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School Meals and Child Outcomes in Bangladesh

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ABSTRACT

Purpose: School meals are a good way to channel vital nourishment to poor children. The study has been tried to demonstrate the concepts of school meals in the globe and derived the eventual scenarios from Bangladesh.
Methodology: To comprehend the basis of school meal and the derivation of its consequences in Bangladesh, a descriptive research approach is used here. And this work is mainly based on secondary information. Here, various journals, survey reports, newspapers, research articles etc. were used as a source of data. To demonstrate the results, the collected data were analyzed through a tabular form.
Findings: This study shows that school meal us applying as an essential tool to remove children's hunger for the short-term and improve their long-term nutritional status. This may also lead to improve their health promotion. In Bangladesh, school meals are a high-return investment in human capital and local economies with multiple benefits. Collaborative efforts are required to strengthen the school meal program and achieve intended outcomes in respectively short and long terms.
Limitations: The study is based on secondary data only. A need exists, however, for further high-quality studies.
Practical Implications: In the paper, empirical evidence suggests that the school meals program play a special role in fulfilling the nutritional requirements of school-going children and establishing children's right to education. In Bangladesh, school meals are treated as an incentive for parents to send their children to school. This may ultimately generate a positive impact on children's attendance and nutrition.
Originality: This study will contribute to reveal the pattern of global school meal. In Bangladesh, the initiative of school meals plays a vital role in reducing the country's malnutrition rate. The study has suggested the avenue for likewise research in this realm.

1. Introduction

School meal is an essential tool for the children's nutrition and improved health in the long run. Children are encouraged to ameliorate their nutrition, and choose healthy foods and learn good dietary habits through schools meals. Bringing a hungry child to class has a negative impact on their capacity to study. School meal program is a way to provide children with nutritional foods while they are at school. Most of the countries in both developing and developed devote their resources to feed some portion of their schoolchildren through government arranged programs. Nutritionists and social scientists have widely recognized the causal link between nutritional condition and the learning capability of children. Hence, the mechanism of providing free or subsidized school meals is viewed as government's crucial policy measures for improving children's learning outcomes (Afridi et al., 2013). At present, governments and development partners in both developing and richer countries are committing significant resources to providing free school meals to disadvantaged children. School meals benefit children by lowering class-room hunger, lessening sustenance deficiency and laziness, enhancing school enlistment and attendance,

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raising cognitive and academic achievement, and assisting to have gender equality in educational access. To maximize the advantages of school meal programs on children, it is crucial to extend their coverage and improve the standard of present school meal programs. In Bangladesh, the government has prioritized quality education, and school meal is being used to improve that quality. Here, school meal arrangement remarkably enhances children's behavior and positively influences their educational performance. Despite some limitations, the fact remains that school meal programs help to improve the nutritional state of children so that they can pay more attention in class.

The aim of this study is to illustrate the shape of school meals in various countries throughout the world, and then to determine the child outcomes in Bangladesh. To accomplish so, data from secondary sources is analyzed using a descriptive manner, such as tabular form. Although a very few studies has been done on the topics School Meal Program but the issues of 'School Meals and Child Outcomes in Bangladesh' is still remain unexplored. Finally, this study will help in understanding the notion of school meals and determining the true impact of school meals on children in Bangladesh.

2. Objectives of the Study

This study delineates the global school meal pattern and obtains the eventual results from Bangladesh. However, to attain this goal, the study also tries to outline the following objectives:

- To have a better understanding of the concepts of school meals in many countries around the world.
- To create a common view of school meals.
- To discuss the pattern of school meal program in Bangladesh.
- To find out the impact of school meals in different countries, such as Finland, Norway, Philippines, Bhutan, Kenya, Bangladesh etc. and
- Lastly to look at the child outcomes in Bangladesh.

3. Literature Review

3.1 Concepts of School Meal

A school meal is a meal served to students by the school during the school day, usually at the beginning or middle of the school day. School meal is often categorized as lunch which may embrace some morning programs and the programs of one-commodity like school milk or fruit. School lunch covers almost child's one-third nutritional daily needs. In many countries, school meal arrangements are implemented to build a healthy physical and psychological state for children; these programs are essential for implementing nutritional policies that will benefit the public health to a greater extent. School meal initiatives vary depending on the economic, health, and food supply realities in each country. Furthermore, these programs provide a major educational and social advantage in some developing countries.

3.2 Evidence from the Globe

Since the 1920s, all primary and secondary schools in Western Europe, including Finland, France, Sweden, the United Kingdom, and Scotland, have required to provide a hot lunch every day of the week. In several European countries, such as Austria, Ireland, and Norway, variations of this rudimentary school meals initiative exist, with individual schools deciding whether or not to serve lunch.

Finland's unique system of free lunches in primary and secondary schools is a useful model for Europe, where the reconstruct of some school systems, such as Germany's, allows for a new healthier approach to school meals depends on best practice paradigm from other European nations, including Finland.

The Education (Provision of Meals) Act 1906 established the school meal initiative in the United Kingdom. In the United Kingdom, every week day, all public schools serve school lunches to around 45 percent students of elementary and secondary level. Now-a-days, with comparison to the past three decades, children appear to rely more on meal given at school. In addition, a new movement called "Feed Me Right" planned to arrange healthier

menus that substituted junk food and transforming school menus to more nutritious quality foods for improving health and school performance. The effort went throughout the Greenwich Borough of England, involving new kitchen equipment and cook retraining. The new menus were gradually accepted, but the results were splendid: an increase in school lunch consumption and an 80% reduction in absence, which enhanced the entire health of the students and their educational achievements.

