



TEACHERS' KNOWLEDGE REGARDING CHILDREN'S HEALTH AT THE ELEMENTARY SCHOOL LEVEL

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Abstract/Izvleček This article is based on one of the research questions in a larger study that aimed to assess the impact of the school health program at elementary schools in Punjab, Pakistan. It explores whether the school health program was helpful in enhancing teachers' knowledge regarding major health issues among school children - anaemia, iron deficiency, malnutrition, asthma and breathing problems, and seasonal illness. The study revealed some significant findings, which are discussed with reference to the previous literature; conclusions are reached and recommendations given to improve teachers' knowledge and skills for improving school health.

Znanje učiteljev o zdravju otrok v osnovni šoli

Članek temelji na enem od raziskovalnih vprašanj obsežnejše študije, katere namen je bil oceniti učinek šolskih zdravstvenih programov v osnovnih šolah v Punjabu (Pakistan). Predstavlja enega glavnih delov raziskave o tem, koliko je šolski zdravstveni program pripomogel k izboljšanju znanja učiteljev glede petih pomembnejših zdravstvenih težav šolskih otrok, to so anemija, pomanjkanje železa, slaba prehrana, astma in težave z dihanjem ter sezonske bolezni. Podatki so bili zbrani s testom, pripravljenim za preverjanje znanja učiteljev o zdravju učencev in o učinkovitem odzivanju na zdravstvene težave. Raziskava je podala nekaj pomembnih ugotovitev, ki jih v nadaljevanju obravnavamo glede na obstoječo literaturo, nato pa ponudimo sklepe in priporočila za izboljšanje večšin učiteljev za dvig zdravja šolarjev.

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Background

Developing countries like Pakistan have always been reported to have lower standards of health and hygiene in schools and elsewhere. In Pakistan, many reports have highlighted the challenges of enrolment and retention of students in schools. National reports mention that more than 20 million children are still out of school, and the share of children that are out of school between the ages of five and 16, is 44 percent between classes 1 and 10, while only 30% of children remain enrolled up to the secondary school level (AEPAM, 2018). The Ministry of Education, (1992) and UNESCO (2012) identified the factors that contribute to dropout as illness associated with the child, poor family economic status, attitude and ignorance of parents about their role in the education of their child, an unpleasant and unfriendly environment in school, irrelevance of the curriculum and the poor quality of teaching (Farooq, 2016).

Owing to physical illness, disability or disorders, many children find it difficult to continue their studies and so leave school, without the school knowing the exact nature of their health problem and its feasible solution (PMU& PHSRP, 2009–10). The World Health Organization (2003) reported that if we want our children to take full advantage of the education that is offered to them, their ability to learn and to attend school should not be compromised by health conditions. Teachers' and Parents' health knowledge has been found to be positively correlated with child health and nutrition in developing countries (Mwanri, Worsley, & Masika, 2001). The number and kinds of diseases that can affect education process are extremely diverse, and as children grow, the health and nutritional challenges that they face also change. Poor health and nutrition affect access to education, since some diseases seriously affect the growth and development of children and subsequently their chances of enrolment. Children in developing countries are particularly likely to face a variety of diseases and nutritional deficiencies. Unfortunately, these countries are not yet able either to have the services to provide education or to deal properly with poor health among their school children and with the consequent behaviours and attitude problems of children with poor health (Jukes, Drake, & Bundy, 2008).

Researchers and practitioners of child health and development have mentioned that schools could become a hub to fight against infectious diseases and to deliver an extensive range of health services to children and their families (Ahmad & Danish, 2013), because schools can provide organized opportunities for learning; moreover, pupils spend a significant amount of their time in schools and with teachers, during which time they become involved in a range of activities. The World Health Organization also recognizes the role of schools in the promotion of health and defines 'Health Promoting Schools' as schools 'constantly strengthening [their] capacity as a healthy setting for living, learning and working' (WHO, 1997).

