

## **IRON DEFICIENCY ANAEMIA IN ECUADOR: DOES EDUCATION MATTER?**

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### **BACKGROUND**

Iron deficiency anaemia (IDA) affects 1 billion people worldwide and The United Nations Children's Fund's (UNICEF) goal to "reduce the prevalence of anaemia (including iron deficiency) by one third by 2010" emphasises this global problem. The World Health Organisation (WHO) estimates that 52.0 % of pregnant women and 39.0 % of infants under four are anaemic in developing countries, compared with 22.7 % and 20.1 % in developed countries.<sup>1</sup> Importantly, it is these groups who are most vulnerable to the numerous effects of IDA on mortality and morbidity, due to their increased physiological demands.

Strategies to increase iron intake and reduce iron loss are essential in reducing IDA. Despite much research into the efficacy of supplementation schemes, national fortification programmes and effects of parasite eradication in reducing IDA<sup>2 3</sup>, an area somewhat less explored is that of maternal nutrition education. Education has had an impact in reduction of other micronutrient deficiencies<sup>4</sup> and regarding iron-deficiency, research has shown that maternal nutrition education can increase both iron intake and haemoglobin levels in children. Education *and* supplementation is more effective than either approach alone.<sup>5</sup>

Previous research into maternal knowledge of anaemia showed that women recognised its symptoms but only half considered these a priority health concern.<sup>6</sup> Many do not know why iron supplements are prescribed. These important findings highlight the difficulty in promoting awareness of a condition with few specific recognisable symptoms yet numerous health consequences.

### **AIM**

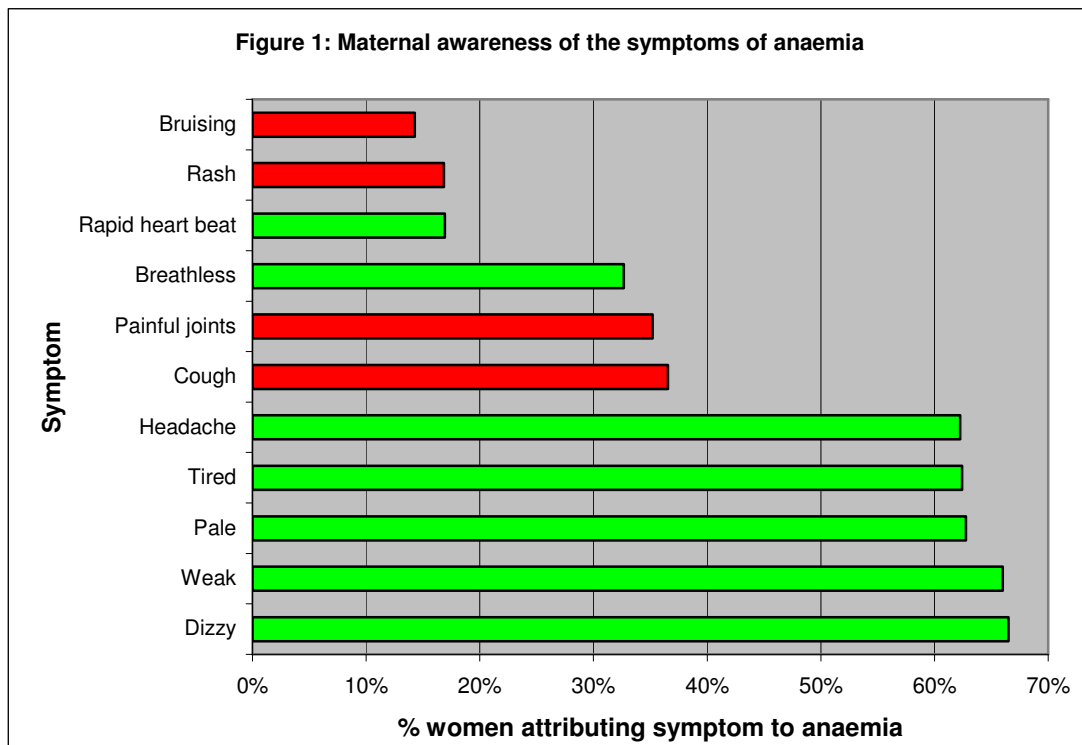
A study conducted in urban (Quito) and rural (Chone) bases in Ecuador, was designed to establish maternal awareness of IDA, with regards to cause, symptoms and prevention. The key objectives were to determine whether greater maternal awareness led ultimately to increased actions to reduce IDA, and assess the impact of region and maternal education on knowledge of IDA.

## METHOD & DEMOGRAPHICS

Subjects (197 women who were either pregnant or had a child under the age of five), selected from antenatal and post-natal clinics, were interviewed using a standard questionnaire. Of the sample, 86.3% were secondary-level educated and 14.2%, university-educated. Significantly more rural women were university-educated compared to the urban mothers (5.6% vs. 37.0%;  $p < 0.001$ ) which may have contributed to the greater mean age of the rural compared to the urban sample (25.6 vs. 18.3 years;  $p < 0.001$ ). This sample bias resulted from a necessary limitation to select subjects from an adolescent clinic in the urban area.

