

Review Article

Impact of Mid Day Meal on Human Capital Formation: A Micro Study

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IMPACT OF MID DAY MEAL IN HUMAN CAPITAL FORMATION: A MICRO-STUDY

Mayurbhanj is one of the districts in the country which is endowed with rich natural and mineral resources. But at the same time, it has been identified as a backward district. It is a tribal-dominated district that is home to less educated and malnourished people. The human capital status of the district is deplorable. Thus, this district was covered under the MDM programme in the first phase of its inception. It was understood that MDM would meet the requirement of human capital formation in the formative years of the children. The scheme will not only attract children to the school but also meet their nutritional requirements. The families will be supplemented if they send their children to the school. Though there are several studies on MDM, those studies have not focused on human capital formation in the formative years. The present study is, therefore, important, particularly in the context of a less developed and tribal-dominated region like Mayurbhanj, to know the impact of MDM in human capital formation, which will ensure its growth and development in future years.

I. GENESIS OF MDM

The present endeavour is an inquiry into the role of the MDM programme in human capital formation as human capital is considered the most valuable resource and the real wealth of a nation. Human capital formation is contingent upon investment in the social sector, such as health and education, for which governments are spending a considerable portion of their limited resources to provide educational and health services to their people. Understanding this link between health and educational outcomes, the Government of India launched the National Programme of Nutritional Support to Primary Education (NP-NSPE) or the mid-day meal scheme in August 1995. The objective of the mid-day meal scheme is that it will help the formation of human capital in the formative stage, and at a later stage, its impact will disseminate to the society at large in the process of development. It is, therefore, realised that unless all the children of primary

schools of the country and the states actively participate in the development process, human capital utilisation shall probably remain sub-optimal. Hence, the present study emphasises human capital and examines the role of the mid-day meal scheme in its formation. The study is basically an empirical inquiry into the role of a mid-day meal scheme in promoting the education and health of children in primary schools. The study is confined to the district of Mayurbhanj and covers the period from the academic year 1999-00 to 2008-09.

II. OBJECTIVES OF THE STUDY

The present work is pursued with the following objectives.

- To assess the impact of the scheme on the education of the students at the primary level.
- To assess the impact of the scheme on fulfilling the nutritional requirement of the students at the primary level.
- To investigate the problems associated with the implementation of the scheme in a backward district like Mayurbhanj and to suggest suitable measures for effective implementation of the scheme.
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III. HYPOTHESES

On the basis of the above objectives, the following hypotheses are tested.

- There is a positive impact of the MDM programme on the education of the students at the primary level.
- The MDM programme fulfils the nutritional requirement of the stakeholders.
- The MDM scheme helps human capital formation in the formative years.

IV. DATA AND METHODOLOGY

The work is based on both primary as well as secondary data. The secondary data are drawn mainly from the published and unpublished reports of the departments such as the Directorate of Economics and Statistics, Government of Orissa; Directorate of Women and Child Development, Government of Orissa; Department of Planning and Co-ordination, Government of Orissa;



Annual Work Plan on MDM and Census Publications, Government of India. The primary data are collected through canvassing a well-structured questionnaire. Statistical tools such as ratios, percentages, annual Compound growth rate, mean and standard deviation, correlation and regression analysis have been used for comparative analysis.

V. REVIEW OF LITERATURE

The present work reviews some of the studies on MDM where views of noted scholars and researchers on MDM have been discussed. The volume of literature relating to human capital formation and MDM are found quite large at the macro level. There is also no dearth of studies on the impact of MDM on the health and education of children as the topic is widely discussed and debated. But, to understand the nature of impact at a deeper level, it is important to move from aggregate to disaggregate level. The aggregate analysis will be incomplete unless the analysis is carried down to the grassroots level. However, not much work has been done at the micro-level to examine the efficacy of MDM on human capital formation. The present work intends to fill this vital gap. Furthermore, the study of MDM in Mayurbhanj will have an immense bearing on other districts of the state. The present study is unique in the sense that the findings will unfold the complex nature of the impact of MDM on human capital formation at the formative years of the children.

