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Improving ICDS Effectiveness Through Enhancing M&E Efficiency In India: Case-Control Study

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***Abstract*—Inequity in Childhood malnutrition in India is showing diminishing return in decline and concentrating mostly among poor and vulnerable communities and more specifically, who lives in disaster prone areas. The present study investigated how the nutrition governance can be strengthened through improved monitoring and evaluation (M&E) efficiency generation so that they can ensure smooth service uptake during and after disaster. The study examined the M&E systemic gaps in the nutrition service delivery of Integrated Child Development Service scheme in four disaster prone districts in West Bengal, India. Moreover, the impact of new risk informed M&E system on service delivery effectiveness is also estimated using case-control method taking two case districts and one control district. Looking at the average treatment effect (ATE) values, it can be argued that the factors significantly contributing to satisfactory results in Malda and South 24 Parganas are related to the initiation of Learning and Adaptation process in terms of staff evaluation, post-disaster coverage measurement etc. However, there exists scope for lots of improvements in relation to other items under the same construct to be operationalised in a consistent manner. Given the negative value of rho, it can be argued that unobservables that improve M&E performance tend to occur with unobservables that persist in the district, which is treated as control. These unobservables may include external environments and the requirement lies in strengthening horizontal integration while conducting periodic risk and impact analysis. Thus, while implementing child risk analysis in the control district, all the factors considered in this study are to be handled carefully and effectively to maintain a higher level of technical efficiency so that the implementation can bring desired outcome.**

Keywords–Nutrition Governance; M&E Efficiency; Case-Control Study; Disaster Preparedness

I. INTRODUCTION

A. Context of malnutrition and the existing governance system

Low and Middle-Income countries are fighting with the burden of all forms of childhood malnutrition – stunting, wasting, underweight, and micronutrient deficiencies [1]. Empirical literature inferred that increasing the effectiveness of the nutrition programme reduces malnutrition by 20 per cent and child mortality by 15 per cent [2]. Chakrabarti et al. (2019), Martinez-Schiferl (2012), Leroy et al. (2008) examined the nature of covered population and factors at both demand as well as supply sides (demographic, socioeconomic, service accessibility) constituting the effectiveness to increase access to the service [3, 4, 5]. Given such circumstance, exposure of children to multiple covariate shocks like natural disasters, for example, floods, cyclones, droughts etc., creates pressure on the sub-optimal capacity of service delivery system, reduces its effectiveness, efficiency and consequently increases malnutrition [6,7]. Given the backdrop, investigating the effectiveness of strategies to increase the efficiency of the nutrition intervention programme for ensuring access to service during a disaster has not done so far, especially in India.

The nutrition intervention programme –Integrated Child Development Service scheme (ICDS) in India is targeted at eradicating childhood malnutrition – covers different programme components like supplementary nutrition provision for children, growth monitoring, counselling of pregnant women and lactating mothers, early childhood cognitive development. It is also targeted to reduce the likelihood of future malnutrition prevalence through preventing the occurrence of intrauterine growth retardation – by taking care from conception to birth [8]. In the last 12 years, coverage of the ICDS programme increased to 82 million children, 19 million pregnant women and lactating mothers [9, 10]. However, malnutrition under the age of five in India has declined from 42.5 per cent to 35.7 per

cent – i.e., by only 6.8 percentage points in 10 years. In the West Bengal state of India, the figures show the fall is by 7.1 percentage points – from 38.7 per cent to 31.6 per cent. Previous works investigated the inequity aspect of ICDS service delivery and uptake [3, 11]. As found in Chakrabarti et al. (2019), the inequality in service uptake has been decreased from 2006 to 2016 based on the recommendations in different research on reducing the rich-poor gap in access. For example, in the most deprived quintile, service uptake increased from 11.7 per cent to 34.8 per cent in the said period [3]. Though there is an increase in coverage with fall in inequity in access to ICDS services, level of malnutrition has not been reduced by adequate magnitude, especially in disaster-prone pockets.

While having the target of reducing poverty and hunger under SDGs (Sustainable Development Goals), different studies recommended that government departments along with handholding support from civil societies are to increase the scale of child development services with higher quality and optimisation of resource use [12, 13]. Besides, child development programmes implemented in other developing countries reflect that these programmes are successful in achieving higher socioeconomic benefits compared to costs incurred for implementation [14]. The study by Tomlinson et al. (2018) observed that enhancement in process efficiency and effectiveness of social programmes contributes to the rate of growth of children [15]. On the other hand, it is evident that in respect of ICDS implementation, absence of periodic evaluation measuring the programme impact with given level of operational efficiency influences management's limited knowledge about the quality of service and the actual coverage of the population [16]. As a result, the actual coverage of essential anganwadi services either is decreasing or remaining constant resulting in reduced or stagnant impact due to improper targeting followed by application of less effective sub-optimal strategies [15, 16]. Moreover, the use of scarce resources targeted for this public service is also inefficient as the distribution depends less on periodic measurement of changes in needs.

Consequently, the level of malnutrition is not falling at par with the rate of execution of the programme components [17]. Studies also found that limited information on actual increase in number of beneficiaries reduces community participation in service uptake and results in diminishing returns to fall in malnutrition [16]. Furthermore, studies mention that data on the number of awareness programmes conducted in a quarter, the number of participants with and without children etc., may help to modify the capacity of providers and centres to fit with the changed estimate of potential coverage. The study also mentioned that an increase in the coverage with greater effectiveness and efficiency of the programme is essential to reduce malnutrition [18]. However, such a dimension of the effectiveness and efficiency of the M&E component, for example, the impact of sharing those data with the community – is not examined primarily on the current geophysical setting.

Though the ICDS programme components cover communities at the micro-level (400-800 population per Anganwadi centre also known as AWCs) with a substantial amount of Government funding, its process effectiveness is still debatable from different aspects of service delivery [8]. Multiple community-based impact evaluation studies covering ICDS facilities are conducted in different parts of India to assess the causes behind the service delivery failure and found that inefficient staffs having inadequate training, the inefficiency of the programme process in community knowledge building or incompetence in ensuring the quality of service are few significant reasons of failure [19]. Additionally, if such sub-optimal capability of system faces increased demand for service due to the occurrence of any natural disaster, the effectiveness of operational strategies becomes questionable further [7]. Another study inferred that the role of integrated decision making – both horizontally and vertically – as part of institutional coherence plays a crucial role in reducing malnutrition in disaster-prone areas instead of planning and implementing service delivery components in isolation [20, 21, 22, 23]. However, no research is evident on investigating the influence of institutional capabilities in an integrated manner on the efficiency of M&E system of ICDS programme. In addition, the role of process effectiveness to strengthen that influence further is not investigated.

B. Theoretical Grounding

Multiple research studies in literature exist who studied the strategic effectiveness towards achieving operational efficiency of different programme components in domains like the financial sector, transport sector etc. In the World Bank study (2013) conducted by Independent Evaluation Group to assess the relevance, effectiveness, and efficiency of IFC M&E system, the gaps visible are – irrelevant logical framework; less capable staffs; no periodic performance evaluation of staffs; no measurement of the impacts of processes followed to reach an outcome [24]. On the other hand, different researchers are now drawing the inference that internationalization of a part or whole of the M&E system can be an option to improve the operational efficiency of the system [25]. Internationalisation helps to access the

innovative ideas in research, adopt in practice and gain competitive advantage [26].

One such study on strategic process effectiveness of ICDS in the state of Gujarat in India by Chudasama et al. (2016) shows that almost 89 per cent frontline workers have not received orientation training and Datta et al. (2010) reflects that association between the capacity building of AWWs and the improvement in the quality of performance is significantly positive to increase the programme coverage [16, 27]. Another study also found that proper coverage of supplementary nutrition ensures children's presence in AWCs and automatically increases the uptake of other services [3, 28]. Development practitioners and donor organizations agree that evidence collection to find gaps in planning and monitoring of the implementation process of any programme followed by correction of strategies, capacity building and evaluation can bring success in programme outcome [29, 30]. To investigate the underlying causes of such gaps in programme implementation, the current study is designed, which will be conducted in West Bengal, India. The relevance of selecting the state of West Bengal is manifold. In India among different states, West Bengal is a middle-level achiever concerning Human Development Index, however, has shown a higher concentration of malnutrition[1] compared to poor-performing states like Bihar or Uttar Pradesh [11]. Again, within West Bengal, it is evident that though the coverage of nutrition services is higher in a rural area, the prevalence of malnutrition is also higher in rural counterpart across all the districts [31]. Additionally, it is also evident that concentration of malnutrition is reducing at slower rate in places where people experience the frequent occurrence of natural disasters given the weak operational capacity of service delivery to manage the differing need of service during and after the disaster [32]. So, researchers recommend tackling the two interconnected issues – malnutrition and extreme climatic events – are to be handled simultaneously [33].

For investigating significant factors with robustness in results, different regression models are run to investigate the factors influencing technical efficiency and whether the effectiveness of M&E system influences the impact of drivers on the degree of technical efficiency – as followed in Chakrabarti et al. (2019) [3]. In addition to that, lack of community awareness, shortage of resources for capacity strengthening, limited capacity building activities for supervisors and frontline workers, lack of regular focus on excluded population – are causes for existing inequities in prevalence from systems facet [34, 35, 36]. All these bring in front – how the performance is measured, how far the system is efficient in identifying and estimating the needy population and succeed in targeting on them, how far process effectiveness leads to achieving efficiency, how far gaps in service are measured periodically to identify the children, pregnant women and lactating mothers who are missed out, how far quality of service is maintained, and what steps are taken to modify M&E strategies. Thus, information is collected on different operational level items constructing each independent variable where the phenomenon of interest is M&E technical and operational efficiency. Below the section describes the analytical model used in literature to measure the efficiency of cost or production functions in either parametric or non-parametric model.