Since the pilot program started in 1966, the United States has been arranging breakfast to schoolchildren across the country. More than 8.5 million pupils have received breakfast through the School Breakfast Program (SBP), a federal and state reimbursement arrangement for each breakfast provided that meets federal demands. Children from households with incomes at or below 130 percent of poverty, children receiving Temporary Assistance for Needy Families (TANF), and children receiving food stamp benefits are all fit for free or reduced-price breakfasts. Indeed, all SBP sponsors are needed to provide free or reduced-price breakfasts to competent children (Badri, 2014).

The origins of India's school meal initiative may be traced back to 1925, when the British administration started a midday meal arrangement in Madras Corporation. This was amongst the most first free meal initiatives for students in schools. The Integrated Child Development Services (ICDS) program was established by the Indian government in 1975. Government high schools and partly assisted schools, as well as Anganwadis, serve midday meals to pupils under the Midday Meal Scheme. Here, meals are provided free of charge and according to policy criteria. The National Programme of Nutritional Support to Primary Education (NP-NSPE) scheme was implemented in India by 1998 (“School meal,” n.d.).

In the People's Republic of China, a regular school lunch consists of staple foods, a meat diet, and a vegetable dish, with each school serving a distinct variety of dishes. Students can select between two and three items based on their choices, with rice as a staple. Students in disadvantaged rural communities have limited access to nutritional food. To tackle malnutrition, the government has financed “nutritious lunch” programs in rural public schools. According to government data from June 2017, 48 percent of schools failed to satisfy prescribed nutrition levels in full.

In Japan, school lunch programs began in 1889, when a private elementary school in Yamagata Prefecture supplied free meals to pupils from low-income households. A national institution in 1932, school lunch started to help students from low-income households. In 1940, an aid programme was launched to enhance the dietary and physical circumstances of all schoolchildren. In 1975, school meal programs were available in 99 percent of elementary schools. In 2014, school lunch was served to a total of 6.76 million children in 99.2 percent of elementary schools (Ishida, 2005).

In Italy, school meals serve traditional Italian cuisine; however this varies by region and town. The Italian government is particularly “down to people," and is conducting a large-scale research to assess and include students in their eating habits, diets, and food choices. However, because school food is quite costly, many parents fight for the right to have packed home-cooked meals for their children.

Philippines and Bhutan are two well-known paradigms of countries where school meal initiatives are in progress and yielding positive results. A large majority of Filipino children are undernourished, putting them vulnerable to sickness and infection. Senator Edgardo J. Angara began a school meal initiative at public schools all over the country in 2003, focusing on disadvantaged areas. Noodles Milk, and eggs are supplied to students in grades 1, 2, and 3 on a 120-day cycle. These children, ages 7-9, are at a critical point in their physical and psychological growth. As a result of the program, attendance, learning ability, academic attainment, height, weight, entire nutrient condition and rates of drop-out among recipients all ameliorated dramatically. The World Food Programme assists the Royal Government of Bhutan in its plan of enhancing right to education by supplying regular meals to school children, especially those from impoverished and food-insecure households in rural areas. This activity contributes to national trends of higher rates of enlistment and attendance, as well as lower dropout rates. School meals increase the short-term nutrient condition of schoolchildren, hence improving their attention and cognitive abilities (Billah, 2011).

The Kenyan school meal arrangement began in 1980 for primarily of the non-rural schools and within 1995, a national strategy had been established making school meals mandatory in all Kenyan primary schools. In 2003, the World Food Programme (WFP) and the Ministry of Education (MoE) partnered on a successful program focusing at expanding and improving meal programs, especially in remote schools. Furthermore, the program pondered absence as a crucial problem related to insufficiency or poor condition of meal and the school circumstances. As a result, Kenya's combined school meal arrangement focuses on providing free meals to a large number of rural community schools. The meal has 700 calories, which is fit for a child's daily intake during the school day. The initiative has had a favorable influence on attendance rate and dropout rate at school has lessened. Other noteworthy effects include an increase in height and weight, improved immunity to sickness, and a jump in school enrollment from 77% to 92%. Mothers were also able to keep up with their household responsibilities while freeing up more time to work.

In Burkina Faso, school canteens were linked to improved school enrolment, regular attendance, continually lower repetition rates, lower dropout rates in impoverished provinces, and higher rates of success in national exam, particularly among girls. The impact of a modest pilot school meal program in Malawi on attendance and enrolment was studied. When compared to control schools over the same three-month period, there was a 5% increase in enrolment and a 36 percent upgrade in attendance/absenteeism (Badri, 2014). Figure 1 represents an explanatory review of the current school meal arrangements around the world.

