Understanding research: the infant mortality rate

In the first of a regular series of short papers on aspects of research, Linda Shields and Alison Twycross provide a brief explanation of measurements of infant mortality.

The infant mortality rate, or ‘IMR’ is an indicator of the health of a community. But what is it and why is it important? Health researchers, clinicians, community health workers, government officials and many others may want to know how the health of a particular community or country is faring. Many different measures could be used to give this information. The numbers of serious childhood injuries could be estimated by counting the children who present to hospitals for treatment. An understanding of childhood asthma could be gained by counting the numbers of ‘puffers’ sold, or we may guess the number of children at risk of passive smoking by counting the parents who smoke. Indicators such as these tell us about a small section of each community, but a more general and reliable method is needed if we want to know about the health of a community (or country) as a whole.

Children under one year of age are one of the most vulnerable groups in a community. In the past, mothers could expect at least half of their babies to die before their first birthday, but now it is unusual for small children to die, at least in developed countries. Infants are the ‘basis’ of a community, and if they die it makes a significant impact on the way the community develops. Measuring how many infants die in the first year can tell us how healthy the community is and how effectively it can generate itself: that is, how many children have a chance of growing to maturity thereby ensuring the on-going survival of the community.

Why use a rate?

The number of children who die in a country tells us that, but it means little unless we can compare it to something. For example, to say ‘in X country, 300 children died last year’ may sound shocking as it sounds like a large number. If X had a population of 1,000 then that is a lot of children, but if their population was one billion, then we would know that not many children died. And what do we mean by children? In some countries children are those under 18 years of age, in others, children become adults much earlier. The measure loses relevance unless all children are defined equally. Also, children have different illnesses and causes of death at different ages. An efficient way of expressing the numbers of deaths of children is to narrow it down, so the influence of such variables can be decreased. The IMR was devised to do just that.

The IMR represents the number of deaths of infants under one year of age per thousand live births per year in a defined population (Jekel et al 2001), eg a country, or a group of people in a country. By looking at the live births, the number of stillborn babies is removed, narrowing the field down a little. Including only those children who are most vulnerable, those under one year, narrows it further. The denominator, ‘1,000’ is a round number which is used more often than a bigger number (eg. 100,000) because in real terms and in modern times, few infants die.

By using the IMR we can compare the health of particular countries. In 2001, Sweden’s IMR was 3.44 deaths per 1,000 live births, while the IMR of Indonesia, a developing country, was 39.4. so we know that the health of the Indonesian community is not as good as that of Sweden (Central Intelligence Agency 2002). IMR can be used to compare groups within a country. Australia’s IMR from 1998-2000 was 4.9 but the IMR of Aboriginal infants in the same period was 21.0 (Australian Bureau of Statistics 2002). This reveals that the health of Aboriginal communities in Australia is not as good as that enjoyed by the wider Australian population. Reliable information expressed as rates is invaluable to those planning health programmes and giving help where it is most needed.

REFERENCES

