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THE MORTALITY OF TWINS : A CASE STUDY FROM DATA OF THE FRENCH *LONGITUDINAL STUDY* (EDP) IN FRANCE

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The frequency in twin births has experienced a spectacular increase in nearly all the industrialised countries during the last thirty years, under the joined effects of postponement of maternities and infertility treatments. In France, for example, the frequency of twin births increased from 8.9 out of 1,000 in 1972 to 15.0 in 2000 (a 70% increase) (Insee).

Twins children experience more health problems and higher mortality than children born from single pregnancy at least at the early beginning of their life. Infant mortality is two to nine times higher for them than for singletons (Duchesne, 2001 for Quebec(2001); Pison, 1991 for Afrika(1975-1987); Botting, Macdonald and Macfarlane, 1987 for England-Wales(1982-1984); Pons, Richard and Papiernik, 1991 for France(1979-1989)). Twinning is considered more and more as an important health problem in part because of the rise of the twinning rate which lowers the decline in perinatal and infant mortality.

Because of their little weight at birth, their premature feature and complications at delivery – frequent in multiple births –, twins are more exposed to early death. But outside this «birth's capital» or endogeneous variables, the particular case of twins should allow us some further suppositions about more dynamic and exogeneous aspects, especially what concerns context of catching diseases. One member of a twin's pair is particularly exposed to some contamination when its co-twin is effectively sick, in the case of a contagious disease. The fact to be equally aged and to be often together can play a significant role. Even without a contagion from one twin to its counterpart, as they are exposed to the same pathologies or to similar life/environment's conditions, twins are more at risk to develop similar diseases. Moreover the genetic correspondence in case of identical twins heightens these risks. Children born from simple pregnancies, who are not bred up with children of exactly the same age in their family, but with older or younger brothers and sisters, are less exposed to familial contagions.

Researches in field of twin's or multiple birth's mortality are often confronted to lack of quality data, just as well what concerns the type or quality of informations collected as the number of observations. Main factors as weight at birth, premature feature and complications of delivery have been largely illustrated and discussed. Differential mortalities among twin's birth according to sex and type of twins – with monozygotic twins more fragile than dizygotic ones - have been illustrated (Bulmer, 1970; Boklage CE., 1987), but data are often more difficult to collect. On contrary rarely researches have been interested - or had corresponding data - to study the dynamic aspect of twin mortality, that means increased risk of contamination between twins of same pair as presented over.

The analyse of the French *Longitudinal Study* (EDP¹ or Permanent Demographic Sample, Insee) should allow us to confirm and study more in detail all these different aspects of twin's mortality, as providing us a large sample of twins with numerous quality informations.

¹ Echantillon Démographique Permanent

EDP is a source of informations about twins. It gathers since 1968 in a single folder the statistic bills – census, civil registration - of all persons resident in metropolitan France and born during the first four days of october of each year, which represents a little more than 1% of births and of population. Considering the way the sample is constituted, it systematically includes twins of a same pair (and triplets of a same groupe of triplets, and so on) since they are born the same day. For example, in 2000, there were in metropolitan France about 765,000 deliveries; among them 11,483 were twin ones. We so expect the EDP to include 8,500 deliveries, and among them 126 twin ones (that means 252 twins). As the twinning rate was lower thirty years ago (about 9 per 1,000), but the annual number of deliveries higher, EDP should gather at least 100 twin's pair each year at this period (that means at least 200 twins by annual cohort).

Analyse of EDP should allow us to study in detail the mortality of twins, to compare in particular the age at death and the cause of death between twins and singletons, as well as the age and cause of death within a twinning couple. It doesn't allow us to distinguish identical (monozygotic) from fraternal (dizygotic) twins, but it will be possible to estimate indirectly differences among the two types of twins by comparing twin's pairs of same sex (which gather all monozogothic twins and a part of dizygotic twins) to twin's pairs of different sex (which gather remaining dizygotic twins). EDP doesn't provide us informations about morbidity, only about mortality. But its analyse can allow us to indirectly evaluate the impact of increased contamination's risks about twins health. As much as possible, study will take into account the effects of different familial and socio-economic factors (familial composition, socio-professional category, matrimonial status, place of residence, residential or professional mobility, and so on...), so as to compare life's conditions of twins to those of singletons.

Contrary to certain cohorts where children are followed only few years after birth, the EDP collects information about individuals until adulthood and beyond. Comparisons will so not be limited to small ages and we will examine for example wether the overmortality of twins compared to singletons persists for greater ages. Answer is *a priori* negative, but it isn't excluded that twins could preserve a particular fragility.

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