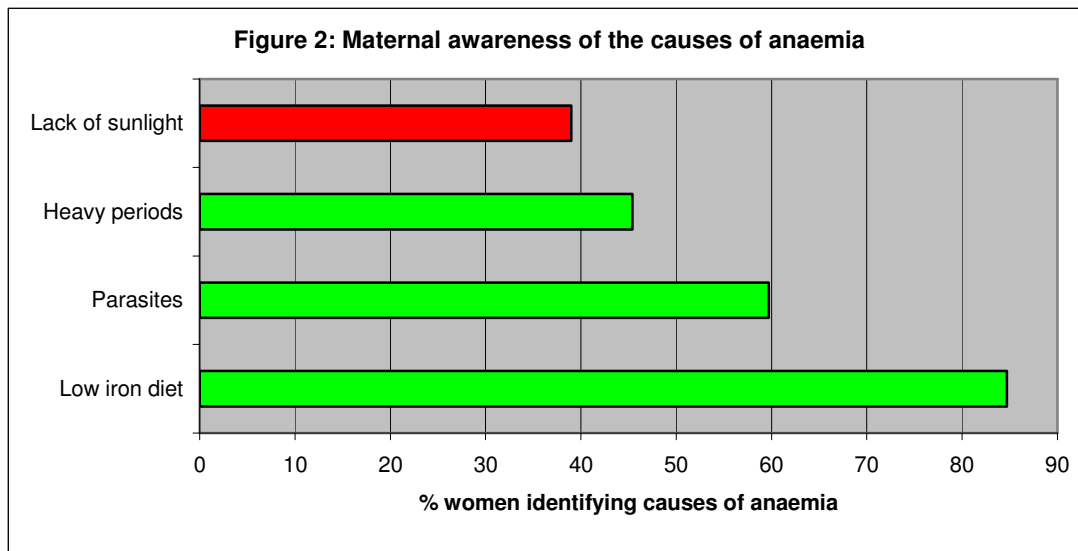
## RESULTS

Overall, 77.2% had heard of anaemia, with over 60% correctly recognising that an anaemic child would be dizzy, weak, pale or tired (Figure 1). Although uncharacteristic symptoms such as rash, bruising and cough were also suggested, these findings are encouraging in the hope that early recognition of the common symptoms may prompt early treatment.



All participants thought that iron was important for health yet only 22.4% had heard of iron deficiency anaemia (IDA); 45.1% of responders could identify at least one of the WHO "IDA at risk" groups (pregnant women and children under 5).

Causes of low iron were correctly identified by the majority (56.6%) of women (Figure 2). Low dietary iron was the most commonly identified cause (84.7%), important, as this is the most easily modifiable factor contributing to iron-deficiency.



Unfortunately, just 18.7% of women could name the two major iron-rich foods commonly available in Ecuador - red meat and green vegetables. Worryingly, 14.1% suggested foods such as rice, bread and eggs as iron-rich sources, which actually contain very little iron unless specifically fortified. Of more importance in prevention of IDA is the *consumption* of iron-rich foods and encouragingly, despite only 8.3% identifying red meat as an iron source, the average consumption of red meat was 3.32 times per week, which is in line with recommended UK intakes.<sup>7</sup>

Urban women ate significantly higher weekly portions of red meat compared to the rural women (3.6 v 2.47,  $p < 0.01$ ) but interestingly, there was no significant difference in *knowledge* between the groups (8.4% urban v 8.1% rural,  $p > 0.05$ ). The consumption difference could be explained by the higher availability of red meat in Quito (in terms of distribution and cost) and the greater consumption of fish in coastal Chone.

More than two-thirds (67.1%) of women or their children use iron supplementation, with no significant difference in uptake between urban and rural areas (65.0% vs. 72.2%,  $p > 0.05$ ). This highlights the relative success of the current national nutrition scheme but inadequate local supply of supplements may account for the less than perfect uptake.

## DISCUSSION

Overall, the study has highlighted a good knowledge of the existence of anaemia and its symptoms. There is widespread agreement of iron's importance for health but specific awareness of IDA is poorer. Almost all recognised those most vulnerable to low iron and the impact of diet on iron levels. Although knowledge of iron-rich foods was poor, this bore no correlation to subsequent actions, as red meat consumption was better amongst women living in areas of greater *availability*, than those who had better *knowledge* of iron rich foods. Ultimately, it the actions taken to prevent IDA that are important, even if this does not stem from a sound educational basis in the target population.

Two key findings emerged regarding education and IDA awareness. Firstly, there was a vastly greater awareness of IDA in university-educated women compared to non-university attendees (96.4% vs. 10.1%,  $p < 0.001$ ). Secondly, the former group were also better at identifying causes of low iron than the latter group (73.3% vs. 54.5%,  $p < 0.001$ ). However, there was no overall difference in use of iron supplements or consumption of iron rich foods by the university-educated women, i.e. *knowledge*, again, did not correlate with *action*.

We postulate that in a developing country such as Ecuador, maternal awareness alone is insufficient to impact on IDA, where actions are limited by socio-economic factors and local provisions. However, improving availability of iron supplements and red meat for all Ecuadorians would no doubt make a small, yet significant, start to achieving UNICEF's global goal to reduce IDA by 2010.

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