

## Transformative effects of mid-day school meal program in Nuwakot district through Homegrown model: A case study of Nepal

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### Abstract

This study aims to explore the roles of various actors in school meal programs in the Nuwakot district, particularly those following homegrown models. A mixed-method research approach was employed, involving 16 government schools (with 64 interviews) from two local governments to understand the program's impact.

The school meal program in Nepal has heightened awareness among various stakeholders. Hot meals are prepared and served, with a collaborative effort in line with homegrown models involving parents who play a significant role. Schools, too, contribute significantly to the success of the program. The utilization of locally produced foods has increased, albeit with seasonal variations, and involves farmers and cooperatives. This shift has resulted in changes in dietary practices.

The cooperative's role is pivotal in ensuring an ongoing supply of limited school and food items. Local markets play a crucial role in meeting demands for these programs. The local governments' role is vital, requiring a multi-sectoral approach to effectively support and sustain the program.

**Keyword:** School Meal; Homegrown; Awareness; LG's; Local Production.

### 1. Introduction

School meal programs—in which students are provided with snacks, meals, or other foods in or through schools—are common throughout the world (GCNF, 2019). School feeding programs uses changed modalities to provide meals to the schoolchildren, for the program the marginal cost is the most innovative and within such price the program running is another achievement, this added the usefulness of school feeding programs. (Bundy, 2009).

The health and nutrition interventions are important aspects of school meal that help reinforce the benefits of school feeding programs and need to be strongly promoted, but are typically part of broader sectoral and cross-sectoral policies and program activities. The lesson learned by other countries through their experience of meal program encourage and attracted students for the learning, demands usually increased (Kattan, 2006).

India has a long tradition of school feeding programs (some since the 1920s), largely funded by state governments with some external assistance. In 2001, India's Supreme Court directed state governments to introduce school feeding

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programs in all government and government-assisted primary schools. This was the result of a petition from the People's Union for Civil Liberties, a large coalition of organizations and individuals that led the Right to Food Campaign (Bundy, 2009, p. 11).

The Brazilian school feeding program is in the country's national constitution and is part of the government's Zero Hunger Program. Covering nearly 37 million children, the program is among the largest in the world. Its implementation is managed by an independent institution, the National Fund for Development of Education (FNDE), created in 1997 to be responsible for the disbursement of the financial resources for school meals in each municipality. This transfer became automatic in 2001 and obliges local governments to spend at least 70 percent of transferred money on food, preferably purchased locally. (Bundy, 2009, p. 12).

Review shows that the school feeding programs can help to get children into school and help to keep them there, through enhancing enrolment and reducing absenteeism; and once the children are in school, the programs can contribute to their learning, through avoiding hunger and enhancing cognitive abilities (Levinger, 1986). These effects may be potentiated by complementary actions, especially deworming and providing micronutrients. Bundy (2009) found that meal program benefited from early work in this area, which arrive at similar conclusions about the direction of the effects. The effectiveness at the large scale was a matter of questions (Bundy, 2009).

A study by Chhetri and Manandhar (2023) review that the school meals programs are widely considered as one of the most effective interventions to simultaneously improve nutrition and education outcomes for schoolchildren in developing countries, like Nepal is ongoing meal programs with different modalities (MoE et al., 2016).

It was noticed that the school meals programs contribute to alleviating short-term hunger in school-children, which increases their ability to concentrate and learn while they are at school (Shalini et al., 2014; Laxmaiah et al., 1993). School meal increase student enrolment, attendance and retention rates (Aliyar et al., 2015). Tiffin program contribute to better academic outcomes as well as improved child health. School meals programs are commonly implemented either through direct food provision or through Cash based transfer to the schools, and this study focuses on the latter.

The number of issues has raised from the cash-based school meals give more autonomy to schools, but sometimes face challenges such as varying meal quality, misuse of funds, delays in the cash flows disrupting meal provision, and may distract teachers from classroom teaching and many more. The health effect is also a speculation from the hand cash because junk food may disrupt the concept (Shrestha et al., 2020).

In order to address constraints and manage sustainable effort an increasing interest to give communities greater control over the program implementation applied. Local purchase schemes found best to promote local food supply system. This approach has become known as home-grown school feeding (HGSF) (Aliyar et al., 2015; WFP, 2009) (Chhetri & Manandhar, 2023). But to strenthen the local economy are the farmers nearby are beenefiting from the sale of products or not is a big questions in the days ahead? Markets are suppose to be a gloval networking and products may import export through markets.

In Nepalese history, the school feeding programme, was introduced with educational performance intention first time during the Rana Regime. During the decades of 1950, students in need were provided free mid-day meals in the government schools of Kathmandu Valley. The Sanskrit schools have continued free education with accommodation and foods till date through for limited number of students (GoN, 2006; Chhetri & Manandhar, 2023).

Various review shows that the community school midday meal programme is being run in 42 of the 77 districts in the country. While the government (Ministry of Education) manages the programme in 33 districts, the World Food Programme provides midday meals to the children of select schools in nine districts (The Kathmandu Post, 2023; Chhetri & Manandhar, 2023).

After mega-earthquake and COVID-19 outbreak in Nepal, WFP and Government of Nepal jointly agreed to run a Mid-Day meal Program applying homegrown modality in support with Government of Japan for coming two years where WFP will act a role of a technical support and integrated model has been developed to run this program (My Republica, 2020).

The Nuwakot district is one of the pioneering for the school meal program in Nepal. Homegrown model launched as a pilot program in Nepal started in all LG's of Nuwakot district. The ongoing cash grant of NPR.15 per students by Government will be usual and infrastructure development to support meal program and social support programme was assigned to World Food Program in associated with Japan government fund to manage program after COVID outbreak.

The multi sectoral collaboration noticed among the various actors of the district such as farmers, school, LG, cooperatives and markets respectively (WFP, 2022).