For many years, national and international organizations have been working to improve health and hygiene conditions through School Health Programs (programs that promote health through schools); it has been usually expected and ensured that children will enrol and stay in school, will learn more while in school and will develop and enhance their skills, knowledge, and healthy behaviours that will definitely protect them and future generations from serious diseases (UNESCO, 2012). The most visible benefit of school health and nutrition programs can be education outcomes, and their socioeconomic returns in later stages of life.

Over the past two decades, school health and nutrition programs focused on low income countries shifted significantly away from a medical approach. It has shifted towards an approach that improves all children's health and nutrition, mainly the disadvantaged and poor localities. The concept of school health interventions began to change in the 1980s, when studies showed that school health and nutrition programs were not only important contributors to health outcomes, but also vital components in the effort to improve achievement and completion rates, especially for children coming from lower socioeconomic backgrounds (Bundy, et al., 1993); research has also proved a positive correlation between the health condition of learners and their learning outcomes (Prasla & Prasla, 2011). The provincial government in Punjab, in collaboration with the Punjab Health Sector Reforms Program, the health department, the education department, district governments and UNICEF, developed and implemented a School Health Program in Punjab schools. Under this program, school health and nutrition supervisors were appointed to perform screening practices for children and to train schoolteachers to enhance their skills and health-related knowledge, to build the capacity of schoolteachers to screen children and promote hygiene education among the children (PMU & PHSRP, 2009–10).

It has been observed that even after this huge intervention, there was no major change within schools to ensure a safe and healthy learning environment.

The researchers' assumption in the current study was that teachers did not have enough knowledge regarding the school health program; therefore, this program could not make a major difference. The goal of the present study was to assess public elementary school teachers' knowledge about the health issues of children under the School Health Program, and to detect any difference between male and female teachers' knowledge about the health issues of school children under the School Health Program.

Literature Review

Being a social institution, school makes children undergo emotional, physical, mental, and social upbringing. The development of a child's natural competences takes place in school because it acts as an incubator. Education itself has proven to be a process that can boost children's potential to the maximum, and can make them productive citizens, so that they can play their role in the improvement of society and country. During the education process, there are several factors upon which a balanced upbringing of both boys and girls is reliant, but among these, health plays the most significant role. A physically and mentally fit child is more expected to succeed in all walks of life (UNESCO, n.d). The relationship between health status and academic achievement is more complex than it seems at first glance. Clearly, those children probably miss fewer school days because of illness if their health care needs are met, and such children are better able to focus on learning in the classroom (Grant & Brito, 2010).

Education and health are also closely connected when children and young people with poor vision or hearing have learning difficulties; those who are malnourished or tired have lower concentration skills; similarly, students with poor resistance to infections, or whose chronic situations are not effectively managed suffer a considerably greater rate of school absences; moreover, they also exhibit mental health problems, and substance use can diminish the capacity of students to learn and flourish. Educational achievements and good health are the means that provide an opportunity for individuals to live dynamic, satisfying and productive lives (National Health and Medical Research Council [NHMRC], 1996).

If students are not motivated and able to learn, it does not matter what responsibilities are assigned to teachers, how well equipped they are to teach, or what kind of governing structures are set up for schools; educational progress will be severely limited. Health-related problems play a key role in limiting the motivation and capacity of students to learn.

Healthier students are better learners (Seirawan, Faust, & Mulligan, 2012). Since a child's probability of school enrolment and capacity to learn and succeed in school are directly affected by health and nutritional status, so improving the nutritional and health status of students positively affects school enrolment and attendance. In Ghana, malnutrition among children was associated with significant delays in school enrolment. At the pre-elementary level, improving child health and nutrition has long-term impacts on development. In the Philippines, a study found that a one-standard-deviation increase in early-age child health increased subsequent test scores by about a third of a standard deviation. A longitudinal study in Pakistan found that a standard deviation increase of one-third in child height increased school enrolment by 4 percentage points for boys and 19 percentage points for girls. In rural Kenya, an evaluation of school-based mass treatment for de-worming found that student absenteeism fell by a quarter (Filmer, 2003).