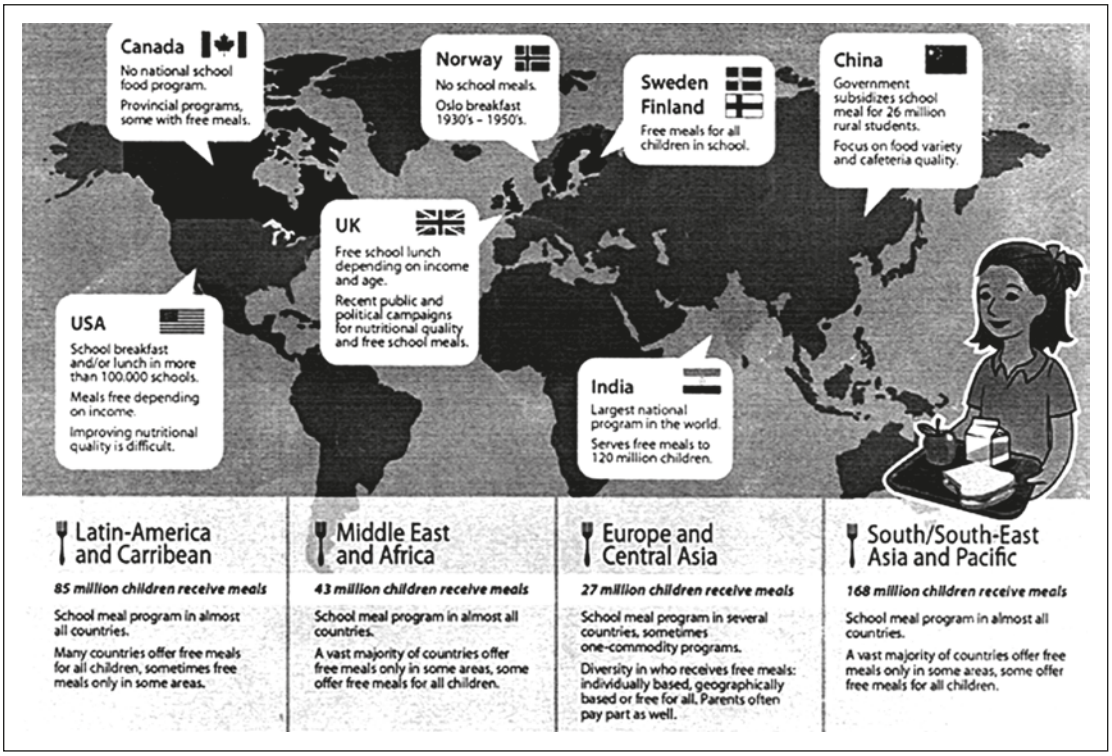

Figure 1. School meals around the world. Source: (Oostindjer, M et al., 2017)

In both industrialized and developing countries, school meal initiatives were designed with the goal of preventing malnutrition among students. Food is the top priority for poor families, and it is linked to family resources that consume nearly altogether their money as well as time. Families appear to be eager for having adequate money to buy nutritious food as well as ensuring sufficient diets for their children and anxious that their children going to school hungry. As a result, chronic/mild malnutrition develops, creating psychological and physical alterations that have long-term impact on schooling, physical health, and productivity.

School meal arrangements provide many chances for children to get nutritious, well-balanced meals. This type of dietary experience is repeated several times to provide individuals multiple chances to change their eating habits. However, patterns of eating, lifestyle and behaviors are formed in childhood and have a substantial impact on health condition and well-being. Students demand a nutritious meal during the school time. Low school nutrition and hunger can be a substantial learning barrier, resulting in poor academic performance. According to studies, malnourished children are more presumably possess behavioral issues such as attention deficit, melancholy and antagonism, all of which affect scholastic achievement. School meals may provide instant relief from hunger, as well as reduce distraction and improve concentration among pupils.

The general view is that meals should be given to those school-aged children who are malnourished or poor. The school meal is designed to encourage enrolment and assist households in defraying some of the expenses (opportunity and each outlay) associated with schooling their children. Moreover, the logistical and political perception is: school meal arrangements are usually supplied to all children at a specific school. School meal simply generates two advantages.

Firstly, it gives the child a direct incentive for attending school regularly. Secondly, short-term hunger is removed by well-timed school meals, which may enhance children's capacity to concentrate and study (Adelman et al., 2008). According to empirical research, there is a strong correlation between child nutrition and school learning, with the accessibility of school meals programs, like school breakfast, improving children's academic achievement, including participation and educational performance.

Furthermore, school meals may increase learning results through the following ways. First, school meals can incentivize parents to bring their children to school on a regular basis by lowering the expense of education. Regular school attendance can potentially upgrade the academic achievement. Second, school meals ameliorate the children's nutritional level which may influence their long-term psychological abilities. Third, school meals can improve learning results by increasing children's attention and classroom engagement, especially in situations when there is a sense of "classroom hunger (Afridi et al., 2013).

The notion that that school meals promote academic ability by improving nutrition is based on two factors. Firstly, school meals generate a better nutrition; and secondly, the better nutrition leads to higher academic achievement. Recently, school participation is regarded as the promising motivational factor for funding school meal. Here, a child's participation is defined as her presence in school on a school day. According to the casual observations of World Food Program (WFP), subsidized school meals fascinate additional children largely to school (Vermeersch & Kremer, 2005).

4. Methodology

This study is based on descriptive research, and the analysis method is relied on secondary provenances for information. The data was collected from various journals, newspapers, research articles, online news, and survey reports of Multiple Indicators Cluster Survey (MICS), United Nations Children's Education Fund (UNICEF) and World Food Programme (WFP). The descriptive method tabular form was used to represent and analyze the accumulated data.

5. Findings and Discussion

5.1 Findings from the Globe

Studies have shown that numerous outcomes have immensely been ameliorated as a result of school meals arrangements. These outcome variables are categorized as- firstly, academic performance; and secondly, health and nutrition. Enrollment, attendance, dropout rate, grade repetitions, school attainment levels, cognitive function, and behavior at classroom are some of the elements that influence academic performance. Better dietary intakes and nutrient level, as well as the establishment of appropriate dietary practices, are all health and nutritional elements. The hypothesized relationships among these outcome variables are exhibited in Figure 2.

