Conference report

The genetics, demography, and health of minority populations: a symposium held by The Galton Institute, September 1990

The Galton Institute's Annual Symposia, held in the Meeting rooms of the Zoological Society of London in the third week of September, are renowned for their wide ranging approaches to issues relevant to both genetics and society. The 1990 symposium conformed to the high standard of previous meetings and was extremely successful. The opening lecture (in J V Neel's absence owing to sickness, his paper was read and explained by A H Bittles) considered minority groups as examples of genetic isolates and discussed their genetic implications. An isolate can be delineated by geographical, social, cultural, or biological limits and is at risk of the effect of a small number of founders and of inbreeding. An isolate that is long established, having arisen from an ancient tribe, is in genetic equilibrium, with frequent protein polymorphisms and few rare recessives. However, in most other isolates there are many rare alleles (owing to many tribal contributions to the parent population) with consequently great phenotypic variation. Such a situation applies to the immigrants from the Indian subcontinent in the UK. Mutational load can be estimated from such isolates, but possible confounding factors are groups of linked genes and heterozygote advantage. D F Roberts gave a fascinating account of the high price paid for their isolation by the unique people who inhabit the bleak island of Tristan Da Cunha in the mid-south Atlantic. Several attempts at settlement failed until an English garrison arrived in 1816 with the purpose of preventing Napoleon from being rescued from St Helena. Slowly, and with three serious setbacks, the community has increased to its present size of nearly 300 members. Recessive retinitis pigmentosa and several dominant disorders are present in the community, as well as placid and tranquil natures.

One subject that recurred in the symposium was that of consanguinity between marriage partners. A H Bittles observed that it was normal behaviour in many parts of the world. Why is it so popular? In some situations, like on Tristan Da Cunha, it occurs because of an absolute shortage of similarly aged mates. There may be an effective shortage of mates

outside the family for those Muslim women who enter purdah at the menarche. In the Herrero tribe in Namibia/Botswana, there is never any question of marrying outside their relations within the tribe. For Swedish families in Finland, and for Pakistani farmers in Mirpur, one aim of cousin marriage is to preserve property. However, these answers are insufficient to explain the widespread custom. B Modell suggested that marrying a relation makes life more comfortable for a woman, particularly if she is restricted to living in her husband's extended family for sociocultural reasons. Indeed, females may be safer in communities practising consanguinity, for A H Bittles observed that the sex ratio of liveborns was 101:100 in south India (where consanguinity is practised) compared to 110:100 in north India (where it is not). A modern factor encouraging consanguinity is that UK immigration officers are more likely to accept that a planned marriage is genuine if it is between relations.

Whatever the causes and social accompaniments of consanguinity, what are its genetic effects? Extensive studies from India (A H Bittles) and from Pakistan (S A Shami) show an increase in early mortality rates and in lethal malformations in the offspring of consanguineous couples. Interim findings from a prospective study from Birmingham (S Bunday) show a risk of about 1 in 11 for the offspring of consanguineous Pakistani couples having a serious malformation or chronic handicap. However, there may be benefits: B Modell suggested that the spread of homozygous haemoglobin E through the Indian subcontinent was facilitated by consanguinity and thus led to the malarial protective effects of the heterozygous states for G6PD deficiency and β thalassaemia becoming less important with a consequent fall in the frequency of G6PD hemizygotes.

W Holzgreve described a health education programme in Münster aimed at Turkish immigrants and doctors concerning β thalassaemia. The study confirmed previous observations from Italy and Cyprus, namely that if prenatal diagnosis is available for a serious disorder, then it is welcomed by couples

at risk regardless of their religious or cultural background. This health programme for thalassaemia and the neonatal screening programme for sickle cell disease in Camberwell, reported by A Bellingham, were approved by Professor Ramalingaswami in his elegant summary. He emphasised that while the study of migrant populations gives valuable information concerning the causes of multifactorial disease, it is essential that sensitive methods of health care, appropriate to the immigrant communities, are delivered in association with such research.

I have not covered all of this excellent conference.

If you want to learn more of the above matters, or about how demography can reveal the duration of wars, or the causes of why genetic diseases spread, or if you want to learn about the effects of interethnic marriages, then you must read for yourself the proceedings of the symposium, which are due to be published in the summer of 1991.

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