C. Methodological Underpinning - System of Systems under Uncertainty

Literature mentioned that tools measuring the performance effectiveness are used in examining the effectiveness and efficiency of socioeconomic programmes and these are to be built carefully as contextual and institutional factors affect the results [37, 38, 39, 40]. It has been found that 70 per cent of studies who used case-control method to assess the impact of implementation following balanced scorecard technique or propensity score matching is mostly providing evidence of the failure of top-down approach [41]. So, a bottom-up implementation approach is suggested to consider ground level contextual factors. In these studies, researchers used Stochastic Frontier Models to assess the success of a treatment group compared to the control group [42]. However, to quantify the performance effectiveness of one department in horizontally integrated manner under uncertainty require additional methodological attributes to design the M&E theoretical framework to ensure integrated service delivery under the exposure to covariate shocks [43].

Performance management measures like nature of coordination adopted, reporting of organisational performance, etc., are used based on actions towards outcome achievement. This ultimately leads to the development of innovative strategic solutions that improve operational processes [44, 45, 46]. Performance monitoring and evaluation quantify efficiency with the execution of effective strategies of operations to increase system performance and staff accountability [41].

Given this backdrop, the current study will investigate that how the situation of service delivery

[1]. According to WHO definition of malnutrition, children of a particular age group will be shorter (stunted), thinner (wasted) or low weight (underweight if their height for age, weight for height or weight for age is -2 standard deviation below that of the reference population (WHO 2006).

effectiveness in terms of coverage varies within different study locations, how the impact of intervention of M&E system in case districts vary from control district where different line departments along with the nodal department for nutrition programme trying to ensure the effectiveness of M&E system with an increase in efficiency under an uncertain environment experiencing extreme climatic events.

Multiple studies exist on multiple influencing factors that are responsible for persisting malnutrition among poor children, especially who are exposed to multiple covariate and idiosyncratic shocks. Nevertheless, study focusing on whether governance system-related factors influence operational efficiency of an integrated M&E system which is meant to ensure a reduction of malnutrition in disaster-prone areas is not conducted so far. Under governance related factors the study has taken different aspect of governance like learning and adaptation, decentralized convergence, diversity, and connectivity under overarching System of Systems. Moreover, it examines whether strategic effectiveness in an integrated M&E system and partial process outsourcing could influence the impact of institutional factors on the operational efficiency of an integrated M&E system. Case-Control method is used to investigate the scenario.

II. METHODOLOGY

A. Method of Data Collection

The research describes the nutritional status of children in the study area and different service uptake status analysing the secondary data available at government department as well as demographic and health survey data of India. The study used monomethod quantitative approach administering **Semi-Structured Interview** the data is collected on -

The overall M&E operations comprising of planning; database creation and maintenance; employee motivation and skill upgrade; ways of routine evidence collection; frequency of monitoring activities executed, and processes followed; frequency of process and impact evaluations; process innovations adopted*;* perception about M&E outsourcing.

B. Variables

There are three enabling factors and two moderating factors to be used for testing the hypothesis.

Enabling Factors – There are three independent variables which represent **System of the Systems** indicating

Degree of Autonomy evident within departments – Risk analysis conducted by DWCD[2] in integrated way with DM&CD[3], DH&FW[4], SED[5], PHED[6],

Degree of convergence visible in decentralized governance –to create M&E operational plan incorporating risk analysis,

Degree of diversity and connectivity– Vertical and Horizontal integration strategies inside the M&E system, M&E implementations designed and made integral part of the main programme serving the vulnerable population,

Principal Component Analysis technique is used to construct the composite variables where the responses are gathered through an interval scale – Excellent, Satisfactory, Partly unsatisfactory, Unsatisfactory – as used in the World Bank study [24].

The Phenomenon

The phenomenon is constructed using the activities under the M&E system. The Principal Component Analysis method is used to create the composite variable and operationalised by success of lessons learnt, challenges overcome, increased coverage etc., measured in interval scale – Excellent, Satisfactory, Partly unsatisfactory, Unsatisfactory – following the World Bank study [24].

Moderating Factors

M&E strategy effectiveness– The effectiveness is measured by two different constructs – Learning and Innovation Development and Quality of implementation process where responses are collected using an interval scale. These factors are created using Principal Component Analysis based on data related to the effectiveness of M&E strategies designed to reach specific efficiency level. The interval scale used is - Highly successful, Successful, Unsuccessful, Highly unsuccessful – as used in the World Bank study [24].

Outsourcing of M&E service –measured in interval scale - Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree – as followed in the World Bank study [24].

[2] Department for Women and Child Development

[3] Disaster Management and Civil Defence Department

[4] Department of Health and Family Welfare

[5] School Education Department

[6] Public Health and Engineering Department

Continuous values of predicted factor scores are considered for analysis.

C. Sample Size

Table 1: Sample size for the study

Sample Size	Malda	South 24 Parganas	Purulia
DWCD	5	13	33
DM&CD	12	8	5
DH&FW	1	4	2
SED	6	3	5
PHED, SBCC[7] and Block Welfare	3	8	4
Total	27	36	49

Interviews are conducted with mid-level officials in child-centric governance – Child Development Project Officers (CDPO), Block Welfare Officer (BWO) from DWCD, Block Disaster Management Officers (BDMO) DM&CD, Block Medical Officers, Health (BMOH) from DH&FW, School Inspectors (SI) are selected from the SED, Assistant Engineers (AE) are contacted from PHED. In each of the districts, 60 to 75 officials of respective departments are engaged in convergent mode to deliver ICDS service in normal and disaster time successfully. Among them, above mentioned number of staffs will be interviewed from each of the three districts to assess the research issue.

D. Econometric Model

Under the case-control study, the district Purulia is taken as Control district. Malda and South 24 Paraganas have been taken as Treated districts based on the degree of M&E implementation – the programme component of disaster management department to ensure the service delivery and uptake of ICDS and four other departments during a disaster through developing and strengthening of M&E efficiency. Following the BSC theory, propensity score matching technique is used to match observations in control and treated areas for specific criteria and estimated the average treatment effect in treated districts and the possible drivers to be considered to make implementation in control district successful in the next phase. Predicted values of technical efficiency are compared in four SFA models –testing the hypotheses.

The equation for estimating the treatment effects –

The outcome is denoted by y_j and the equation is

$t_j : E(y_j | x_j , t_j , \varepsilon_j) = \exp(x_j\beta + \delta t_j + \varepsilon_j)$

$t_j = 1, w_j\gamma + u_j > 0$

$t_j = 0$, otherwise

The x_j are the independent variables used in modelling the outcome, w_j are the covariates used in modelling of treatment project, and error terms ε_j and u_j assumed to have normal distribution with mean '0' and covariance matrix

$$\begin{bmatrix} \sigma 2 & \sigma\rho \\ \sigma\rho & 1 \end{bmatrix}$$

The covariates x_j and w_j are assumed to be unrelated to the error terms, and y_j is a continuous variable [47].

E. Ethical Consideration

The research used semi-structured questionnaire for data collection. The survey tool and method were designed for this purpose kept in mind the gender, socio-cultural sensitivities, and rights of the respondents without violating any of the rights. Consent has been taken from all the respondents before starting the interview. All the respondents have given free consent to conduct the interview. The consent form explained the purpose of the interview and how the data privacy is ensured.

F. Data Analysis

First the quantitative data is entered in MS Excel and then coded and cleaned in STATA 14. Bi-variate and multivariate analyses are conducted using STATA 14. An estimation of Average Treatment Effect measured the degree of efficiency of the M&E system of the ICDS in achieving the programme performance and how different inputs are started in treatment districts. The average treatment effect is estimated taking the districts where the implementation process is initiated (Malda, South 24 Parganas) while taking one district as control (Purulia) to assess the effectiveness of strategies adopted.

III. RESULTS

A. Introduction of the Study Area

India is a country in the continent of Asia. According to the World Bank classification, it falls under the low and middle-income country group. There are 29 states and 8 union territories as the second level of the administrative unit below the central government. The Gross Domestic Product (GDP) value of India is $2.7 trillion in 2018 with an annual 6.8 per cent growth in GDP; the population is 1.3 billion [48]. According to Census 2011, the

[7] Social and Behaviour Change Communication

population is higher in the rural area (68.9 per cent) compared to the urban area (31.1 per cent). Almost 49 per cent are female, and 14 per cent of the population comprises of children under the age of 6. Percentage of the socially excluded population constitutes 1/4th of the total population. However, the female literacy rate and workforce participation rate are incredibly low.

West Bengal is the state near the bank of Bay of Bengal – in the eastern part of India which is the place of cultural renaissance in India during the period of British rule. There are 23 administrative districts in West Bengal under the state jurisdiction. According to Census (2011), the population of West Bengal is 90.3 million, where 48.7 per cent is female population and child population under the age of 6 is 12 per cent [49]. Degree of social exclusion prevailing is a little higher than the country level (29.3 per cent) [49]. Though the level of female literacy is right (70.5 per cent), however, the workforce participation rate is low (38.1 per cent) [49].

Malda district has 2 Subdivisions, 11 Police Stations, 2 Municipalities, 15 Blocks, 146 Gram Panchayats, 2008 Gram Sansads, 1814 Mouzas and 3701 Villages [21]. South 24 Parganas district is divided into 5 sub-divisions and 29 blocks. Correspondingly, there are 310 Gram Panchayats and 7 Municipalities. Besides, there are 13 Sundarban blocks in the district [23]. The district headquarter of Purulia district is situated at Purulia town having three administrative sub-divisions viz. Purulia Sadar East, Purulia Sadar West and Raghunathpur. Furthermore, it has 22 Police Stations, 20 Blocks, 3 Municipalities (Purulia, Raghunathpur, Jhalda), 8 non-municipal towns, 170 Gram Panchayats, 2683 Mouzas (2468 inhabited villages) and 1911 Gram Sansads [22].