VI. SOCIO – ECONOMIC PROFILE

Following observations emerge out of the analyses of the socio-economic profile of the study area and response of the stakeholder to the policy of the government on MDM. The economic profile of the district reflects certain peculiarities that need to be taken care of. Mayurbhanj is located in northern Orissa. It is the largest district in the state. It possesses varied physiography. The historical background of the district, along with geographical diversities, contains the seeds of underdevelopment. The district is found to be an economically poor district with very low income and low per capita income compared to other districts of the state. The share of the district's GDDP as a percentage of the SDP of Orissa has been continuously declining. The gap between the per capita income of the district and that of the state is large and, in fact, widening over the years. The growth rate is not only lower but also sluggish and volatile, with large annual fluctuations in GDP. The district has hardly improved its position vis-a-vis other districts. All the macro-economic features of the district epitomize the economic backwardness of the district. From the poverty profile of the district, it is understood that the percentage of people below the poverty line is found to be much higher than that at the state level and all other districts except a few ones. The

poverty is spatially concentrated mostly in the rural areas, and that too among the households belonging mainly to ST households hired labourers and landless and marginal farmers. There also exist significant regional variations in the incidence of poverty in the district. The other indicators of relative backwardness and deprivation of the district are low HDI, high death rate, low level of child nutrition, low infant mortality rate, lower number of hospital beds per lakh of population, low doctor-population ratio and high teacher-taught ratio (1:40). The picture of the district in terms of some of the above characteristics is much worse and despicable. An inquiry has been made in the present study to assess the resource base and potential of the district. From the study, it is found that the district is the treasure house of vast mineral, forest and animal resources. It is richly endowed with mineral ores of the total deposits of the state. But the attempts to exploit these resources are almost nonexistent. Hence, the rate of exploitation of minerals is found below. Thus, the rich mineral resources, dense forest, vast unutilized land and picturesque landscape offer a wide scope for the economic development of the district. Besides the mineral resources, human resource development and infrastructure penetration in the district are not satisfactory. A major percentage of villages lack all-weather connectivity. The railway route length is only 113.55 km, out of which 51.5 km railway route is electrified in the district. The air transport facility is found to be absent. The infrastructural facilities available are seen to be poor, and a large number of people, particularly in hilly and interior areas, suffer from physical exclusion and are unable to access the available opportunity.

VII. MAJOR FINDINGS OF THE STUDY

Major findings of this section outline the impact of mid-day meals on the health and education of children at the primary level, which is the formative stage of human capital formation.

A. Education

a) Enrolment

It is observed that in the sample schools, the total enrolment has increased from 2,848 in 1999-00 to 3,239 in 2008-09. However, the enrolment of boys has decreased from 65.59 per cent in the beginning to 64.93 per cent at the end of the study period. In contrast to this, the enrolment of girls has increased from 34.41 per cent to 35.07 per cent during the same period. This increase in the participation of girls may be attributed to the MDM programme. The enrolments of ST and SC category students have increased marginally, while that of the general category has slightly declined. This indicates that the MDM programme has not only prevented dropouts but also attracted new students to

the school, particularly from ST and SC categories. While there is an increase in enrolment of girls in all categories, there is a decrease in enrolment of boys both in ST and general categories. MDM programme has statistically significant positive impacts on gross enrolment rate. It is observed that the mother's education has a strong and positive impact on enrolment, but the father's education does not. Child enrolment rates increase as household income rises. Household size is negatively correlated with enrolment.

b) Annual Compound Growth Rate

The annual compound growth rate (1.43 per cent) of enrolment is almost the same both for general and ST categories. But the growth (2.81 per cent) of enrolment of SC category students is marginally above this rate. It is heartening to note that the growth rate of enrolment of girls in all categories are more than the annual compound growth rate of boys and this indicates that MDM has intervened to attract students, particularly girls, into the fold of education.

