Health Problems among School Age Children and Proposed Model for School Health Promotion

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ABSTRACT

Background: Young school going children are at high risk of acquiring communicable and non-communicable diseases and the situation is alarming in low and middle income countries (LMICs). The prospects are further worsened by poverty and inadequate water and sanitation facilities. This all significantly affect young children’s cognitive, motor and socio-emotional development. Concept of health promoting schools (HPS) has long been advocated where schools are viewed as healthy settings for living, learning and working. Countries around the world have implemented diverse components of HPS, which are delivering promising results.

Current State and Proposed Model: The paper attempts to highlight the need for school health promotion, and reports on the health promotion activities being carried out in a peri-urban school settlement in Pakistan by the Rural Educational Promotion and Development Society (REPDS), Pakistan in collaboration with Aga Khan University (AKU), Pakistan. Health program at the school was conceptualized in light of the WHO’s HPS model and is comprised of four major components: (1) school health services mainly include, treatment of minor ailments to children and school staff, health screening of children and health education activities, (2) community links and partnerships to promote health of children and collaboration with local NGO to deliver eHealth services, (3) capacity building of teachers to undertake basic health assessments of children, and (4) school physical environment to offer conducive atmosphere to all members of the school community.

Conclusions: The health and education sectors in LMICs need to assess the health needs of the young children in their settings so as to adapt the school health promotion programs in order to enhance children’s overall well-being.
INTRODUCTION

Globally, school age children suffer from various communicable and non-communicable diseases, which can be prevented. The communicable diseases such as poor dental hygiene (cavities and caries), skin diseases and worm infestations are mainly due to poor personal hygiene and sanitation practices as a consequence of inadequate knowledge and resources [1-3]. Among all the communicable diseases, respiratory infections and diarrheal diseases are the deadliest killers of young children [4-6]. Incidence of diarrhea in initial years has been reported to be linked with impaired cognitive performance in later childhood [5,6]. In addition, repeated attacks of infections due to unhygienic behaviors diminish children’s cognitive abilities affecting their class room performance. Under non-communicable diseases among the school age children, double burden of malnutrition i.e., obesity and underweight is becoming an alarming health concern across the globe [7].

Above all, poverty further complicates the phenomenon and restricts access to health care services. This has significant effects on young children’s cognitive, motor and socio-emotional development [8]. The health issues highlighted above are not only influenced by the level of knowledge and practices of school children, teachers and parents, but are also attributable to schools’ physical environment where a child spends most of his/her productive time.

The starting point for prevention of diseases among young children is to offer health examination through low cost screening programs at the school and simultaneously focusing on improving healthy behaviors alongside improving the school’s physical environment. This paper attempts to highlight the need for school health program, reports the health promotion activities carried out in a peri-urban settlement in Pakistan, and presents a model for school health promotion.

SCHOOL HEALTH PROMOTION

For decades, schools have been seen as settings with great potential to affect children’s overall health, and can provide a safe and conducive environment where children can attain their optimum potential [9,10]. The World Health Organization (WHO) has long been advocating for school health promotion. The WHO has defined the concept of health promoting school (HPS) as the one that “constantly strengthens its capacity as a healthy setting for living, learning and working” [11]. Therefore, school’s building, overall infrastructure, water and sanitation facilities, recreational facilities, waste disposal, etc must be adequately in place to provide safe environment to the students. In addition, a health promoting school is characterized by a number of aspects including, but not limited to, healthy polices, customized school curriculum to include life skills education, school health services, safe physical environment, staff well-being and health education in collaboration with local service providers and communities [10].

Impact of School Health Programs

There is no single HPS framework for implementation [12]. The countries around the world have implemented HPS framework with focus on some of the commonest health issues among young children (as described above) with improvements demonstrated at children’s knowledge and practices, and reduction in the morbidities [13]. Health education is one of the components of Health Promotion Ottawa Charter and has been the commonest feature of the health promotion programs worldwide [14-19].

For instance, oral health education program in Bangladesh showed positive improvement in the knowledge, attitude and practices of school children (Grade 6-8) from baseline [14]. Knowledge about regular tooth brushing to prevent tooth decay rose from 43.7% to 89.7%, need to visit dentist increased from 38.1% to 73%, and the use of fluoridated tooth paste increased from 4.5% to 46.5%. In addition, oral health program was also effective in reducing prevalence of dental caries from 51.9% at baseline to 33.4% at the end-line [14]. Likewise, school based oral health education programs in countries such as Brazil [20] and Indonesia [21] have also demonstrated positive outcomes among the school children.

A study in Kenya with school water, sanitation, and hygiene (WASH) interventions documented improvement in diarrhea-related outcomes among the children less than 5 years of
In one of the intervention clusters, baseline period prevalence of diarrhea was 26% in the intervention group and 20% in the control group. Post-intervention, diarrhea reduced to 8% and 12% respectively. There were statistically significant differences in the odds of both recent episodes of diarrhea and clinic visits for diarrhea among children between the intervention and control groups. For a child in the intervention arm, 56% lower odds of a child having diarrhea than for a child in the control arm (AOR = 0.44; CI = 0.27, 0.72) with 66% difference in the odds of a clinic visit in the past 2 weeks (AOR = 0.36; CI = 0.19, 0.68) was noted [22].

A school health promotion program in Mali also showed positive impact of comprehensive school WASH intervention on students’ (aged 1-4 years) absence and cases of diarrhea [23]. The odds of school children reported being absent due to diarrhea (OR: 0.73, 95% CI: 0.56, 0.94) or having had diarrhea (OR: 0.71, 95% CI: 0.60, 0.85) or respiratory infection symptoms (OR: 0.75, 95% CI: 0.65, 0.86) in the past week were lower in beneficiary schools compared with the comparison schools [23].