B. Demographic Profile

According to Census (2011) (Table 2), Malda district has total population 3988845 out of which 3447185 persons or 86.4 per cent population live in rural areas, and 541660 persons or 13.6 per cent population live in urban areas. The population density in Malda district is 1069 persons per sq. Km. in 2011 [49]. The decadal growth rate is 21.2, the sex ratio is 944, and the child sex ratio is slightly higher (950) [49]. Almost half of the population is female population, 15 per cent of the total population belongs to the age group of 0 – 6 years, 1/3rd of the district population belongs to socially excluded people [49]. From the socio-economic developmental perspective, the literacy rate and workforce participation rate are meagre.

In South 24 Parganas district, the total population is 8,161,961 out of which 6,074,188 persons or 74.4 per cent population live in rural areas, and 2,087,773 persons or 25.6 per cent population live in urban areas [49]. The population density in South 24 Parganas district is 819 persons per sq. Km. in 2011[49]. The density of population in rural areas is 621 persons per sq. Km. and that in urban areas is 11,811 persons per sq. Km. in 2011 [49]. Like other districts, near about 50 per cent population is female, 1 out of 3 belongs to indigenous communities [49]. Though the female literacy rate is reasonable and near the state average, workforce participation is low.

Purulia district has a total population of 2930115 out of which 2556801 persons or 87.3 per cent population live in rural areas, and 373314 persons or 12.7 per cent population live in urban areas [49]. This district is comparatively less developed, having almost 40 per cent socially excluded population, lower female literacy rate and workforce participation [49].

C. Malnutrition Status in the State of West Bengal and Pattern of Change in Service Uptake from 2006 to 2016

Figure 1 represents the status of three anthropometric indicators of malnutrition in West Bengal. It is evident that the malnutrition level is higher in the rural area compared to the urban area for all the indicators. Prevalence is measured in the standard deviation scale, and it shows that stunting level varies from 28.5 per cent to 34 per cent and underweight varies from 26 per cent to 33.6 per cent – indicating 1/3rd of the child population in West Bengal is suffering from either shorter height or lower weight – responsible for retarded physical growth and cognitive development resulting in future economic loss and lower economic growth inclusive of development [31].

According to figure 2, malnutrition prevalence among children is higher in some of the backward districts including Purulia, Malda and moderate in South 24 Parganas [31].

From Figure 3, it is evident that uptake of ICDS service has been increased across different economic groups – a higher rate of growth in access is visible among more impoverished to middle asset quintiles. However, the overall rate of utilization is still meagre across groups [31].

Figure 4 reflects that in a period of one decade from 2006 to 2016, uptake of ICDS service has been increased among girl children indicating fall in gender inequity in access. Furthermore, success in policies focused on excluded population is also

visible as there is an increase in access to services among SC and ST population – for example concerning access to supplementary nutrition, regular health check-up of women and children as well as early childcare services and counselling for pregnant women and lactating mothers [31].

Figure 5 depicts that the service was mainly accessed previously by poorest to poorer quintile; however, in lower magnitude. In the last ten years, the access to ICDS service has been increased across quintile groups, and the coverage of service has been increased significantly – indicating satisfactory success in policy implementation [31].

D. District Context on Child Nutritional Outcomes - Associated Risks due to Gaps in Nutritional Achievements

In Malda district, 19.8 per cent newborns have low birth weight (less than 2.5 Kg) which is more than 20 per cent in Chanchal I, Harishchandrapur I and II and Manikchak. According to National Family Health Survey (2015 – 16), 37.2 per cent children under the age of five are underweight, 37.8 per cent are stunted and 55.2 per cent children (6 – 59 months) are anaemic – higher than the state average [31]. Low birth weight, higher levels of malnutrition coupled with less access to services during and after disaster raises the possibility of malnutrition and morbidity further.

In South 24 Parganas, among 98.8 per cent live birth, 99.6 per cent are weighed. According to National Family Health Survey (2015 – 16), 27.8 per cent children under the age of five are underweight compared to 31.5 per cent in West Bengal, 27.3 per cent are stunted compared to 32.5 per cent in the state, and 20.1 per cent children are wasted compared to the state value of 20.3 per cent. Among children (6 – 59 months), 65.2 per cent are anaemic – lower than the state average (54.2 per cent) [31]. The gap in birth weight measurement, moderate levels of underweight and stunting prevalence along with less access to services during and after disaster raises the likelihood of malnutrition and morbidity further.

In Purulia district, all the blocks reflect that more than 90 to 100 per cent newborns are weighed after birth except Manbajar II (64.3 per cent) [31]. According to National Family Health Survey (2015 – 16), 58.2 per cent children under the age of five are underweight, 45.5 per cent are stunted and 66.8 per cent children (6 – 59 months) are anaemic – higher than the state average [31]. Low birth weight, higher levels of malnutrition coupled with less access to services during and after disaster raises the possibility of malnutrition and morbidity further.

Percentage of malnutrition is reducing and to sustain the level ensuring the service throughout the year is required. As per Table 3, there still exists gap in initiation of breastfeeding for example in block like Chanchal I where comparatively malnutrition level is higher [50, 51]. However, only 6 per cent children within the age group of 6 – 23 months are fed with minimum acceptable diet in Malda district which is much lower than the state average [31].

As per ICDS MPR in Table 4, South 24 Parganas district has only 11.2 per cent underweight children to total weighed children in AWCs. CD Block level variation shows that Basanti, Bishnupur I and II, Canning I and II, Gosaba, Jaynagar II, Kakdwip, Kultali, Mathurapur II and Sagar have higher level of prevalence [50]. Percentages of newborns breast fed within 1 hour of birth among total live birth reached 95 to 100 per cent gaps are almost vanished [51]. But this achievement cannot be sustained if during disaster; pregnant women will fail to attain 4th Saturday meetings, Village Health and Nutrition Days and fail to gain knowledge about the utility of initiation of breastfeeding and exclusive breastfeeding.

According to Table 5, Percentage of malnutrition is reducing and to sustain the level ensuring the service throughout the year is required. There still exists gap in initiation of breastfeeding for example in block like Manbazar II where comparatively malnutrition level is higher [50]. However, only 18.6 per cent children within the age group of 6 – 23 months are fed with minimum acceptable diet in Purulia district which is marginally lower than the state average [31].

E. Gap in Service Availability

As per Table 6, it is visible that though almost 100 per cent of the AWCs are operational across the blocks in the district, a vast gap persists in the employment of supervisors – in Ratua I, Harishchandrapur I and II, Manikchak, Kaliachak II. However, only 24.1 per cent AWCs operate from their owned building, and 74.9 per cent AWCs have sanitation facility [52]. With respect to senior management staff shortage, Malda shows huge gap – 38.5 per cent CDPOs and 9.1 per cent ACDPOs are in position [50]. Given this context, if AWCs which are not operated from own building get damaged due to disaster, delay in planning on recovery will further hamper the nutritional achievement of children.

According to Table 7, in Kakdwip, Kulpi, the percentage of AWC operational is lower. Concerning mid-level staff availability, Kakdwip and

Patharpratima are vulnerable, which are highly exposed to cyclone too [50].

As per Table 8, it is visible that though almost 100 per cent of the AWCs are operational across the blocks in the district, huge gap persists in employment of supervisors – in Para, Manbazar II, Jhalda I, Jhalda II, Bagmundi, Hura[50]. However, only 55 per cent AWCs operate from own building and 19.3 per cent AWCs have sanitation facility [52]. With respect to senior management staff shortage Purulia shows huge gap – 87.0 per cent CDPOs and 0.0 per cent ACDPOs are in position [50]. Given this context, if AWCs which are not operated from own building get damaged due to disaster, delay in planning on recovery will further hamper the nutritional achievement of children.

F. Empirical Findings

In Table 9, out of total respondents, 24 per cent belong to Malda, 44 per cent belong to Purulia, and 32 per cent belong to South 24 Parganas district. In all the studied districts, it is evident that the primary analytic division is situated at block offices where raw data comes from Gram Panchayats. District officials estimate at an aggregate level and send to the state authorities. More than 90 per cent of the departments at block and district level shared that they have dedicated M&E persons and very less dependency on external consultants is reflected. In Purulia and South 24 Parganas most of the departments collect data monthly; however, in Malda, some of them collect annually, for example, disaster management and civil defence. Evaluations of the programme effectiveness and impact are mostly conducted at GP and block-level across districts.

As per figure 6, Malda district faces several disasters like flood, thunderstorm and children in poor and marginalized communities living near riverbank areas are most exposed to the risk of poor health, nutrition, cognitive development, and child protection related issues. In Malda district, the major natural disaster strikes and disrupts life is flood and inundation during and after flood. The climate change is one major responsible factor causing the increase in the frequency of floods and Malda district is vulnerable to floods caused by the overflow of the rivers Ganga, Mahananda and their tributaries. Purulia district mostly experiences extreme hot summer when an excessive heat wave is a common phenomenon. Children living in areas with water scarcity are mostly exposed to the risk of poor health, nutrition, cognitive development, and child protection related issues. Among them children belonging to low-income families, excluded families suffer the most. The South 24 Parganas district shows that cyclone followed by flood is the major disaster faced by children in poor and excluded communities living in both deltaic and non-deltaic GPs. They are mostly exposed to the risk of retarded growth, poor physical, cognitive development, and child protection related issues.

