

Is School Breakfast Beneficial? A Review of Evaluation Studies

A Report

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Abstract

This report is an attempt to understand the impacts of breakfast schemes provided by the school authorities across the world on the academic and other performances of the beneficiaries. The report has reviewed some of the prominent research done on the theme and have found that school breakfast has an equally important role like lunch programs in increasing the benefits of nutritional interventions.

The key finding of the review is as follows:

- *Provision of free breakfast to school children in schools ensures adequate nutrition and energy to attend daily classes with improved concentration and interest. Students who eat breakfast show improved attendance, behaviour, and academic performance, as well as decreased tardiness. Students who skip breakfast show increased errors and have slower memory recall as per the research.*
- *Provision of free meals have proven its impacts on improving school enrolment rates. Free breakfast reduces expenditure of the family, and acts as an incentive to send children to school thereby increasing school participation rates.*
- *Many of the studies like Soldavini (2019), Frisvold (2015) have suggested that majority of the beneficiaries who participate in free meal programs are from the lower income households, and hence need this support for adequate nutrition. Provision of free breakfast with a well-designed nutritionally enriched diet would give more nutritional gains and helps to recover from malnutrition and undernourishment.*

The report calls for further extensive research on the benefits of breakfast along with the provision of free lunch as well as a comparative study of both interventions to design better nutritional intervention policies.

Introduction

School Breakfast Program (SBP) initially designed to remedy the educational gap of students from low-income household has created more impacts within and outside the purview of academic performances of the beneficiaries. Though there have been different schemes in schools to provide free lunch or mid-day meals, it is the concern of children attending daily classes with an empty stomach paved way for implementation of breakfast schemes. In the context of successful implementation of school lunch programs and meal programs, studies pointed that provision of lunch alone would not solve the age-old issue of classroom hunger. Students who come from lower income households depends completely on lunch programs for their daily afternoon hunger. Thus, in this context, this report has attempted to analyse the policies implemented to provide free breakfast to school children in different countries and to see a comparison of whether providing a breakfast scheme is more beneficial than lunch program.

Anecdotal evidence suggests that providing a healthy breakfast to school going children, improves their cognition, attention span and ability to learn. Apart from all these they also improve other social and behavioural skills. Usual school lunch schemes have proven that it is effective in targeting gender objective. It also frees up resources within households and enables improved livelihoods. It is clear that school feeding programs is an effective safety net to poor families in times of crises. It offers an incentive for households to send their children to school and invest in education, breaking the poverty trap. It increases school enrolment and attendance by reducing drop-out rate. It draws girls to school, maintains their attendance and increases their progress, effectively addressing the gender gap in school; it does not only change the lives of the girls, but also of their future children. There is enough evidence on the impacts of school lunch programs but a comparative analysis of them with the breakfast programs are less. It is pertinent to gauge the importance of providing breakfast too as a free school feeding program. The thrust of this report is therefore to examine the impacts of school breakfast programs in comparison with the benefits of school lunch programs.

Methodology

Policy makers may use a number of interventions to target various groups within a population through social safety nets to address the problem of hunger and malnutrition. School feeding programs are one intervention that governments and non-governmental organizations (NGO) across the globe have utilized in targeted areas where a significant part of the population especially the school going children, faces poverty and hunger. The important objective of this study is to see whether there is a distinctive impact for the provision of free breakfast for the school children. Hence articles which have dealt exclusively on school breakfast schemes were chosen for the review.

The objectives of this literature review are defined below:

- Document the evidence of impacts of school breakfast programs in terms of effectiveness in improving physical health, cognitive development, and school performance outcomes of the beneficiaries.