At the start of the nineteenth century, it was perceived for the first time that there existed a relationship between health and education, and as a result, hospital staff were employed by schools in many countries to inspect school children and identify potential infectious diseases. In their initial stages, school health services were simply engaged in treatment rather than prevention of disease, but from the start, the concept was clear that school health services could improve health, along with the school performance of children, especially those who could not afford better health facilities (Ahmad & Danish, 2013). Thus, the idea of improving the health and then the learning of school children through school-based health and nutrition programs is not a new one. There are many countries who have School Health Programs, and effective School Health Programs have resulted in the emergence of child-friendly schools and have thus led towards the advancement of education for all (UNESCO, 2000). There are several possible settings for school-based health interventions. To reach students at school has always been a traditional way, so school staff and especially teachers may incline towards individual-based or classroom-based health education of school children.

Nevertheless, the critical components for improving students' healthy behaviours are health promoting policies, procedures and environments. Hence, at the school level or even the district level, school health approaches may be considered universal because they reach all students and staff, and implementation is less costly, while more targeted interventions are thereby reinforced. School interventions comprise different kinds of training.

Such training includes a range of activities and lessons, not only for students, but also training opportunities for teachers and staff; for example, in mandatory health classes, instruction can be provided to students about prevention of various diseases; for students who are at higher risk, teachers can be offered training in more targeted activities; staff can also be trained in a range of disease prevention efforts to ensure the involvement of families and community members. Provision of training to parents and teachers, in school interventions, to develop skills in conflict management and communication with students also indicate School Health Programs' potential for preventing negative health behaviours (Dilley, 2009). These approaches can prove to be effective for the promotion of health and healthy behaviours among students, adolescents and among families of low socioeconomic status.

Problem statement

In many countries, including Pakistan, school health programs include teacher training. It is important that teachers have the knowledge and skills to maintain school health. Teachers can play major role in the sustainability of school health after the intervention is over. Therefore, in this program evaluation study, one major research question was to assess teachers' knowledge regarding children's health in the elementary schools in Punjab, Pakistan

Methodology

A study was conducted in the province of Punjab, Pakistan. This study was limited to three districts (Vehari, Lodhran and Bahawalpur) located in Southern Punjab of Pakistan. The three districts had 3,483 public elementary schools and 8,352 elementary school teachers.

This study was descriptive in nature and included collection and analysis of quantitative data.

The population of this study was widely scattered throughout three districts of Southern Punjab. For this purpose, out of the total population of three districts of Southern Punjab i.e. Bahawalpur, Vehari and Lodhran, 346 schools were selected through stratified random sampling. From these 346 schools, 468 elementary school teachers were included in the sample.

A knowledge test was used as a tool to collect data from teachers regarding their knowledge about the 5 major health issues among elementary school children under the School Health Program.

Material for the knowledge test was drawn from the training manual for teachers under the School Health Program. These knowledge tests were sent to the selected teachers to be completed, along with a consent form. The consent form provided adequate orientation regarding the study objectives and methods. Data confidentiality and the subjects' privacy were maintained throughout the study.

The data instrument was pre-tested on 25 members of the study population, beyond the sample size, to ensure the reliability and proper administration of the data collection form. A reliability coefficient was calculated for enquiries regarding teachers' knowledge about children's health issues (Cronbach's alpha = 0.972). The validity of the questionnaire was checked and improved by four experts from different fields.

Out of 368 teachers who received consent forms, 353 agreed to participate (95% response rate). For the sake of data validity, 5 subjects were excluded because of missing demographic information; thus, the final number of participants was 348 teachers. Data entry and data processing were carried out using SPSS 20.0 software.

Analysis

Both descriptive and inferential data analysis were applied, using the appropriate statistical tests of significance, including the t-test. Categorical variables were expressed in percentages with 95% confidence intervals. To assess the knowledge of teachers about the children's health issues, descriptive analysis was used. To establish opinion differences on each item between categories of respondents i.e. male and females, two independent sample t-tests were used.

