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**Consanguinity, genetics and definitions of kinship
in the UK Pakistani population**

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Summary

Consanguineous marriage is a controversial topic in many Western societies, with attention mainly focused on the health of immigrant communities from Asia and Africa. In the UK consanguinity is especially prevalent in the Pakistani community which now numbers over 1.1 million. Less attention has been paid to the influence of hereditary population stratification within Pakistani communities. In particular, *biraderi* (literally brotherhood) membership which denotes male lineages that largely govern marriage partner choice and hence the transmission of disease genes. The various roles played by *biraderi* and their relationship to other socio-occupational and kinship terms, such as caste, *quom* and *zat*, are often overlooked in health-based studies. The interchangeable use of these different kinship terms without rigorous definition can create identity uncertainty and hinders inter-study comparisons. Where feasible, standardization of terminology would be both desirable and beneficial, with *biraderi* the preferred default term to identify specific social and genetic relationships within the Pakistani diaspora.

Introduction

During the late decade media attention frequently has focused on the contribution of consanguinity to genetic disorders, particularly in immigrant communities from South Asia, the Middle East and North Africa (Bittles 2012). An estimated 50-60+% of marriages in the UK Pakistani community are consanguineous, with first cousin unions especially common (Darr & Modell 1988; Bunday *et al.* 1990; Bhopal *et al.* 2014), and causative associations between consanguineous marriage and congenital anomalies have been reported as part of the ongoing Born in Bradford Study (Sheridan *et al.* 2013). However, rather than the entire community being at equivalent risk, specific inherited disorders may be largely restricted or unique to particular families or sub-communities (*biraderi*) (Bittles 2008; Corry 2014), reflecting founder mutations and genetic drift.

The principal aim of this review is to describe and define the background socio-demographic and population genetic structures of the UK Pakistani community, and more broadly the populations from which they originated in South Asia. The grandparental and parental generations of the UK Pakistani community mainly originated in the Mirpur region of Azad Kashmir during the 1950s, with additional emigration from the southern Kotli district in Azad Kashmir, the Attock region of northern Punjab province, and from the Chhachh region on the border of Punjab and Khyber Pakhtunkhwa provinces (McLoughlin 2006). A study conducted during 2010 confirmed the ongoing popularity of consanguineous unions in Mirpur (Jabeen & Malik 2014), with 62.2% of marriages contracted between spouses related as second cousins or closer, equivalent to a mean coefficient of inbreeding (α) = 0.0348.

[Figure 1 here]

From a genetic perspective, many of the terms used in the medical and social science literature to describe population sub-structure in Pakistan and in the large Muslim population of India are vague, with frequently overlapping definitions that are of limited applicability in

epidemiological and genetic classifications. However, more positively, there are censal data on population sub-structure dating back to the late 19th century and covering regions which either overlap with, or are adjacent to, the locations from which most of the UK Pakistani community migrated. Information of this nature offers the possibility of generational depth when assessing present-day population genetic stratification, and disease predisposition and/or incidence.

Definitions of caste, zat, quom and biraderi

Definitional problems and confusion can arise in attempting to differentiate between the terms caste, *quom*, *zat*, and *biraderi*, and less commonly tribe, clan, *gotra* and *rishtidar*, which individually and collectively have been used to describe social status and traditional social/occupational groups in South Asian populations, and in some cases to define varying degrees of kinship (See Appendix 1 for a glossary of terms used). In many instances researchers have used the terms inter-changeably, sometimes in a descriptive manner but mostly without clear accompanying definitions. Spelling inconsistencies in the application of Urdu terms in English language publications also can add to the general lack of cohesion, e.g. with *biraderi*, *baraadri*, *baradari*, *biradari*, *biradri*, *bradari*, *braderi*, and *quom*, *qaum*, *quam* variously used.

The term caste is still widely applied to define traditional social and occupational groupings in Pakistani society (Sikand 2004; Lyon 2013). However its use can be misleading in Muslim societies since, strictly speaking, caste refers to hereditary social and occupational stratification within Hinduism (i.e. *jati*), and in Islam no such hereditary intra-faith boundaries should exist. The problem has been described in terms of a clash between Qur'anic egalitarianism and Muslim social practice (Sikand 2004). But in English language publications it also may reflect a partial default to a general form of terminology widely used to describe the populations of the Indian sub-continent during the pre-Independence colonial

period, e.g. in the 1881 and 1891 Censuses of India for Punjab and the Northwest Frontier Province (Rose 1911-1919; Ibbetson 1916), and in the 1921 Census of India for Punjab and Delhi (Middleton & Jacob 1922-1923).

