New Study Published in the BMJ Shows Children Can Play a Key Role in Lowering Family's Salt Intake

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New research in northern China funded by the UK MRC shows that

- Primary school children can get their whole family to reduce salt intake while being taught during their usual health education lessons about the dangers of eating salt and how to reduce it
- Over one school term (3.5 months), salt intake was reduced by a quarter in both children, and parents and grandparents with a significant fall in systolic blood pressure in adults
- This represents a novel and important way of reducing salt intake in countries where most of the salt is added by consumers
- It is estimated that the reduction in salt intake would prevent approximately 200,000 stroke and heart attack deaths per year in China alone, and also have major implications for other countries

A new study, the first of its kind to successfully reduce salt intake through educating children who then instruct their family to reduce salt, has been carried out by Queen Mary University of London, The George Institute for Global Health at Peking University Health Science Center and Changzhi Medical College.

The controlled trial conducted in 28 primary schools[1] in Changzhi, northern China resulted in salt intake being reduced by a quarter in children, parents and grandparents with a significant fall in systolic blood pressure in adults. If the reduction on blood pressure was to be replicated across the country, it is estimated that this would prevent approx.153,000 stroke and 47,000 heart attack deaths per year in China.

The study, also known as School-EduSalt (School Based Education Programme to Reduce Salt), included almost 280 children (aged approx. 10 years) and over 550 adult family members including parents and grandparents with an average age of 44 years.

During the study, children were taught about the dangers of eating salt and how to reduce it using the schools' usual health education lessons. Children then delivered the salt reduction message to the whole family. In particular, children needed to persuade the person who did the cooking to reduce the amount of salt used at home. The salt reduction education lasted for one school term (?3.5 months). Salt intake was measured at the beginning and the end of the study, each involving two consecutive 24-hour urine collections.

KEY FINDINGS

- The results show that salt intake is high in both children and adults in northern China. The average baseline salt intake (i.e. before the salt reduction education) was 7.0 g/d for 10 years-old children, which is 40% higher than the WHO recommended level of 5 g/d for adults. The average baseline intake for adults was 11.7 g/d which is more than double the WHO recommended level.
- The salt reduction education is effective and led to a significant reduction in salt intake of 1.9 g/d ($P<0.0001$) (or a third of a teaspoon) in children and 2.9 g/d ($P<0.0001$) in adults (half a teaspoon).
- The reduction in salt intake was accompanied by a significant fall in systolic blood pressure of 2.3 mmHg ($P<0.05$) in adults.
- It was estimated that a 2.3 mmHg reduction in systolic blood pressure would reduce strokes by ?9% and heart attacks by ?5%. This would prevent ?153,000 stroke and ?47,000 heart attack deaths per year in China.

Cardiovascular disease (strokes, heart attacks and heart failure) is the leading cause of death and disability worldwide. Approximately 80% deaths from cardiovascular disease occur in developing countries.2 China is the largest developing country in the world. There were ?1.7 million stroke deaths and ?948,700 heart attack deaths in 2010 in China.3 This continues to rise due to the rapid epidemiological and economic transitions.

Salt puts up blood pressure which is a major risk factor for cardiovascular disease. A reduction in salt intake lowers blood pressure and reduces cardiovascular disease.4-6 Indeed, salt reduction is one of the most cost-effective measures to prevent cardiovascular disease.7-9 Salt intake in China is very high. Unlike in developed countries, about 80% salt in the Chinese diet is added by the consumers during

cooking or in sauces.10 So far, no country has demonstrated a successful salt reduction programme where most of the salt is added by consumers.

"The study provides a novel, feasible, effective and important approach to reducing salt intake in the population where most of the salt in the diet is added by consumers" says Dr Feng He, the study principal investigator, Senior Research Fellow at the Wolfson Institute, Queen Mary University of London. "As the salt reduction education was delivered to children using the schools' usual health education lessons, it could be easily incorporated into the national school curriculum. A nationwide implementation will lead to a major reduction in salt intake in the Chinese population and therefore a reduction in strokes and heart attacks."

"The study used repeat 24-hour urine collections to assess salt intake. This is the most accurate method and hence the study results are very reliable. The results shows that salt intake in northern China is very high. Salt intake before the salt reduction education was 7 g/d in 10 years old children and almost 12 g/d in adults, while the WHO recommended level is 5 g/d for adults. Clearly urgent action is needed to reduce salt intake in the Chinese population" says Professor Yangfeng Wu, co-principal investigator of the study, senior director at The George Institute for Global Health at Peking University Health Science Center.

Professor Graham MacGregor, co-principal investigator of the study, Chairman of WASH (World Action on Salt and Health) and Professor of Cardiovascular Medicine at the Wolfson Institute, Queen Mary University of London says "This study has achieved a reduction in salt intake of a quarter. Such a big reduction in salt intake could prevent approximately 400,000 stroke and heart attack events in China, half of which would be fatal". Professor MacGregor continues"The success of the School-EduSalt study demonstrates that children can play an important role in getting their families to reduce salt. The findings suggest that the WHO's target of 30% reduction in salt intake by 2025 can be achieved in China if the education programme is implemented across the whole country".

Professor Jixiang Ma, Deputy Director, National Center for Chronic and Noncommunicable Disease Control and Prevention (NCNCD), China CDC says "Traditionally, hypertension prevention and control have been managed within the healthcare system. In China, the healthcare system is already stretched and has limited capacity for behaviour intervention. The School-EduSalt offers a new approach to reducing risk factors for NCD. This approach has the advantage of reaching a wide range of the population from children to adults, and therefore will have a greater impact on NCD prevention and also save money to the health service".

Commenting on the potential implications for other countries, Professor MacGregor says "Universal primary education is a common goal in most national education policies, school children in other countries should also be taught about the harmful effects of salt on health. Conveying salt reduction message to children has the potential to set habits and attitudes that will persist throughout adulthood". Professor MacGregor continues "In most developed countries, most of the salt in the diet is hidden in processed food, kids can still play a role in helping their family to reduce salt, e.g. by selecting food with less salt when shopping with their parents and getting them to reduce the amount of salt they add to their food".

The study was funded by the UK MRC (Medical Research Council) and it is part of the GACD (Global Alliance for Chronic Diseases) Hypertension Prevention Programme.11

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Embargoed link to research paper:http://press.psprings.co.uk/bmj/march/washschoolsalt.pdf

For online articles, please include a link to the following active URL where the article will be published in full and freely available:http://www.bmj.com/cgi/doi/10.1136/bmj.h770

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[1] 14 schools were randomly selected to receive salt reduction education and 14 schools served as control

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