Results

In Table 1, descriptive analysis of the knowledge test is presented with respect to the anaemia related knowledge of teachers. It is notable that only an average number of teachers know about the after-effects of anaemia in children, but the majority of teachers can identify anaemia in the school children, since they do know the symptoms of severe anaemia

Table 1: Teachers' Responses on Anaemia Related Questions

| Items | Descriptive Analysis | Correct Answer | Incorrect Answer | Total |
|---|----------------------|----------------|------------------|-------|
| Anaemia affects a child's physical & cognitive growth | Frequency | 214 | 134 | 348 |
| | Percentage | 61.7 | 38.5 | 100 |
| Pale skin, gums, & eyelids are symptoms of severe anaemia | Frequency | 294 | 54 | 348 |
| | Percentage | 84.7 | 15.5 | 100 |

The results in Table 1 show that training of public elementary school teachers by school health and nutrition supervisors has enabled them to identify anaemia in children during screening of their class; however, teachers do not know the potential effects on children if anaemia is not treated properly. Even after training under the School Health Program, public elementary school teachers are unable to understand the severity and serious effects of anaemia.

Table 2: Teachers' Responses on Iron Deficiency Anaemia Related Questions

| Items | Descriptive Analysis | Correct Answer | Incorrect Answer | Total |
|---|----------------------|----------------|------------------|-------|
| In iron deficiency, nails become thin, brittle and spoon shaped | Frequency | 123 | 225 | 348 |
| | Percentage | 35.3 | 64.8 | 100 |

In Table 2, descriptive analysis of the knowledge test is presented on teachers' level of knowledge about iron deficiency anaemia and its symptoms. It is noteworthy that a below-average number of teachers know about the kinds of anaemia, i.e. iron deficiency anaemia and its symptoms in children. The results in Table 2 show that training of public elementary school teachers by school health and nutrition supervisors has not enabled them to identify iron deficiency anaemia in children during screening of their class under the School Health Program

Table 3: Teachers' Responses to Questions about Malnutrition and its Symptoms

| Items | Descriptive Analysis | Correct Answer | Incorrect Answer | Total |
|---|----------------------|----------------|------------------|-------|
| Malnutrition in a child can be identified through general appearance, certain diseases & laboratory tests | Frequency | 111 | 237 | 348 |
| | Percentage | 31.9 | 68.3 | 100 |
| Numbness or weakness in parts of the body can be suspected as malnutrition or tuberculosis | Frequency | 71 | 277 | 348 |
| | Percentage | 20.4 | 79.8 | 100 |

In Table 3, descriptive analysis of the teachers' knowledge test is presented with respect to malnutrition in school children, its identification and symptoms. It is worth mentioning that the majority of teachers did not know how malnutrition in school children could be identified or its symptoms. Similarly, teachers did not know the symptoms of other serious diseases, e.g. tuberculosis. The results in Table 3 show that training of public elementary school teachers by school health and nutrition supervisors has not enabled them to identify malnutrition in children during screening of their class.

Table 4: Teachers' Responses to Questions about Worm Infection

| Items | Descriptive Analysis | Correct Answer | Incorrect Answer | Total |
|---|----------------------|----------------|------------------|-------|
| A child who eats dirt can be suspected to have hook worms | Frequency | 173 | 175 | 348 |
| | Percentage | 49.9 | 50.3 | 100 |

In Table 4, descriptive analysis of the teachers' knowledge test is presented with respect to worm infection in school children, its identification and symptoms. It is worth noting that the majority of teachers neither know how worm infections in school children can be identified nor what the symptoms are. The results in Table 4 show that training of public elementary school teachers by school health and nutrition supervisors has not enabled them to identify worm infections in school children, during screening of their class. In Table 5, descriptive analysis of the teachers' knowledge test is presented with respect to teachers' knowledge about the breathing and heart problems of school children and their initial symptoms. It is worth noting that the great majority of teachers knew about the signs and symptoms of Asthma in school children, but there were some teachers who were below-average in identifying heart and other breathing problems by the signs and symptoms

Table 5: Teachers' Responses to Questions on Asthma and Breathing Problems

| Items | Descriptive Analysis | Correct Answer | Incorrect Answer | Total |
|--|----------------------|----------------|------------------|-------|
| Blue skin and lips, mean problems with breathing & heart | Frequency | 151 | 197 | 348 |
| | Percentage | 43.5 | 56.7 | 100 |
| A wheeze & difficulty in breathing out mean Asthma | Frequency | 319 | 29 | 348 |
| | Percentage | 91.9 | 8.3 | 100 |

The results in Table 5 show that the training of public elementary school teachers by school health and nutrition supervisors has not enabled them to identify heart and breathing related problems in children by the symptoms, during screening of their class.

