

Historical Perspective

Studies on Maltese Consanguinity

Luis A Vassallo

The possible genetic consequences of consanguinity have been known from ancient times, though different societies have held varying views. Some have encouraged consanguinity as desirable and the classic examples are the sister brother marriages of the Egyptian Pharaohs and also of the ancient Irish and Inca Royal families. Mother-son, father-daughter marriages are only said to occur occasionally among the primitive tribes such as the Minahassa of Celebes.

In certain countries, consanguinous marriages are very common. The Japanese population of nearly 100 million has a remarkable degree of inbreeding, reaching a consanguinity rate of approximately 20% in many districts, while in Central and Southern India many populated areas are claimed to have a 60% consanguinity rate. Inbreeding is typically common in isolate population, and small island communities or 'closed' populations are most frequently associated with this phenomenon.

Many historical communities have laid strict taboos on consanguinous unions. The ancient Romans prohibited them while the Jews did so to a lesser extent. (Leviticus XVIII). Taboos were stricter in the Christian World. Up to the year 1215, marriages between remote relations (even 6th cousins) were prohibited, and this ban is traditionally said to have promoted intermarriage on a large scale between Germanic and Italian tribes, because of the fear of marrying a relative unwillingly. That this could easily happen, even between closer degrees of kinship is interestingly recorded in the marriage registers of 1827 for the Parish of Rabat in Gozo. Pope Innocent III in 1215 reduced the prohibition down to IIIrd cousins and this remained the rule for over 700 years when IIIrd cousin marriages were no longer prohibited. For catholics of closer kinship to marry, formal ecclesiastical dispensation must be obtained. In catholic countries, detailed studies of a population's consanguinity rate may be made by perusing the appropriate ecclesiastical archives where dispensation details may be found.

The Maltese Islands are therefore suitable for population genetic studies on consanguinity as the population has been catholic for centuries and as civil marriages are illegal.

Some data on various aspects of consanguinity in Malta obtained during a consanguinity survey to determine the mean coefficient of the Maltese Islands, is here presented.

The pattern of frequency of the various types of consanguinous unions may throw light on inbreeding characteristics. Fig. 1 shows the distribution of consanguinous marriages in Malta where complete data including marriages between 2nd cousins once removed ($2\frac{1}{2}$) and 3rd cousins are available (see Fig. 1). It will be seen that 1st cousin marriages were the commonest type of union in Malta prior to 1917. With the precipitous fall in consanguinity rates, after the 2nd World War, they are no longer the commonest type of cousin marriage. Complete year samples from 1950 to 1970 show the change in this pattern of frequency (see Fig. 2). The other interesting data denoting a previously high degree of inbreeding at the turn of the XXth century is the frequency of double cousin marriages with the consequent effect on the mean coefficient of inbreed-

Figure 1: Distribution of Consanguinous Marriages in Malta prior to year 1917, 1401 Marriages

1 st Cousins	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3
424 (30.8%)	151 (10.9%)	318 (22.8%)	181 (12.8%)	327 (23.7%)

Figure 2: Post World War II Cousin Marriages

1 st Cousins	1 $\frac{1}{2}$ Cousins	2 Cousins
125 (34.7%)	47 (13.5%)	187 (51.8%)

Figure 3: Double Consanguinous Marriages

Cousins	1 st	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3
Fraction	1/8	5/64	1/32	5/256	1/128
Number	10	34	17	37	22
Total				120 (7.5%) of Consanguinous Marriages	

Luis A Vassallo MD, FRCP, FRCPE, FRCPG
(b.1933 d.1994)
formerly Consultant Physician at St Luke's Hospital, Malta

Figure 4: Uncle-Niece Marriages

(Coefficient of Consanguinity = F = 1/8)

1 st Cousins			
Maltese Islands	87+	-	1305
Reggio Emilia Diocese (100 years)	34	-	1256

ing (see Fig. 3). It is unfortunate from the genetic point of view that data on various degrees of kinship more remote than 2nd cousins is no longer available since 1917.

Uncle-niece marriages are relatively commoner in Malta. A comparable series is shown (Fig. 4).

A series of 949 1st cousin marriages was also studied in order to determine the predominant subtype. Fig.5 shows the frequency of the 4 subgroups. It is interesting to note that communities vary as to the predominant type. Sisters' children marriages are the commonest in European communities, whereas marriages between brothers' children are commoner in Moslem and Jewish populations.

In the Andra Pradesh population of India, the commonest marriage is between a girl and her paternal aunt's son.¹

This finding in the Maltese community is noted because of its bearing on the inbreeding coefficient of sex linked genes (F') which differs according to the 1st cousin subtype. Thus the coefficient is 3/16 for the mating of the offspring of 2 sisters; 1/8 for the mating of a sister's son with her brother's daughter, and is 0 for the other 2 groups. Search for diseases associated with sex linked genes may yield interesting results in Malta.

In Europe, consanguinity rates fell during World War II. In Malta, on the contrary, the consanguinity rate for 1943 was the highest (4.4%) for years. This was due to the dislocation of population because of enemy bombing, with families naturally seeking refuge with relatives during the war years with consequent closer contact between cousins.

The Maltese Islands are not genetic isolates. The 'break-down of genetic isolates' has become the overall pattern for Western Europe. It is interesting to note that the phenomenon of consanguinity in Southern Europe and including the Maltese Islands is a relatively recent one. It reached a peak 'explosion' in the nineteenth century when in many places, high consanguinity rates (with values of the alpha of Bernstein ranging from 2.37×10^{-3} and 12.23×10^{-3}) have been recorded.² My searches in the Maltese marriage records of the seventeenth and eighteenth century for cases of consanguinous marriages fully support this contention for there appear to be relatively very few cases of consanguinity, in contrast to the 'boom' in consanguinity in Malta for the latter half of the nineteenth century. The Maltese physician Gavino Gulia³ deplored in 1874, the frequency of consanguinous marriages which he felt was due to the bad social conditions, and which contributed to the illhealth of the Maltese population.

Figure 5: First Cousin Marriages

(949 Analysed)

Brothers' Children	Sisters' Children	Brother's Son Sister's Daughter	Brother's Daughter Sister's Son
167 (17.6%)	306 (32.2%)	202 (21.3%)	274 (28.9%)

Chi Square Test = 46.3 (D.O.F. = 3); P < 0.1%

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Editorial Note

The Editorial Board is honoured to be able to publish a paper first presented by Luis Vassallo thirty years ago, and a copy of which was kindly furnished by his son, Dr David J Vassallo.

My personal recollection of Luis Vassallo is from the perspective of an erstwhile medical student and later house physician. He was a superb teacher endowed with a sparkling intellect while his interests were widely eclectic. I remember him equally at ease explaining intricacies of molecular biology as he was discussing the cause and effect of the Jewish Diaspora. He was a precise examiner who was more concerned in finding out what you knew rather than seeking out what you did not know. Luis Vassallo was much loved by his patients, not only for his clinical acumen but also for his genuine kindness and unaffected humility.

Professor J.M.Cacciottolo
MMJ Editorial Board Chairman