Review suggesting that the school meal Program is the most essential program for the education. Students are direct benefiting from the Mid-day meal Program. Various country experiences shows that mid-day meal helping in enrolment, nutritional values, meeting food requirement of the day time, creating opportunity to various social institutions to tie up and provide support from the various aspects. (Chhetri & Manandhar, 2023).

The school meal program grant of NPR. 15 Rs/ students allotted for the 180 days yearly and the money is allotted based on the data of the schools which is monitored and counted through the schools and verified with LG and based on that figure the amount is allotted in each school (EDCU, 2022).

After federal act 2015, all three-tiers of Government role were important to support in development activities in Nepal. Education, agriculture and health sectors also supervised by LG's. The Province and LG's role is vital; hence this study is equally important from the case study perspectives to analyse the ongoing status and consequences of homegrown School meal Program in Nepal (Chhetri et al., 2020).

Various reviews suggest that the school meal program in Nepal is the most transformative program in Nepal supporting to manage food and aware for education. Now many modalities have come to tested and run the school meal program, among which homegrown is new and innovative models, under which a team effort contribution is essential and multi sectoral approach is evidence of this model. Hence, this study will analyse the ongoing practice of homegrown model in the covering district. The research will further share the findings of study area to the scientific societies that may help for the future.

Based on the above objectives, a null-hypothesis is set to check the statistical value of the two major variables such as "School meal program" and "verities of meals" in the program.

H<sub>0</sub>: - There is no significant relationship between school meal program and verities of meals served in the school.

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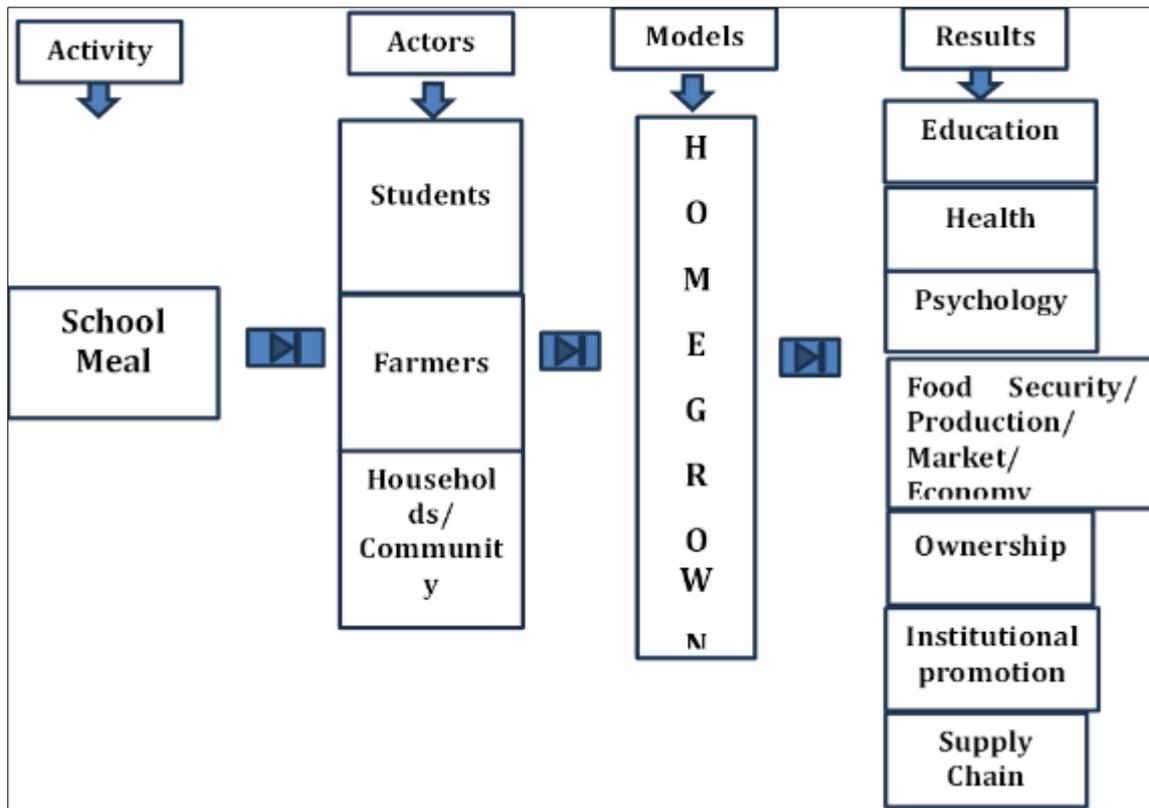
## 2. Conceptual and theoretical perspectives:

In the context of the Nepalese school meal program targeting Homegrown models, numerous concepts and ideas are associated. A proposed conceptual framework (Figure-1) has been developed based on various reviews and consultations with educational and development experts.

In the school meal program, students, teachers, and communities are considered the fundamental elements. When applying the homegrown model, positive outcomes in the education system result in increased learning and awareness within schools. The consumption of local foods contributes to elevated nutritional values, maintaining good health, and controlling diseases. From a psychological standpoint, the outcomes of new learning include improved learning and students' behaviors, along with the acquisition of new skills.

The homegrown model has enhanced the food security situation by boosting the market capacity through increased local production sales, benefiting farmers, and bolstering the local economy. The development of a farmer-to-cooperative and market chain system, along with institutional promotion, can be observed. In the Nepalese context, the uniqueness of the federal system is evident due to the presence of local governments (LG) and local services at the doorstep. Local monitoring supports the modality, and the concept of ownership gradually increases.

The homegrown model creates space for investment, attracting both government and private organizations. The local economy could witness growth if efforts and approaches by various systems are applied. Hence, institutional support, meaning support from various organizations and local-level monitoring, is the most effective way to run the program. This model represents a forward-thinking approach for the homegrown initiative in the Nepalese context, serving as a tool in this research, and findings will be shared accordingly. Therefore, this approach and framework will be applied for the analysis and formulation of various questions.