Literature Review

No	Title	Objectives	Methodology	Output/Findings
1	Bütikofer, A., Mølland, E., & Salvanes, K. G. (2018). Childhood nutrition and labor market outcomes: Evidence from a school breakfast program. <i>Journal of Public Economics</i> , 168, 62-80.	Analyse the long term and intergenerational consequences of access to nutritious food using the rollout of a free school breakfast program in Norwegian cities.	The study has used data of individuals born between 1910 to 1932 on average number of school years, average number of working years, annual income, nature of employment-self, private or government, student teacher ratio, school attendance rates, doctor-patient ratio were collected from the data register of Norway. A model combining all the variables constructed was created and differences in differences was applied to identify the changes before and after implementation of the program.	<ul style="list-style-type: none"> • Access to school breakfast increases the completed years of education, on average, significantly by 0.1 years. This corresponds to an increase in completed years of education of approximately 1% compared with the pre-intervention level. • Study found that access to school breakfast increases the average earnings from 1967 to 1980 by 2–3% compared with the pre-intervention level. <p>Long term effects-</p> <ul style="list-style-type: none"> • The first-born children benefitted little from their mothers' access to the Oslo breakfast. However, the first-born children of fathers with access to nutritious food earn significantly more in their early to mid-30s. Implying that the long-term impacts of Oslo breakfast program are gender specific.
2	Bhattacharya, J., Currie, J., & Haider, S. J. (2006). Breakfast of champions? The School Breakfast	Analyse the impact of SBP (School Breakfast Program) on the health of school children through clinical	The study has used data from NHANES III (National health and nutritional examination survey) was used and difference in difference analysis was carried out in the study. Serum extractions were done in two seasons- when schools	<ul style="list-style-type: none"> • SBP raises the HEI by 3.69 points, reduces the frequency of low serum vitamin E levels by seven percentage points, and lowers the probability of low fibre and low iron intake by 19 percentage points.

	Program and the nutrition of children and families. Journal of Human Resources, 41(3), 445-466.	examination and laboratory tests- serum levels of vitamin A, vitamin C, vitamin E, folate, anaemia, and high cholesterol.	were opened and when it was summer vacation.	<ul style="list-style-type: none"> • Effects of SBP are larger for school children and younger household members as compared to adults. • The serum analyses have shown that the presence of cholesterol is low and fibre, vitamin, iron and other components considered for the study was relatively in good levels during the schools working period than during the vacation when the students were under school breakfast program.
3	Gleason, P. M., & Dodd, A. H. (2009). School breakfast program but not school lunch program participation is associated with lower body mass index. Journal of the American Dietetic Association, 109(2), S118-S128.	estimate the relationship between participation in school meal programs and children's body mass index (BMI) and their likelihood of being overweight or obese, testing the hypothesis that school meal participation influences students' weight status, as measured by their	<p>A cross-sectional design in which a regression model was used to estimate the association between participation in the School Breakfast Program and National School Lunch Program and children's BMI and risk of overweight or obesity, controlling for a wide range of student and school characteristics.</p> <p>Participants included a nationally representative sample from the third School Nutrition Dietary Assessment Study of 2,228 students in grades 1 through 12 for whom height and weight measurements were obtained. These students, along with their parents, each completed a survey. Multivariate regression models were used to examine</p>	<ul style="list-style-type: none"> • No evidence was found of any relationship between usual school lunch participation and any of four different measures of weight status based on students' BMI. School breakfast participation was associated with significantly lower BMI, particularly among non-Hispanic, white students. • There was no evidence that either the school breakfast or lunch program is contributing to rising rates of childhood obesity. In fact, School Breakfast Program participation may be a protective factor, by encouraging students to consume breakfast more regularly.

		BMI and indicators of overweight and obesity.	the relationship between usual school meal participation and BMI and indicators of whether students were overweight or obese. These models controlled for students' demographic and socioeconomic characteristics, levels of physical activity, usual eating habits, screen time, and school characteristics.	
4	Frisvold, D. E. (2015). Nutrition and cognitive achievement: An evaluation of the School Breakfast Program. Journal of public economics, 124, 91-104.	The article investigates the impact of the School Breakfast Program (SBP) on cognitive achievement by comparing it with the non-beneficiaries.	Primary data was collected from 43 schools which participated in the school breakfast program in the year 2009 and 2014. 1800 students were participants and 1500 students were non participants of the program. Multinomial logistic regression was applied to find the association of cognitive achievement and participation in the program. Difference in differences method was used to find the long-term impact on cognitive achievement.	<ul style="list-style-type: none"> • In the primary analysis of the study, it was found that the beneficiaries had an increased math achievement with a standard deviation of 23% while non beneficiaries had only 8%. • Outputs of multinomial regression show that there is a positive association of attendance of SBPs on the math, science and reading scores of the beneficiaries at significant levels (math-0.002, science-0.034, reading- 0.047). • There is a significant increasing positive impact on the math, science and reading scores of beneficiaries over the course of 5 years while compared to non-beneficiaries of the SBP.
5	Soldavini, J., & Ammerman, A. S. (2019). Serving breakfast free to all	The article examines the association between offering breakfast	Article has used cross-sectional study using data from the North Carolina Department of Public Instruction covering data from 2,285 North Carolina public	<ul style="list-style-type: none"> • Breakfast serving models positively associated with academic participation for elementary and high school students ($P < 0.05$). Serving breakfast free to all