Obesity reduction school health program in the United States exhibited reduced prevalence of obesity among 6-8 grade students [16]. Intervention was effective in improving the behavioral outcomes as well reducing the prevalence of obesity. Among girls, the mean TV viewing time was 2.98 hours at baseline which reduced to 2.28 hours at the end line. Among the boys, the mean TV viewing time at baseline was 3.78 hours that reduced to 3.43 hours. At baseline the prevalence of obesity among the girls in intervention and control group was 21.5% and 23.6% respectively. At two years’ follow up, the prevalence in the intervention group reduced to 20.3%; whereas in the control group it increased to 23.7% [16].

In Pakistan, the school health programs have been delivered in a fragmented manner. The major emphasis of these programs remained on health screening. The program does not include interventions on school nutrition and health education [17]. A school health program was also initiated by one of the provinces in Pakistan with attention on nutrition and capacity building of teachers, alongside health screening of school children [17].

**SCHOOL HEALTH PROJECT AT DEH CHUHAR SITE, GADDAP TOWN, KARACHI, PAKISTAN**

The NGO adopted School Project (2015-2019) is under implementation by the Aga Khan Development Network (AKDN) partners at Deh Chuhar—a peri-urban site located at the outskirts of Karachi. Deh Chuhar village is located at Gaddap town in Karachi. The area is clustered into 34 villages. The total households in the village are 2,052 with approximately 10,750 inhabitants [24].

The Government Boys Primary School and the Government Girls Lower Secondary School were closed for a couple of years due to lack of supervision by government and teachers’ absence. In collaboration with the AKDN, both schools were adopted by an NGO, Rural Educational Promotion and Development Society (REPDS), in 2014 and merged as “Government Boys and Girls Elementary School, Haji Hussain Baloch Deh Chuhar” UC II Gaddap Town (Education City) situated in District Malir, Karachi, Pakistan. The school is operational till Grade 5. A total of 136 students are currently enrolled in the school with majority (57%) of the boys in age bracket of 3-15 years. A majority of the children are enrolled in early childhood education (ECD) class; where their basic understanding is built across various academic disciplines including Mathematics, English and General Knowledge. With regards to the health, children are taught basic aspects of personal cleanliness [25,26].

A health program was conceptualized for the school children in light of the WHO’s HPS and is illustrated in Figure 1. At the heart of the model, first aid services and treatment for minor ailments are being provided through a Lady Health Visitor (LHV) to meet basic day-to-day healthcare needs of the children and school staff.
First round of health screening services through physical examination checklist was offered at the school during the first quarter of 2016 by LHV and Medical Officers (MOs). Malnutrition (37%) and poor personal hygiene (29%) were reported as the most common health issues among the children. Parents were counseled and a nutrition health awareness session was organized at the school. Cases needing secondary level of care were referred to the nearby care providers. Health education for the school children and community members (including teachers and parents) is the vital feature of the school health program. In this regard, health education resource kit on basic health and hygiene practices for preventable health issues is being developed. Alongside the provision of school health services, the overall school environment has been made conducive to foster learning atmosphere for the children. A school health audit checklist has been developed to keep a check on the school physical environment including water and sanitation, adequate class room facilities, and waste disposal as highlighted in Figure 1.

The Way Forward

Moving forward, school children at the Deh Chuhar will continue to receive healthcare services at the site through LHV and MOs. Cases needing referral will be dealt via eHealth consultation through a private eHealth technology firm. eHealth using information and communication technology (ICT) in healthcare has an added value in terms of improving access and quality of care. eHealth has offered benefits not only to the communities and patients in need, but also to the healthcare providers working at different levels of health system [28]. ‘Hub and spoke model’ will be used to connect the children and parents at the school (needing referral) with a pediatrician for the needed case management. Aga Khan University Hospital, Department of Women and Child Health has been facilitating the whole process as the technical partner. In addition, need-based health education sessions for the school children, parents and teachers will be organized on monthly basis. School-based intervention research will also be carried out to investigate the effectiveness of various health promotion activities in improving basic hygiene practices among the school children. In addition, teaching curriculum would be critically reviewed to assess the integration of basic health literacy in the curriculum.

To sustain the activities of school health program, capacity of school teachers and local community volunteers will be built in offering basic...
health screening services such as anthropometric measurements to children, organizing health education sessions on preventable health issues for school children and their parents. Capacity of teachers will also be built in Early Childhood Education and Development (ECED). This includes exploring young children development, learning and well-being, role of adults in young children’s overall development and the role of teachers in creating healthy environment for children and their support in child’s learning in early years [26]. Community partnership is an important element in our applied school health model. Planning is under way through the school-based health promotion research intervention, which will take on board community members’ views to enhance health promotion of school children. Furthermore, school management will also be empowered to keep a check on school’s physical environment.

CONCLUSIONS

Good health is a pre-requisite for acquiring education. The children of school going age must ideally be offered conducive environment at schools through school health promotion programs thereby reducing their potential of acquiring communicable and non-communicable diseases. Countries around the world have shown promising results with the implementation of various components of school health programs. Therefore, the health and education sectors in the low and middle income countries need to assess the health needs of the young children so as to adapt the school health promotion programs in order to enhance children’s overall well-being.

AUTHORS’ CONTRIBUTIONS

NAP conceptualized and drafted the paper. NAP in close coordination with RK conceptualized the design of school health model. SG provided input related to eHealth. All authors have read and approved the final manuscript.

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CONFLICT OF INTEREST

Authors have declared that no competing interests exist.

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