**Figure 1** Conceptual framework of the study

(Source: Self Prepared by Researcher, 2023)

## 2.1. Theoretical approach

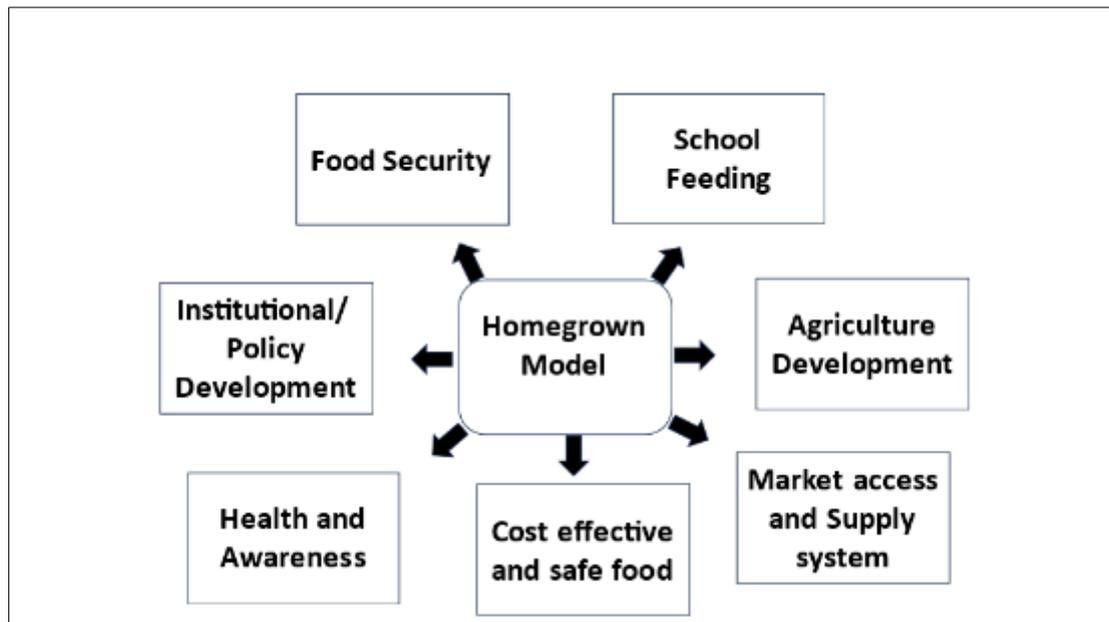
This research is designed to analyse from the social science-sociological perspectives. Hence, many theories are allied with school meal following variables (education, health, food security, livelihood, good government) approach, but the best practice is the education and social perspectives. Various theories are described as a fit for this approach.

**Educational Theory:** The theory that describes the numerous issues of education research starts from teaching-lecture and extends to the overall performances of the students. This theory covers practice, analysis, education, curriculum, policy, and so on (Higgs, 2012). A number of theories have been designated in each topic globally, but aligning such theories may not fit a single way to justify the homegrown.

**Health Theory:** - Nutrition and hygiene are the major parameters of this theory, describing the aspects of individual as well as institutional development. Homegrown is associated with nutritional, health, and hygiene perspectives, but this theory may not cover the other aspects of the models that are associated with production and markets (Raingruber, 2012).

**Economy Theory:** - Economy is the prime aspects of state monetary and financial situation, for this, earning, expenditure and financial policy and regulation is essential to deal with this. Homegrown no doubt increases income aspects of local's markets and farmers but this theory may not for best because other aspects of education, health's are not covering this philosophy. (Gilboa et al., 2022).

Hence apart from the mentioned theory, a mixed theory is developing to justify the homegrown which is strongly aligned with production-agriculture development, school feeding, food security and Institutional policy and many more indicators could be introduced in this homegrown model illustrated here-



(Source: - Self Prepared, 2023)

**Figure 2** Homegrown model theory self-developed by Author reference from many previous models of scholars

Homegrown School Feeding Programmes (HGSFPs) seek to link agricultural development through the purchase and use of domestically produced food. HGSF (and nutrition) programs are intended to stimulate local production by creating a stable demand for quality and safe food, stimulating local production, supporting the development of local skills, and combating malnutrition by purchasing the food required from local smallholder farmers and processors. HGSF programs can enhance chances for smallholder farmers to get access to markets and contribute to rural transformation by giving early assistance to local smallholder farmers to develop their capacity to provide a stable food supply (WFP, 2018).

Various theoretical and empirical reviews have similar insights that homegrown is not associated with only one progress aspects, it is associated with many other development programs such as agriculture development, school feeding programs and so on. Figure 2 is drawn by the author inspired by various old models and explains that the homegrown eradicated poverty and improved the food security situation of the area.