Figure 7 depicts that 57 per cent of officials and workers from the department from women and child development said that during a disaster home visit by ICDS workers get disrupted most compared to other child-specific services. Other significant problems faced in schools, health centres and ICDS centre are inundation of toilets or water scarcity in toilet use (50.9 per cent of them reported) water source contamination (50 per cent of them reported), inadequate water supply or water source requires repairing (42 per cent reported). Among the respondents, 1 out of 3 of them reported that irregularities in academic sessions are frequent during a disaster and one-fifth of them reported an increase in child insecurities during those periods.

Table 11 is depicting the regression results of the case-control study. As per the findings, if learning with adaptation is satisfactory to excellent, then M&E performance will be significantly successful to highly successful. ATE is significantly higher (5.070), and the direction indicates that districts taken under treatment group (assigned value 1) are having satisfactory to excellent output compared to control district Purulia where the implementation has not been started yet.

IV. DISCUSSION

As according to previous research, M&E services help to achieve programme outcome, determine optimum processes to achieve it in each timeframe and recommends ways to replicate the technical support elsewhere [53, 54]. Among M&E service, monitoring consists of ongoing assessment of process and intermediate results while evaluation comprises of periodic assessment of outcome achievements [55]. Given such a concept; lack of knowledge regarding context analysis and periodic analysis leads to ignorance about the utility of the M&E system as one major programme component in different social programmes. For example, in General Assembly resolution 70/1, United Nations Member States agreed on the reinforcing of the effort to strengthen the monitoring system of any social programme with capacity building to reduce the efficiency gaps and Cape Town Global Action Commission designed a road map to execute the action points [13].

Looking at the ATE value, it can be argued that the factor significantly contributing to satisfactory results

in Malda and South 24 Parganas is the initiation of Learning and Adaptation process in terms of staff evaluation, post-disaster coverage measurement etc. Furthermore, studies are also in line with applying SOS in implementation process through adaptation of new M&E strategies, creating integrated service delivery team, tackling diversity, and improving connectivity, training them to serve during crisis under risk and uncertainty significantly improves technical efficiency – goes in line with the present finding [56, 57,58].

However, there exists scope for lots of improvements in relation to other items under the same construct to be operationalised in a consistent manner. Given the negative value of rho, it can be argued that unobservables that improve M&E performance tend to occur with unobservables that persist in the district, which is treated as control. These unobservables may include external environments and the requirement of strengthening horizontal integration while conducting periodic risk and impact analysis. Thus, while implementing child risk analysis in the control district, all the factors considered in this study are to be handled carefully and effectively to maintain a higher level of technical efficiency so that the implementation can bring desired outcome.

V. CONCUSION - LIMITATION OF THE STUDY, IMPLICATION AND FUTURE AVENUES

A. Limitations of the study

The current research work tried to examine the level of efficiency is getting generated in an integrated M&E implementation system, to reduce the impact of sub-optimal institutional capacity in delivering child-specific service in disaster-prone areas of the state of West Bengal in India. However, the study has a few limitations.

- The sample size was moderate and in future studies it is to be increased covering all the Blocks in each district,
- The current study followed quantitative method only given the resource and time constraint. Future studies have to cover mixed method approach covering depth interviews and group discussions to explore the dimensions in inductive manner,
- This study was cross-sectional given the time of the study. However, it should be conducted in periodic manner – quarterly – within the comprehensive monitoring system inclusive of child risk analysis.

B. Implication and Further Research

In this study, the research hypotheses are tested, and the results show that, firstly, stronger the institutional factors, higher is the efficiency; higher the effectiveness of integrated M&E strategies or M&E outsourcing on a partial basis, stronger is the influence of institutional factors on M&E efficiency. Therefore, all three hypotheses are proved to be true. In addition to this further, the study also found avenues to increase the technical efficiency further through combining different strategic components as well as suggested ways on how to implement the same programme components in the district where it has not started yet following the learning from the other two areas where implementation process is initiated.

Therefore, to increase the impact of child risk analysis – the integrated M&E system – further focus on

- strengthening of the Risk analysis process,
- the identification process of excluded needy children and women,
- cost-benefit analysis in risk analysis to mitigate the impact of financial risk,
- collection of periodic data on disaster impact analysis,
- identification and removal of non-working methods in the M&E and validating estimated results at field etc.,
- the regular arrangement of integrated capacity-building workshops,
- reviews and operational modifications are required.

These will increase the technical and operational efficiency followed by the impact, which is to be reflected through the quality of process implementation. This is also in line with one of the major and crucial UN mandate – to attend Sustainable Development Goals on time; United Nations suggested further research on strategy improvement followed by result-oriented policy advocacy to increase the impact of social programmes [13, 59, 60]. Given this context, further research on the M&E effectiveness and efficiency is to be conducted in periodic manner as part of the M&E system. Additionally, it has to include monitoring of parallel programme components inclusive in child risk analysis to make it a comprehensive M&E mechanism.

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REFERENCES

[1]. Popkin, B. M., Corvalan, C., and Grummer-Strawn, L. M. (2019) 'Dynamics of the double burden of malnutrition and the changing nutrition reality'. The Lancet, 395(10217), 1-27

[2]. Bhutta, Z.A., Das, J.K., Rizvi, A., Gaffey, M.F., Walker, N., Horton, S., Webb, P., Lartey, A., and Black, R.E. (2013) 'Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost?' The Lancet, (382), 452-77

[3]. Chakrabarti, S., Raghunathan, K., Alderman, H., Menon, P., and Nguyen, P. (2019) 'India's Integrated Child Development Services programme; equity and extent of coverage in 2006 and 2016'. Bulletin of the World Health Organization, 97(4), 270-282

[4]. Martinez-Schiferl M. (2012) WIC participants and their growing need for coverage. Washington, DC: Urban Institute. [online] Available from<https://www.urban.org/sites/default/files/publication/25306/412549-WIC-Participants-and-Their-Growing-Need-for-Coverage.PDF>

[5]. Leroy, J.L., Vermandere, H., Neufeld, L.M., Bertozzi, S.M. (2008) 'Improving enrolment and utilization of the Oportunidades program in Mexico could increase its effectiveness'. Journal of Nutrition, 138(3), 638-641

[6]. Keweloh, R. (2015) 'Integrating Disaster Risk Reduction and Climate Change Adaptation in Theory and Practice' [online] available from<http://www.ruhr-uni-bochum.de/ifhv/documents/workingpapers/wp5_3.pdf>

[7]. United Nations Children's Fund (2019) The State of the World's Children 2019: Children, Food and Nutrition--Growing Well in a Changing World New York, NY, USA: UNICEF Division of Communication

[8]. Gragnolati, M., Bredenkamp, C., Dasgupta, M., Lee, Y. Kyoung, Shekar, M. (2006) 'ICDS and persistent undernutrition: strategies to enhance the impact'. Economic and Political Weekly, 41(12), 1193-1201

[9]. Rao, N., and Kaul, V. (2018) 'India's integrated child development services scheme: challenges for scaling up'. Childcare, Health and Development, 44(1), 31-40

[10]. Menon, P., McDonald, C.M., and Chakrabarti, S. (2016) 'Estimating the cost of delivering direct nutrition interventions at scale: national and sub-national level insights from India'. Maternal & Child Nutrition, 5(12), 169-185

[11]. Kanjilal, B., Mazumdar, PG., Mukherjee, M., Rahaman Hafijur, M. (2010) 'Nutritional status of children in India: household socio-economic condition as the contextual determinant'. International Journal for Equity in Health, 9 (19), 1-13

[12]. Engle, P. L., Black, M. M., Behrman, J. R., Mello, M. C., Gertler, P.J., Martorell, R., and Young, M. E., (2007) 'Child development in developing countries 3: Strategies to avoid the loss of developmental potential in more than 200 million children in the developing world'. The Lancet, 369(9557), 229-242

[13]. United Nations Department of Economic and Social Affairs. (2019) The Sustainable

Development Goals Report New York, NY, USA: UN DESA

[14]. Franks, P. W., Ravussin, E., Hanson, R. L., Harper, I. T., Allison, D. B., Knowler, W. C., and Salbe, A. D. (2005) 'Habitual physical activity in children: the role of genes and the environment'. The American Journal of Clinical Nutrition, 82(4), 901-908

[15]. Tomlinson, M., Hunt, X., and Rotheram-Borus, M. J. (2018) 'Diffusing and scaling evidence-based interventions: eight lessons for early child development from the implementation of perinatal home visiting in South Africa'. Annals of the New York Academy of Sciences, 1419:218-229

[16]. Chudasama, R. K., Patel, U. V., Kadri, A. M., Mitra, A., Thakkar, D., and Oza, J. (2016) 'Evaluation of integrated child development services program in Gujarat, India for the years 2012 to 2015'. Indian journal of public health, 60(2), 124-130

[17]. Chudasama, R. K., Kadri, A. M., Verma, P. B., Patel, U. V., Joshi, N., Zalavadiya, D., and Bhola, C. (2014) 'Evaluation of integrated child development services program in Gujarat, India'. Indian pediatrics, 51(9), 707-711

[18]. Saxena, V., Kumar, P., Kumari, R., Nath, B., and Pal, R. (2015) 'Availability of Village Health and Nutrition Day services in Uttarakhand, India'. Journal of Family Medicine and Primary Care, 4(2), 251–256

[19]. Gadhkar, V.D. (2006) Situational Analysis of Anganwadi Workers Training Centre in Jharkhand. Lucknow: NIPCCD Regional Centre