Table 6: Teachers' Responses to Questions on Seasonal Health Problems

| Items | Descriptive Analysis | Correct Answer | Incorrect Answer | Total |
|--|----------------------|----------------|------------------|-------|
| Try not to blow your nose; just wipe it to prevent a cold from leading to an ear infection | Frequency | 93 | 255 | 348 |
| | Percentage | 26.8 | 73.5 | 100 |

In Table 6, descriptive analysis of the test has been done to check their knowledge about general seasonal health problems among children. It is noticeable that the majority of teachers do not know how to deal with general and seasonal health problems. The result in Table 6 show that the training of public elementary school teachers by school health and nutrition supervisors has not enabled them to properly guide school children about how to deal with general seasonal health problems to avoid their becoming serious.

Table 7: Teachers' Responses to Questions on General Screening

| Items | Descriptive Analysis | Correct Answer | Incorrect Answer | Total |
|--|----------------------|----------------|------------------|-------|
| The child's skin should be examined b/w toes, fingers, & behind the ears | Frequency | 245 | 103 | 348 |
| | Percentage | 70.6 | 29.6 | 100 |
| On the wrist, use fingers to take the person's pulse | Frequency | 185 | 163 | 348 |
| | Percentage | 53.3 | 46.9 | 100 |

In Table 7, descriptive analysis of the test has been presented to clarify information about how well informed and skilled teachers are about general screening practices among school children. Clearly, the majority of teachers were aware of how to examine children for skin problems and how to generally examine a child during screening at school, but only an average number of teachers were aware of how to take a child's pulse. The result in Table 7 shows that, even after training by school health and nutrition supervisors, public elementary school teachers are not able to fully screen students according to medical examination criteria.

Table 8: Mean Score Comparison of Male and Female Teachers' Health Related Knowledge

| District | Level | N | Mean | SD | t-cal | df | P |
|------------|--------|----|------|-------|-------|-----|------|
| Vehari | Male | 58 | 5.57 | 1.920 | .109 | 114 | .167 |
| | Female | 58 | 5.60 | 1.462 | | | |
| Lodhran | Male | 58 | 5.72 | 1.785 | 1.390 | 114 | .310 |
| | Female | 58 | 5.26 | 1.822 | | | |
| Bahawalpur | Male | 58 | 5.71 | 1.787 | 1.786 | 14 | .077 |
| | Female | 58 | 6.28 | 1.641 | | | |

In Table 8, an independent sample t-test was used to compare the mean scores for male and female teachers' health-related knowledge. It was found that, overall, there was no difference in the health-related knowledge of male and female teachers in any of the three districts. In the Vehari district, the mean difference was insignificant ($p = .167$). Here male and female teachers were equally well trained and exhibited an equal level of knowledge about student health issues. Similarly, in the Lodhran district, there was again no significant difference in male and female teachers' health-related knowledge ($p = .310$).

Likewise, the same dispositions ($p = .077$) can be observed among male and female teachers from the Bahawalpur district, i.e., no significant difference was found between the knowledge level of male and female teachers in this district. The health-related knowledge of male ($M = 5.57, SD = 1.920$) and female teachers ($M = 5.60, SD = 1.462$) in the Vehari district, male ($M = 5.72, SD = 1.785$) and female teachers ($M = 5.26, SD = 1.822$) in the Lodhran district, and male ($M = 5.71, SD = 1.787$) and female teachers ($M = 6.28, SD = 1.641$) in the Bahawalpur district was the same.

