

# Biomedicines-Meal-Physiology' Focused 'Global-Health Scientific-Technical-Research-Ecology Biodiversity-Wildlife-Conservation Issues'

Subhas Chandra Datta<sup>1,2\*</sup>

<sup>1</sup>Department of Zoology, VisvaBharati, Santiniketan, India

<sup>2</sup>Headmaster & Secretary, Kanchannagar D.N. Das High School (HS), Kanchannagar, Burdwan Municipality, PurbaBardhaman, Burdwan, India

\*Corresponding author: Subhas Chandra Datta, C/O- Rajendranath Nag, Bajeprotapur, House No.-430A, Opposite the entry of SBI, Katwa Road, Burdwan Municipality, Burdwan, PurbaBardhaman, West Bengal, India



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## ABSTRACT

**Background:** The 'Biomedicines-meal, is badly affected by lockdowns hampering human civilization; global health and education, research, scientific-technical-research, and well-being, biodiversity conservation, ecological balance, food-producing systems, and climate regulation, enrolment, classroom hunger and malnutrition, socialization, attendance, and retention rates, and women employment playing a vital role in the education of underprivileged children. On the other hand, recently conventional vaccines have high production costs, and complex purification processes, and have not always had biosafety in issues, time-consuming, and bio-safety test commercial production issues, and weakening the ability of vaccines to prevent pathogens causing diseases.

**Objectives:** To overcome it, the main objective is to further confirm the impact of 'Bio-Medicines-Midday-Meal-Ecology (BMDME)' among school children for "Understanding Eco-System for Nutrition, School Health, Nutritious Food Science and Technology, and well-being".

**Results:** And the weed amaranth, vegetables; okra, and cowpea, fruits cucumber, and spices; ginger, turmeric, and garlic, are selected biomedicines for preventive treatment measures as "BMDME" following 'Mid-Day Meal Scheme or Menu', getting various positive impacts.

