

Essential health care package for children - the 'Fit for School' program in the Philippines

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High prevalence of poverty diseases such as diarrhoea, respiratory tract infection, parasitic infections and dental caries among children in the developing world calls for a return to primary health care principles with a focus on prevention. The 'Fit for School' program in the Philippines is based on international recommendations and offers a feasible, low-cost and realistic strategy using the principles of health promotion outlined in the Ottawa Charter. The cornerstone of the programme is the use of school structures for the implementation of preventive health strategies. 'Fit for School' consists of simple, evidence-based interventions like hand washing with soap, tooth brushing with fluoride toothpaste and other high impact interventions such as bi-annual de-worming as a routine school activity for all children visiting public elementary schools. The programme has been successfully rolled-out in the Philippines covering 630,000 children in 22 provinces and it is planned to reach 6 million children in the next three years. The programme is a partnership project between the Philippine Department of Education and the Local Government Units with support for capacity development activities from the German Development Cooperation and GlaxoSmithKline.

Key words: Caries, soil transmitted helminth infection, infectious diseases, school health, health promotion, hand washing, fluoride toothpaste

Nearly 90% of the world's school-aged children live in low and middle-income countries¹ where living conditions often result in high prevalence of poverty-related diseases. Whether at school or at home, overcrowded buildings, lack of clean water and sanitation facilities, poor awareness and poor personal hygiene practices cause serious health problems. Infectious diseases like diarrhoea, respiratory infections, skin diseases, worm infections and dental caries are very common, are often perceived as 'normal', are socially accepted and usually

neglected. Such a problematic environment impacts on child health as well as on school attendance and academic performance and keeps children trapped in a cycle of diseases and poverty for a lifetime.

In the light of unacceptable disparities in health, increased health care costs, unaffordable and unavailable health services, the WHO *Commission on Social Determinants of Health*² has recently called for re-orientation towards prevention on a mass scale. Despite knowledge and ample evidence on the efficacy and cost-effective-

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ness of preventive measures there are only very few examples of broad scale implementation of such measures. The Fit for School program works on the premise that schools provide an ideal setting for introducing preventive measures for health with the objective of developing sustainable health promoting behaviour change and long-term health outcome improvements.

This paper introduces the 'Fit for School' program in the Philippines, which is focused on the institutionalisation of daily hand washing with soap, daily tooth brushing with fluoride toothpaste and bi-annual de-worming of all children in public elementary schools. The first part of the paper highlights the evidence base for the interventions of the programme, the design and the policy basis from international recommendations; as well as the expected health outcomes based on published international research. The second part of the paper explains implementation, practical organisational issues and costs in detail.

Prevailing child health problems in the Philippines, international recommendations and expected health benefits

Common childhood infections

Infectious diseases like diarrhoea and respiratory tract infections are among the top three mortality causes in the Philippines for children below 10 years of age. The Philippine Department of Health (DOH) estimates that every year 82,000 children die due to pneumonia, diarrhoea and respiratory tract infections³. According to the DOH report, respiratory tract infection, diarrhoea and influenza are the three leading causes of morbidity for all age groups in the Philippines.

Hand washing with soap is the single most effective intervention to prevent infectious diseases as it interrupts the transmission of diseases from one infected person to another. The UN General Assembly designated 2008 the *International Year of Sanitation*, and has declared October 15 as *Global Hand washing Day* to raise awareness of the importance of hand washing with soap and as a call for generally improved hygiene practices. *Global Hand washing Day* is a campaign to motivate and mobilise millions around the world to wash their hands with soap⁴. The theme for the first *Global Hand washing Day* was 'Focus on School Children'. The Philippines was among the member states who pledged support and mobilised school children to wash their hands with soap. A recent review⁵ suggests that hand washing with soap at 'critical moments' after using the toilet, before preparing food and before eating can reduce diarrheal incidence by 42-47%, and results in up to 30% reduction of respiratory infections. Another study found that children under 15 years living in households receiving hand washing promotion and soap had half the diarrheal rates of children living in control neighbourhoods⁶. Hand

washing with soap is regarded to be more effective than any other single health intervention.

Soil-transmitted helminth infections

The prevalence of soil-transmitted helminth (STH) infection in pre-school children in the Philippines is 66%⁷, while the results of a recently concluded sentinel surveillance of STH infections using school children showed an infection rate of 54%⁸. STH infections impair healthy nutrition⁹ through reduced food intake due to poor appetite and malabsorption¹⁰. As a result, untreated STH infected children have higher levels of stunting¹¹, lower body mass index, anaemia and undernourishment^{7,12,13}. The impaired metabolic functions trigger sleeplessness and negatively impact children's motoric development and cognitive performance¹⁴. STH infections early in life may therefore affect cognitive indicators which are measured later in life¹⁵.