### 3. Methodology

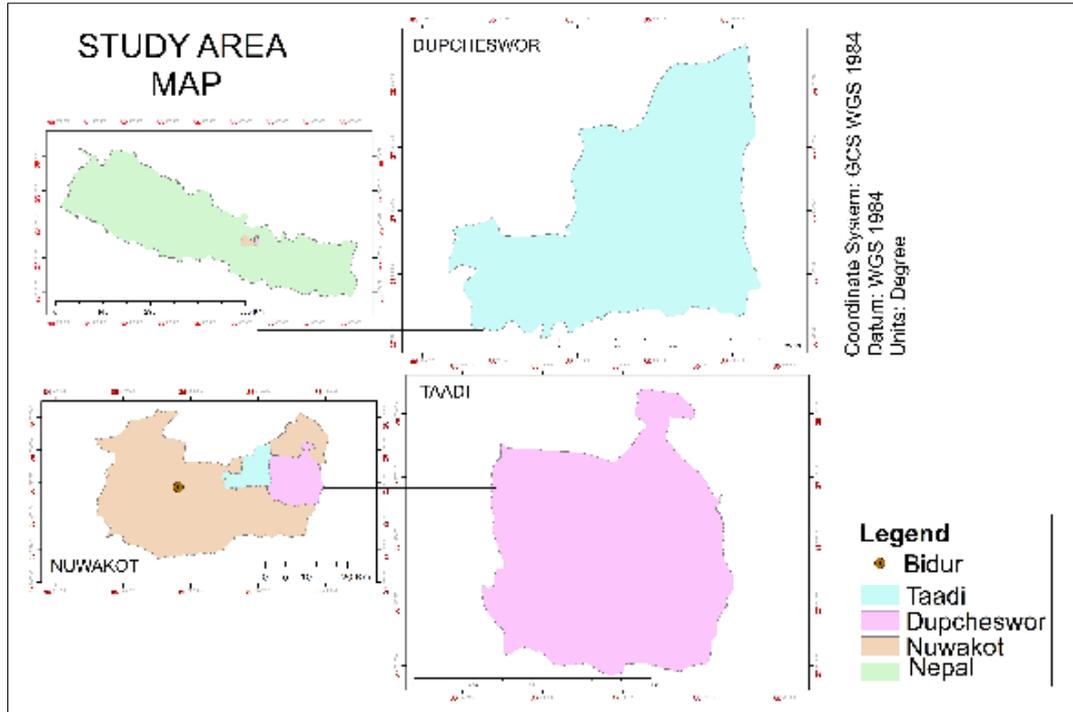
This is a cross-sectional mixed-method approach applied to generate the SMP practice in the study area. A total of 16 schools (Annex-1) within two Local Government (*Figure-3*) of Taadi and Dupcheswar Rural Municipality has been chosen for this study randomly out of a total of 10 Palikas (Palika: -In Nepal, after federalizations the administrative bodies have classified into Province, district and municipality. Municipality is known as Nagar Palika and Rural Municipality is called Gaun Palika in Nepali) in Nuwakot district.

The selected Palikas are remote and nearly 40-50 km motorable distance from the district HQ (*Figure-3*). The idea behind the selection is to analyze the SMP situation in the remote areas and the role of various actors under homegrown models. The study was conducted within July-August 2023. The schools were chosen based on the ratio of the Secondary, Basic, and Primary schools, so that the analysis would be better to check the ongoing practice of the school meal program.

A total of 64 questions were captured from the 16 schools (1 question from teachers, 1 from SMC, and 2 from the parents respectively). The interview was taken during break time in a school to verify and observe the cooking-distribution process, and various observations took place during this daytime interview. The questions were collected and processed through IBM SPSS Ver-24, and tables and graphs were prepared through MS Excel for better interpretation. Two questions were tested in Taadi LGs under pilot testing, and the value of Cronbach's alpha is .82, which is significant to justify the questions. The analysis and review of the pre-testing were helpful in preparing a final questionnaire for data collection from the field. The data analysis plan involved mixed-method analysis through various notes, one through descriptive statistics that show the overall figures of the two Palikas, and one through cross-tab means for the

comparative analysis of each LG's. For better analysis and validation of set hypotheses (Null), Regression, P-value, and Correlation were planned to analyze and extend to validate the statistical value of the data.

Various tables and graphs were displayed. The FGD and KII notes were drawn through qualitative analysis using MAXQDA software, and the analysis summary was added in each graph/table where fit for the best. Observation tools were also considered a powerful source and explained in the required spaces.

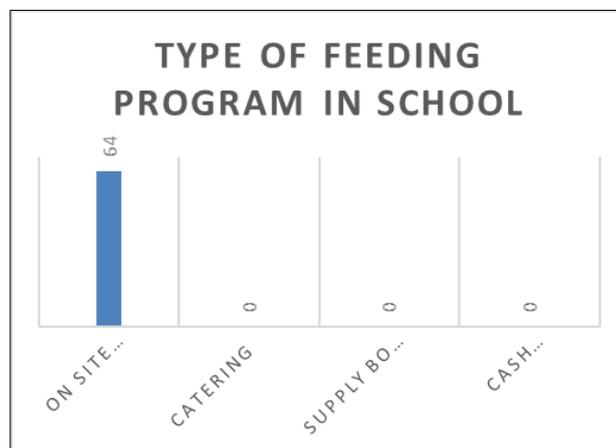


(Source: - Self Prepared GIS map, Dec, 2023)

**Figure 3** Study area of Nuwakot district within Nepal

#### 4. Results

In this part, the analysis of the data will explain through notes applying various tables and graphs sources obtained from the survey and that will be validate through key notes of KII and FGD.

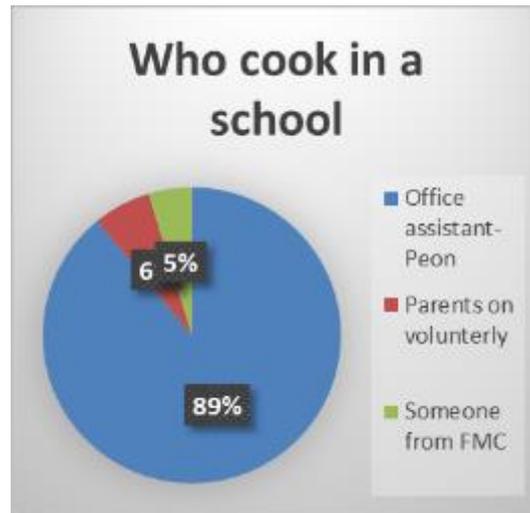


(Source: - Field survey, 2023)

**Figure 4** Type of Feeding practice in School

On site cooking observed (All 64 responses) in the visited schools and reported during survey (Figure-4). During consultation with EDCU, LG and local NGOs (CARDSN), it was reported that in Nuwakot district catering by outsiders,

supply through canteens and cash giving are the extreme rare practices under school meal programs. Field survey shows a clear picture of onsite cooking within the school premises. Observation and various sources have strongly intensified hot meals are served in schools on daily basis up to the student of class six standards.