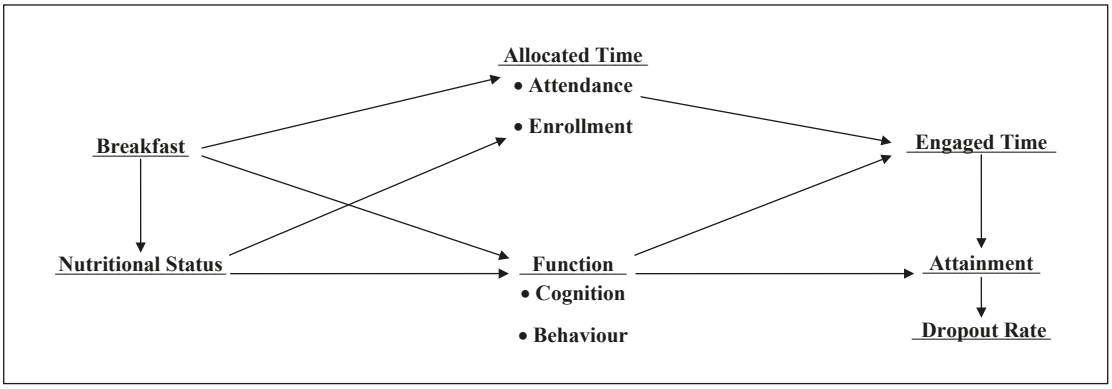

Figure 2. The hypothesized relationships between breakfast and possible outcome variables in School children. Source: (Grantham-McGregor et al., 1998).

Figure 2 depicts the hypothesized relationships between breakfasts and various outcome factors in school-aged children. "Allocated time" refers to time set aside by the teacher, whereas "engaged time" refers to time spent by the children focusing on learning tasks. Another factor to consider is that if school meals are supplied over a long time, it is feasible to upgrade the nutritive level in malnourished population. There is plausible evidence that better nourished children have more coherent cognitive performance than those who are malnourished. Thus, it is possible that school meals may indirectly enhance cognitive performance indirectly by upgrading the nutritional condition of malnourished children.

School meals are an important component of the school-time, whether they are gratis, convenient to purchase or delivered from dwelling-house. It can also be considered as situated learning in practice communities.

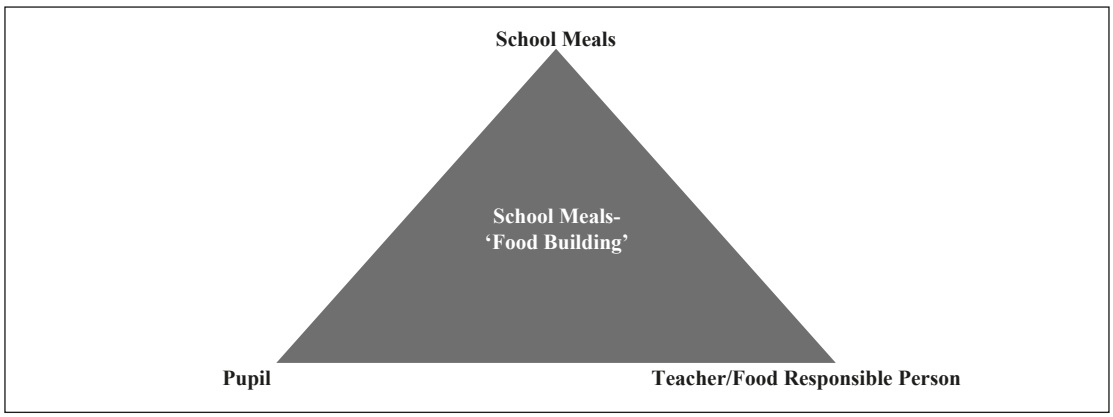

Figure 3. The didactic triangle elaborated. Source: (Benn, J., et al., 2014)

Figure 3 depicts the indispensability of school meals as schooling lessons, highlighting the significance of the interaction between the pupil, the teacher/food responsible person and school meal's element in constructing the schooling realm for school meals as food 'Bildung'. This institutional link can be comprehended regarding 'foods capes,' which are defined as "the places and circumstances in which children consume and interact with food, as well as the meanings and connections associated with them."

School meals play a crucial role in reducing hunger of under nourished or surprisingly well-fed children's for the short period, encourage parents (in particular among the penurious) to admit their children in school and maintain regular attendance, address micronutrient insufficiencies in school-aged children and raise community's partaking and their involvement in institutes (Acham et al., 2012).

School meal arrangements can further be regarded as a channel for better nutritional condition if the foods or proportions are enriched or if they contribute to a greater variety of diets. While research often but not invariably perceive advantages from including meal in school meal arrangements (Alderman & Bundy, 2012). School meal arrangements offer chances to upgrade food's nutritional stature regarding entire vigor, compensating for substandard meals eaten exterior of school foods, and contrasted to home-packed lunches. School meals are enriched with immense micronutrients: they foster a social learning circumstance and encourage social interactivities that are crucial for learning about dietary behaviors from peers. In Norway, the major aims of the so-called Oslo breakfast program, which ran from the 1930s through the 1950s, was to affect family eating behaviors as well as give sustenance meal to underprivileged children. The school meal provides one meal each day for parents, which may immensely increase their workforce participation. Moreover, in all industrialized arenas, the increase in women's labor force participation has been amongst the most remarkable social structural trends in the previous decades. Thus, school meals truly influence children's betterment and may further affect their livelihood in general. In a nutshell, the potential consequences of school meal on educational achievements can be outlined in three ways.