A school-based approach is the best way to reach the STH infected child population in the most cost-effective and systematic manner using the mass drug administration approach recommended by the WHO, without prior screening of children¹⁶. This approach is recommended by the Integrated Helminth Control Program that specifies a twice yearly de-worming every January and July each year in the school setting¹⁷.

Anti-helminthic drugs can be included in large-scale public health interventions due to their safety and simple administration¹⁸. Ample evidence clearly demonstrates that regular treatment of (STH) infections produces immediate as well as long-term benefits that significantly contribute to the positive health outcomes, particularly in schoolchildren¹⁶.

The objective of regular de-worming in endemic STH areas is not to cure, because children will be re-infected after a short time. The intention of bi-annual de-worming is to control the level of infection and keep the worm burden of infected individuals below the threshold that causes morbidity¹⁹. The prevalence of heavy STH infections declines by 30% after bi-annual drug treatment. In Uganda, children's weight was 10% greater after treatment with albendazole every six months as compared to those who did not receive this treatment²⁰. In the slums of urban India, a series of studies have been conducted on the effect of bi-annual de-worming using albendazole. Results show that stunting of infants and pre-school children was reduced by 9.4% and weight improved by 35% within two years²¹.

Untreated dental caries

A recent National Oral Health Survey (NOHS)²² showed that 97% of the grade I children (6 ± 1 year) and 82% of the grade VI children (12 ± 1 year) suffered from tooth decay. These grade I / grade VI children had on an average 9 / 3 decayed teeth; 40% / 41%,

of decayed teeth had progressed into decay with pulpal involvement²³. The prevalence of school children with pulpally involved teeth (odontogenic infections) in grade I and VI was 85% and 56%, respectively²⁴. Odontogenic infections in grade I and VI school children in the Philippines are associated with low BMI²². Chronic inflammation from odontogenic infection may affect metabolic pathways leading to anaemia²⁴; 20% of the grade I children and 16% of the grade VI children reported toothache at the time of examination for the NOHS. Toothache impacts on food intake because eating is painful²⁵. It also impacts on sleep and on quality of life²⁶ and is the main reason for school absenteeism in the Philippines²⁷.

The WHO and the FDI World Dental Federation clearly state that:

- 1) Prevention of tooth decay by using fluoride is the most realistic way of reducing the burden of tooth decay in populations
- 2) Fluoride toothpaste remains the most widespread and significant form of fluoride used globally and the most rigorously evaluated vehicle for fluoride use
- 3) Fluoride toothpaste is safe to use
- 4) Promoting the use of effective fluoride toothpaste twice a day is strongly recommended²⁸.

A resolution on oral health, adopted by the 60th World Health Assembly of WHO in 2007, urges governments 'to promote oral health in schools, aiming at developing healthy lifestyles and self care practices in children'²⁹. By implementing the above international recommendations, substantial return in terms of reduced morbidity, improved growth, and improved educational outcomes can be achieved³⁰.

A Cochrane review has confirmed the anti-caries efficacy of daily use of fluoride toothpaste³¹. A 2-year school-based fluoride tooth brushing programme in high risk school children in Scotland showed a reduction in caries increment of 56%³². A long lasting effect was shown by the fact that four years after termination of the 2-year school-based fluoride tooth brushing programme a reduction in caries increment of 39% was still seen³³. In Indonesia, a 3-year school-based tooth brushing programme with fluoride toothpaste resulted for different age groups in up to 40% reductions in caries³⁴. In the Philippines, daily school-based fluoride tooth brushing in pilot school studies have resulted in 40% caries reduction and in 60% reduction of caries progression into the pulp³⁵.

In summary, the high prevalence of infectious diseases, STH and odontogenic infections and toothache in Filipino school children strongly influence the physical and mental development of children, their quality of life, their ability to learn, their productivity and mobility. Institutionalisation of the above-mentioned interventions in public elementary schools has high potential to

significantly improve health and wellbeing of the child population in the Philippines.

School-based health promotion goes beyond health education - the setting approach

Education is the backbone of development in any given country. An effective educational system implies that children are healthy and in every way 'fit for school'. Therefore, intersectoral approaches are required, linking the education and health sectors in joint programs.