c) Attendance

There is a continuous rise in the average attendance of the students during the study period. The percentage of attendance for all communities increased from 75.98 in the year 1999-00 to 79.63 in the year 2004-05 and further increased to 83.14 in the year 2008-09. The same trend is also found both for boys and girls. The category-wise picture is not different. Attendance of students in all categories has shown a rising trend. However, absenteeism is found more among girls compared to boys. The average attendance is found to be the highest (86.31 per cent) in the case of general category boys, but it is the lowest (76.62 per cent) for ST category girls. It may be pointed out that there is not much difference between the attendance of the SC and general category students, whereas that of ST students lag behind. In the pre-lunch session, the attendance is more compared to the post-lunch session for all categories, both for boys and girls. Leaving school after lunch is found to be more among ST followed by SC. This is minimal for the general category students. Due to the MDM programme, school attendance of participating students has increased by 1.214 days per month (or 5.06 per cent of total school days in a month).

d) Dropout

It is found that the overall dropout rate has reduced from 10.12 per cent in the academic year 2004-05 to 8.45 per cent in the academic year 2008-09. The dropout rates for the boys and girls of all communities, which were 9.82 per cent and 10.61 per cent, respectively, are found to have decreased to 8.13 per cent and 8.21 per cent during the same period. It may

be pointed out that the dropout rate of the girls is found to be higher than that of the boys in the study period. The category-wise analysis of dropouts shows that it is maximum (8.93 per cent) for the ST category students and minimum (5.15 per cent) for the SC category students. While the dropout among girls of SC and ST categories are more than their counterparts, the reverse is found in the case of general category students. Though there are differences in dropout rates among different categories, a declining trend is observed for all categories, both for boys and girls. This is a positive sign for healthy growth of primary education, and the credit may be attributed to the MDM programme. The MDM programme has a statistically significant negative impact on dropout that has been proved by the Probit regression model. The value of the coefficient is - 0.069, which indicates that participation in the MDM programme reduces the probability of dropping out of school by 6.9 per cent. Other statistically significant determinants of preventing drop out of school children are household size and mother's education. The likelihood of school dropout decreases as household income increases.

e) Teacher-Taught Ratio

The teacher-taught ratio in four sample blocks of Mayurbhanj is higher as against 1:38 for the state. Bijatala block, in comparison to the other three blocks, has less accessibility and is less developed, for which the teacher-taught ratio is found to be the highest, followed by Bangiriposi, Rairangpur and Saraskana. Thus, it may be construed that there is less number of teachers in the district compared to other districts of the state.

f) Learning Level

The MDM programme has a positive impact on learning, but it is not statistically significant. The Tobit regression equation suggests that participation in the MDM programme does not necessarily increase test scores. It is further evident that

- Girls do better in achievement tests than boys.
- Parent's education level has a positive impact on students' test scores.
- Students score high in tests if the teacher-taught ratio is low.
- Students score more if they have electricity at home.
- The learning level of general students is better than that of SC and ST students. It is construed that in spite of an increase in enrolment and attendance, the education standard of the students has remained less than satisfactory.

B. Health

The following significant observations are obtained from the anthropometric indicators such as height,