First, children receive school meals on a conditional basis. Hence, school meals instigate households to ensure their children's enrollment and encourage them for regular attendance. The accessibility of meals may have unintended implications, particularly when school meals are not given freely by all schools and when school attendance realms and fees are governed by few standards. Households could switch between treated and untreated institutions, for instance, and increased urge for treated institutions may raise fees.

Second, the empirical evidence suggests that skipping breakfast has an unfavorable effect on short-term heed and memory. The evidence shows that children and juvenile adults can benefit from "empty calories" in lieu of a morning fast. If vigor sources help children work more efficiently during the school time, test scores may improve over time.

Third, Malnutrition could be prevented or alleviated by long-term exposure to nutrient-dense meals (McEwan, 2013). However, school meals badly influence on learning results if the arrangement places extra pressures on already stretched school resources. For example, the development of school meals creates a significant rise in class-size which negatively affected learning levels in Kenya. Furthermore, if teachers devoted more time on regular management and delivery of school meals, a re-allocation of school resources could be away from teaching. In a nutshell, school meals reduced teaching hour and increased class sizes. Thus, the entire impact of such an initiative on children's academic achievement is unclear. (Afridi et al., 2013).

Despite some problems, the agreeable fact is school meals initiatives provide appropriate nutrition and may support children's physical development and lessens the chance of children becoming overweight or obese, or underweight.

5.2 School Meal Program in Bangladesh

Bangladesh is a heavily populated country with a population of about 164 million people. A frequent remedy to educational impediments and malnutrition among children is a school meal program. Almost every country in the world has some kind of school meal arrangement. School meals are recognized by the government of Bangladesh as an important tool for the betterment of students, communities, and society en masse.

School-age children are generally classified as those between the ages of 5 and 14. It is the period of vigorous development in childhood. Since 1972, for statistical purposes, the United Nations Educational Scientific and Cultural Organization (UNESCO) has classified children aged 6 to 11 as primary school age and children aged 12 to 17 as secondary school age. School age is also a pivotal time in a child's physical and psychological development. According to research, health problems caused by poor nutrition in primary school-aged children are among the main reasons of low enrolment, high absence, early dropout, and poor classroom performance (Nowsin et al., 2014). Multiple Indicator Cluster Survey (MICS) 2019 conducted by the Bangladesh Bureau of Statistics (BBS) and The United Nations Children's Fund (UNICEF) Bangladesh shows the following results:

- The chronic malnutrition as indicated by stunting levels significantly fell from 42% in 2013 to 28% in 2019.

- The percentage of people who are moderately or severely underweight has decreased from 31.9 percent in 2012-13 to 22.6 percent in 2019. Similarly, from 42 percent in 2012-13 to 28 percent in 2019, moderate and severe stunting has decreased remarkably.

- The primary school net attendance percentage is 85.9%, which is somewhat higher than the previous MICS cycle (2012-13), when it was 73.2 percent. Despite this, 13.1% of adolescents do not complete lower secondary school. Boys have a particularly high dropout rate, with one in every five (18.1%) dropping out of lower secondary school. (The United Nations Children's Fund [UNICEF] Bangladesh, 2020).

In Bangladesh, school meal arrangements were established in response to the prevalence of penury, hunger, long-standing under nutrition and anemia, all of which have a negative impact on school-aged children's health, academic attentiveness, and hereafter productivity as grown-up. Malnutrition (defined as a low anthropometric status) has a variety of reasons, with poverty being just one aspect to consider. Many other issues contribute to households' incapacity to give immense macro and micronutrients that their children require. Rice is high in carbohydrates but is low in micronutrients, making Bengali diets rely heavily on it. A varied diet rich in micronutrients is necessary for good nutrition. Surprisingly middle-class households may lack the time or proficiency to make such meals. School feeds supplemented with micronutrients can help children overcome dietary issues faced by their households Nutritious meal improves children's physical and psychological development. School meal arrangement can do a notable role in meeting the nutritional needs of school-aged children while also ensuring their access to an education.

Bangladesh's government has a lot of experience with school feeding programs, such as school meals, snacks, and take-home rations. The World Food Programme (WFP) launched the School Feeding (SF) initiative in Bangladesh in 2001 as an emergency response arrangement for 350,000 school aged children from flood-affected households in Jessore district, with the goal of returning them to school. The SF arrangement was deemed a success and was subsequently added as a major component of the World Food Programme's country initiative to mark lower enrollment and attendance rates in Bangladesh's poverty-prone areas (Welcome to School Feeding Programme, 2020).

World Food Programme (WFP) has given food aid to Bangladesh since 1974 and it launched school feeding arrangements using micronutrient enriched biscuits in 2001. Over 7,000,000 people have benefited from school feeding initiatives, with 50% of them being girls. The WFP-supported schools are mainly categorized as the schools of Government Primary, Registered Non-Government Primary, along with several community and NGO respectively. Since 2001, the number of school feeding recipients has increased remarkably, reaching 1.5 million in 2009, accounting for half of WFP Bangladesh's overall portfolio (The Impact of School Feeding in Bangladesh, 2018).

School feeding arrangement is presently shifting from an outside funded and executed arrangement to being fully owned and implemented by the government. The Government of Bangladesh constructed the National School Meal Policy, which was approved in August of 2019, with technical assistance from WFP, the Center of Excellence in Brazil, and the Global Alliance for Improved Nutrition (GAIN). To put the policy into action, the government has been preparing an implementation strategy with technical assistance from the World Food Programme, with the goal of serving healthy school meals in lieu of the current fortified biscuit paradigm.