(Source: - Field survey, 2023)

**Figure 5** Who cook in a school

In another question of meal preparations, 89 % meals were preparing (*Figure-5*) through peon-office assistants, parents and SMC members also found engaged in cooking and serving in rare cases when cook/ peon is off or in distinct circumstances, when he/ she get sick or visited outsides, the trend indicating that peons are mostly engaged on cooking work.

The primary role of SMC is to assigned meal coordinator (Principals are usually the focal person) assigned peons, manage and overall monitoring of the activities. In each school, mostly the Head/ Principal is responsible to manage the overall meal activities. He does administration work, counted students' number in morning assembly informed cook to prepared meal accordingly. He also managed a notes of each day students taking meals. After confirming students, cook usually follows the menu (*Annex-8*) of the schools and prepared food accordingly. Students are responsible to take meal during break time and cook distributes food and washes utensils as common task under SMP.

The local parents are usually visits and share the feedbacks of the meal programs. The SMC manage serious concern raised during the executions of the programs. Cooperative assignments and management of foods also done by the SMC and Principal both. For the payment of meals programs, a document prepared and submitted through the local Palikas and disbursement proceed accordingly in trimester seasons.

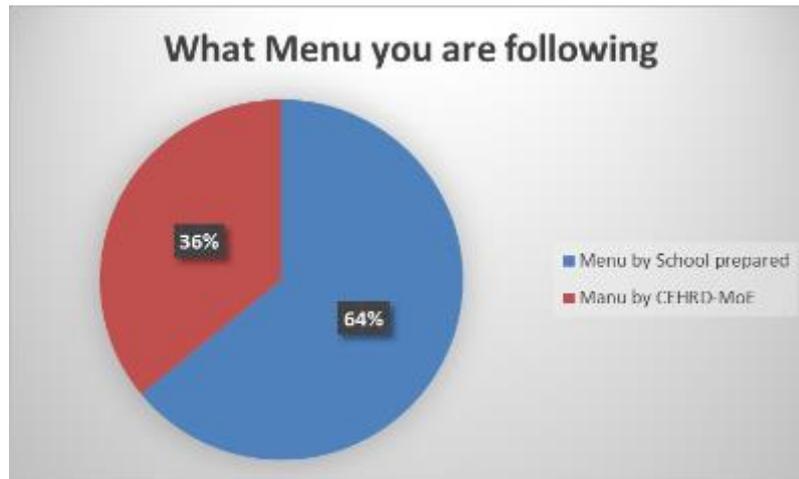
The school meal program allocations of NRS. 15 is not sufficient, top up of amount is also challenging due to the huge investment Palika-wise. For higher number of schools, this is manageable but for a smaller number of students is challenging to manage meal program with the allocated amounts. (*KII-Principal, SMC, LGs-Chairman/ Vice Chairman*).

Most of the schools are accumulation NPR. 1000-1500 (\$11.5) each month to the remuneration of peons as the load is high to the peons. Since, no additional amount is coming from any sources, thus school is managing from the internal sources. In some cases, parents, SMC and peons are cooking and serving on volunteer basis. (*KII-Educational head of the Palika and school Principal/ SMC Chairman; FGD notes of locals*).

WFP has constructed kitchen-shed, wash stations and given trainings to the peons, Principals and SMC for the smooth executions through homegrown mode. Local Palika initiated this hot meal serve concept and coordinated various local cooperatives for the supply of the necessary foods at nearby schools. (*KII with WFP and local partner CARDNS*).

In a question on MENU, there are two major options, the majority of respondents have said preparing as per prepared by school at local levels. Whereas some 36 % have said following CEHRD (*See Annex-8*). During field visit, it was observed that the pudding, fried rice and rice with potatoes are the most common, useful and easily available foods items found easy to cook without any losses of nutritional values. This is also cost effective, so local schools served either

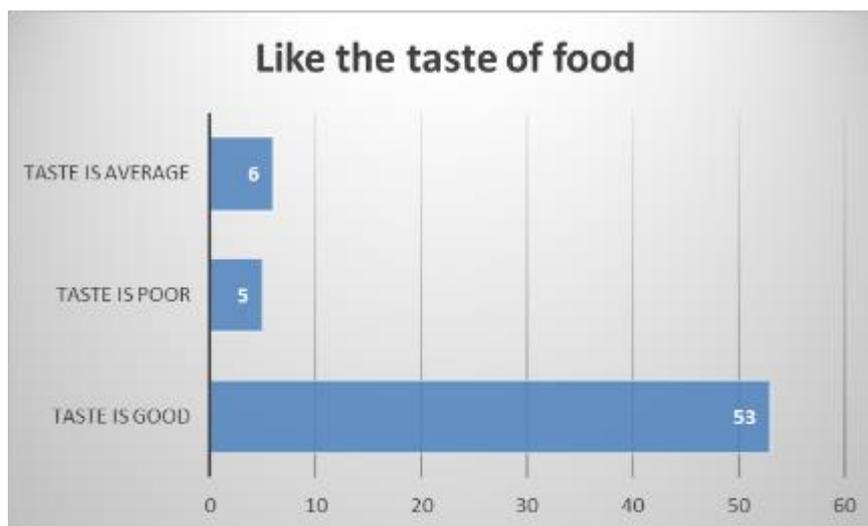
egg, or meat as this is healthy food from the nutritional view in a week/ month. From the above analysis we can concluded that the schools are trying best to manage food and continuing program from any circumstances.



