies on the inclusion of women and

minorities, as mandated by the US National Institute of Health.⁶⁴ In addition, even when ethnic minority populations are included, the research analysis may not be stratified or the hypothesis examined according to ethnicity.⁵¹

A recent Cochrane systematic review⁶⁵ identified four randomised controlled trials (RCTs) that looked at the effectiveness of culturally adapted interventions to improve asthma outcomes, while another Cochrane systematic review⁶⁶ identified one RCT that explored the effectiveness of involving an indigenous healthcare worker for indigenous adults and children to improve asthma outcomes. Both systematic reviews found that culturally adapted/healthcare worker-matched interventions, when compared to a generic programme, improved many, but not all, asthma outcomes. Given the small number of trials in this area, the evidence base is encouraging but limited.

In the UK, the ELECTRA trial was designed to determine whether asthma specialist nurses using a liaison model of care would improve asthma outcomes in a multiethnic area of London.³¹ Overall, benefits were observed, although South Asian patients benefited less from this model of care than those from other ethnic groups. Whilst a bilingual advocate orally-translated an asthma plan written in English for the intervention group, there was no indication that any cultural adaptation of the content of the intervention was undertaken. Other intensive community-based interventions have similarly shown little improvement in clinical outcomes.^{29,67}

Therefore, a clear research path has been outlined: high-quality studies are needed to trial and evaluate innovative, culturally-adapted interventions with purposefully recruited participants from ethnic minority groups. This work should be undertaken alongside two other priority areas of research for ethnic minority populations – further epidemiological research and qualitative studies of health-seeking behaviours.²²

Collaborative care model

In the meantime, while supporting the inclusion of ethnic minorities in research is important, changes should also simultaneously take place in practice. Consultations require greater engagement on the part of the clinician to probe patients regarding their fears about the disease, their views about medication and whether lay or popular remedies are used, and how asthma and self-management ‘fits’ within their lifestyle. Knowledge on patients’ beliefs, attitudes, experiences and behaviours allows greater involvement of the patient in treatment decisions and moves asthma management towards a model of collaborative care.

Furthermore, improvements in provider-patient interaction³⁸ must also take place, mediated by improving cross-cultural communication and competence, advocating for health literacy, and developing a greater appreciation of

Box 1: Spectrum of collaborative care model

Patients: Encourage and support patient development of health literacy through referrals to culturally-appropriate resources (websites, brochures, specialists, etc) to reinforce and enhance patient-provider interactions and improve their capacity to self-manage.

Health care providers: Promote cultural competence through training (tools have been developed to assess clinicians’ views on the care of ethnic minority patients),²⁹ and increasing workforce diversity.

Consultations: Increase the length of time for consultations with focus on learning about patients’ preferences and individualising educational information.³⁶

Specialists: Increase access to respiratory specialist support through partnerships at primary care level²⁹ in the management and care of high risk populations.

Family-based interventions: Extend the self-management model to a family-management model, including family-oriented asthma action plans, taking into account the social circumstances and dynamics of the family.

Community-outreach interventions: Establish community-based asthma teams (asthma nurse, social work and peer coach) to do outreach work (for example see ClinicalTrials.gov identifier: NCT00281177).

Culturally-appropriate care centres: Develop centres staffed by people with the necessary language skills, cultural understandings and health care knowledge to support practitioners with limited time and cultural training for a range of chronic diseases, including asthma. These workers can act as liaisons with health care practitioners, nurses and social workers to address and link broader societal issues.

the nuances that diversity can offer, both in terms of challenges and opportunities.

Sharing decision-making and improving communication moves asthma care towards a patient-centred approach.⁶⁸ A patient-centred approach has the potential to increase ethnic minority patients’ confidence in their primary health care provider³² by fostering relationships and partnerships between people with an equal stake in asthma-related outcomes. To practice a patient-centred approach requires the development of a collaborative care model across the entire spectrum of care in order to effect change in asthma outcomes (see Box 1).

Conclusions

Worldwide, there is now a growing body of evidence of ethnic disparities for asthma and its related health outcomes. However, research on effective interventions for ethnic

minorities is largely absent from the evidence base on asthma, thus exposing a chasm in health priorities and care. A move towards a patient-centred approach emphasising communication and collaborative decision-making has the potential to lessen some of the ethnic disparities. Change is required at many levels, from individuals, through to providers, to broad societal transformations.^{2,29} More inclusive research and considered practice can facilitate this change. In this paper, we hope we have highlighted some of the key issues in the field of ethnicity and asthma along with practical suggestions for managing asthma.

Conflict of interest declarations

JLL and ED have no conflicts of interest. AS is an Assistant Editor of the *PCRJ*, but was not involved in the editorial review of, nor the decision to publish, this article.

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