At the World Education Forum in Dakar in 2000, WHO, UNICEF, UNESCO and the World Bank agreed to join forces for implementation of school health programmes and developed a common framework. They launched the *Focusing Resources on Effective School Health (FRESH) framework*³⁶ which promotes action-based school health programmes that go far beyond the previous concept of health education.

For decades, school health programmes around the globe emphasised acquisition of knowledge through education in school in the belief that knowledge eventually leads to motivation and behaviour change of children at home. However, accumulating evidence reveals that health education increases children's knowledge, but it does not change behaviour³⁷. Behaviour is mainly determined by social and cultural determinants and the environment³⁸. Health promotion based on the principles of the Ottawa Charter³⁹ covers a broader area than health education since it includes activities that enable individuals and communities to increase control over the determinants of their (oral) health. It implies that promotion of (oral) health beyond health education enables children to adopt healthy habits. This implies that the school itself becomes a 'healthy place' where healthy habits are institutionalised in daily school life.

The public elementary school system ideally reaches a large proportion of the child population between 6 and 12 years of age; and through these children, their parents and other family members. Schools are the second home for children and therefore the right place to familiarise them with health and behavioural aspects.

'Fit for School' - an intersectoral concept

In the Philippines the FRESH framework has been applied to conceptualise and implement the 'Fit for School' program. It promotes an Essential Health Care Package (EHCP) for schoolchildren focusing on the most prevalent diseases of children in the Philippines: respiratory tract infections, diarrhoea, STH infections and tooth decay. The 'Fit for School' program intervenes to institutionalise:

Daily supervised hand washing with soap
Daily supervised tooth brushing with fluoride toothpaste
Bi-annual de-worming of all children by supervised digesting of an albendazole tablet.

As a general principle of school health programmes, a clear definition of roles and responsibilities has been agreed between government agencies mandated with health and education (intersectoral approach). The 'Fit for School' program is implemented within the education sector, while the responsibility to finance and procure the needed consumables (soap, toothpaste, toothbrush and medication) lies with the health sector of the provincial governments.

The active participation of teachers and the community through 'Parents Teacher Community Association' (PTCA) is a prerequisite for implementing the program. The PTCA takes the lead in the construction of the facilities (Table 1) necessary to run the 'Fit for School' program, such as access to water and a place where handwashing and toothbrushing can be done as

class activity (Figures 1 and 2, Table 2). Each classroom is provided with a health corner where the necessary materials are stored (Figure 3, Table 3) and a toothbrush holder, which children can easily reach (Figure 4). The PTCA lobbies for the allocation of funds for improvement and maintenance of water and sanitation facilities within the community council.

In the 'Fit for School' program, children are not only the beneficiaries but the prime actors. Children are encouraged to develop their leadership skills and to take responsibility for the daily hand washing and tooth brushing as a group activity of the entire class in an organised manner. The programme is institutionalised through an executive order within the administrative school system. The implementation is supported by clear technical guidelines for daily hand washing (Table 4) and daily tooth

Table 1 Guidelines for the construction of facilities for hand washing and tooth brushing

- Hand washing and tooth brushing as a daily routine activity with the whole class takes place outside the classroom
- All children of a class line up and perform the activity in an organised way
- If running water is not available, the hand washing and tooth brushing is performed in front of a simple bamboo, PVC pipe or galvanised gutter
- Rinsing of hands and brushes is performed from a water jug or pail at one end of the trough or pipe
- The trough has a down grade construction, allowing water to flow to one end where water drain away through a hole
- Simple roof over the trough allows hand washing and tooth brushing under all weather conditions

Table 2 Guidelines for the toothbrush holder

- Each child receives per year one toothbrush with a head cover, which is stored in a toothbrush holder inside the classroom
- The toothbrush holder is fixed to the wall, so that children can easily reach them
- The material of the holder is made of easily washable material e.g., cloth or plastic
- The toothbrush holder is big enough for a fixed place for each child's toothbrush and has enough space between the brushes to avoid cross infection
- The spacing slots cover the handle but not the head of the toothbrush to avoid moulding
- Each spacing slot and each brush is clearly labelled to avoid mixing up of brushes



Figure 1. Hand washing as school activity



Figure 2. Children brushing their teeth together

Table 3 Guidelines for the health corner

- The health corner is a clean and well lighted place, which is inviting for children
- Availability of water, either from a tap or from a jug.
- Availability of a nail cutter, to be only used under the supervision of the teacher
- Availability of fluoride toothpaste
- Availability of a toothbrush holder
- No towels are needed, because towels are a source of infection after the first use