As previously indicated, some commentators regard the terms caste and *biraderi* as similar, i.e. implying hierarchical ranking and indicative of a form of social stratification which is determined by family background, occupation and work (Lyon 2002; Metcalf & Rolfe 2010), or even treat them as synonymous (Sikand 2004), while others draw a distinction between the two (Bittles *et al.* 2004). Perhaps more surprisingly, endogamous marriages within sub-groups of the Pakistani community in the UK have been described in terms of caste divisions (Samad & Eade 2002; Overall *et al.* 2003), and in the Bradford community caste has been referred to as impacting on the everyday lives of its Muslim population (Azam 2006; Blakey *et al.* 2006).

The terms *zat*, *quom* and *biraderi* also have been used inter-changeably to describe endogamous communities in Pakistan (Nazir 1993; Gazdar 2007; Kabeer *et al.* 2010), including Azad Kashmir (Loureiro 2012), but with some variation according to geographical location and ethnicity (Gazdar 2007). Thus in Khyber Pakhtunkhwa Province (formerly the Northwest Frontier Province) and Baluchistan different communities are generally referred to as clans and tribes, whereas the term *quom* is more commonly used in the border area between western Punjab and Khyber Pashtunkhwa, and *zat* is the more usual term in the Lahore region of eastern Punjab (Lyon 2002). Although *zat* and *quom* membership are both acquired by birth, are endogamous, and are indicative of social status, they are in fact different concepts, with *zat* status not subject to change and endogamy regarded as obligatory, whereas an individual's *quom* could change according to occupation and endogamy is preferential rather than enforced (Wakil 1970; Nazir 1993).

In Punjabi urban centres *quom* membership now principally serves as a form of social identity rather than a direct indicator of occupation and hence economic status (Donnan 1988; Weiss 1991). As with *zat* status, membership of a *biraderi* is acquired at birth and is regarded as immutable, the requirement for *biraderi* endogamy is strict, and in Punjab it has been described as the key institution of kinship (Alavi 1972). Critically from a genetic perspective, *biraderi* status specifically implies membership of a closed patrilineal kinship group (Alavi 1971; Alavi 1972; Fricke *et al.* 1986; Khan 2000; Zaman 2008; Khan 2010; Mohmand 2011; Ajaz *et al.* 2015), resulting in significant differences between the genomic profiles of co-resident *biraderi* (Wang *et al.* 2000). In the UK context it has been suggested that some individuals not directly related to the patrilineage may be admitted as ‘honorary’ kinship members (Bolognani 2006, 2009), albeit with no specific information on how recent or widespread this practice might be.

Biraderi: definition and membership benefits and obligations

The term *biraderi* is believed to be derived from the Persian word *birader* (brother) (Korson 1971; Weiss 1991; Hussain 2005), which has given rise to the widespread definition in English of a *biraderi* as a ‘brotherhood’, or alternatively as a fraternity, kinship, clan, patrilineal extended family, or patrilineal descent group. The definitional boundaries of a *biraderi* often are imprecise and have been described as being ‘as large as the distance at which one can recognize one’s relatives’ (Wakil 1970). In practice all of the inhabitants of a small rural settlement may belong to a single *biraderi*, while families from many different *biraderi* can be co-resident in larger towns, but with members of specific *biraderi* preferring to live alongside each other in particular localities (Nadvi 1997).

Besides the traditional role of the *biraderi* as a mutual social support and coping system, e.g. serving as a welfare agency, arranging loans for members, and assisting in employment or with accommodation (Seebohm *et al.* 2005), financial help can also be provided to members

with a major illness, and to their families (Meulemans *et al.* 2003). For this reason, poorer and rural families tend to be more dependent on the *biraderi* and to cleave more closely to the attendant rights and obligations of membership (Hooper & Hamid 2003; Mohmand 2011). By comparison, some financially successful families may attempt to elevate their social status by claiming membership of a related but higher status *biraderi*, e.g. surgical instrument manufacturers in Sialkot, Punjab who were members of the *Lothar* (blacksmith) *biraderi* but claimed to be *Mughal* on the grounds that historically their families had been swordsmiths (Nadvi 1997).