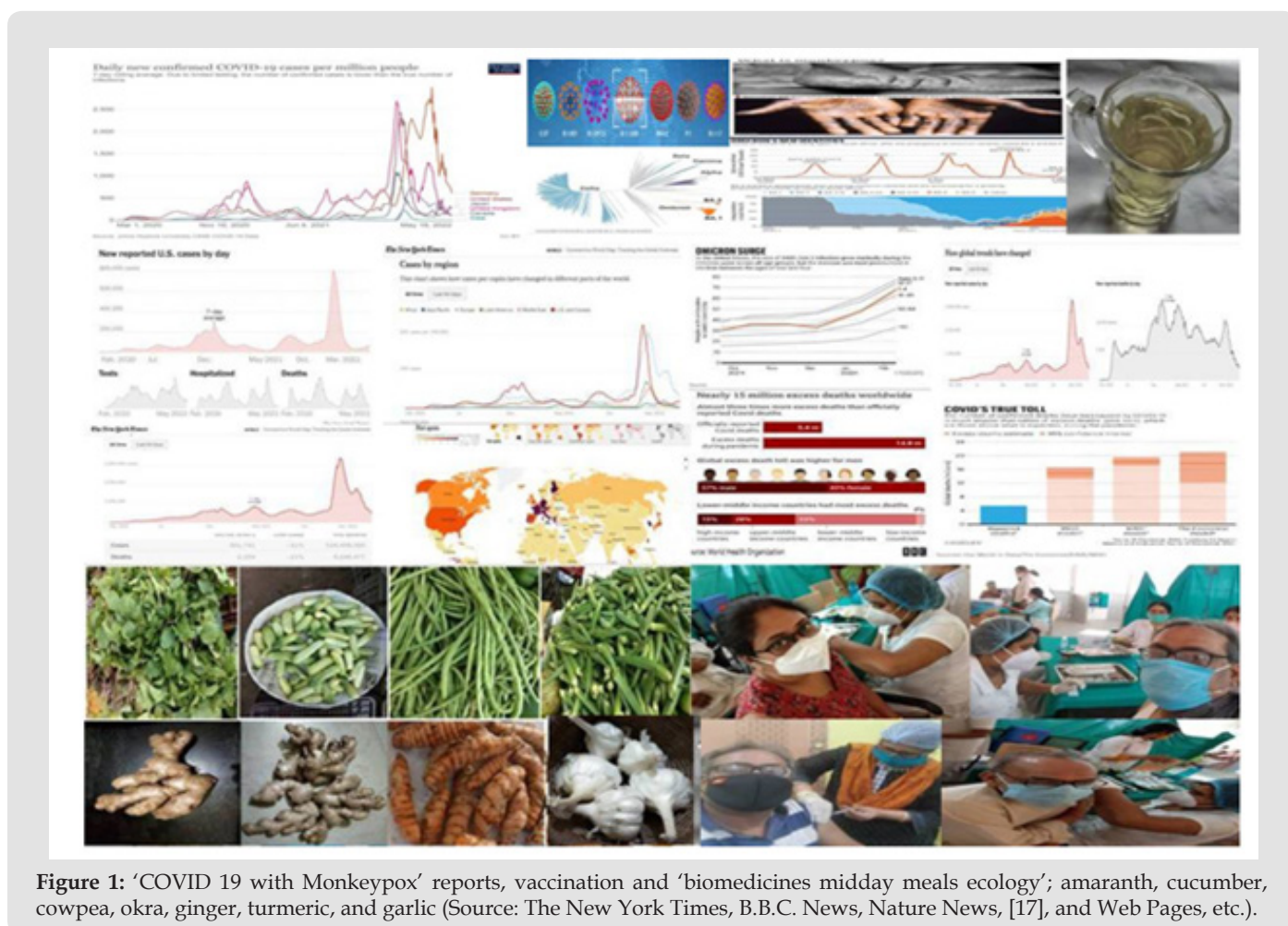
**Conclusion:** Its effects on growth, obesity, malnutrition, colds, cold and flu, and eye diseases, coronavirus-2/-3infections-or-reinfections with different diseases, 'Sedentary-Life-Style, Food-Habits, Health-Hazards, and Bio-Medical-Ecology-Research', and the 'Biomedicines-Meal-Physiology' Focused 'Global-Health Scientific-Technical-Research-Ecology Biodiversity-Wildlife-Conservation Issues' with the joyful school environment. So, the 'PM POSHAN', 'BMDME', and the biodiversity of 'Wildlife (Owl, wild cats, mongoose, and bats) Conservation', are bringing together clues or experts in infectious disease diagnostics, surveillance, vaccine development, and therapeutics, that will enable a swifter and more focused response to the next global pandemic, and future immunotherapy design in type-2 diabetes and other inflammatory conditions also.

**Keywords:** Biomedicines-Meal-Physiology; Focused; Global-Health-Scientific-Technical-Research-Ecology; Biodiversity-Wildlife-Conservation Issues

## Introduction

In the Azadi Ka Amrit Mahotsav (76th- Anniversary of Indian Independence) is an initiative of the PM of India with Government to celebrate and commemorate 75 years of independence which is commenced on 12th March 2021 which started a 75-week countdown to our 75th anniversary of independence and will end post a year on 15th August 2023. But, in this time, the 'PM POSHAN', 'Biomedicines midday meal ecology (BMDME)' (Figure 1), is the planet's life-support system not only for humans but also for all other life-forms, human survival, the nutritious food, regulated climatic condition, and the other benefits derived from an ecosystem. Stress like different lockdowns badly effects on ecological balance, biodiversity, freshwater sources, food-producing systems, and climate regulation causing major adverse impacts on health and well-being. The school 'Midday Meals (MDMs) Ecology' by SSA (Sarva Shiksha Abhiyan) under the HRD (Human

Resource Development) ministry, the Government of India (GOI), is initiated the National Programme of Nutritional Support to Primary Education (NP-NSPE) on 15 August 1995 for quality education, capacity building, ensuring access and retention of children in schools, seeks to address the issues of hunger and education in schools ([http://mdm.nic.in/mdm\\_website/](http://mdm.nic.in/mdm_website/), <https://www.smilefoundationindia.org/blog/mid-day-meals-and-their-role-in-the-education-of-children/>, <https://www.smilefoundationindia.org/say-no-to-hunger/>) by serving hot cooked meals 'PM POSHAN (Mid-day meals)', and improving the nutritional status of children, enrolment, avoid classroom hunger and malnutrition, increase school enrolment, improve socialization among castes, attendance, and retention rates, and empower women through employment playing a vital role in the education of underprivileged children [1-3].



