

who had at least one full sibling born in the same period (N=1 381 436). All individuals were followed from age 28 years until the age of death, emigration, or December 2009. Using Cox' regression analyses, we estimated HRs for mortality according to educational status.

**Results** Both conventional cohort analyses and intra sibling analyses were carried out. Educational differences observed in the cohort analyses were attenuated in the intra- sibling analyses.

**Conclusion** The attenuation of the association in the intra sibling analyses indicates that environment in childhood and/or genetic setup explain some of the association between educational status and mortality. However, significant associations still persisted in intra-sibling analyses, supporting an independent effect of education on mortality.

# P1-338 THE ASSOCIATION OF MATERIAL DEPRIVATION AND RR OF INFANT MORTALITY IN PENINSULAR MALAYSIA

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The aim of this paper is to investigate whether areas with greater deprivation index have higher RR of infant mortality in Peninsular Malaysia. This investigation is essential for the regional planning and development by policy makers to reduce the inequality and health gap across region within the country. We begin this investigation by studying the census based data for year 1991 and 2000 for the 81 administrative districts. These data are then correlated with RR of infant mortality data for the period of 1990–2000. In this paper, Bayesian hierarchical method is used to rank area deprivation and RR of infant mortality for each administrative district. The results are then mapped through choropleth maps to see the association between the two risk factor and health indicator. The analysis showed that regional material deprivation is strongly associated with the RR of infant mortality.

# P1-339 PATTERN OF DROWNING AND ITS BURDEN IN NORTH COAST OF IRAN

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**Background and objective** Drowning is a neglected serious public health problem in the northern provinces of Iran. Since the first step for health program planning in each community health is the priority setting, in this study, the epidemiological pattern was reviewed and burden of drowning was calculated.

**Methods** This study used data on death registration system and deaths due to drowning disruption in two provinces of Mazandaran and Gilan happened in 2008 were addressed. Initially with the help of descriptive statistics to describe characteristics of drowning, using the standard WHO forms the burden of drowning was calculated.

**Results** During 2008, 158 indigenous people from the provinces died from drowning. Of these 140 cases (88.6%) were male and 18 patients (11.4%) were female. The mean age of the drowned was 26.4 (SD=16.2) years. The drowning death rate was 2.9 per 100 000 population in two provinces. In examining place and time, most cases (85.4%) occurred in summer, the month of August (29.7%). Number of years lost was 4110 equivalent of 76.1 per 100 000 respectively. Most disabled age lost life years (DALYs) was seen to age group 10–19 years.

**Conclusion** With regard to the issue that most drowned in the sea and occurred in the summer time and the highest number of DALYs was in the age group 10 to 19 years, these findings need to be considered for prevention strategies in these provinces.

# P1-340 FOLATE STATUS AND FOLIC ACID INTAKE 6 YEARS FOLLOWING MANDATORY FORTIFICATION OF FLOUR IN BRAZIL: A POPULATION-BASED STUDY IN SÃO PAULO

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**Introduction** To prevent neural tube defects (NTD) folic acid fortification of wheat and corn flour has been mandatory in Brazil since 2004. The purpose of this study was to examine the effect that folic acid fortification has had on serum folate levels and its contribution of total folate intake.

**Methods** Data were obtained from two 24 h dietary recalls from a population-based study (2008–2010) in São Paulo-Brazil for 297 participants who also had serum folate concentrations measured. Folate intake was obtained using the software program Nutrition Data System for Research. Descriptive statistics, Pearson's correlates, Kruskal-Wallis and Student's t-tests were performed using Stata (Version 10.0).

**Results** The reference range (5th–95 th percentiles) for the population after the introduction of folic acid fortification was 4.6–16.4 ng/ml for serum folate. The prevalence of low (<3 ng/ml) serum folate was 0.6%, while 1.4% of population exceed the limit value of 20 ng/ml. Synthetic folate (folic acid) contributed 51.3% [49.2 to 53.4 95% CI] of total folate intake. Both natural folate and synthetic folate did not correlate with folate serum concentrations (p>0.05), however participants in the highest serum folate tertile were older (p=0.001), and synthetic folate intake among adults and the elderly was less than the group aged <19 years (p=0.01).

**Conclusion** There was a very low risk of folate deficiency in the studied population; older participants had higher levels of serum folate and lower intake of synthetic folate. Participants with excessive serum folate concentrations after the folic acid mandatory fortification of flour were identified.

# P1-341 DENGUE SPATIAL RISK DISTRIBUTION IN CAMPINAS, BRAZIL

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**Introduction** Dengue fever is an arboviruse of great importance in public health. Currently, the urban population *modus vivendi* favours transmission and maintenance of breeding sites of the vector, *Aedes aegypti*. Given the complexity of vector control, epidemiological surveillance for early case detection is of fundamental importance for the prevention of outbreaks of major proportions. This research aims to study the spatial distribution of the risk of dengue in the city of Campinas from January to December 2007.

**Methods** Spatial RR of dengue fever was calculated for each 4 weeks in Campinas using generalised additive model in a case-control study. All 9018 reported and confirmed autochthonous dengue fever cases of residents in the municipality were geocoded, while controls were generated from a representative sample of the population of Campinas based on IBGE census.