All children receive a nutritious cooked food and a micronutrient fortified biscuit as part of the school meal program, which provides them with immense macro and micronutrients they require to live healthy, productive lives in and out of school. WFP, with its extensive expertise assisting countries in delivering nutritious school meals, is ardent to see this school meal program succeed on a large scale. Schoolchildren in WFP-assisted school meal program locations receive cooked meals five days a week, from Saturday to Wednesday, and fortified biscuits on Thursday. In Bangladesh, children who are in pre-primary, primary, and secondary school form the cornerstone of the country's people resources. Food aid and nutrition programs run by the government prioritize schoolchildren in poverty-stricken areas.

School meal program is necessary to keep student at school for extended periods of time by alleviating hunger. A universal feeding initiative can contribute significantly to national development by assisting in the removal of various types of discrimination, increasing food security, and improving primary education learning outcomes. Bangladesh has also committed to achieving the UN Sustainable Development Goals by 2030. Hence, the school meal arrangement must be given top emphasis. The school meal arrangement will begin by prioritizing poverty-stricken and/or disadvantaged areas for coverage.

In October 2013, as an experimental basis, cooked hot meals were provided to several of the schools in Bangladesh's two upazilas. This experiment was launched in partnership with the Ministry of Primary and Mass Education (MoPME) and the Directorate Primary Education (DPE) to examine school meal options and modalities. The data in Table 1 (The Impact of School Feeding in Bangladesh, 2018) shows the number of pupils enrolled in the school meal program, classified by school type.

Table 1. Number of Students under the School Meal Programme per type of School and Target Upazila

Type of School	Jamalpur	Barguna	Total
Government Primary School (GPS)	6,027	10,094	16,121
NGO/BRAC schools	396	255	651
Madrasah	175	78	253
Total	6,598	10,427	17,025

Source: (The Impact of School Feeding in Bangladesh, 2018).

Under the school meal program, a mixture of nutrition compact cooked food and micronutrient enriched biscuits will be delivered to the school-aged children on alternative days of a week. Children from Government Primary Schools and Government-recognized Ebtedayee Madrasas will benefit from the program. A freshly-made nutritive cooked food will be supplied to all children who attend school each alternate day and a 75 gm packet of fortified biscuit instead alternate day from Saturday to Thursday in week. The results in Table 2 ("Operational Guideline for School Meal Programme", 2020) however delineates each child entitlement for cooked food and biscuit.

Table 2. Entitlement of Each Child for Cooked Food and Biscuit

Food Commodity	Per Child/Entitlement	Remarks
Fortified Rice	90gm	On alternate days, a total 177gm of raw food will be cooked for each child, providing 536 kcal (30% energy) and 50% of the daily recommended micronutrient requirements.
Red Lentil	25gm	
Fortified soya bean oil	12gm	
Fresh vegetables	20gm (minimum)	
Leafy vegetables	15gm (minimum)	
Potato	15gm	
Iodized salt	3gm	
Fortified biscuits	75gm	Every other day, each child will receive one packet of micronutrient-fortified biscuits, which will give 338 kcal and 67% of daily recommendation of the micronutrient requirements.
Egg (boiled)	1pcs	Once a week, each child will receive a boiled egg with cooked meal. On that day, a cooked meal of fortified rice, red lentil, and fortified soya bean oil will be served, providing 628 kcal and 50% of the daily recommended micronutrient requirements.

Source: ("Operational Guideline for School Meal Programme", 2020)

The requisite biscuits are manufactured and distributed by the private sector as part of the School Feeding (SF) initiative. The WFP supplies wheat and micronutrient mix to biscuit manufacturers, as well as acting as a consultant to help them upgrade hygiene and standard control. WFP-imported wheat labeled for SF is exchanged against biscuits from agreed domestic factories. Before being distributed to schools, the biscuits are supplied to WFP's associate NGOs and stored at zonal warehouses. The chosen service-giving NGOs are in charge of creating delivery plans, monitoring attendance and distribution, checking the schools for quality storage, cleanliness and sanitation, and reporting to the World Food Programme. The distribution procedure is overseen by a school

management committee (SMC) made up of parents, teachers and school administrators for each school. At least one female member is present in every SMC. SMCs, NGOs and GoB officials receive proper training on how to run the SF program (Ahmed, 2004).

Under the present pilot initiative, which is set to end in December 2020, the government is now delivering 75-gram biscuit packages to almost three million children at 15,349 primary schools in 104 upazilas across the country, at a cost of Tk. 474 crore. Cooked meals are served to children in primary schools in three upazilas: Bamna in Barguna, Islampur in Jamalpur, and Lama in Bandarban. In 93 upazilas, the government funds the school meal program, while the World Food Programme (WFP) provides meals in the residual upazilas ("Govt. plans to feed all," 2019).

Indeed, during the last five years, there have been sequential successions of handover from WFP government, resulting in a decrease in WFP coverage. At present, around 0.5 million school children in food-insecure and poverty-stricken areas are served by the WFP. The Poverty Map has been used to prioritize the present programming areas (Welcome to School Feeding Programme, 2020).

With the National School Meal Policy 2019, the government aims to boost primary school attendance and lower primary school dropout rates. Under the new meal policy, by 2023, over 14 million primary school pupils in Bangladesh will receive midday meals. By 2023, when the policy is completely implemented, the government will supply each primary-level pupil in the country with one meal every school time. The new strategy recommends serving prepared meals five days a week and protein-rich biscuits once a week to pupils. Schools in char, coastal, haor, and other backward sections of the country would be the first to get the midday food program. The government will establish a national school meal administration under the Ministry of Primary and Mass Education to execute the school meal arrangement, as well as a school meal recommendatory group made up of notable social figures to assess the program and give recommendations.

