

A Tribute to Prof. Dulitha N Fernando

Review



Translation of evidence into practice: public health nutrition research

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The name of *Professor Dulitha Nandanie Fernando (1944-2021)* is immortal in the annals of Sri Lankan public health nutrition. Her biggest contribution to nutrition has been her in-depth understanding of research on public health. She was in collaboration with her associate researchers in the Medical Research Institute (MRI) and conducted much research during past 20 years. Even after her retirement, she continued her work with the MRI focussed on improving the nutritional status of the population. Thus, her research achievements are innumerable, and her illustrious career is worthy of emulation. This paper aims to examine the dissemination and implementation of some of the research findings towards improvement of nutrition in Sri Lanka.

Translation of research into practice

Translation of research into practice is an ongoing process. However, there is a wide gap between the evidence generated through public health research and the application of that in community settings (1-3). It may be due to poor dissemination of these research findings for use in community settings or not convincing the policy makers adequately (4). Policy makers and researchers play different roles. Policy makers may be reluctant to take risks in relation to public health measures affecting large numbers of people. On the other hand, policy makers may be willing to act promptly than researchers who demand high standards of reliability and validity of results. On the other hand, policy makers are sometimes unwilling to act even where researchers believe the evidence is clear, and risks of action is minimum (5).

Generally, nutrition research is conducted for many purposes; to determine the extent, severity and causes of the nutrition problems for advocacy and planning; to test new interventions to control nutrition problems; to monitor nutrition programmes or interventions to increase the coverage and to identify challenges; and to evaluate nutrition programmes or interventions to test the impact, etc. (6). In this article, lessons learnt from the research studies conducted by MRI with the support of Professor Fernando from 1998 to 2017 are presented.

Iron supplementation of school adolescents

A substantial amount of evidence confirms that iron supplementation of anaemic school children improves their school performance, verbal and other skills (7). It also has become increasingly apparent

that it is difficult to correct anaemia fully by iron treatment during pregnancy alone. In 1996, it was found that 36% of adolescents were anaemic in Sri Lanka (8). In an effort to break the vicious cycle of anaemia, adolescents were targeted and made as a priority age group by the Ministry of Health. Hence, more attention was paid to the need to provide adolescent girls with either daily or weekly low dose iron supplements. A series of research studies was conducted to identify the feasibility of this strategy in Sri Lankan settings.

Research 1

The first study was conducted in 1998 to identify a cost-effective preventive programme by using daily and weekly iron supplementation for adolescent schoolgirls (9). This study was designed as a double-blinded, placebo controlled clinical trial among girls aged 10-17 years in three treatment groups. Daily treatment group (243 girls) were given a daily dose of ferrous sulphate (60 mg elemental iron) and 250 µg of folic acid in a combined tablet (iron/folate) and 100 mg of vitamin C five days per week, Monday through Friday. Weekly treatment group (230 girls) was given the same dose of iron/folate and vitamin C, but only once a week on Monday, and they were given a placebo replacement for the iron/folate and vitamin C during the other four days. Control group (217 girls) was given the placebo replacement for iron/folate and vitamin C five days per week, Monday through Friday. The trial was implemented for 6 months to compare the efficacy of weekly and daily iron supplementation for improving haemoglobin and serum ferritin concentrations. The findings revealed that the prevalence of anaemia was reduced from 25% to 9.5% by weekly supplementation and from 18.5% to 8.6% by daily supplementation. In the placebo group, the prevalence decreased from 19.8% to 13.4%. It was concluded both weekly and daily iron supplementation is efficacious as long as compliance is good. Weekly supplementation is an economically advantageous and simple intervention to improve the haemoglobin status of adolescent girls.

Practice: This important finding created new opportunity for programme delivery. This study was published in 1999 and the original data were used along with the data from other countries to provide global recommendations on iron supplementation regime for adolescents (10).