[20]. United Nations Children's Fund (2018) Guidance for Risk – Informed Programming New York, NY, USA: Humanitarian Support and Transition Support

[21]. District Disaster Management Plan Malda (2018) Child Risk and Impact Analysis [online] available from<http://wbdmd.gov.in/writereaddata/uploaded/DP/DPMalda59094.pdf>

[22]. District Disaster Management Plan Purulia (2018) Child Risk and Impact Analysis [online] available from<http://wbdmd.gov.in/writereaddata/uploaded/DP/DPPurulia8193.pdf>

[23]. District Disaster Management Plan South 24 Parganas (2018) Child Risk and Impact Analysis [online] available from<http://wbdmd.gov.in/writereaddata/uploaded/DP/DPSouth%2024-Parganas81622.pdf>

[24]. The World Bank. (2013) Biennial Report on Operations Evaluation: Assessing the Monitoring and Evaluation Systems of IFC and MIGA. Washington, DC: World Bank

[25]. Zedtwitz, M. and Gassmann, O. (2002) 'Market versus Technology Drive in R&D Internationalization: Four different patterns of managing research and development'. Research Policy 31(4), 569-588

[26]. de Meyer, A., Mizushima, A. (1989) 'Global R&D Management'. R&D Management, 19 (2), 135-146

[27]. Datta, S.S., Boratne, D., Cherian, J., Joice, Y.S., Vignesh, J.T., and Singh, Z. (2010) 'Performance of Anganwadi centres in urban and rural area: A facility survey in coastal south India'. Indian Journal of Maternal & Child Health, 12,1-9

[28]. Balasubramanian, P., and Ravindran, T. S. (2012) 'Pro-poor maternity benefit schemes and rural women: findings from Tamil Nadu'. Economic and Political Weekly, 47(25), 19-22

[29]. Hawkes, C., Ruel, M. T., Salm, L., Sinclair, B., and Branca, F. (2019) 'Double-duty actions: seizing programme and policy opportunities to

address malnutrition in all its forms'. The Lancet, 395(10218), 142-155

[30]. The World Health Organisation (2013) Research for universal health coverage. Geneva, Switzerland: The World Health Organization

[31]. International Institute for Population Sciences & ORC MACRO (2017) National Family Health Survey (NFHS -4). Mumbai, India

[32]. United Nations (2016) Helping governments and stakeholders make the SDGs a reality [online] available from<https://sustainabledevelopment.un.org/>

[33]. Faber, M., Laurie, S., Maduna, M., Magudulela, T., and Muehlhoff, E. (2014). 'Is the school food environment conducive to healthy eating in poorly resourced South African schools?'. Public health nutrition, 17(6), 1214-1223

[34]. Maity, B. (2016) 'Interstate differences in the performance of Anganwadi centres under integrated child development services scheme'. Economic & Political Weekly, 51(51), 59–66

[35]. Desai, S., and Dubey, A. (2012) 'Caste in 21st century India: Competing narratives'. Economic and political weekly, 46(11), 40

[36]. Nisbett, N., and Barnett, I. (2017) 'Explaining the reduction in child undernutrition in the Indian state of Maharashtra between 2006 and 2012: An analysis of the policy processes'. Food Policy, 70, 27-39

[37]. Walburg, J. (2006) Performance Management in Health Care: Improving Patient Outcomes: an Integrated Approach New York: Routledge

[38]. Klein, R. (2010) 'The New Politics of the NHS: From Creation to Reinvention', Oxford: Radcliffe Publishing

[39]. Pollitt, C. (2018) 'Performance management 40 years on: a review. Some key decisions and consequences'. Public Money & Management, 38(3), 167-174

[40]. Pollitt, C., Harrison, S., Dowswell, G., Jerak-Zuiderent, S. and Bal, R. (2010) 'Performance regimes in health care: institutions, critical junctures and the logic of escalation in England and the Netherlands'. Evaluation, 16(1), 13-29

[41]. Kollberg, B., and Elg, M. (2011) 'The practice of the balanced scorecard in health care services'. International Journal of Productivity and Performance Management, 60(5), 427-445

[42]. Vitezić, N., Cankar, S. S., and Linšak, Ž. (2019) 'Effectiveness Measurement Using DEA & BSC Methods in Public Health Services'. NISPAcee Journal of Public Administration and Policy, 12(1), 199-216

[43]. Bourne, M., Franco-Santos, M., Micheli, P., and Pavlov, A. (2018) 'Performance measurement and management: a system of systems perspective'. International Journal of Production Research, 56(8), 2788-2799

[44]. Bititci, U.S., Carrie, A.S., and McDevitt, L. (1997) 'Integrated performance measurement systems: an audit and development guide'. The Total Quality Management Magazine, 9(1), 46-53

[45]. Waldman, D. (1994) 'Designing performance management systems for total quality implementation'. Journal of Organizational Change Management, 7(2), 31-44

[46]. Martinez, V., Radnor, Z., Radnor, Z. J., and Barnes, D. (2007) 'Historical analysis of performance measurement and management in operations management'. International Journal of Productivity and Performance Management, 56(5), 384-396

[47]. Stata, A. (2013) STATA Treatment-Effects Reference Manual: Potential Outcomes/Counterfactual Outcomes Release 13. College Station, Texas: StataCorp

[48]. The World Bank. (2019) The World Bank in India [online] available

from<https://www.worldbank.org/en/country/india>

[49]. Census of India (2011) Primary Census Abstract. Government of India, New Delhi, India

[50]. Department for Women Development Child Development & Social Welfare, Government of West Bengal (2018) Monthly Progress Report

[51]. Department of Health & Family Welfare, Government of West Bengal. (2018) Health Management Information System

[52]. ISAC Report (2018) India

[53]. Mubin, S., Ahmed, M., and Sial, J. (2011) 'Terminal evaluation of public sector development projects: An analysis of 85 evaluated development projects of Punjab province'. Pakistan Journal of Engineering and Applied Sciences, 9(1-2), 58-67

[54]. Patton, M. Q. (2003) 'Utilization-focused evaluation'. in International handbook of educational evaluation. ed. by. Kellaghan, T., Stufflebeam, D.L. Dordrecht: Springer, 223-242

[55]. Freeman, H. E., Rossi, P. H., and Lipsey, M. W. (1993) Evaluation: A systematic approach. California: Sage Publications

[56]. Danese, P., and Romano, P. (2012) Relationship between downstream integration, performance measurement systems and supply network efficiency. International Journal of Production Research, 50(7), 2002-2013

[57]. Liang, Y. H. (2015) 'Performance measurement of interorganizational information systems in the supply chain'. International Journal of Production Research, 53(18), 5484-5499

[58]. Maestrini, V., Luzzini, D., Maccarrone, P., and Caniato, F. (2017). 'Supply chain performance measurement systems: A systematic review and research agenda'. International Journal of Production Economics, 183, 299-315

[59]. Engle, P. L., Black, M. M., Behrman, J. R., Mello, M. C., Gertler, P.J., Martorell, R., and Young, M. E., (2007) 'Child development in developing countries 3: Strategies to avoid the loss of developmental potential in more than 200 million children in the developing world'. The Lancet, 369(9557), 229-242

[60]. United Nations Children's Fund (2015) UNICEF Annual Report 2014 New York, NY, USA: UNICEF Division of Communication

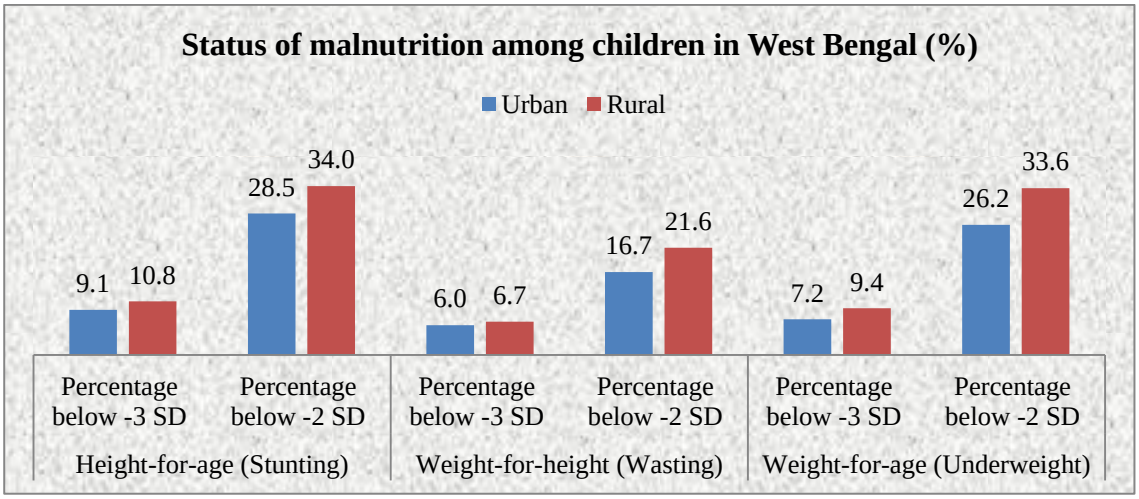
Appendix

Table 2: Demographic profile of the population in 3 districts and the state

District Name	% of female Population	% of Child Population	Child Sex Ratio	% of SC Population	% of ST Population	% of Female Literate	Workforce Participation Rate
Malda	48.7	15.3	960	21.6	8.4	44.6	38.8
South 24 Parganas	48.9	12.6	963	30.2	1.2	71.4	36.3
Purulia	48.9	14.2	953	17.60	19.45	56.5	43.2
West Bengal	48.7	11.6	956	23.5	5.8	70.5	38.1
India	48.5	13.6	918	16.6	8.6	43.1	39.8