weight and body mass index of the primary school children participating in MDM and that of the out of school children in the same age group. From the data of height and weight of children aged 6-10 years for three categories of school children, namely, General, ST and SC, it is established that the general category children have mean heights and weights considerably above those of ST children and close above that of the SC children. ST children have mean heights which fall below those of children of the general and SC categories at every age. Mean heights of general children are at the top. The comparisons with respect to mean weights are somewhat similar. Mean weights for general children are considerably above those for ST and competitive to that of SC. The standard deviations for height and weight increase from year to year almost for all the categories. The BMI for both sexes in different categories show a similar trend, and it is found that BMI for respective years increases in age. For all the categories, the mean BMI of girls is higher than that of boys. The variability of height and weight with age and sex is very nearly the same in each of the three categories of school children, although the overall levels at which the means fall do differ. There is a steady, nearly linear increase in height with increasing age. Weight also increases with age but show some greater variability. Both height and weight show increasing standard deviations with increasing age throughout the age range, as has been noted. Within each of the three categories, the mean height and weight for boys are more than that of girls. In each category, weight is highly correlated with height. As height increases, weight increases both absolutely and relatively. In other words, with each increase in 5cm height groups, not only does the mean weight increase, but the ratio of weight to height also increase. The relative weight (kg of weight per cm of height) is slightly different among the three categories, with the general category having the highest relative weights and ST the lowest. The pattern is essentially the same, however, in all three categories. From the means and standard deviations of height, weight and BMI of out of school children irrespective of category, aged 6 years through 10 years, it is established that mean height for both sexes is increasing in a non-linear fashion by about 1.3 to 4 per cent for every single year of age from 6 years through 10 years. In each age group, the mean height of girls is lower than for boys by less than 2.5 cm. As age increases, the difference in the means by sex decreases for each age group. The rate of growth in the mean height of girls is more than for the boys. The mean weights of out of schoolboys and girls are closer to each other. Boys are heavier than girls. The rate of change in mean heights of both the sexes is not distinct in each age group. The mean BMI for out of schoolboys and girls are increasing with the change of their age, but

they are close to each other. In mean heights and weights, boys are ahead of girls, but in BMI, the picture is different. The BMI of boys varies from 14.13 to 14.83, whereas, in the same age group, it varies from 14.29 to 15.25 for girls. It is evident from the study that the mean heights for both boys and girls who attend school are greater than that for out of school children. The mean heights for both sexes of school children are increasing in an almost linear fashion by about 4 per cent for every single year of age from 6 years through 10 years whereas for out of school children it is increasing in a non-linear fashion by about 1.3 to 4 centimetre in the same age group. In each age group, the mean heights of school girls is lower than that of boys by less than a centimetre, but the mean heights of out of school girls are lower than that of boys by less than 2.5 cm. Like mean heights, the mean weights for both sexes of school children are found to be greater than that of out of school children. The mean weight of school children for both sexes rise sharply for every single year of age, but the rate of change in mean weights of out of school children is not sharp at the same period. BMI of school children of both sexes is higher than that of out of school children. It implies the nutrition level of school children is better than the out of school children. Both the school and out of school children are no doubt below the standard height, weight and BMI, but the school children taking MDM are found closer to the standard height, weight and BMI compared to out of school children. It may, therefore, be concluded that school-going children with respect to height, weight and BMI are better than those of out of school children. The difference between these variables may be attributed to the implementation of the MDM programme.

C. Quantity of MDM

It is found that 51.87 per cent of students are of the opinion that a mid-day meal is sufficient for them. But a sizable number of students, i.e., 48.13 per cent, are not satisfied with regard to the quantity of the mid-day meal provided to them. Since the inception of the mid-day meal scheme, the objective is that the school mid-day meal is meant to be in addition to, and not a substitute for, meals which parents should, in any case, provide to children at home, or were so providing prior to the introduction of the cooked mid-day meal programme. But the present study finds that almost half of the students of our sample are not satisfied with the number of mid-day meals. This may be due to the impoverished condition of the households where the children are underfed.