Research 2

Subsequently, a national study was conducted in 2002 among adolescent schoolchildren aged 10-15 years to assess the extent of anaemia as a public health problem (11). A three-stage cluster sampling method was adopted to draw a nationally representative sample of students from public schools. A total of 144 schools were randomly selected and 1521 students were studied. It was found that the overall prevalence of anaemia was 11.1%. The highest prevalence of anaemia was observed at the age of 14 years (37.7%) among girls.

Practice: The Ministry of Health took a policy decision to address anaemia in school adolescents aged 10-15 years by giving them high priority through schools. Policy discussions took place to link the weekly iron supplementation programme with the existing school health programme. There was good support from the Ministry of Education to this mode of delivery.

Research 3

During 2002-2003, another study was carried out in five districts to assess the feasibility and impact of anaemia in schoolchildren with weekly iron supplementation (12). A multi-stage stratified sampling technique was used to randomly select 600 grade 7 and grade 10 students from 30 schools in five districts. After the baseline assessment, a weekly iron supplementation programme was initiated by the medical officers of health in the area in collaboration with the School Health Unit of Family Health Bureau. All children in grades 7 and 10 in selected classes were given the supplementation regime for 6 months: iron folic acid combined tablet (60 mg of elemental

iron and 250µg of folic acid) and 100 mg of vitamin C, only once a week, every seventh day only on Monday. On the first day, 500mg of mebendazole and vitamin A megadose were also given. The study revealed that when the supplementation coverage is more than 30%, the reduction of anaemia was 50%.

Practice: Weekly iron supplementation was initiated in all schools throughout the country for a period of 6 months among adolescents aged 11-15 years since 2004. Subsequently, it has been expanded to all school children from 5-18 years after issuing guidelines by the WHO (13-15).

Research 4

This study was conducted in 2009 to assess the impact of iron supplementation programme after 5 years of the implementation as a part of national nutrition and food security survey (16). It was expected that the previously supplemented school children should presently fall into 15-20 years of age. A household survey was carried out in nine districts of Sri Lanka, one district randomly selected from each province. A multistage cluster sampling method based on the probability proportional to size technique was used to identify 30 clusters per district. A systematic random sampling technique was used within each cluster to identify 21 households.

It was found that the prevalence of anaemia was 23.5% among non-pregnant and non-lactating women aged 15-20 years. It concluded that iron supplementation during the early adolescent period was not sufficient to maintain iron levels for a long period of time as a strategy to control anaemia in pre-pregnant women. The study recommended to initiate a sustainable cost-effective solution to control anaemia in adolescents and pre pregnant women.

Research 5

This study was undertaken to determine the

prevalence of anaemia and coverage of iron supplementation as part of national nutrition and micronutrient status among school adolescents aged 10-18 years in 2017 (17). A cross-sectional study was carried out among 2,700 children, randomly selected 300 children from each province. A total of 135 secondary schools were included. It revealed that the prevalence of anaemia, iron deficiency and iron deficiency anaemia were 8.8%, 22.1% and 3.8%, respectively. A higher prevalence of anaemia was seen among the older children. There was a marked geographical variation in the percentage of children who always consumed iron folate received from school (48.8-94.8%). This example shows the relationship between research and policy. Iron supplementation is a 'magic bullet' approach to deficiency. Supplementation programmes do not tackle the root causes of deficiencies. More sustainable action would focus on dietary modification, on eating habits and customs. However, research on interventions in nutrition and food habits is much more difficult to undertake and the effects more difficult to measure, and therefore funds are difficult to secure (5).

Epilogue

In order to deliver the best nutritional care to people, there is a need to constantly build and refresh the evidence base for practice. This has to be done not only by conducting high-quality research in communities, but also by ensuring that the results of the studies find their way into practice as quickly and as comprehensively as possible. However, effective translation of research into practice has always been as elusive goal (3). Professor Dulitha Fernando always recognized this wider gap between the volume of public health knowledge generated through research and the application of the evidence in community settings. She continuously guided her trainees and students to translate or disseminate the study findings for use in community settings where it is likely to have positive impacts. Professor Fernando will be always remembered for her sharp mind and intelligence by many colleagues and students.

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