Findings and Discussion

Most of these teachers did know the symptoms of anaemia, and during screening of children under the School Health Program they could identify students with anaemia, but most did not know about the aftereffects of anaemia. Teachers, even after training under the School Health Program, did not understand the severity of anaemia, nor what kind of physical and mental harm anaemia could create if an anemic child were not treated properly and immediately; and this despite the fact that anaemia affects motor performance, educational achievements, and cognitive functioning. It is also linked to cognitive dysfunction, behavioural deficits, and decreased immune function (Mwanri, Worsley, & Masika, 2001). Anaemia cannot be taken as a simple or ignorable disease among children, since it is caused by a number of factors and micronutrient deficiencies (Mesfin, Berhane, & Worku, 2015).

The severity of anaemia can also be recognized in the fact that, as anaemia harms the immune mechanisms, so it causes increased levels of morbidity, which may lead to low productivity, fatigue, and common feelings of being unwell. In school children, it negatively affects school performance, cognitive development, and physical growth. Globally, anaemia affects people in both developing and developed countries and is considered a public health problem with serious consequences for human health, and social and economic development. Since anaemia adversely affects energy levels and overall growth, it is considered a critical health concern (Mesfin, Berhane, & Worku, 2015). The prevalence of anaemia among school-age children in developing countries, is 40%. Other factors related to lower hemoglobin (Hb) levels in children include poor nutritional practices among mothers, coupled with their lack of awareness about the problem; low family and educational status; low iron bioavailability in the diet and unhealthy food habits; decreased physical activity; parasitic infestations; and malaria (Assefa, Mossie, & Hamza, 2014). In such conditions, teachers' responsibility to identify anaemia in children and give proper attention to its treatment and eradication is increased many fold, especially in developing countries. Most of these teachers have no knowledge about iron deficiency, its signs and symptoms. In such a situation, a teacher will be unable to identify iron deficient children by noting the symptoms of iron deficiency and will be unable to give attention to such students and their treatment.

Nevertheless, the most significant contributor to anaemia is iron deficiency, and in school-age children, it is the most common form of micronutrient deficiency, usually caused by insufficient diet or infection, mainly by malaria and hookworm (Hall, Drake, and Bundy 2001). Research has also proven that there is a connection between short attention spans and low iron levels in children, and this can also affect the recall capabilities of children (Sisay, 2015). In children, occurrence of iron deficiency is a natural phenomenon. Owing to the iron deficiency that occurs because of the high demand for iron during the period of rapid growth, young children, especially those from low income families, are at higher risk for developing anaemia. It has been estimated that 36% of the population in the developing world undergoes this disease, and consequently, children's growth is affected in these areas (Assefa, Mossie, & Hamza, 2014). In such conditions, if teachers in developing countries are unable to identify iron deficiency among children and do not make arrangements to cure it, both the physical growth and the cognitive functioning of children will remain at risk.

The majority of teachers during cannot identify during screening those students who are suffering from malnutrition and showing obvious symptoms of malnutrition. Meanwhile, research indicates that in elementary school-age children, owing to miserable nutritional status, health problems are the greatest cause of low school enrolment, unsatisfactory classroom performance, high absenteeism, and early dropout. Childhood malnutrition has been observed as one of the reasons behind the high child mortality rates in developing countries. Slower cognitive development and serious health impairments that reduce an individual's quality of life later in life are linked to chronic malnutrition in childhood. In developing countries, malnutrition is so widespread that in 2013 the World Food Program (WFP) reported that in low-income and developing countries, one of every five children below 5 years is malnourished. Malnourished children are likely to get sick frequently, resulting in death.

The scientific evidence shows that in the formal educational system, infant and childhood malnutrition is a risk factor, and nutrition should be included as a determinant of school performance and achievement (Sisay, 2015). Underweight (low weight for age) is an indicator of both acute and chronic malnutrition, while stunting (low height for age) is a physical indicator of long-term or chronic malnutrition, and in school-age children, both are common.

Many children do not enrol in school because of stunting and malnutrition and thus remain out of school.