**Figure 1:** 'COVID 19 with Monkeypox' reports, vaccination and 'biomedicines midday meals ecology'; amaranth, cucumber, cowpea, okra, ginger, turmeric, and garlic (Source: The New York Times, B.B.C. News, Nature News, [17], and Web Pages, etc.).

On the other hand, recently conventional vaccines have high production costs, and complex purification processes, and have not always had biosafety in issues, time-consuming, and bio-safety test commercial production issues [4]. It has been reported (Figure 1), that 'Only Biomedicines-Meals (BMs)' Act as the 'Preventive-Immunity-Booster-Community-Vaccine' or 'Emergency-Oral-Vaccine' or 'Preventive-Natural-Gifts' or 'Biomedicines-Mixture' or 'Spices-Community-Biomedicines-Physiology' or 'Combined-Biomedicines Physiology' Against 'Omicron' Enriching Quality-Care Global-Public-Health Forestry-Agriculture-Environment-Biodiversity-Wildlife-Conservation-Medical-Research-Science-Technology-Communication-Applications-Socio-Economy, etc. with the Steady Reopen Opening of Different Research-Educational-Institutions Immunization Against 'Future A to Z Diseases' [5-18].

### Major Problems

The 'Biomedicines-Midday Meals Ecology (BMDME)' is badly hampered or impacted or affected on 'Global Education and Health', due to the different time to time 'COVID-19 lockdowns' caused by the pathogens-SARS-CoV-2 or Coronavirus-2/-3 from the December 2019 to up-to-date, and the recent 'Freshwater-Living-Pathogens', infectious viruses 'hitchhike' on latching onto micro-plastics, missing our helpful guts-microbes, and the WHO will reconsider alert level if an outbreak of recent-Monkeypox grows, etc. caused by various 'Global Pathogens', affecting the BMDME with the most significant global education, badly affected student's lives, physical activity, and sedentary behavior, food habits, etc., that intricately linking chronic diseases, public health risk due to their epidemic potentiality and insufficient countermeasures or vaccines or weakening the ability of vaccines to prevent pathogens causing diseases, and now, the major problems, "Want to prevent pandemics? Stop spillovers! Understanding Eco-System for Health and wellbeing, and fostering health, nutrition and well-being" [19-23].

### Objectives

- Therefore, the main objective is to see, or observe, mindset, and study the impact of 'Bio-Medicines Midday Meal Ecology (BMDME)' among school children for "Understanding Eco-System for Nutrition, Health, and well-being" by engaging students in inquiry project-based joyful-learning applying methods of science or technology in their own local contexts preventing or tackling environmental degradation (Figure 1).
- Moreover, we shall try to find out or understand the human impacts on ecosystems affecting health and well-being is also quite important.
- Try to know how our activities disturb the ecosystem functions leading to various negative impacts on health and overall well-being, and also to see that our daily activities at all

levels need rectification and re-designing to reduce the negative impacts on the ecosystem and thereby achieve ecosystem sustainability, health safety, and security as well as well-being for all.

- To inspire the students to make a scientific inquiry, in their own localities, about the situation of health (both human and animal), nutrition, and well-being and will also encourage them to make efforts to identify ways and means to fortify and foster the situation ensuring health safety and security, nutritional security and well-being at individual, family and community levels.
- Exploring and understanding ecosystem(s) in their neighborhoods and taking initiatives for ecosystem conservation and restoration.
- Making inquiry into the interlink-ages of an ecosystem with health, nutrition, and well-being along with their implications.
- Taking initiatives for experimentation, based on the ecosystem approach, for local level natural resource management, farm, and non-farm-based production, and finding out ways for food, nutrition, and livelihood security, health safety, and developing resilience and adaptation towards climate change and disaster risk reduction.
- Looking into innovative S&T solutions for ecosystem conservation and restoration, nutrition, and health safety.