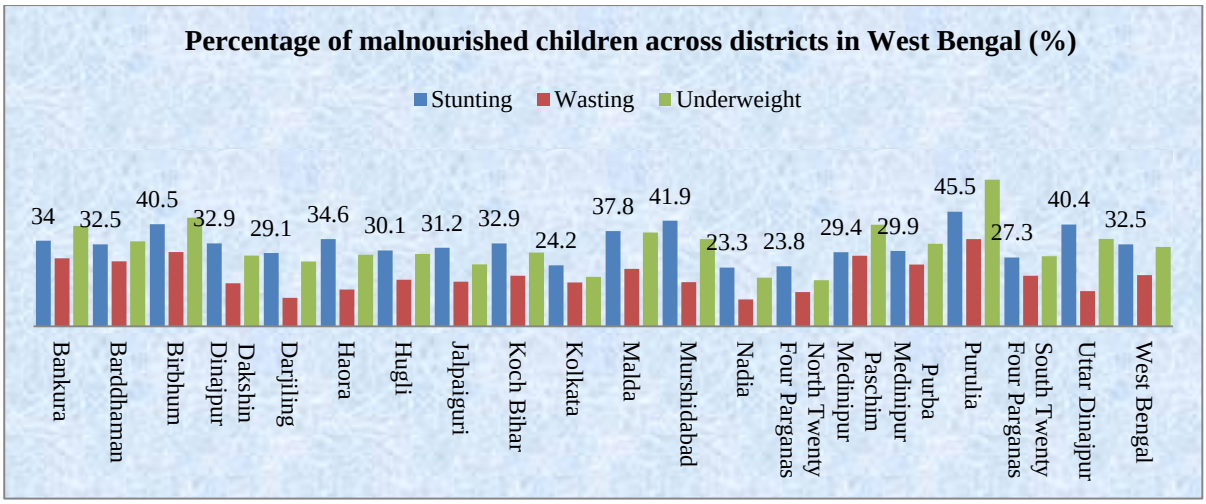
Source: Census 2011

Figure 1: Status of malnutrition among children in West Bengal



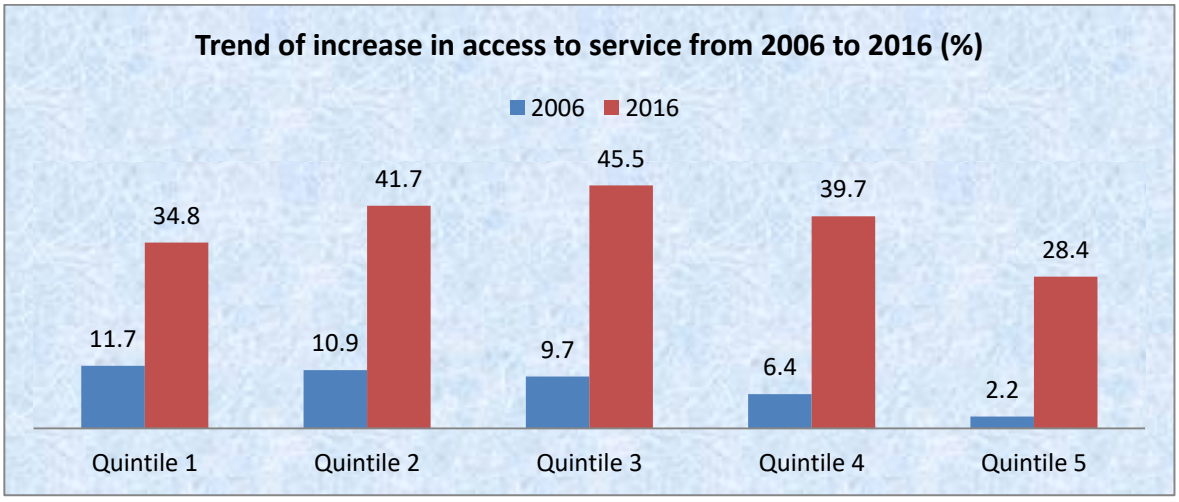
Source: NFHS 4, 2015 – 16

Figure 2: Percentage of malnourished children across districts in West Bengal



Source: NFHS 4, 2015 – 16

Figure 3: Trend of increase in access to ICDS services from 2006 to 2016 in West Bengal, India



Source: NFHS 4, 2015 – 16

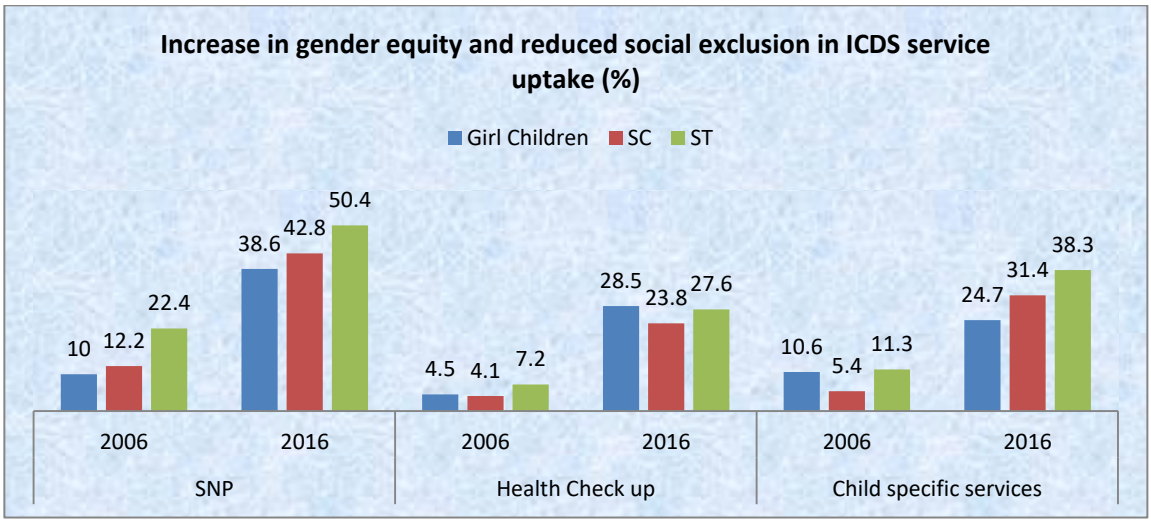
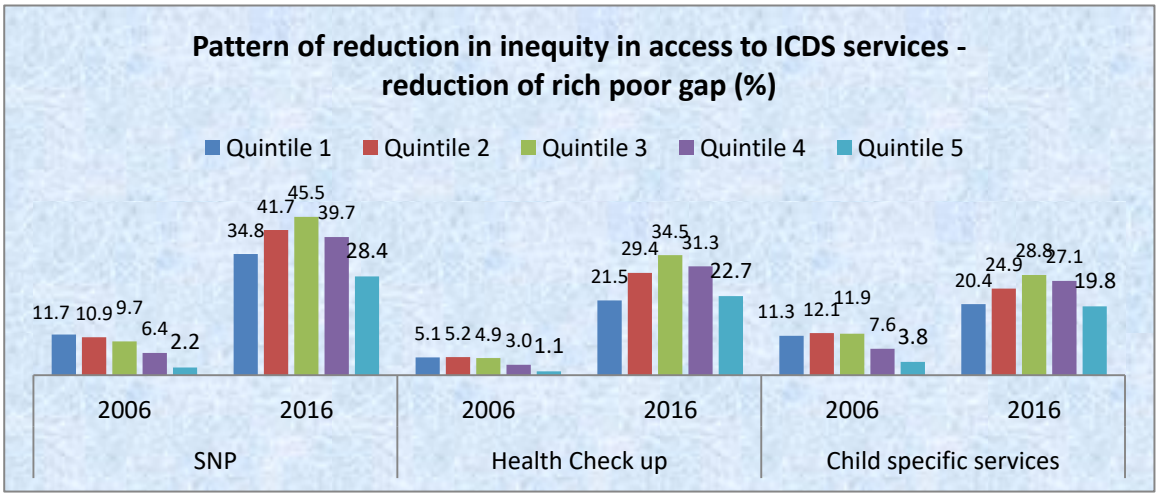


Figure 4: Trend of increase in access to ICDS services by girl children and excluded population subgroup from 2006 to 2016 in West Bengal, India

Source: NFHS 4, 2015 – 16

Figure 5: Pattern of reduction in inequity in access to ICDS services - reduction of rich-poor gap in West Bengal, India



Source: NFHS 4, 2015 – 16

Table 3: Status of malnutrition and breastfeeding practice in vulnerable blocks of Malda district

Block Name	Moderately and Severely Underweight children among total children weighed by ICDS Project[a](%)	Percentage of Newborns breastfed within 1 hour of birth to Total live birth[b](%)
Harischandrapur - I	5.5	99.9
Harischandrapur - II	9.6	95.8
Chanchal - I	13.0	83.7
Chanchal - II	6.5	95.9
Ratua - I		98.8
Ratua - II	3.6	114.1
Gazole	11.7	97.7
Bamangola	0.8	99.3

Habibpur	9.9	99.6
Malda (Old)	7.4	95.2
English Bazar	4.9	98.5
Manikchak	8.1	98.3
Kaliachak - I	9.6	98.3
Kaliachak - II	6.8	97.8
Kaliachak - III	6.1	95.8
Malda	7.0	87.3

Source: a: ICDS MPR 2018; b: HMIS 2018

Table 4: Status of malnutrition and breastfeeding practice in vulnerable blocks of South 24 Parganas district