Table 4 Guidelines for daily hand washing

- Wet your hands with clean water and apply soap
- Rub your hands together to make lather and scrub all surfaces for at least 20 seconds. Imagine singing the 'Happy Birthday' song twice to a friend
- Rinse your hands with water from the tap or a water jug
- Dry your hands by shaking them in the air. Do not use a towel since a towel is a source of infection
- Remember: wash your hands always before eating, after playing with animals and after coming from the toilet

**Figure 3.** Materials have to be properly stored**Figure 4.** Personalised toothbrushes

brushing (*Table 5*). Manuals and posters in all implementing schools promote a consistent message.

Children take care of the following:

- 1) Handing out the toothbrushes from the toothbrush holders
- 2) Distributing the toothpaste through a dispenser (one push on the dispenser gives a pea size amount of toothpaste (*Figure 5*))
- 3) Keeping the washing facilities clean
- 4) Reporting difficulties to the teachers.

The involvement of the teachers is limited to a supervisory and coordinating role in this daily routine activity. The teacher's role is:

- 1) To collaborate with the homeroom PTCA concerning the construction of needed facilities
- 2) Give lessons related to importance of personal hygiene and STH infections

- 3) Designate responsibilities to the children's leaders
- 4) Oversee the smooth flow and conduct of daily activity
- 5) Distribute the de-worming tablets to the school children twice a year in accordance with guidelines (*Figure 6, Table 6*)
- 6) Report any difficulty and seek support of the principal or school nurse.

The role of the school principal is to:

- 1) Ensure that daily hand washing and tooth brushing and bi-annual de-worming is carried out in their school
- 2) Ensure availability of consumables
- 3) Communicate with the school nurse and PTCA concerning the state of affairs.

Table 5 Guidelines for daily tooth brushing

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- Press the dispenser once for one drop of toothpaste on your dry toothbrush. No need to wet the brush with water
 - Line up outside at the dental trough
 - Brush all tooth surfaces especially your teeth in the back of your mouth for two minutes. Imagine counting from 1 to 50 while brushing your upper teeth and another 50 counts for the lower teeth
 - Feel with your tongue if all surfaces are smooth, brush again, where you feel rough areas
 - Just spit the toothpaste out. Do not rinse your mouth because the rinsing will reduce the positive effect of the fluoride
 - Wipe your mouth using your hands with some water
 - Rinse your toothbrush with water
 - Place your toothbrush back in the toothbrush holder at your assigned place
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Table 6 Guidelines for mass de-worming

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- The DepEd health personnel in collaboration with the local community health workers will inform parents and teachers on mass de-worming to address all questions and concerns
 - The parents need to sign their informed consent
 - The teacher will call five children at a time and distribute the de-worming tablets, which will be chewed by the children immediately under direct observation of the teachers
 - PTCA volunteers will assist the teacher in the documentation
 - This procedure will take place every six months
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**Figure 5.** Children are partners**Figure 6.** Mass Drug Administration for de-worming

The role of the school nurse is to:

- 1) Orient school administrators and teachers on the programme
- 2) Conduct the monitoring of the 'Fit for School' program at least twice a year in all the schools in his/her area of responsibility together with a PTCA representative of the respective school and one community representative
- 3) Give feedback to teachers, the principal and the PTCA representative on the state of affairs and explain if there is room for improvements
- 4) Participate in PTCA meetings.

Due to the strong involvement of children and parents, the daily extra work related to the 'Fit for School' program is rather limited. Since the allocation of funds for the consumables (soap, toothbrush, toothpaste, de-worming tablets) is an agreed responsibility of the local government, sustainability of the 'Fit for School' program is ensured.

The 'Fit for School' program is also an entry point for improvement of other areas of school health. Washing programmes need access to water, which is not available in nearly half of the public elementary schools in the country. In these schools children need to bring water from a nearby well or water source. Through the programme, the issue of lack of sanitation facilities has

been brought to the attention of community councils, teachers' organisations, and even the media. Approaching elections and the stimulated demand have made access to water and improvement of sanitation a priority in many villages. Waterless sanitation systems have been implemented in 10 schools to further explore the feasibility and sustainability of alternative concepts. In some provinces, local governments have learned to appreciate the benefits of school health programmes and have allocated budget for other important health interventions like vitamin A and iron supplementation. Basic oral treatment (tooth extraction) of children with toothache and odontogenic infections may even be considered for the near future. A ban of vendors and banning smoking on school premises, the implementation of garbage segregation, establishing school gardens and agreeing on child seeking policies (actively indentifying children who dropped school and trying to bring them back to school) are examples of additional activities within the 'Fit for School' program.