Assistance with marriage arrangements (Nadvi 1997; Cameron 2006), including contributions towards the dowries of poorer families within the membership (Zaman 2008), is an especially important facet of *biraderi* influence. Within the UK Pakistani community the *biraderi* act as significant intermediaries in transnational marriage arrangements (Shaw 2000; Cameron 2006; Hasan 2009; Shaw 2009; Shaw 2014). Indeed, it has been proposed that besides family obligations and cultural preferences, a major reason for the continuation of transnational marriages between the UK and Pakistan is the requirement to marry within the *biraderi* when there is a shortage of potential UK-resident partners from whom to choose (Samad & Eade 2002). Intra-*biraderi* marriage is perceived as a matter of *izzat*, which usually is defined in terms of family honour but also encompasses the concepts of family status and prestige (Azam 2006). From the wider *biraderi* perspective, the assistance provided in facilitating transnational marriages reciprocally serves to maintain and strengthen links with the international network of members of the *biraderi* resident in different countries, especially Pakistan (Cameron 2006; Shaw 2014). As in Pakistan (Hooper & Hamid 2003; Mohmand 2011), support for *biraderi* candidates in elections has been expected in overseas Pakistani communities, which in the UK has led to a number of cases of alleged electoral impropriety and fraud (Michael 2004; Baston 2012; White 2012).

There is a basic dichotomous hierarchy within the Muslim *biraderi*/caste system of the Indian sub-continent (Sikand 2004; Aarzo & Afzal 2006; Ara et al. 2007), with the two main social/occupational groupings based on their ethnic and geographical origins, i.e. *Ashraf*, ‘noble castes’ with Arab, Central Asian, Iranian and Afghan origins versus *Ajlaf*, who were regarded as of inferior social status and predominantly were local converts to Islam (Fricke et al. 1986; Ahmad 2003). This quasi-ethnic division is said to have reflected adherence to the concept of *kaf’aa*, which requires equality between marriage partners, with the choice of a spouse from outside one’s *kaf’aa* discouraged if not forbidden (Sikand 2004).

Although the terms *Ashraf* and *Ajlaf* have been applied in the Pakistani province of Punjab (Fricke et al. 1986), a somewhat different, more overtly socio-economic, sub-division also exists between the *zamindar* (literally ‘land owners’) with 23 sub-groups identified, and *kammi* (‘servant classes’) with 15 distinct sub-groups (Ahmad 1977). However, in Punjab there is an additional internal ranking within the ‘upper class’ *zamindar* in which sub-communities (*biraderi*) such as the *Syed* and *Awan* occupy the pre-eminent social positions (Shami et al. 1994), which has led to an effective threefold division into *Ashraf* (‘nobles’), *zamindar* and *kammi* being proposed (Shaw 2000). A fourth hierarchical sub-division also has been suggested, the *Mussalli*, many of whom converted from the Hindu *Chuhray* community to Christianity in the 19th century (Beall 2006) and continue to occupy lower social and occupational status as sweepers (Gazdar & Mallah 2011).

Inter-*biraderi* marriage has been rare in Pakistan and India, and in UK South Asian Muslim communities, in part because of social stratification between *biraderi* (Kabeer et al. 2010), with limited social mixing (Mohmand & Gazdar 2007), although marital alliances can be arranged with families in other *biraderi* that rank higher in social and economic terms (Nadvi 1997; Shaw 2015). Lesser attention has been paid to the social hierarchies within *biraderi*, but in addition to differences associated with geographical location they may explain the

multiple *biraderi* subdivisions that were noted in the 1921 Census of India for Punjab and Delhi, with 1,013 sub-divisions recorded in the *Awan biraderi*/'caste' alone, 581 in the *Mussalli*, and 1,068 within the *Sheikh* (Middleton & Jacob 1922-1923). Social and economic considerations which reflect this internal hierarchy are nonetheless important when intra-*biraderi* marriages are being considered, with parents generally unwilling to accept marriage proposals from a family of lower socio-economic or social class background (Azam 2006).

Discussion

Irrespective of consanguineous marriage, sub-division of a population into multiple endogamous sub-communities predictably results in greater intra-community genetic homogeneity and the increased expression of specific recessive disease genes (Overall *et al.* 2003; Bittles 2010). Failure to allow for the effects of historical population stratification could readily lead to questionable disease associations (Leslie *et al.* 2015), especially in South Asian populations characterized by longstanding religious and social sub-divisions (Bittles 2005). Therefore in planning and conducting socio-demographic, epidemiological and genetic studies within the UK Pakistani community, assessment of the results in terms of *biraderi* membership would be an appropriate starting-point (Bittles 2013; Corry 2014). At the same time there should be a recognition that individuals and families in some study communities may be more familiar with alternative descriptive terms, including caste, *zat* or *quom*.