### Work Plan

Here, the Class-V to Class-VIII, lower age group (age of 10 years to 14 years) of the student's team act as 'Child/Students Scientists' with the proper understanding and definition of the school problem undertaken, and the help of senior students or guardian communities, under the guidance of a guiding teacher, and helping/visiting/treating doctors, team leader, and team member on the simple innovative, teamwork, and a practical project entitled, "Bio-Medicines Midday Meal Ecology (BMDME)" among the school children's, and communities, and visitors or outsiders based on the exploration of everyday life situations of 'BMDME' involving field-based data collection having definite outputs, arrived through scientific methodology which related directly to community work in the local community, and having follow-up future plans and activities for the better "Understanding Eco-System for Health and well-being, and Fostering health, nutrition, and well-being and impact to projection schoolmates, neighborhood community that relevance of the original innovative simple practical creative proposal of 'Bio-Medicines Midday Meal Ecology' to the community/school problem, and find solutions i.e. in methodology and experiment design".

## Methodology

**Study Area (Clinical) and Weather:** Kanchannagar D.N. Das High School (HS), Burdwan Municipality, Purba Bardhaman District, West Bengal, India, measuring 2229.67 sq meter (24,000 sq ft), where the temperature was  $22\pm 5^{\circ}\text{C}$ , relative humidity was  $75\pm 5\%$ , is situated near the Damodar and Banka river; and is surrounded by ponds, forest, different trees, park, garden, playground, different storehouse, rice mill, markets, agriculture-horticulture-land, braveyard, wildlife sanctuary, masjid, temples, etc. forming the 'Location-Wise an Ideal Place' for keeping-and-caring of 'Wild-Bats', with the average rainfall was 150 millimeters, and it was the locality as 'Sample Area' for "Bio-Medicines Midday Meal Ecology (BMDME)", and COVID-19 infected or reinfected with ethical consideration and permission [5-18].

**Study Samples (Clinical):** The 'Study (Clinical) Samples' (Figure 1) were the different 'Child/Students Scientists' of the student community of Kanchannagar [5-18].

**Duration of (Clinical) Study:** The duration of study for all age groups was 4th-July 2022 to up-to-date August 2022.

**Bio-Medicines Midday Meal Selection Ecology for Preventive Treatment Measures:** The weeds; different kinds of amaranth (*Amaranthus viridis* L. cv. CO-1), vegetables; okra (*Abelmoschus esculentus* L. cv. Ankur-40), and cowpea (*Vigna unguiculata* L. cv.5269), fruits cucumber (*Cucumis sativus* L. cv. local Slicing variety), and spices; ginger (*Zingiber officinale* Rosc., cv. Local variety), turmeric (*Curcuma longa* L., cv. Local variety) and garlic (*Allium sativum* L. cv. VL Garlic-1), are selected biomedicines against COVID-19 (Figure 1) for preventive treatment measures as "Bio-Medicines Midday Meal Ecology (BMDME)" following 'Frequently Asked Questions on Mid-Day Meal Scheme' and well established available records or proofs [1-3,15-18,24-60].