(Source: - Field Survey, 2023)

**Figure 6** What Menu you are following?

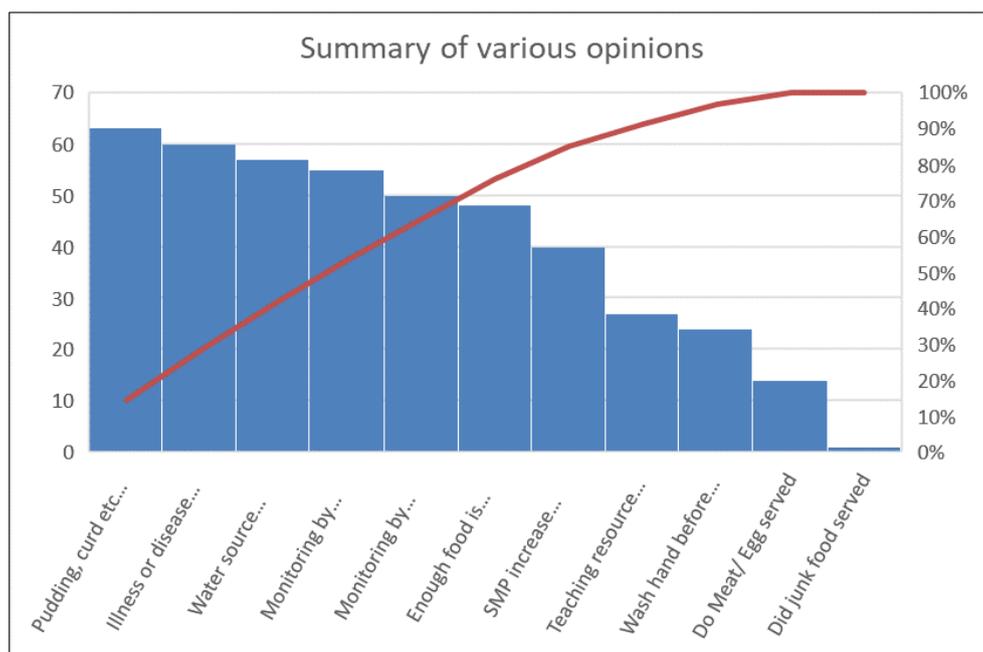
Paddy, wheat and local vegetables such as green leaves and potatoes are easily available in the farm areas, this procurement also benefited farmers but such productions are limited for some seasons. The average land size of the farmers is 3 to 6 Kattha (*Up to 0.2 Hectare*) per houses, however the farmers and cooperatives have good opportunities in the days ahead. In Dupcheswar RM, milk is scares due to inadequate animals because of cold area as well as low grazing field and poor infrastructure for the market connectivity. In Taadi, the milk is available, local markets are well connected with motorable roads, hence milk is used in school meals and curd and porridge is more in practice (*FGD and KII-Local ward members, cooperatives, lead farmers*).



Source: Field Survey, 2023

**Figure 7** About the taste of food

In a context of taste of food, the taste is recorded and verifies as good (53 respondents) whereas average and poor taste is also opted for such items which are not much like such as maize halwa (*food made of wheat, Maize*), kwati (*A mixed vegetables made of various nuts*) which are good foods from the health perspectives but such food is usually taking in houses on daily basis, so repeating food at school is not a good choice and instead like widely porridge, rice, paani roti and Meat based food. Ethnic majority (Tamang) is high in the area usually follows traditional food items in daily life. Maize and millets are common in daily life, blended product of maize and millets are common as they don't like the food items, instead pudding and other food items are likely most (*FGD participants*)



(Source: - Field Survey, 2023)

**Figure 8** Summary of various facts and reality of meal programs-meal types, availability, taste and monitoring aspects and so on

Pudding, curd-milk based items are the top most choices of the student (*Figure-8*) as such items are rarely used in the houses and have high nutritional values.

Illness and disease cases are less recorded, water source and hygiene maintenances are prime reason, ongoing support from health offices, LG serving de-warming, Vitamin programs and nutritious foods are the main reason of low cases of illness (*KII-Health Officials, LGs*).

Water source availability is also significant, the tap water is the main sources. Most of the schools are connected with pipe to the school with bases. Very few (only 2 schools-Observation) are carrying water from the nearby sources.

SMC/ Parents and local elected people's-LG's visits are regular answered by the participants during survey. The ward officials from the same area are frequently coming to see and address the issues of the SMP. However, the active parents are also visiting and taking interest on the monitoring, whereas some parents who are mostly wage labourers and illiterate they are less active in the communities. Officials or elected People from the LGs office are rare due to work load and remote areas. About the amount of food, a certain amount is served which at least fill the hunger and considered as a food for tiffin purpose not to fill the entire stomach.

Farmers evidence that food program helps poor students who came empty stomach feeds by the schools early than tiffin time due to the availability of the food at stores (*FGD participants*).

School meal program somehow has increased the awareness, timely participating on school time, hygiene, eating healthy foods, and education continuations are the usual practice of awareness recorded during interviews, However the parental awareness and importance of Educations are still challenging due to the lack of knowledge in the houses and communities. From the human resource perspectives, no significant changes have noticed as the teaching availability is rare in the rural areas and only such teachers are available who are nearby and wish to work, for the freshers and new human resources financial and human resources are challenges.

Private school-boarding in the community also created problems to get enrolled in the government school due to facilities and quality of educations have challenged the students to get in the public schools. However, meal program and students with low economy are really benefited with public schools due to meal availability, low cost and improving trend of educations system in government mechanism. During interview, it was found that during friday, meat or eggs are served for only one day and in some schools, students reported that once is a month at least they got meat or eggs,

so this also verified with schools and management that the given amount is not sufficient to manage meat every week instead at least some day they manage based on the price and availability of the items in the community.

