Social networks and health

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There is evidence from the social sciences that an individual's health and health behaviour is influenced by their social relationships. For example, after the death of a spouse the risk dying increases when other known factors are controlled for. A young person's social network influences their health-related behaviour (such as alcohol consumption and smoking) although the mechanisms seem to be complex and contingent, and the methods of data analysis used have been limited. Even highly publicised research on social networks and health, for example the 'spread of obesity' through social networks [1] has been subject to considerable methodological criticism. Advances in our mathematical and statistical understanding of networks and network data (particularly in a Bayesian setting) are opening up the possibility of more robust analysis methods. Understanding the impact of social networks on health raises the possibility of novel interventions, which may be targeted at specific groups such as school attenders, or more generally in society or through social media.

Few health-related datasets include data about social networks beyond immediate family members. The Add Health dataset includes data about friendship networks among adolescents in large schools in the USA (see Add Health website at: http://www.cpc.unc.edu/projects/addhealth). This National Longitudinal Study of Adolescent Health started in 1994 and data continues to be collected. In includes data from around 90,000 school pupils, of whom around 2100 were asked to complete a detailed survey that included details of friendship networks, health and health behaviours within 14 schools. There are many published studies from this database but few using the social network data.

One direction for the project would be to analyse the network aspects of the Add Health data, using and extending Exponential Random Graph models [2,3]. Another would be to model the propagation of attitudes and moods on realistic social networks over time. Most challenging (but potentially most valuable) would be to combine these two enterprises, to capture the way that health shapes the social networks that in turn shape health.

References

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