**Ecology for Bio-Medicines Midday Meal:** Kanchannagar D.N.Das High School (HS), Kanchannagar, Purba Bardhaman-713102, West Bengal, India, is situated beside the Damodar river and is surrounded by ponds- and agriculture- fields. The school campus prevails the main old- and tall- tree of the banyan tree (*Ficus bengalensis* L.) with other trees, a nutritional garden with a midday meal, exhibited an enriched faunal diversity comprising dogs, different types of cats (wild/fishing cats, etc), small mammals, squirrels, rat, mongoose, mice, reptiles, toads, pigeons, small birds, and insects. Midday meal in a school depends on the quality and supply of healthy foods which depend on the habitats in the school environment. The rats were spoiling the food for the midday meals, rooms, important documents, and materials in the school. Once, the bats in the banyan tree began to dirty the school building with their excreta. Different pests significantly reduce food production in the nutritious kitchen garden in school. Due

to the mid-day meal within the school campus and the owl's clear vision during the night, it preferred to consume a variety of rodents inhabiting the kitchen and the school campus. Food grains of mid-day meal attracts rodents resulting in a rapid increase of rats and mice but the presence of owl compel them to run away from the premises and they become guards for the cleanliness of the school. It can, therefore, serve as a useful "Healthcare Bio-Controller" i.e. Biological Bird of Prey. Their breeding helps to escalate the vegetation system of the school area and made the ponds clean; directly emphasizing the ecosystem. Evidently, the barn owl would ensure substantial management of the ecosystem for better growth of economically important crops and their management in agriculture, horticulture as well as pisciculture also. And improves midday meal by supplying quality vegetables also and it would not only be an easier way, easily available, and cheap but also conserve our biodiversity and improves the school environment which will contribute towards "Sustainable Climate, School Health, and Development with Joyful learning environment". They are also opening a path of research for the students of our school who are observing them closely. We are amazed to find the coexistence of predator and prey on the same platform where owls and pigeons are busy in incubation. It does not attack the pigeons. Owls do not cause any harm to the other resident birds within the campus also and directly or indirectly they are helping us in various ways (WebMD, COVID-19 and Wild Animals 2022; <https://www.webmd.com/lung/covid-19-and-wild-animals?print=true>). They realize the meaning of relationships, so they did not feel irritating when visitors and school students went to meet them, and proofing "Only Environmental Science Act as Natural Bio-medicine Preventive Epidemic Model of 21st-Century Pandemic Diseases" [61-70].

**Cause of Selection Bio-Medicines Midday Meal Ecology/ Pre-assessment of Ecosystem, Health, Nutrition and Well-being:** Amaranth, cucumber, cowpea, okra, spices; ginger, turmeric, and garlic are the older widely cultivated, for both medicinal and culinary oligo-purpose, the cost-effective fresh vegetables-fruits, qualify as an ideal safe food for people of low income countries and also has economic viability, and it is easily available in all regions, low priced, seed, oil, and leaf are used as food, -Aid to Eating and Staying Healthy during COVID-19, to provide nutritious food and immunity, fruits or entire plants are used to make modern medicine, resisting different diseases; analgesic, diuretic, antifungal, vermifuge, antiulcer, laxative, antiviral, asthma, ulcers, diarrhea, swelling of the mouth or throat, and high cholesterol and hypertension, hepatoprotective and antioxidant activities, and it is developed a blueprint for diagnostics, vaccines, and therapeutics against novel coronavirus [71], forming the Nature's Gift to the poor human disease-free healthy life' multipurpose crop, consumed in a variety of ways, fruits rich in vitamins, calcium, folic acid, carbohydrates, phosphorus, magnesium and potassium,

iodine, and other mineral matters, and a good source of superior nutritional quality -oil and -protein, unsaturated fatty acids such as linoleic acid, and makes them easier to digest, and have several active constituents like tannins, resins, reducing sugars and amino acids. The methanolic leaves extract was reported for the presence of rutin and quercetin. It also possesses spinosterol (24-ethyl-22-dehydrolathosterol) as a major component along with 24-methylathosterol 24- ethyllathosterol, 24-methyl-22-dehydrolathosterol, 24-ethyl cholesterol, and 24-ethyl-22-dehydrocholesterol as minor components in sterol fraction. The roots of *A. viridis* possess a steroidal component, amasterol (24-methylene-20-hydroxycholesta- 5,7-dien-3 $\beta$ -ol). Amaranth is also known for several potential pharmacological properties-health beneficial effects on human diseases, like cardiovascular disease, type 2 diabetes, kidney diseases, skin infection, digestive diseases, some cancers, antibacterial, antioxidant, nootropic, eye, body immunity, blood pressure, obesity, asthma, constipation, cancer, heart disease, obesity, osteoporosis, gastrointestinal health, sexual health, and neurological disorders, etc. [1-3,15-18,24-60,72,73].