During interview, only one day a packed biscuits was served reported by the local farmers and students that was the reason of significant low rate of students. No other cases of serving junk food recorded, the SMC reported that they have even banned junk food in the nearby shops due to the SMP activities. As the SMP is allowing food to up to the student of standard eight and above than that grade students usually visit outside during tiffin time so no Junk food mechanism is established.

Junk food is not allowed in the school areas and this is under the Palika policy. A fine system is minute from the board meetings of the Palika (*KII-Chairman of the Palika*).

The overall trend of the surveyed areas illustrating a positive track of the meal program through a coordination mode is accelerating where the multi approach is essential and SMP somehow creating a new idea and learning among the different actors.

In the procurement system question, the trend shows that local markets and cooperatives are meeting the demands of the schools. The local markets, Samundratar for Dupcheswar and Kharanitar for Taddi, are the most functional markets with the availability of food items in both markets. Taadi market is larger than Dupcheswar market because the markets are connected with many road networks in the district, whereas Dupcheswar is much more remote than Taadi RM. The cooperatives in both Palikas are playing a vital role in the supply system. The functional cooperatives at Taadi are Kirateswar cooperatives and Hile cooperatives in Dupcheswar RM. Both cooperatives have different scenarios in the supply mechanism. The food in the local areas is diverse, and there are many challenges for the cooperatives.

**Table 1** Procurement and Supply system

Legend	Cooperative channels	Direct from farm	Village local market	District Market	Market outside of the district
Where to buy food for school	20	1	23	18	2
Legend	Principal	Teachers	Member from SMC	Parents	Supply through cooperative
Who do purchase	22	6	8	8	20

(Source: Field Survey, 2023)

In terms of the supply system and purchase mechanism, the trend in the surveyed areas shows that the heads of schools (Principals) are more engaged in the purchase system than other channels. In many areas, WFP is attempting to build and connect cooperative agreements with schools for the direct supply system. The paper agreement is almost done for the majority of the schools, but the supply has not yet started officially through Palika levels. However, in some wards, the supply system is running and ongoing based on demand and availability.

Supplying to all schools is very difficult from logistic and cost perspectives. The price of commodities fluctuates day by day, and many challenges occur in the supply. It is not possible to supply as per the demands mentioned in the menu (Annex-8) at the prescribed price (KII with Cooperatives Chairman).

#### 4.1. Hypothesis testing analysis

There is no significant relationship between school meal program and diverse meal varieties served-Null Hypothesis were set and following testing is done here to analysis the facts;

Pudding, and Paani roti are the most favourite dishes opted by the respondents as 43.8 % are much like pudding followed by Paani-roti. During class visiting, it was also observed that the students have strongly selected pudding while reconfirmed the best food served in the meal programs. The Jaulo is not much liked by the respondents as this is a common food usually eating in daily lives in homes so repeating the same food at schools is not favourable for the students.

**Table 2** Food varieties of the study area served in school-Opinion of the respondents which they like the most

Legend	Pudding	Paani-roti	Kwati	Jaulo	Meat/ egg	Potatoes, rice, bitten rice and mixed
Dupheswar RM	12	16	12	0	2	2
Taadi RM	16	0	0	<sup>3</sup>	0	0
Sum (N)	28	16	12	<sup>3</sup>	2	2
Sum (%)	43.8	25.0	18.8	6.3	3.1	3.1

(Source: - Field Survey, 2023) (P-.000)

From the analysis perspectives, Table-2 is enough to prove that the food is served under meal programs are diverse with many varieties.

**Table 3** Symmetric measures of statistical analysis for the hypothesis testing school meal and diversity of food varieties

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Interval by Interval	Pearson's R	-.257	.101	-2.093	.040 <sup>c</sup>
Ordinal by Ordinal	Spearman Correlation	-.355	.131	-2.991	.004 <sup>c</sup>
N of Valid Cases		64			

(Note: -a. Not assuming the null hypothesis., b. Using the asymptotic standard error assuming the null hypothesis., c. Based on normal approximation)

To validate the regression and correlation statistics between two variables School meal and diversity of meals, the R value is .40 and Correlations is .004 which is significant value of the variables that indicating that a relationship in between school meal and diverse food distribution.

**Table 4** Mean average statistic summary of the various questions

		What is the favourite food of all?	is food amount being enough to eat?	Do you like the taste of food which you received?	Do you serve meat, eggs in a week?	Do you serve pudding, curd in a week?
N	Valid	64	64	64	64	64
	Missing	0	0	0	0	0
Mean		2.16	1.25	1.27	1.78	1.02
Std. Error of Mean		0.184	0.055	0.078	0.052	0.016
Median		2.00	1.00	1.00	2.00	1.00
Mode		1	1	1	2	1
Std. Deviation		1.472	0.436	0.623	0.417	0.125
Variance		2.166	0.190	0.389	0.174	0.016
Range		6	1	2	1	1
Minimum		1	1	1	1	1
Maximum		7	2	3	2	2

(Source: -Field Survey, 2023)

The average mean statistics for various questions to validate the hypothesis assumptions indicate that the average mean of favorite food is 2.16 with an SD value of 1.472. Regarding the portion of food, the mean is 1.25, the liking of taste mean is 1.27, meat and egg serving confirmation mean is 1.78, and pudding and curd serving mean is 1.02. This indicates

that the average mean of each variable and the standard deviations of each variable are between 0.125 to 1.472. This suggests that each variable is significantly associated with the fact of meal distribution, meaning that each variable actively plays a role in the meal program, representing diverse items available under school meal programs.

Hence, based on the set objective, there is no significant relationship between the school meal program and the diversity of school meals, as found strongly significant. This means the null hypothesis is rejected, and the hypothesis is proved.