Teachers have below average knowledge about parasitic infections and their signs and symptoms in children, while millions of school-age children face a major health problem, that is, infection by hookworm, whipworm and roundworm. These parasites ingest nutrients from the children they infect. Thus, malnutrition is aggravated by them, and the children's physical development is retarded. The tissues and organs in which they live are also destroyed by them, thus causing intestinal obstruction, diarrhoea, ulcers, abdominal pain, anaemia, and various other health problems. Slower cognitive development and impairment of learning leading to poor school performance are linked with all of these consequences of infection (Luong, 2003). It has been hypothesized that educational achievement is reduced by severe worm infection, either through specific channels, including protein-energy malnutrition, or by inducing anaemia, which is known to affect educational outcomes (Kremeri, Miguel, & Michael, 2004). Infectious diseases and nutritional deficiencies exert a negative impact on children's and adolescents' nutritional status and thus hinder their growth.

A child's internal mucosa is damaged by intestinal helminth-worm infections, leading to decreased digestion; the resulting poor nutrient absorption leads to stunting. During childhood, deficiencies in micro- and macronutrient intake can impair both cognitive and physical growth and can also increase the risk of mortality. Moreover, immune deficiency results from insufficient intake and consumption of selected micronutrients, thus increasing the possibility of further infection. More than a third of the world's population, especially in the developing nations of Latin America, Asia and Africa, is infected with soil-transmitted (hookworm) helminths (STH) (Ross, et al., 2017). Hookworms enter the body through the skin of children and are mainly transmitted from soil. Once inside the human body, hookworms cause anaemia in the host. Children in the poorest countries are probably infected from the time they stop breast-feeding, and for the rest of their lives are continually infected and re-infected.

For children, only rarely do infections have consequences, while chronic, long-term infection exerts a negative effect on almost all aspects of a child's development e.g., nutrition, health, learning, cognitive development, and educational achievement.

Regular deworming contributes to good health and nutrition for school-age children; since school-age children of any age group normally have the maximum capacity for worm infection, this in turn, leads not only to increased enrolment but also to more frequent attendance and thus to reduced class repetition, and eventually to improved educational attainment (WHO, 2003). Most of these teachers could identify the symptoms of asthma, but less than half were able to identify other breathing problems by the signs and symptoms. Researchers have proved a connection between breathing problems, asthma and student absenteeism. Taras found that, “children with asthma and other breathing problems are conceivably at risk for decreased school functioning due to acute aggravations of the disease, increased absenteeism secondary to symptoms, and effects of asthma or other breathing problems medication” (Taras, 2006). Even after training under the School Health Program, the great majority of teachers do not know how to deal with seasonal health problems of children, to prevent their becoming serious. However, severe cough and cold symptoms can keep a child at home even for a long time. In such a situation, on the one hand, teachers will be unable to guide students in how to properly deal with common cold problems to prevent their becoming serious, and on the other, teachers will be unable to identify a cold as a symptom of any serious disease--while a severe cold and cough can be symptoms of infectious conditions, such as croup, viral bronchitis, or whooping cough. It could also be a warning sign of asthma. Moreover, during mild cold and respiratory symptoms, even if child's cough is mild, the virus might still pass to somebody else, and there remains a risk of the whole class becoming infected and ill (Brennan, 2017). School health and nutrition supervisors' training for teachers under the School Health Program has not enabled them to properly screen students, and most teachers do not even know how to take someone's pulse. Failure by teachers to screen students properly can lead to student ailments even after regular screening by teachers.

Conclusions and Recommendations

The study has shown that, even after training under the School Health Program, the average public elementary school teacher, in three selected districts, was able to provide correct answers to only 45-55% of questions related to the health issues of children.

School health and nutrition supervisors' training for public elementary school teachers has enhanced teachers' knowledge about children's health issues to only a moderate level, and teacher's health-related knowledge still needs to be improved. The findings of the study indicate that, even after training under the School Health Program, teachers do not possess a satisfactory level of knowledge about children's health related issues; therefore, to improve the results of the School Health Program and the academic performance and educational achievements of students by making them healthy, the following proposals are made:

- The number of School Health Program training sessions by school health and nutrition supervisors should be increased.
- There should be formal, regular children's health-related training sessions for teachers by health or education departments.
- Medical Officers should accompany school health and nutrition supervisors to school, to provide detailed information to teachers about various health issues and diseases among school children.
- Teachers should be facilitated to take special courses about the health problems of school children.