D. Sanitation

It is observed that 87.5 per cent of schools have separate toilets for boys and girls in their compound. 6.25 per cent of the sample schools have no toilets, while another 6.25 per cent of schools have toilets under construction. Students of 59.38 per cent of schools use the toilets while 12.5 per cent of students are not using the toilets as these are not clean. There is 9.37 per cent of schools in which toilets are in dilapidated condition, and therefore these are abandoned. There are also 6.25 per cent schools in which toilets are used only by the staff and guests though these are actually meant for the students. The students are prohibited from using it on the plea that they will make it dirty. It is observed that not a single toilet has the provision of a water cleaning facility for which the prime objective of providing sanitation to the pupil is hindered. Also, during the interaction, it is revealed that most of the students hesitate to use the unhygienic toilets. It is revealed that 93.75 per cent of schools have their tube wells within the school premises, and only 6.25 per cent of schools do not have the facility of drinking water. It is also found that the water quality of the tube well in some schools is not good as it is rich in iron, for which they have to depend upon private wells or tube wells located in distant places. There are no schools in the sample in which they have to depend on an open well for drinking water. Gone are those days when pupils were not sent for primary education due to the unavailability of drinking water in the school area. Now there is the most successful provision of drinking water in almost all the schools in the primary section.

E. Disease and Vaccination

From the parents of the sample children, it is known that 70.62 per cent of children were not attacked by any diseases during the last six months of our study period, i.e., December 2008, but the rest percentage of children were affected by diseases like cough and cold, fever, measles, jaundice, scabies, diarrhoea, etc. Among the affected ones, the highest number of children (20.63 per cent) was suffering from fever as this district is a malaria-prone area. Next to fever, 2.5 per cent of children had the disease- scabies because, in this tribal-dominated region, people do not have much awareness regarding cleanliness for which such disease occurs. In our study, it is found that in the sample area, the primary health care facilities are provided at an average distance of 3.93 km, which helps the people to avail the services of health care. As a result of our observation, more than 70 per cent of students are free from diseases. More than ninety per cent of the children are found to be vaccinated. The children who could be not vaccinated are due to inconvenience or superstition. As the vaccination centres are mostly located in easily accessible and well-communicated regions, the people

living in the remote and inaccessible areas are unable to avail the utility of the vaccination programme. Due to superstition also, some parents are unwilling to vaccinate their children.

F. Problems in MDM

a) Problems in Organisational Structure

The implementation of the MDM scheme is not free from hindrances. The following problems are reported to have been encountered by the implementing agencies.

- (i) Serious Quality Problems
- (ii) Lack of Basic Infrastructure
- (iii) Social Discrimination
- (iv) Corruption and Pilferage
- (v) Absence of Separate Budgetary Provision
- (vi) Absence of Weighing Machine
- (vii) Inadequate Wages to Cooks and Helpers
- (viii) Delay in Disbursement
- (ix) MDM is not given on Holidays
- (x) Contractor Raj

b) Problems with the Staff

- (i) Participation of VECs and PTAs in Decision Making Process is absent
- (ii) Disruption in Classroom Activities
- (iii) Participation of Children below Six Years
- (iv) Fake Students' Attendance
- (v) Maintenance of Stock Register
- (vi) No Organised Way of Serving MDM

c) Problems of the Students

Monotonous menus undermine the nutritional value of MDM. In most of the sample schools, children are served only rice and dal without any vegetables. There is no weekly menu followed by the implementing agencies. In some schools, the quality of the meal is so poor that some children prefer to eat at home. Sometimes eating food makes them ill. The children are of the opinion that the food served is not sufficient for them. Though there is the provision to give eggs for two days in a week - on Wednesday and Friday- it is learnt that in some cases, they are given for one day only. This is due to the unavailability of eggs in the local market, as reported by the teachers. Often bad quality eggs lead to students' sickness. Also, it is revealed that sometimes students are distributed raw eggs instead of boiled ones. While the programme implementing agencies face problems procuring eggs for the MDM programme, they distribute fruits like apples or bananas as a substitute for eggs. Fruits are not the exact substitute for eggs. So the nutritional support to children through MDM is hampered to some extent.

VIII. RECOMMENDATIONS

On the basis of the findings and problems discussed above, the present study prescribes the following suggestions that have far-reaching policy implications for human capital formation in the formative years through the effective implementation of MDM in the Mayurbhanj district of Odisha.