At present, there are about 66,000 government primary schools in Bangladesh, with approximately 14 million pupils. It is noted that the yearly cost of giving biscuits to pupils at all primary schools is anticipated to be Tk. 2,835 crore, while the estimated budget for cooked meals for five days (Saturday-Wednesday) and biscuits for one day (Thursday) each week is Tk. 5,560.80 crore. About TK 7,475 crore will be needed to offer bread, bananas, eggs, and biscuits to the pupils in each meal ("Govt. plans to feed all," 2019).

School meals create high-return investment in human capital and multiple advantages to the local economies. School meals generate various impacts on children's performance. These outcomes are described below.

5.2.1 Impact of School Meals on Nutrition and Health of School-Aged Children

School meal arrangement significantly upgrades the children's diet who participates in it. The energy (calories) devoured from school arranging biscuits is almost totally (97%) extra to a child's regular diet. In another means, the child's household does not provide them less meal at house for consuming the school arranging biscuits. These results basically depended on a well-designed research and an econometric model that was used to examine the affect of school meal on children's calorie intake.

In the diets of program partakers, biscuits constitute the single most major way of getting vitamin A. They are the vital origin of protein, vigor and iron after rice. Partaking students' average energy consumption is 11 percent and 19 percent greater in rural and urban slum regions, respectively, than in related control areas (Ahmed, A. U., & Babu, S. C, 2009).

The mid-morning snack comprised of a package of enriched wheat biscuits with 300 calories and 75 percent of the daily vitamin and mineral recommendations for school children; it was provided to pupils for each attending day of school. In the regions of rural and urban slum, participants' average energy intakes were 11 percent and 19 percent higher, respectively, than sex- and age-matched pupils in control schools who did not partake in the SF program. The energy intake from biscuits was 97 percent more than the child's regular diet; as a result, the SF arrangement increased the partaking children's net food consumption, and the additional vigor from the biscuits was

not offset by a decrease in feeding at home. According to the household food consumption questionnaires, researchers found that a major portion of the pupils getting SF shared enriched biscuits with other members of their households on a daily or sporadic basis. The impact of SF biscuits on the food consumption of the partakers' siblings (ages 2–5) resulted in a 7% increase in entire calories ingested by these preschoolers on average (Jomaa, L. H., McDonnell, E., & Probart, C, 2011).

The value of extra sustenance for individual pupils is clearly diluted when it is shared. However, because nutritive supplements possess a proportionally bigger influence on the nutrient condition of younger children, it can be highly advantageous for the younger siblings. School meal enhances children's nutritional condition: it improves the body mass index (BMI) of partaking children by 0.62 points on average. This gain depicts a 4.3 percent increase over the school-aged children's BMI in the control group on average—a significant increase that is partly related to the fact that most of the partaking children were initially malnourished (Ahmed, A. U., & Babu, S. C, 2009).

The WFP observed that most primary school-aged children in the programme realms had insufficient energy, vitamins A, B1, and B2, and iron in their diets. The study also noticed that the micronutrient, protein, and calorie content of school biscuits significantly improved the nutrition of the schoolchildren participants. According to schools, School Management Committees, and mothers in the NW, the biscuit removes children's hunger at school time. The biscuits were found to reduce hunger, lower the prevalence of skin disorders, and relieve weakness and vertigo in schoolchildren, which parents believe enhances the children's learning ability. They observed that if children are focused and cheerful, learning quality improves. Parents and teachers alike thought the biscuits were nutritious and beneficial to their children, with some praising them as a supportive substitute for fish and meat that they couldn't supply for their children (Bangladesh School Feeding Impact Evaluation, 2011).

5.2.2 Impact of School Meals on Education and Learning

The positive nutritional effects studies show the need and advantages of providing schoolchildren with school foods and/or snacks to upgrade specific cognitive activities and scholastic performance, particularly among under nourished children. School meal ameliorates academic performance by lowering the dropout rate. When both methods of school meals are offered concurrently at school, this applies to both school feedings and take-home rations, especially, with greater advantages to girls.

The International Food Policy Research Institute (IFPRI) undertook a thorough study of Bangladesh's school feeding program in late 2003. Before the IFPRI surveys, a major portion of the program students had been consuming school feeding biscuits every school time for more than a year. Depending on survey data, econometric models isolated the impacts of income and other factors to capture the influence of the school meal program alone.

According to the evaluation, the school meal program considerably raises enrolment and attendance while also lowering dropout rates. It has increased enrolment by 14.2 percent and boosted school attendance by 1.3 days per month. It has decreased the likelihood of dropping out by 7.5 percent. However, according to a large number of mothers, the school meal program has various benefits on children. They report that children's enthusiasm for going to school and attending to their learning has grown, that they are more active and cheerful than before, and that their sickness rates have decreased (Ahmed, A. U., & Babu, S. C, 2009).

When children receive a prepared meal at school, their attendance increases while their dropout rate decreases remarkably. Under the trial experiment, students' attendance has increased by 11% in schools where prepared meals are offered and by 6% in schools where biscuits are served ("Govt. plans to feed all," 2019).