References

- Assefa, S., Mossie, A., & Hamza, L. (2014, January 16). Prevalence and severity of anemia among school children in Jimma Town, Southwest Ethiopia. 2. doi:<https://doi.org/10.1186/2052-1839-14-3>
- Brennan, D. (Ed.). (2017, October 22). *Is Your Child Too Sick for School*. (WebMD) Retrieved from WebMD: <https://www.webmd.com/children/guide/too-sick-for-school#1> (Accessed: 10th January, 2017).
- Bundy, D., Shaeffer, S., Jukes, M., Beegle, K., Gillespi, A., Drake, L., Wrigh, C. (1993). School-Based Health and Nutrition Programs. In D. T. Jamison, J. G. Breman, A. R. Measham, G. Alleyne, M. Claeson, D. B. Evans, P. Musgrove (Eds.), *Disease Control Priorities in Developing Countries* (Second ed., pp. 3-5). New York: Oxford University Press and The World Bank. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK11783/pdf/Bookshelf_NBK11783.pdf (Accessed: 4th February, 2018).
- Farooq, M. S. (2016). Causes of Primary School Students' Dropout in Punjab: Primary School Teachers' Perspective. *Journal of Elementary Education*, 26(1), 2.

- Filmer, D. (2003). *Determinants of Health and Education Outcomes*. The World Bank. The World Bank. Retrieved from http://siteresources.worldbank.org/DEC/600659-11099-53265771/20383949/30377_32_Filmer_Determinants_of_Health_and_Education_OutcomesMay2003.pdf (Accessed: 1st February, 2017).
- Grant, R., & Brito, A. (2010). *Chronic Illness and School Performance: A Literature Review Focusing on Asthma and Mental Health Conditions*. New York: Children's Health Fund. Retrieved from <https://schoolhealthteams.aap.org/uploads/ckeditor/files/chronic-illness-and-school-performance.pdf> (Accessed: 11th May, 2017).
- Kremeri, Miguel, E., & Michael. (2004, January). WORMS: IDENTIFYING IMPACTS ON EDUCATION AND HEALTH IN THE PRESENCE OF TREATMENT EXTERNALITIES. *Econometrica*, 72(1), 5.
- Luong, T. (2003). De-worming school children and hygiene intervention. *International Journal of Environmental Health Research*, 4.
- Mesfin, F., Berhane, Y., & Worku, A. (2015, April 22). Anemia among Primary School Children in Eastern Ethiopia. (M. A. Paulo, Ed.) *PLoS ONE*, 10(4), 2. doi:10.1371/journal.pone.0123615
- Mwanri, L., Worsley, A., & Masika, J. (2001, December 1). School and anaemia prevention: Current reality and opportunities—a Tanzanian case study. *Health Promotion International*, 16(4), 1-4. Retrieved from <https://academic.oup.com/heapro/article/16/4/321/656748> (Accessed: 11th May, 2017).
- Ross, A. G., Papier, K., Luceres-Catubig, R., Chau, T. N., Inobaya, M. T., & Ng, S.-K. (2017, September 21). Poverty, Dietary Intake, Intestinal Parasites, and Nutritional Status among School-Age Children in the Rural Philippines. *Tropical Medicine and Infectious Disease*. doi:doi:10.3390/tropicalmed2040049
- Sisay, B. (2015). *Assessment on the Effects of Child Undernourishment on the Academic Performance of Students in Governmental Primary School: The Case of "Atselibnedingel" Governmental Primary School in Addis Ababa*. Addis Ababa University. Retrieved from <http://etd.aau.edu.et/bitstream/123456789/8103/1/16.Beiment%20Sisay.pdf> (Accessed: 9th May, 2017).
- Taras, H. (2006, April 7). *How Health Affects a Child's School Performance*. (Newsroom, Producer) Retrieved from UC San Diego Health: https://health.ucsd.edu/news/2006/Pages/04_07m_Taras.aspx (Accessed: 8th January, 2017).
- WHO. (2003). *School Deworming at a glance*. WHO. Retrieved from www.who.int/intestinal_worms/resources/en/at_a_glance.pdf (Accessed: 9th May, 2017).

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