Block Name	Moderately and Severely Underweight children among total children weighed by ICDS Project [a] (%)	Percentage of Newborns breast fed within 1 hour of birth to Total live birth [b] (%)
South 24 Parganas	11.2	75.8
Baruipur	4.5	100.0
Basanti	13.2	100.0
Bhangar I	9.9	99.9
Bhangar II	5.9	100.0
Bishnupur I	13.1	99.7
Bishnupur II	12.7	99.9
Budge Budge I	6.9	99.2
Budge Budge II	9.9	98.6
Canning I	12.5	99.2
Canning II	17.1	99.7
Diamond Harbour I	12.6	95.2
Diamond Harbour II	8.4	98.3
Falta	8.1	96.6
Gosaba	17.6	99.8
Jaynagar I	5.1	96.0
Jaynagar II	15.8	99.9
Kakdwip	18.2	99.0
Kulpi	6.4	99.4
Kultali	26.2	97.1
Magrahat I	6.9	99.9
Magrahat II	4.6	99.0
Mandirbazar	6.6	102.0
Mathurapur I	9.8	98.7
Mathurapur II	12.0	102.2
Namkhana	8.9	99.5
Patharpratima	7.6	99.5
Sagar	17.8	99.5
Sonarpur	8.7	97.9
ThakurpukurMahestala	9.4	100.0

ICDS MPR 2018

Table 5: Status of malnutrition and breastfeeding practice in vulnerable blocks of Purulia district

Block Name	Moderately and Severely Underweight children among total children weighed by ICDS Project[a](%)	Percentage of Newborns breast fed within 1 hour of birth to Total live birth[b](%)
Purulia	18.8	95.2
Arsha	13.9	99.9
Baghmundi	16.9	99.0
Balarampur	14.9	99.8
Bandowan	21.7	84.9
Barabazar	21.7	96.4
Hura	18.4	98.7
Jaypur	14.5	98.2
Jhalda-I	16.4	99.1
Jhalda-II	16.4	99.8
Kashipur	12.7	99.7
Manbazar-I	15.8	99.9
Manbazar-II	23.0	61.6
Neturia	16.6	85.0
Para	29.5	99.2
Puncha	14.9	90.0
Purulia-I	18.7	99.5
Purulia-II	28.6	99.2
Raghunathpur-I	20.1	100.0
Raghunathpur-II	22.1	99.5
Santuri	23.4	87.5

Source: a: ICDS MPR 2018; b: HMIS 2018

Table 6: **Status of ICDS infrastructure by ICDS projects in vulnerable blocks of Maldadistrict**

Block Name	Percentage of AWC Operational by ICDS Project (%)	Percentage of Supervisors in Position by ICDS Project (%)
Harischandrapur - I	97.2	18.2
Harischandrapur - II	97.8	15.4
Chanchal - I	96.3	58.3
Chanchal - II	90.4	27.3
Ratua - I	85.2	11.1
Ratua - II	100.0	50.0
Gazole	99.7	35.7
Bamangola	97.2	50.0
Habibpur	100.0	50.0
Malda (Old)	97.9	30.8
English Bazar	95.3	71.4
Manikchak	96.6	16.7
Kaliachak - I	97.5	50.0
Kaliachak - II	97.2	16.7
Kaliachak - III	97.3	33.3
Malda	97.4	36.9

Source: ICDS MPR 2018

Table 7: **Status of ICDS infrastructure by ICDS projects in vulnerable blocks of South 24 Parganas district**

Block Name	Percentage of AWC Operational by ICDS Project (%)	Percentage of Supervisors in Position by ICDS Project (%)
South 24 Parganas	95.0	33.0
Baruipur	93.2	----
Basanti	97.1	----
Bhangar I	94.6	----
Bhangar II	98.1	----
Bishnupur I	100.0	----
Bishnupur II	97.3	36.4
Budge Budge I	100.0	44.4
Budge Budge II	92.6	----
Canning I	93.1	----
Canning II	95.3	22.2
Diamond Harbour I	94.6	----
Diamond Harbour II	94.5	----
Falta	98.8	50.0
Gosaba	97.5	----
Jaynagar I	95.3	----
Jaynagar II	100.0	----
Kakdwip	84.4	10.0
Kulpi	85.5	----
Kultali	100.0	40.0
Magrahat I	96.8	----
Magrahat II	100.0	----
Mandirbazar	91.4	35.7
Mathurapur I	97.4	66.7
Mathurapur II	100.0	----
Namkhana	100.0	----
Patharpratima	81.2	15.4
Sagar	96.0	----
Sonarpur	96.9	----
Thakurpukur Mahestala	100.0	62.5

Source: ICDS MPR 2018

Table 8: Status of ICDS infrastructure by ICDS projects in vulnerable blocks of Purulia district

Block Name	Percentage of AWC Operational by ICDS Project (%)	Percentage of Supervisors in Position by ICDS Project (%)
Purulia	97.7	24.6
Arsha	97.7	20.0
Baghmundi	91.9	14.3
Balarampur	98.6	22.2
Bandowan	98.5	25.0

Barabazar	98.3	41.7
Hura	98.2	14.3
Jaypur	97.1	25.0
Jhalda-I	97.4	11.1
Jhalda-II	97.9	11.1
Kashipur	99.0	21.4
Manbazar-I	97.8	45.5
Manbazar-II	97.5	10.0
Neturia	97.2	20.0
Para	98.2	8.3
Puncha	98.0	36.4
Purulia-I	95.9	50.0
Purulia-II	97.7	60.0
Raghunathpur-I	97.4	25.0
Raghunathpur-II	98.2	20.0
Santuri	97.0	12.5

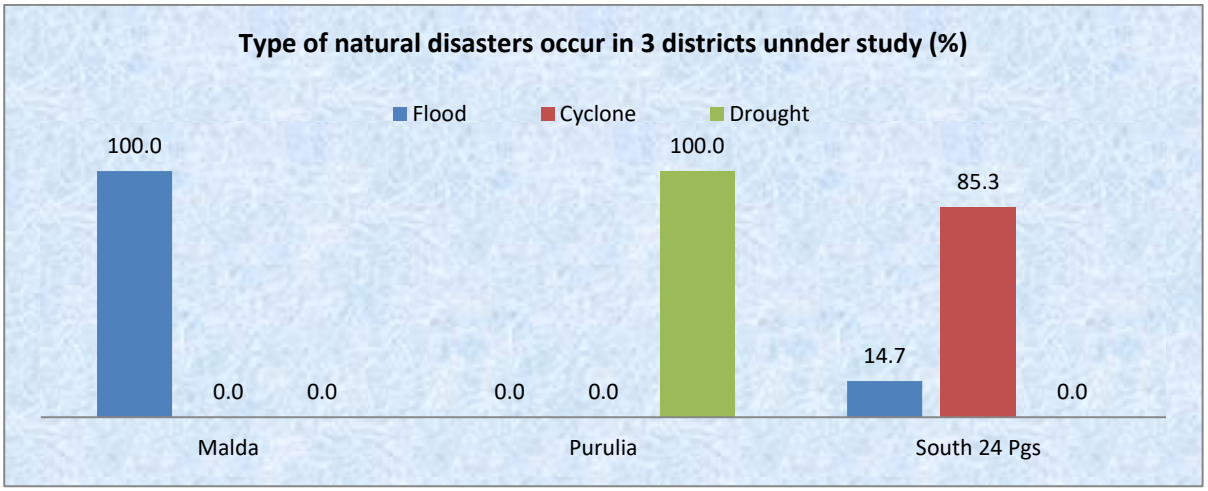
Source: ICDS MPR 2018

Table 9: Background Profile of the district M&E system in the three study districts of West Bengal, India

	Malda(%)	**Purulia (%)**	**South 24 Parganas (%)**
Respondents interviewed	24.1	43.8	32.1
Nature of M&E			
District level	14.8	24.5	22.2
Block level	85.2	71.4	75.0
GP Village level	0.0	2.0	2.8
Implementing partner level	0.0	2.0	0.0
M&E Structure			
Dedicated M&E person	100.0	98.0	91.7
Depend on external firms / consultants	0.0	2.0	8.3
Data collection frequency for Monitoring			
Monthly	33.3	83.7	65.7
Quarterly	0.0	0.0	14.3
Annually	51.9	12.2	17.1
Need based	11.1	4.1	2.9
Not conducted	3.7	0.0	0.0
Nature of Evaluation			
GP level evaluation	55.6	77.6	36.1
Block-level evaluation	74.1	30.6	47.2
District level evaluation	25.9	22.5	2.8
State-level evaluation	11.1	2.0	0.0
Overall Risk evaluation	7.4	6.1	8.3