	students and type of breakfast serving model are associated with participation in the School Breakfast Program. Journal of the Academy of Nutrition and Dietetics, 119(7), 1142-1149.	free to all students as well as breakfast serving model with student participation in the SBP in October 2017 among public schools in North Carolina.	schools who served breakfast in October 2017 with 1,445,287 students. Multinomial logistic regression and odds likelihood ratio analysis was done to identify the association as well as the chances of students' participation in academics.	<p>students was positively associated with SBP participation alone and in combination with free lunch programs ($P < 0.05$).</p> <ul style="list-style-type: none"> • The combine effects of free breakfast program and free lunch programs indicates that free nutritional interventions have a significant impact on academic performances.
6	Jacoby, E. R., Cueto, S., & Pollitt, E. (1998). When science and politics listen to each other: good prospects from a new school breakfast program in Peru. The American journal of clinical nutrition, 67(4), 795S-797S.	Review literature on the long-term impacts of school feeding programs implemented in Peru Andes since 1993.	Systematic literature review of articles published in journals and newspapers since 1993 to 1998.	<ul style="list-style-type: none"> • The first year of implementation documented improved dietary intake and a significant decline in the prevalence of anaemia as stated by many articles. • Undernutrition and morbidity due to nutritional defects has been reduced significantly. Till 1994, majority of the research have been concentrating on n health and nutritional impacts. • Following years more research concentrated on indirect impacts such as mother's labour force participation, agricultural growth, employment rates etc... • Reduction of school withdrawal rates, decreased trends of grade reductions, increased academic performances,

				reduction of anaemia, obesity, childhood morbidity etc. are the significant impacts found in the literature of impacts of nutritional interventions on Peru Andes.
7	Devaney, B., & Fraker, T. (1989). The dietary impacts of the school breakfast program. American Journal of Agricultural Economics, 71(4), 932-948.	Study examines the dietary impacts of the School Breakfast Program in comparison with the National School Lunch Programs based on twenty-four-hour dietary recall data collected during the 1980-81 school year.	Primary data was collected in the year 1980-81 from 48 schools covering 6566 students. Data regarding demographic information of the students, consumption of food in the past 24 hours and economic information such as family income was collected. The paper has used probit modelling to estimate the likelihood of participating in school breakfast programs influencing the academic performances.	<ul style="list-style-type: none"> • The study has identified that school breakfast programs, have an important role in providing important micro and macro nutrients while analysing 24 hr food consumption pattern of the students. • Beneficiaries of school breakfast programs had a significant influence on classroom attendance rates ($p < 0.05$) and majority of them (78%) were from financially lower backgrounds. • School breakfast programs had significant influence on female children than male.
8	Schanzenbach, D. W., & Zaki, M. (2014). Expanding the school breakfast program: Impacts on children's consumption, nutrition and health (No. w20308). National	The paper aims to measure the effect of the two policy interventions of universal free breakfast and breakfast in classroom using experimental data collected by the U.S. Department of	They constructed summary indices combining similar outcomes pertaining to the fields of nutrition at breakfast, nutrition over 24 hours and child health outcomes. In addition, instrumental variables approach and difference in difference method was employed.	<p>Firstly, it was observed that expanding the school breakfast programme has a positive impact on students taking up the programme, especially under BIC treatment.</p> <p>Secondly, universal free school breakfast and BIC were found to increase the probability of a child having a nutritionally substantive breakfast. More specifically BIC treatment ensures that a child “eats two breakfast.”</p>

	Bureau of Economic Research.	Agriculture. It also derived the experimental estimates of free cafeteria breakfast and impact of BIC.		Expanding school breakfast programme had no positive impact on the attendance rate and the health condition of the child. Some suggestive scenarios however indicated that BIC has the potential to improve health and behaviour in some disadvantaged groups.
9	Ribar, D. C., & Haldeman, L. A. (2013). Changes in meal participation, attendance, and test scores associated with the availability of universal free school breakfast. Social Service Review, 87(2), 354-385.	The paper examined how student outcomes like breakfast and lunch participation, attendance and reading, math and science score would vary across schools providing free universal breakfast and ones providing eligibility-based breakfast programme.	Conducted multivariate difference in difference regression models to understand the comparative impact of breakfast and lunch programs according to the significance levels.	The results portrayed the adverse impact that the transition from free to eligibility-based breakfast programmes had especially for children who were not subscribed to free or reduced-price meals. The transition however had no impact on test scores or attendance.
10	Fletcher, J. M., & Frisvold, D. E. (2017). The relationship between the school breakfast program and food	The paper attempts to look into the relationship between School Breakfast Programme and	The paper employs a difference in differences strategy “which compares differences in child food insecurity both within states and across states in schools with different requirements to provide breakfast at school.”	The paper derives that state policies driving schools to provide SBP has lowered the food insecurity issue for elementary school aged children.