#### *Abbreviation*

*LG-Local Governance, RM-Rural Municipality, WFP-World food Program, SMP-School Meal Program, SMC-School Management Committee, CARDSN-NGO, R-Regression, KII-Key Informant Interview, FGD-Focus Group Discussion, EDCU-Educational Development Coordination Unit, CEHRD- Centre for Education and Human Resource Division, MS-Microsoft, IBM-International business Machine, SPSS-Statistical Package for Social Science)*

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## **5. Conclusion**

Onsite cooking, performed by the school peon (office assistant) with minimal incentives within the school premises, is a unique management approach for the low-cost program, receiving no additional support. WFP and CARDSAN have provided support to sustain homegrown models by aligning various institutions for long-term effects, offering training to key actors such as the peon, principal, SMC, parents, and LG officials. The principal, SMC, and locals support managing local foods cost-effectively to run the program, striving to maintain a healthy environment within the school premises. Infrastructure development, including kitchens and wash stations, and the handover of property to the government provide an opportunity for the government to promote SMP activities. Onsite monitoring by parents and schools creates awareness, and the LG presence at the ward level is supportive in the study area.

Challenges arise in the local perspectives regarding given menus and available foods, prompting a preference for local menus. The acceleration of local productions and the role of cooperatives are evident but not yet functioning comprehensively across the Palika. The current allocated price and market fluctuations pose significant challenges for this program. While local production of cereals and some seasonal vegetables is available, the supply chain is somewhat disturbed due to the unavailability of food throughout the entire season. Consequently, local markets become the ultimate source for buying and continuing the program. Market prices and leadership for this program remain challenging. The capacity of cooperatives is also a question from the analysis perspective, as the diverse area has different cooperatives with low capacity, focusing solely on income and savings-based learning. No advanced learning and commercialization mechanisms have developed within cooperatives in the study areas. Despite these challenges, the supply and local food menu continue, either through supply from farmers, cooperatives, or market purchases, and hot meals are served in the study areas.

The meal program has supported students in remaining in classes, facilitating ongoing learning, and managing hunger to create a healthy environment in the community. The vital role of farmers and cooperatives can play a sustained role in the days ahead, as homegrown presents an opportunity for optimal benefits in production, economy, food security, learning, health perspectives, and more. A wide range of data collection is required, and engagement from all sectors can only sustain homegrown models to promote the National School Meal program.

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## **Compliance with ethical standards**

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of ethical approval*

This article is prepared based on the data collected from the field. During executions of the field work. The researcher had monitored school meal program closely during 2022 and inspired from the innovations of the modalities and writing this paper based on the various research tools applied in the field during 2023.

### *Statement of informed consent*

All actors-respondents were informed and consent has been taken before interview, the article is just the reflection of ground reality and does not try to promoting or degrading any activities or role of the survey's respondents.

*Role of authors*

Raju Chhetri oversees the overall article preparation and management, Sushil Ghimire handles literature review and objective formulation, Rajendra and Sree Aryal set up the methodology, while Prasannata Lamichhane and Gaurav Chhetri are responsible for drawing results and conducting grammatical checks.

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**Annexes***ANNEX-1 Summary of schools visited in Nuwakot district*

SN	Municipality	Schools visited (Name)
1	Dupcheswar RM, Nuwakot	Kalyan Sec School
2	Dupcheswar RM, Nuwakot	Dhaneswari Primary
3	Dupcheswar RM, Nuwakot	Arjub Basic School

4	Dupcheswar RM, Nuwakot	Saraswati Secondary School
5	Dupcheswar RM, Nuwakot	Shikarbesri Primary School
6	Dupcheswar RM, Nuwakot	Dandakharkha Primary School
7	Dupcheswar RM, Nuwakot	Kamal Manik basic School
8	Dupcheswar RM, Nuwakot	Sundar Primary School
9	Dupcheswar RM, Nuwakot	Mahendra Primary school
10	Dupcheswar RM, Nuwakot	Bal Kalyan School
11	Dupcheswar RM, Nuwakot	Chihan Danda School
12	Taadi RM, Nuwakot	Sita Dharma School
13	Taadi RM, Nuwakot	Tutung Primary
14	Taadi RM, Nuwakot	Jagrit Basic School
15	Taadi RM, Nuwakot	Prabhu Danda
16	Taadi RM, Nuwakot	Raluka Secondary School

*Annex-2 Who cook in school, LG wise analysis*

<b>Legend</b>	<b>Office assistant-Peon</b>	<b>Parents on voluntary</b>	<b>Someone from FMC</b>
Dupcheswar	37	4	3
Taadi	20	0	0
Sum	57	4	3

*Annex-3 Types of Menus following, LG wise comparison*

<b>Legend</b>	<b>Menu by School prepared</b>	<b>Manu by CEHRD-MoE</b>
Dupcheswar	41	3
Taadi	0	20
Total	41	23

*Annex-4 Taste of Food of the meals, compare analysis LG wise*

<b>Legend</b>	<b>Taste is good</b>	<b>Taste is Poor</b>	<b>Taste is average</b>
Dupcheswar	36	3	5
Taadi	17	2	1
Sum	53	5	6

Annex-5 Purchase source, Comparison of LG data

Legend	Cooperative channels	Direct from farm	Village market	local	District Market	Market outside of the district
Dupcheswar	16	1	15		10	2
Taadi	4	0	8		8	0
Sum	20	1	23		18	2

Annex-6 Procurement channels

Legend	Principal	Teachers	Member from SMC	Parents	Supply through cooperative
Dupcheswar	22	6	0	0	16
Taadi	0	0	8	8	4
Sum	22	6	8	8	20

Annex-7 Purchased engagement

Legend	Principal	Teachers	Member from SMC	Parents	Supply through cooperative
Dupcheswar	22	6	0	0	16
Taadi	0	0	8	8	4
Sum	22	6	8	8	20

Annex-8, MENU by CEHRD