The promising findings of the IFPRI's school meal evaluation recommend that the program might be raised benefit to assist a larger number of Bangladeshi children-but caution should be created with proper targeting. To get the utmost advantage for the cost, the initiative must cover those realms where malnutrition is a major issue, rates of school enrolment and attendance are low but high dropout rates are prevailed. Urban slums, especially, are prospective regions for growth. In addition, rates of low enrolment and high dropout, children in urban slums face violence and other communal disruptions. Here, several menaces can be reduced if children are encouraged to attend school. As a result, the school meal initiative upgrades academic achievement. Test scores improve by 15.7 percent

when students participate in the school meal program. Participating pupils perform better particularly in mathematics. Pupils from urban slums perform well in achievement exams compared to rural areas pupils, owing to the disparity in quality between urban and rural areas primary schools.

School meal initiative in Bangladesh is significantly easier and less costly to execute and manage compared to a school where full lunch is available. It is a very cost-effective initiative. It is inexpensive in comparison to relevant initiatives, costing US$18 per child every year, of which US$13.50 is spent on biscuit production. In other countries, WFP-assisted school feeding initiatives cost an average of US$34 per child per year. Moreover, compared to school-cooked meals, packaged biscuits provide better standard control and hygiene. Nutrient-enriched snacks could be a better initiative option than a complete meal in numerous countries due to their low cost and high impact (Ahmed, A. U., & Babu, S. C, 2009).

Clearly, effects will be substantial when school meal along with food-for-schooling are combined offered. School meal and food-for-schooling initiatives, when combined, are strong instruments for easing day-to-day hunger, lowering food shortages in families, assisting children in learning while in school, and allowing households to send and keep their children in school. By integrating the two initiatives, governments can reduce hunger and lessen penury in the long run.

6. Conclusion and Recommendations

School meal is regarded as a righteous path to provide crucial nutrition to undernourished children. Adequate nutritious meal consumption promotes a healthier and more secure aging life. In Bangladesh, the school meal initiative helps those impoverished families who are unable to arrange sufficient meal; and because the fugitive hunger in classrooms is likely to badly influence schooling, program makers expected that the school meal initiative could create a significant change in children's foods, and hence their better health and cognitive ability. It is possible to lessen the country's malnutrition rate by spreading this program across the country. A significant step in making a successful future for the entire Bangladeshis is to provide healthy, garden-fresh, homemade foods that generate sufficient sustenance for school-aged children. Despite the facts and research described above, there are still a number of constraints and menaces to the viability of school meals initiatives. To improve schoolchild’s nutritive condition and sustain better schooling performance for penurious malnourished children, the elements that affect the progression, sustainability, fruition and/or non-success of the school meal initiative the management and liability must be examined.

School meal initiative policies, tasks, aspects, budgets, implementation attempts, and stakeholder efforts vary among continents, regions, and countries. In Bangladesh, to upgrade the design and implementation of school meal initiatives, it is important to undertake the following steps:

1. The school meal initiative should target locations where malnutrition is a major issue, lower rate of enrollment and attendance along with high dropout rates are prevailed in school.

2. School meal must be prepared with locally produced components as well as completely following the nutrition chart.

3. To incorporate nutrition and food knowledge into school meals, it is essential to use mealtimes as schooling opportunities for children and to improve their eating habits.

4. Adopt a holistic nutrition approach to feed the primary classes children, with specific goals for distinct age groups, such as pre-primary, primary, and older pupils in classes 4 and 5.

5. To ensure quality education, a collaborative and bottom-up method in harmony building needs to be established. To do this, the following steps need to undertake.

    a) Integrating the pledge of all education bodies like: comprising the education policy planners, especially the administration of school and the Ministry of Primary and Mass Education, as well as the academy community's involvement, including the School Management Committee (SMC) and the school-parents committee.

b) Taking the effective steps on policies and targets that highlight on delivering, developing, and assisting school meal initiatives and successfully focus on facing the schoolchildren's nutrition and health, as well as their academic accomplishment.

6. Specific information needed for preparing the school meals and their nutritional content and quality, the scheduling of school meals and the various scenarios in the education sectors like: enrollment rate, attendance level and academic performance, should all be included in an appropriate guideline. Moreover, the accessibilities of opportunities and resources must be considered, as well as program administrators' and policymakers' opinions of the nutrition and health needs of schoolchildren and the community's capability to engage in the initiative of school meal.

7. The School meal programs should be adequately integrated or supportively matched with school meal, school health, and more other relevant policy and regulatory frameworks.

8. The school administration must completely comprehend and adhere to the new school meal policy.

9. The school meal arrangement must be done with transparency and responsibility. It must also be confirmed that the initiative will not be hampered by local vested interests.

10. The school administration should take necessary steps to expand the meal program to secondary schools in addition to primary schools.

11. Create an environment that encourages students to finish primary school and successful transition to secondary school so that they can gain the skills they need to ameliorate their lives.

12. Strengthen the capabilities of school employees and those in charge of school meals.

13. Investing in keen monitoring and evaluation, including the adoption of appropriate measures related to school meals, is crucial for understanding whether desired improvements are occurring and interlinked with the different periodical impacts. It's also critical to expand the monitoring and assessment system to concentrate on primary school grade attrition and finding the causes for the lower rate of primary completion.

In sum, the school meal initiative is crucial in improving the physical and psychological condition of schoolchildren. The school meal arrangement in Bangladesh is the first initiative to provide direct incentives to primary school pupils, rather than cash or food, to encourage them to attend school. As a result of this initiative, parents will be more enthusiastic about sending their children to school rather than engaging them in income-generating activities. Collaborative efforts are needed to reinforce the activities linked to school meals and acquire the successful outcomes within the time frame.

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