

# Overcoming China's anaemia puzzle in poor rural elementary schools

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		<input type="checkbox"/> Protocol
<b>Registration date</b> 19/05/2011	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan
		<input checked="" type="checkbox"/> Results
<b>Last Edited</b> 01/07/2013	<b>Condition category</b> Haematological Disorders	<input type="checkbox"/> Individual participant data

**Plain English summary of protocol**  
Not provided at time of registration

## Contact information

**Type(s)**  
Scientific

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## Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

**Secondary identifying numbers**  
N/A

## Study information

**Scientific Title**

Nutrition and educational performance in rural Chinas elementary schools: A multi-site cluster randomised controlled trial in Shaanxi province

**Study objectives**

This study hypothesises that there is low haemoglobin count (which is known to be correlated with iron deficiency) among fourth-grade students in poor areas of Shaanxi province (Northwest China), and that the source of the problem is either nutritional deficiency, lack of information on nutritional practices, or intestinal worm infection.

**Ethics approval required**

Old ethics approval format

**Ethics approval(s)**

Stanford University Human Subjects Research Institutional Review Board approved on 27th January 2009 (IRB protocol number 15962)

**Study design**

Interventional multi-site cluster randomised controlled trial

**Primary study design**

Interventional

**Secondary study design**

Randomised controlled trial

**Study setting(s)**

Other

**Study type(s)**

Treatment

**Participant information sheet**

Not available in web format, please use the contact details below to request a patient information sheet

**Health condition(s) or problem(s) studied**

Iron-deficiency anaemia

**Interventions**

Control Condition 18 Schools  
No intervention in these schools.

Deworming Intervention Only 12 Schools

400 mg of albendazole given in a single, oral dose to all students in the school by home room teacher (unless students meet exclusion criteria)

Nutrition Supplement Intervention Only 12 Schools

Multivitamin tablets containing 5 milligrams of iron given orally, daily for 5 months by home room teacher.

Each month we supplied teachers with 5 weeks worth of multivitamins with mineral supplements and disposable paper cups. During the first class period after the first meal of the day students always first go to their home room class. At least one period before the class, the teacher was supposed to boil a large kettle of water and let it cool. As soon as all of the students were in class, the teacher would hand out two disposable paper cups to each student. A multivitamin with mineral supplements was placed in one cup. The other cup was filled with water. The teacher would dispense the multivitamin with mineral supplements and water one student at a time and watch them take it. On each Friday afternoon, students would be given two multivitamins with mineral supplements to take home for the weekend. They were supposed to take one on Saturday and one on Sunday. Almost all parents that we talked to (during the spot checks) knew about the weekend protocol. Multivitamins with mineral supplements were dispensed from November to June. There was about a three week period during winter break when no multivitamins with mineral supplements were dispensed.

#### **Deworming + Nutrition Supplement Treatment 12 Schools**

In 12 schools, students were given a 400 mg albendazole dose orally and also received the 5 mg iron dosage daily.

#### **Information Treatment Only 12 Schools**

One of four letters (depending on students haemoglobin level) detailing the students specific anaemia status was sent home to parents or guardian two weeks after the baseline survey. The letter was sent home with the student and there was a follow up check by the home room teacher that parents received the letter. No other intervention or follow up was conducted.

The letter was written to describe to each parent what anaemia was and its known consequences. Parents were then told their own child's haemoglobin (Hb) level. Their anaemia status was given as 1 of 4 categories: severely anaemic (Hb levels below 115 g/L); moderately anaemic (Hb levels between 115 and 120 g/L); not anaemic, but borderline (Hb levels between 120 and 130 g/L); or not anaemic (Hb levels 130 g/L or higher). Anaemic students were then told that they should consult a doctor and that anaemia is often associated with poor diet and that parents should strive to give their children a balanced diet that contains at least one ounce of meat per day.

#### **Intervention Type**

Supplement

#### **Phase**

Not Applicable

#### **Drug/device/biological/vaccine name(s)**

Albendazole, iron tablets, multivitamins

#### **Primary outcome measure**

Haemoglobin concentrations, obtained by finger prick testing using HemoCue 201+ point of-care diagnostics, measured during the baseline (October 2008) and during the evaluation survey, nine months after the start of the treatments (June 2009)

#### **Secondary outcome measures**

The secondary outcome variable of our study came from a standardised math test that we administered ourselves at baseline (October 2008) and nine months after the start of the treatments (June 2009). The math test was based on questions drawn from a pool of questions

that were originally created for The Trends in International Mathematics and Science Study (TIMSS). Enumerators required students to finish the 29 question test in 30 minutes. No extra time was given.

**Overall study start date**

01/10/2008

**Completion date**

01/07/2009

## Eligibility

**Key inclusion criteria**

All fourth grade students (both male and female students ages 9–12 years) in 66 randomly selected rural primary schools in eight of the poorest counties in China's Shaanxi province, in China's northwest region.

**Participant type(s)**

Patient

**Age group**

Child

**Lower age limit**

9 Years

**Upper age limit**

12 Years

**Sex**

Both

**Target number of participants**

In total, 3,821 students participated in this study

**Key exclusion criteria**

1. Students found to be extremely anaemic (sent directly to a doctor for treatment) or low body weight
2. Students identified as having thalassaemia
3. Students not meeting inclusion criteria

**Date of first enrolment**

01/10/2008

**Date of final enrolment**

01/07/2009

## Locations

**Countries of recruitment**

China

United States of America

**Study participating centre**  
**616 Serra Street, Encina Hall**  
California  
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94305

## Sponsor information

**Organisation**  
Stanford University (USA)

**Sponsor details**  
450 Serra Mall  
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**Sponsor type**  
University/education

**ROR**  
<https://ror.org/00f54p054>

## Funder(s)

**Funder type**  
Other

**Funder Name**  
LICOS Centre for Institutions and Economic Performance (Belgium)

**Funder Name**  
Stanford University alumnus private donor (USA)

# Results and Publications

## Publication and dissemination plan

Not provided at time of registration

## Intention to publish date

## Individual participant data (IPD) sharing plan

## IPD sharing plan summary

Not provided at time of registration

## Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>	results	01/05/2013		Yes	No