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**Title:** Estimation of the Life Expectancy of Persons with Down's Syndrome through a Longitudinal Survival Model

### **Research issue**

Down's syndrome (DS) is the most common inherited cause of mental retardation. Life expectancy is lower in people with this disorder than in general population. Estimation of life expectancy of persons with DS are scarce or and completely lacking. The life expectancy is an important summary measure of an individual's prognosis for survival. The life table is the preferred method for computing life expectancies, but it is not feasible for persons with DS because of lack of information on survival by age classes. However, in view of the unavailability of all the elements for constructing the standard life table, statistical survival modelling may be of great help.

### **Methodology**

It has been shown that for several chronic disabilities, the logarithms of the age-specific mortality ratios (relative to the general population) decline linearly with age, reaching parity at age 85 or older. This, combined with a standard modelling of an individual's current mortality rate, yields a set of age-specific mortality rates that can be used to produce a "customised" life table. Infant mortality in DS can be hardly modelled as a function of mortality in general population, hence estimates from previous studies are preferable. The main purpose is to develop and test a method for computing the life expectancy of subjects with DS using survival models. The proposed approach to computation of life expectancies has three stages:

- Firstly, one estimates the mortality rates at 1 year over the study period using available data from scientific literature.
- Next, the mortality rates over subsequent ages is expressed as a function of the known rates in the general population.
- Finally, a life table is constructed from the modelled rates, and this provides a remaining life expectancy and other statistics.

### **Envisaged results**

By using this computational strategy it is possible to provide estimates of life expectancy at different ages and other survival parameters. Such results may also be used to estimate the number and the age distribution of persons with DS living in a country, once the information of prevalence rate at birth of DS are available. The method may also be useful for a variety of non-progressive disability.