Costs of the 'Fit for school' program

The costs for the programme are comparably low due to the fact that implementation and monitoring are carried out with the existing workforce of the Department of Education, with support from elected representatives of the parents and the village community. The required materials (1 toothbrush, 60ml toothpaste, 45g soap and 2 de-worming tablets) are available at around €0.5 per child per year. Fluoride toothpaste is produced by a local toothpaste manufacturer, tested for anti-caries efficacy and distributed to schools in dispensers.

The general belief that toothbrushes have to be replaced each 3-4 months is not evidence-based. The percentage reduction in plaque scores achieved with 3-month-old toothbrushes with various degrees of wear were not significantly different from those achieved with new brushes in the same adult subjects^{40,41}. It was, furthermore found that heavily worn 14-month-old toothbrushes in the hands of 7- and 8-year-old children are not less effective than new toothbrushes with regard to plaque removal capacity⁴². It was therefore decided to provide each child with a new toothbrush per year, so reducing the costs of the 'Fit for School' program.

Since the health sector in the Philippines is decentralised, the funding of health care is a local matter. City and provincial governments provide the budget needed for 'Fit for School'. Currently 22 different local governments provided funds and purchased the needed materials so that 630,000 children have access to an 'Essential Health Care Package' in their public elementary school. Evaluation of the implementation level per school (adherence to guidelines) is subject of intensive investigation and will identify strength and challenges of the programme.

Costs for capacity development workshops like strategic planning, orientation courses for medical and administrative personnel, practical skills of how to finance, implement and monitor the programme have been shouldered by international development partners as German Development Cooperation and GlaxoSmithKline.

How a small local project became a national policy

The 'Fit for School' program started as a small-scale oral health project in the province of Misamis Oriental in Mindanao. The initial school health programme depended on NGO funding. NGO support was important for starting pilot projects, as a learning experience and for improving the concept before introducing them to government agencies for funding and political support. In 2003, school-based fluoride tooth brushing programmes were implemented in pilot schools in Cagayan de Oro, financed by the city government. Through pilot projects in schools the practical 'ins and outs' of running school-based tooth brushing programmes, the development of appropriate material, the government procurement process, the implementation guidelines and the collaboration with the community were mapped out. These successful pilot school projects served as a basis for an advocacy process aiming to inform the public and local decision makers about the prevailing health problems of school children about; how these problems could be addressed, the feasibility of a school-based programme, the expected health outcomes and, of course, the costs involved. As a result of this advocacy process a more comprehensive 'Fit for School' program including daily hand washing and de-worming was born.

In 2007, Misamis Oriental was the first province conducting this programme in all its elementary schools covering 110,000 children. Thanks to a continuous advocacy process with strong political support from the local governor and with convincing evidence regarding feasibility, affordability and impressive expected health benefits, it became possible to generate interest of national politicians and health care planners. 'Fit for School' finally received national support and was lifted from the provincial level to a national policy and became a flagship program of the Department of Education⁴³.

In 2008, 19 other provinces in the Philippines started to implement the 'Fit for School' program in pilot areas. Convincing political leaders and several workshops for members of the health and education sectors of participating provinces provided the basis for agreeing on administrative structures, allocation of funds, procurement and responsibility issues as well as monitoring tools. Currently, there are plans to scale-up the coverage beyond the pilot schools in these provinces. The total number of children enrolled in public elementary schools in the Philippines is 13 million and the goal is to cover at least 50 % of them in the next three years.

Conclusion

The convincing concept of the 'Fit for School' program, addressing high-impact childhood diseases in a comprehensive, yet simple and cost-effective package, provides the backdrop for a fascinating public health success story that has all the necessary ingredients:

A child population in dire need and with serious health problems impacting on physical and mental development

Solid, evidence-based interventions addressing serious, but common childhood diseases

A unique package bundling these interventions together in the traditional, yet new setting of primary schools

A very practical and pragmatic application of international policies and agreed frameworks on the national level

A targeted advocacy strategy based on sound and convincing arguments that ensures highest political support and priority for the programme

International development and industry partners that follow and support the programme at arm's length and give it the required start-up initiative.

Thanks to the simplicity of the concept and the modular structure of the programme it is hoped that similar programmes will be developed in other countries, adapted to the local situation, but showing similar public health success.

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