DFID Department for International Development

A DFID Case Study Paper

Case Study

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This is one of a series of notes on how the use of good statistics has made a difference to policy making.

Multiple micronutrient supplements – Do they prevent newborn deaths?

Summary

There has been considerable interest in recommending that pregnant women take a combination of vitamins and minerals to improve the weights and outcomes of their babies. This recommendation had progressed to the planning phase for international roll-out of programmes. Using statistical methods and a rigorous experimental design, we cast doubt on the solidity of the evidence base for advocating this. The outcome has been the avoidance of expenditure on a global programme whose results might have been less impressive than imagined.

Background

A third of global deaths happen in children younger than 5 years, most in newborn babies. Low birth weight (under 2.5 Kg) underlies many of these deaths: 25 million low-birth weight infants are born every year. Low birth weight is also associated with diminished childhood growth, higher rates of illness and compromised development. Unfortunately, approaches to alleviate the burden have met with limited success. The possibility that improvements in vitamin and mineral status might lead to reductions in low birth weight is attractive in terms of policy planning. A wealth of evidence has drawn links between deficiencies of such 'micronutrients' - particularly several at the same time - and birth outcomes. Many women already take vitamin and mineral supplements before and during pregnancy, and iron and folic acid are generally recommended. If multiple micronutrient supplement tablets were shown to be helpful, only minor adjustments to policy would be needed. An expert group has formulated a combination of ten vitamins and five minerals for this reason, and international commentators have been proposing its introduction on a large scale. However, the evidence base for policy change is insufficient. We undertook a trial with the aim of establishing whether taking multiple micronutrient supplements during pregnancy would increase the weights of newborn babies.

How did the use of good statistics make a difference to policy-making?

GUIDANCE FOR COMPLETING CASE STUDY

Headings have been provided to give you a broad outline of what to include. The notes below should also help you.

It is helpful if you can consider which of the following areas statistics helped with and then clearly identify this in your case study:

1. Statistics to help identify issues
2. Statistics to inform the design and choice of policy
3. Statistics to forecast the future
4. Statistics to monitor policy implementation
5. Statistics to evaluate policy impact

You may also want to consider the ways in which statistics helped to:

- Increase Transparency
- Improve Accountability

You may also like to consider how good statistics have changed the criteria for policy-making. Alternative criteria for policy-making include:

- Power and influence of vested interests
- Corruption
- Political ideology
- Arbitrariness
- Use of anecdotal evidence

The UCL Centre for International Health and Development ran a scientifically rigorous double-blind, randomised controlled trial in Dhanusha district, Nepal, in collaboration with Mother and Infant Research Activities, our long-term research partner in Nepal. Women attending antenatal care were invited to participate in the study. 1200 participants were randomly allocated either routine iron and folic acid supplements or a multiple micronutrient supplement.
The average birth weight was 77 g higher in the babies of women who had taken the multiple micronutrient supplement. This was statistically significant and suggested that the supplements could make babies heavier. However, preliminary evidence suggested that increasing birth weight would prevent newborn deaths, and we did not find evidence of this. After the findings were published, we communicated with researchers at the Bloomberg School of Public Health, Johns Hopkins University, USA, who had also done work on the subject. We published a joint analysis of findings which suggested that the evidence base to support rolling out the supplement on a large scale was not strong enough. The findings triggered widespread discussion in the international health community. A combined analysis of all available studies was carried out in 2006, and validated our reticence to recommend roll-out.

Statistics were central to our conception of the question, design of the research, and interpretation of the findings. The use of statistical approaches to a public health intervention may have prevented premature formulation of, and expenditure on, global policy.

Publications of interest

Huffman S, Baker J, Shumann J, Zehner E. The case for promoting multiple vitamin/mineral supplements for women of reproductive age in developing countries. Washington DC: Linkages; Academy for Educational Development, 1998.

Osrin D, Vaidya A, Shrestha Y, et al. Effects of antenatal multiple micronutrient supplementation on birthweight and gestational duration in Nepal: double-blind, randomised controlled trial. *Lancet* 2005;**365:**955-62.

Huffman S, Habicht J-P, Scrimshaw N. Micronutrient supplementation in pregnancy. *Lancet* 2006;**366:**2001-5. *Letter and subsequent correspondence.*

Christian P, Osrin D, Manandhar D, Khatry S, Costello AM, West KPJ. Antenatal micronutrient supplements in Nepal. *Lancet* 2005;**366:**711-2.