From a future gene pool perspective, and in terms of genetic education and genetic counselling programmes, it would be important to further investigate claims that the strength of *biraderi* social control has been weakening among younger members of UK Pakistani communities (Y Care International 2014), including less rigid strictures being imposed on marriage with non-*biraderi* members (Michael 2004; Azam 2006; Shaw 2014). Preliminary cross-generational results from the Born in Bradford study cohort (Wright *et al.* 2013)

indicate that this trend has indeed become apparent in a number of *biraderi* but not in others (Small et al. under review).

It would be highly improbable that a major decline in intra-*biraderi* marriage in Bradford would not be accompanied, or even exceeded, by a reduction in the prevalence of consanguineous marriages within the Pakistani community, which now appears to be the case in Bradford (Bhopal *et al.* 2014), having previously been reported in the smaller Norwegian Pakistani community (Grijbovski *et al.* 2009). If these trends are significant in extent, they should result in reduced expression of recessive disease genes in future generations and hence lead to a decline in the prevalence of specific recessive disorders (Campbell *et al.* 2009). Further, if there is a concomitant reduction in completed family sizes that, in turn, would result in fewer marriageable cousins and an accompanying reduction in consanguineous unions (Bittles 2012; Barakat & Basten 2014).

From a wider societal viewpoint, findings (and interpretations) of this nature should serve to defuse the emotional and often poorly informed ‘consanguinity debate’ that has dogged health care planning and provision within the UK Pakistani population (Dyer 2005; Salway *et al.* 2012; Darr *et al.* 2013). Similar controversies in other Western European countries have resulted in the introduction of civil legislation equating consanguineous marriage with ‘forced marriage’, e.g. among Turkish, North African and Middle Eastern migrants in Denmark (Liversage & Rytter 2015) and the Netherlands (De Koning *et al.* 2014). Further, more detailed investigations and clarification of the overall influence of consanguinity and population stratification on the incidence and distribution patterns of genetic disorders are clearly merited, and overdue.

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Figure 1

Map of the provinces of Pakistan, and the location of Azad Kashmir



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Appendix 1

Brief Glossary of Terms

Ajlaf: lower social class Muslims of Indian sub-Continent origin

Ashraf: upper social class Muslims of predominantly Arab, Afghan, or Iranian origin

Awan: endogamous *Ashraf* paternal lineage, people who worked the land and were associated with the *zamindar* class

Biraderi (also *baraadri*, *baradari*, *biradari*, *biradri*, *bradari*, *braderi*): a closed patrilinear kinship group indicating ‘brotherhood’ and denoting socio-occupational status

Caste: English term denoting the Hindu *jati* system. Members of each caste are socially equal, united in religion, and not in social contact with other castes.

Chuhra (*masc*) *Chuhri* (*fem*) *Chuhray* (*plu*) amongst the lowest to all occupation groups, involving sweeping, manual scavenging, cleaning toilets, taking away the “night soil”. Used colloquially as a word to insult people.

Gotra: exogamous Hindu patrilineage, clan

Izzat: concept of family honour, status and prestige, commonly used as “respect.”

Jati: endogamous Hindu patrilineage, defining socio-occupational status at birth

Kafa’ a: concept of marriage between equals

Kammi: a term used to collectively describe the lower strata of the *Quom* system – the *Kammi Quoms* consist of artisans and service workers such as barbers, carpenters and loom workers.

Lothar (also more commonly *Lohar* in the Azad Kashmir community): blacksmith

Quom (also *qaum*, *quam*): endogamous patrilineage, historically based on occupation. *Quom* is broader than *biraderi* and also is subject to social status difference ie there are “high” and “low” *Quoms*.

Mughal: endogamous *Ashraf* patrilineage, originally denoting Mongol origin

Mussalli: a *kammi quom* where the main occupations involve undertaking menial work, for example slaughtering animals and providing service and support to others “higher” *quoms*. (This group are higher than the *Chura*).

Rajput: Hindu converts to Islam, martial background

Rishtidar (also *rishtedar*, *rishtedaar*): kinship, a person who is a relation of mine. *Rishtidari* is the collective noun for kinship.

Shaikh (also more commonly *Sheikh* in the Azad Kashmir context): agricultural and now business community, also linked with clerics. Hindu converts to Islam

Syed (also *Sayed, Sayyid*): endogamous *Ashraf* paternal lineage, direct descendant of the Prophet Muhammad

Zamindar: landholder and landowner

Zat: endogamous clan-based patrilineage group.