	insecurity. Journal of Consumer Affairs, 51(3), 481-500.	food insecurity outcomes		
11	Pollitt, E., Jacoby, E., & Cueto, S. (1996). School Breakfast and Cognition Among Nutritionally At-risk Children in the Peruvian Andes. Nutrition reviews, 54(4), S22-S26.	The paper compares the major findings of two studies related to the educational and nutritional impact of the school breakfast programme with reference to the Andean region of Peru.	The studies compared in the paper undertook randomized control trial experiment with a group of students participating and another group of students not participating in the program.	They concluded that “the brain is sensitive to drops in the short-term availability of nutrients, and that an overnight and morning fast produces a physiological state accompanied by changes in brain function, particularly working memory. This is particularly true among nutritionally at-risk children.”
12	Miller, W., & Lennie, J. (2005). Empowerment evaluation: A practical method for evaluating a national school breakfast program. Evaluation Journal of Australasia, 5(2), 18-26.	Systematically review the different breakfast programs implemented across the countries.	Literature review of research articles published on the theme of provision of school breakfast programs for the cause of educational empowerment. Various theories on empowerment evaluation were applied to analyse the articles.	On purview of the various empowerment evaluation methodologies like conduction 2-round surveys, face to face interactions etc... it was proven that school breakfast programs are also important as much as lunch programs and they provide enough nutrition and energy for the beneficiaries to attend school lectures.

Conclusion

This report was an attempt to analyse various literature available on school breakfast schemes and its impact on beneficiaries. By reviewing different articles on school breakfast programmes, this report has found that provision of free breakfast in schools provide both educational and health benefits to the most vulnerable children, thereby increasing enrolment rates, reducing absenteeism, and improving food security at the household level. Beyond improvements in access to food, school breakfast programs also have a positive impact on nutritional status, gender equity, and educational status, each of which contributes to improving overall levels of country and human development. The study has also stressed the importance of development activities that targeting children has an important role in eradicating chronic hunger and lifting developing countries out of the poverty trap. By investing in the health and nutrition of school-age children, a country can increase the human capital of its younger generations and achieve sustainable economic growth and human development. School feeding is described as a powerful and effective intervention that can help fight chronic hunger while reducing poverty and inequality. In the background of the findings this report has come up with, we stress upon equal provision of breakfast and lunch schemes in schools in order to achieve all the benefits of free school feeding programs. The key finding of this report is summarised below.

- It is evident from the literature that provision of free breakfast to school children in schools ensures adequate nutrition and energy to attend daily classes with improved concentration and interest.
- Provision of free mid-day meals/lunches have proven its impacts on improving school enrolment rates but comparative studies have also shown that provision of free breakfast along with meal schemes have an added positive impact on the beneficiaries.
- Studies suggest that eating a healthy breakfast helps students to do better in school. Students who eat breakfast show improved attendance, behaviour, and academic performance, as well as decreased tardiness. Students who skip breakfast show increased errors and have slower memory recall as per the research.
- Many of the studies like Soldavini (2019), Frisvold (2015) have suggested that majority of the beneficiaries who participate in free meal programs are from the lower income households, therefore a provision of free breakfast would reduce their burden much more.

- Provision of free breakfast along with mid-day meals to school going children would reduce the family expenditure even more and helps them to channel more resources to other needs of the family.
- If provision of free breakfast can reduce more expenditure of the family, it acts as an incentive to send children to school thereby increasing school participation rates.
- Provision of free breakfast with a well-designed nutritionally enriched diet would give more nutritional gains and helps to recover from malnutrition and undernourishment.
- Studies have proven the efficiency of mid-day meal schemes in reducing obesity as the diet consumption will be much more scientifically researched and well designed. If schools take the responsibility of breakfast also the chances of occurrence of obesity can be reduced more.

Thus, it is evident from the literature that provision of breakfast along with lunch programs would manifold the impacts into higher folds. This report calls for extensive research and discussion of the importance of breakfast along with lunch programs in schools to find more sustainable methods to provide better nutritional intervention for the better achievement of all the short term and long-term impacts of such programs.