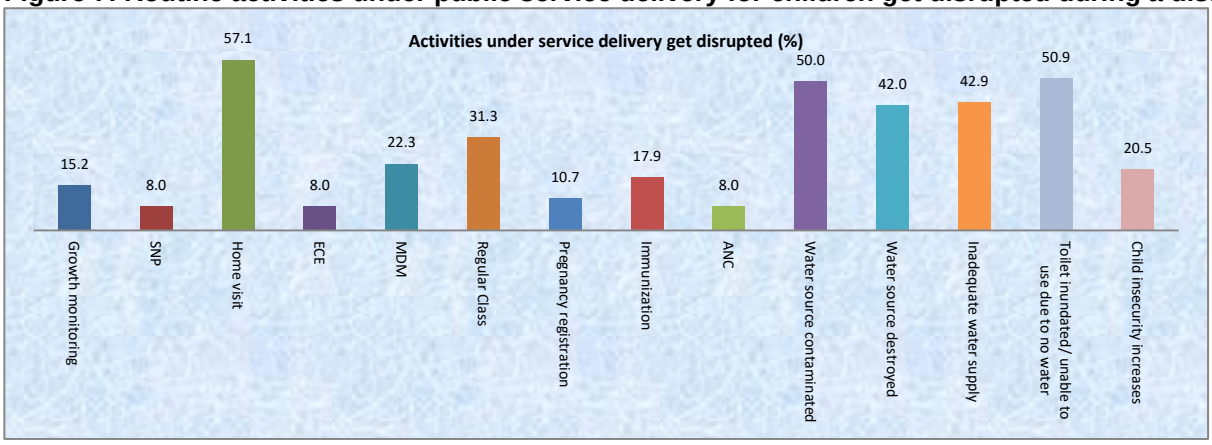
Source: Primary Survey 2020

Figure 6: Type of natural disaster occur in 3 districts under study



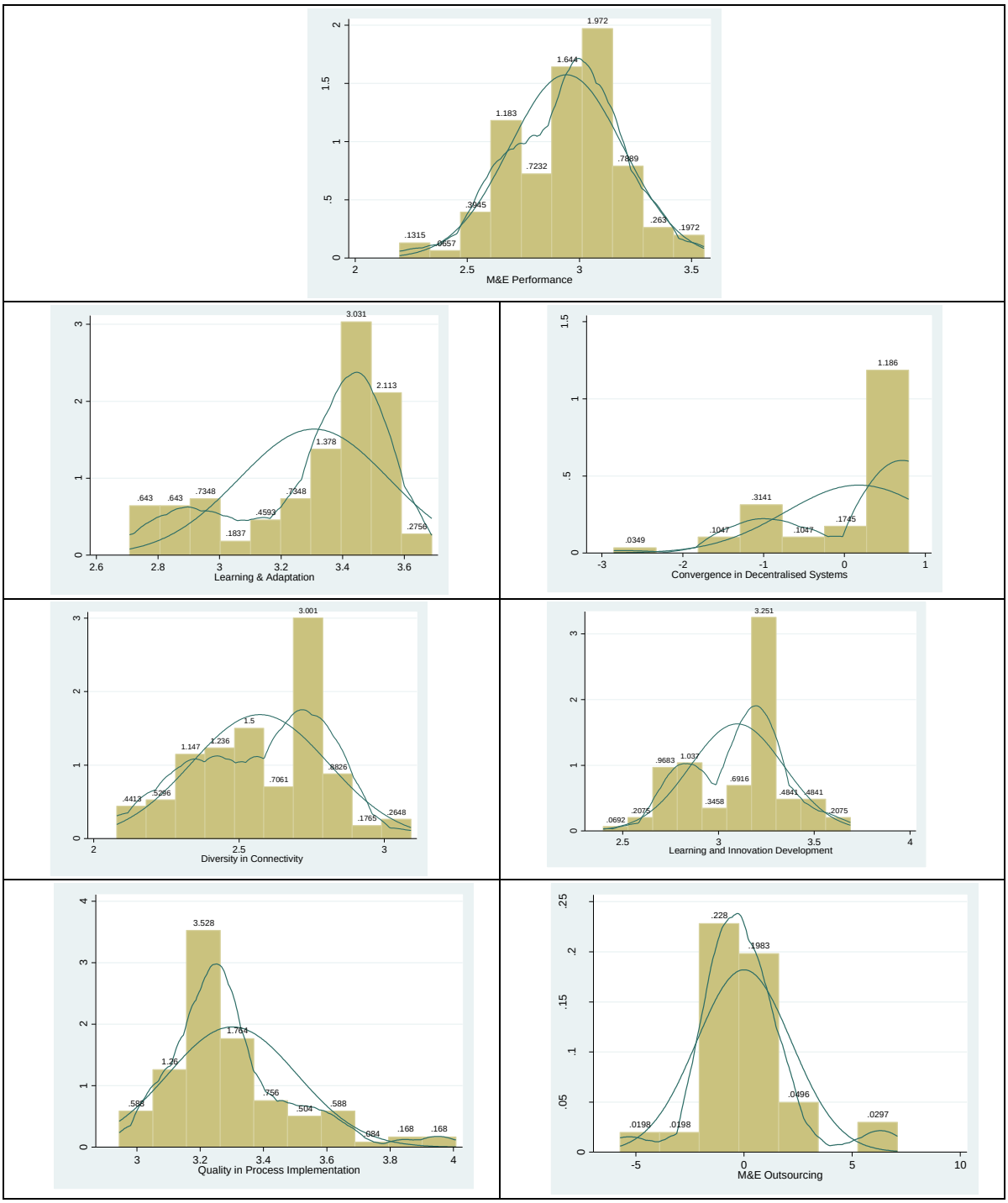
Source: Primary Survey 2020

Figure 7: Routine activities under public service delivery for children get disrupted during a disaster



Source: Primary Survey 2020

Table 10: The distributional pattern of dependent and independent variables represented by histograms



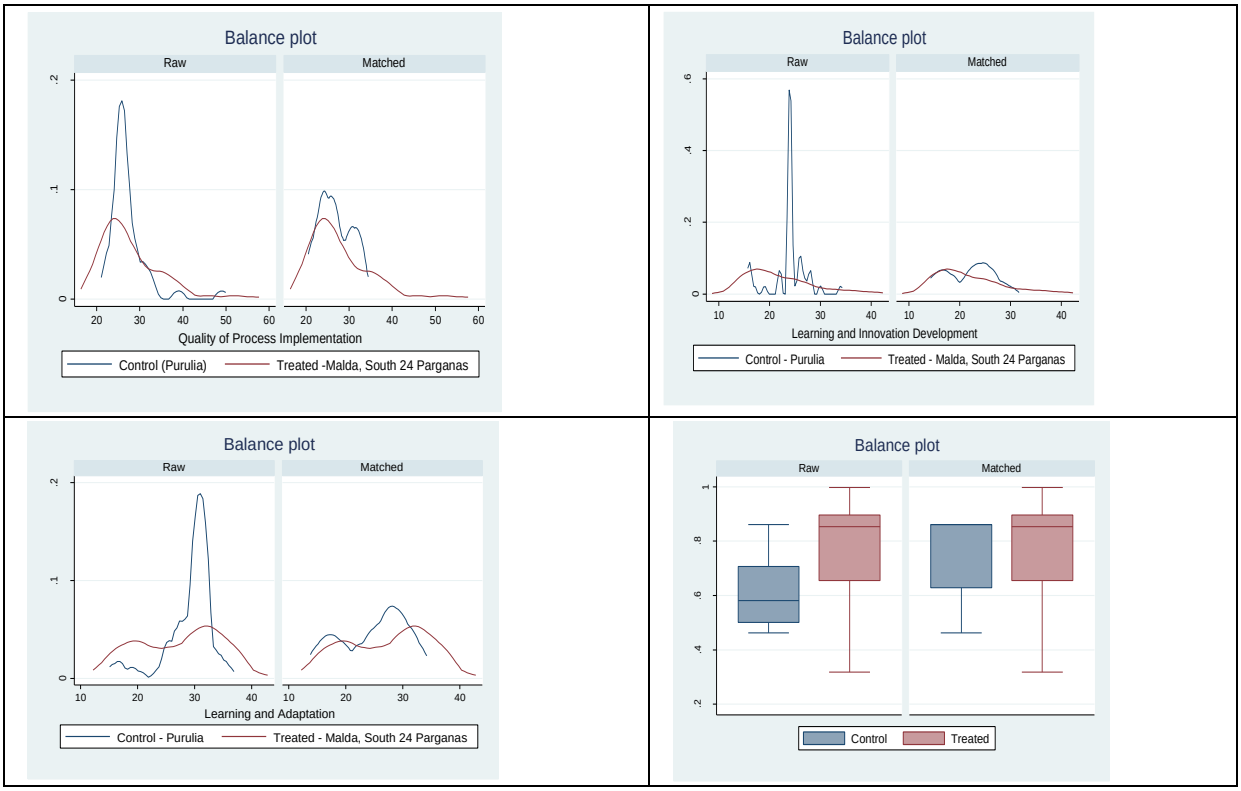
Source: Primary Survey 2020

Table 11: Regression analysis to estimate the average treatment effect in Malda and South 24 Parganas compared to Purulia

Output – Efficiency of M&E Performance	
Learning and Adaptation	.629*** (0.528 - 0.731)
Average Treatment Effect (ATE)	5.070*** (3.086 - 7.054)
Process component contributing to efficiency in treatment group	
Quality in the process followed with learning and innovation through capacity building and networking	.016*** (0.010, - 0.023)
The estimate of the correlation of the treatment-assignment errors for the control group (ρ)	-.792

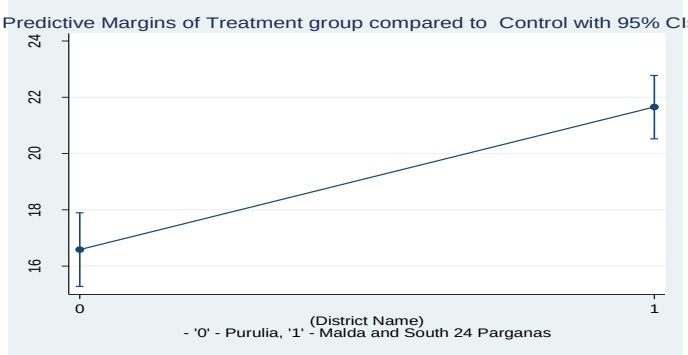
* p<0.1, ** p<0.05, *** p<0.01 Source: Primary Survey 2020

Figure 8: Balance Plots with respect to factors influencing the treatment effect in the study area



Source: Primary Survey 2020

Figure 9: Predicted margins of the treatment group compared to control in the study area



Source: Primary Survey 2020