- (i) Better Monitoring System
- (ii) Timely and Right Quantity of Delivery of Food Items
- (iii) Enhancement of Financial Allocation for MDM
- (iv) Improvement in Infrastructure
- (v) Plan and Implement Development Programmes
- (vi) Linking of MDM Programme with Related Inputs

Taking a longer view, there is much potential for linking MDM with related inputs such as micronutrient supplementation, health services and nutrition education

- ❖ Provision for regular medical checkups of the children,
- ❖ Preventive measures,
- ❖ Nutrition services,
- ❖ Maintenance of mental health and
- ❖ Maintenance of health records.
- (vii) Socialisation Value of MDM
- (viii) Creation of a Social Norm
- (ix) Strong Political Will
- (x) Purchase of Raw materials from Local Farmers
- (xi) Minimum Wage for Cook and Helper
- (xii) Training to Teacher in-charge of MDM and Cook
- (xiii) Additional Incentives
- (xiv) Appointment of Line Staff
- (xv) Creation of Vegetables Garden
- (xvi) Community Participation
- (xvii) Multi-pronged Efforts to Educate Parents
- (xviii) Improvement in the Economic Status
- (xix) Provision of MDM Both in Working Days and Holidays
- (xx) Different Menu for Week Days
- (xxi) Provision of Education Package
- (xxii) Healthy School Living
- (xxiii) Learning of Good Habits
- (xxiv) More emphasis on Education and Human Capital Formation
- (xxv) Students may be motivated by the teachers not to leave the school in the post-lunch session, and by that, their learning level may be improved.
- (xxvi) More teachers may be appointed for having a low teacher-taught ratio as it will improve the standard of the students.
- (xxvii) More nutritious MDM should be provided by the government to schoolchildren to have a better impact on human capital formation in the formative years.

(xxviii) Steps may be taken to reduce dropout rates and attract the out of school children to schools.

IX. CONCLUSION

The MDM programme in Mayurbhanj no doubt has intervened in exerting impacts on the nutrition and education of the school children. In particular, the programme has brought the children of the disadvantaged groups into the realm of primary education who suffered from the traditional weakness of virtual inaccessibility of primary schooling. It has seemingly linked itself with success related to eradicating classroom hunger as well as undernutrition among the children of the underprivileged groups. Many of the parents and children have been seeing the programme as major state intervention in their layout. Aside from these vital advancements, there have been several other impacts of the intervention. The increased rate of attendance of the children and, in many cases, teachers have a positive role in the functioning of the schools. Barring a few exceptions, all the schools visited were seen to be running in schedule, keeping the teaching and learning activities in the centre.

This clearly nullifies the anticipation of a larger section of the media, intelligentsia, relatively richer parents and others who predicted a total collapse in teaching and learning activities. In addition, the programme has achieved some major success in reducing the gap between the different caste hierarchies. The mid-day meal programme seems to have offered an opportunity, however, limited it may be, to reduce the sense of distance between the children of different social groups. In many of the schools, teachers maintained that the high caste children have started sharing the food with others, shredding off their earlier inhibitions. The programme has also created employment opportunities. The involvement in the programme has certainly created a large scope of income-generating activities for the women in the form of supplying ingredients required for preparing MDM to the schools by procuring from the market, and also they supply vegetables by producing the same. However, there is a long way to go for the complete success of the programme in a less developed district like Mayurbhanj. Strong political will, adequate and timely supply of materials, increasing allocation of funds, filling up of all vacant posts, provision of sufficient infrastructure, effective supervision and accountability of the programme to the people, involvement of parents in the programme to make it inclusive, devolving power to Panchayati raj institutions to coordinate between the government officials and school administration will definitely help the overall success of the programme. Unless and until all the functionaries serve the rural people with urge

and devotion, the very purpose of MDM will not be proved successful. Hence both Government organizations and Non-Government Organisations should work together so that the very purpose of MDM will be proved successful within a short span of time.

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