**Group Formation:** The 8 groups were formed from 339 'Child/Students Scientists; standard-5 to standard-8' with one team leader, one team member, 2 captains per 10 core students/group, and some senior ex-students-NGOs from the local communities [71-73]. According to the age of class- V to VIII students were divided into 4 average groups: I-Age Group (10-11years), II-Age Group (11-12 years), III-Age Group (12-13years), and IV-Age Group (13-14years).

**Division of Works:** The 8 cooks prepare and distribute the 'Nutritious Bio-Medicines Midday Meal' in presence of alternately allotted 'Assistant Teacher/staff' and 'Child Cabinets' / 'Child/Students Scientists' maintaining health and hygiene with the guidance of the guide named Dr. Subhas Chandra Datta. The team leader measures observe and collect data with the help of team member, the captain, core students, and some helpful senior ex-students-NGOs from the local communities. Different doctors check physical and mental health and vision for eyes [5-18,25-62,71-73].

**Helping Doctors or Treatments Assistance:** The visiting Dr. Dipanwita Malick, and Dr. Ranjan Mukherjee, check-up health, the International Lions Clubs (Burdwan Agraneer & Educare), and indirectly the Burdwan Medical College and Hospital and Chief Medical Officer of the Hospital (BMCH and CMOH) assist in emergency basis [5-18,25-62,71-73].

**Reference-Data Collected of Pre-Covid-School Midday Meals Reports:** The World Vision India, the Burdwan Medical College, and Hospital arranged blood tests for students' anemia and Thalassemia before lockdowns 22nd-March 2020 [5-18,53].

**Pre-Consumption Assessment of Biomedicines Midday Meals Ecology:** The height and weight were measured class and

age-wise with any specific features/symptoms [5-18,25-62,71-74,75].

**Reference Data Collected of School Midday Meals Reports in 2nd-Reopening-Periods:** Two doctors named Dr. Dipanwita Malick, and Dr. Ranjan Mukherjee, assessed by health check-ups of the students [5-18,43,50,53].

**Middle-Consumption Assessment of Biomedicines Midday Meals Ecology:** In the middle of the study or experiments for 'Assessment of Biomedicines Midday Meals Ecology' (1st August 2022) of school, health, and eye check-up was done by the 4 doctors provided by the 'International Lions Clubs (Burdwan Agraneer & Educare)' [5-18,43,50,53].

**Post-Consumption Assessment of Biomedicines Midday Meals Ecology:** The height and weight were measured class and age-wise with any specific features/symptoms [5-18,25-62,71-73,75].

**Types of Fresh Biomedicines Midday Meals:** The fresh weeds-vegetables-fruits; Amaranth, cucumber, cowpea, okra, spices; ginger, turmeric, and garlic, were purchased from the local market for hot cooked BMDME [5-18,43,50,53,75].

**Preparation of Biomedicines Midday Meals/ Recipe for Consumption:** The weeds Amaranth, or vegetables; okra and cowpea, fruits; cucumber, and spices; ginger, turmeric, and garlic, are tasty delicacy found in many dishes, making it quite versatile vegetable, and consumed during a sort of ways and may be utilized in salads, soups, stews, and sauces, chopped, sliced, fresh or dried, fried or boiled, but in school, it is used in school as hot cooked midday meals except fruits; cucumber [5-18,43,50,53,75].

**Consumption of Biomedicines Midday Meals Ecology:** Maintaining MDM protocol, maintaining health and hygiene, Covid-protocol, and entitlement norm per child; 50g biomedicines (weeds/vegetables/fruits with spices) /class-V (primary)/ day with protein 12g, rice 100g, pulses (dal) 20g, and oil and fat 5g, totaling 450 calories up to V, and 75g biomedicines (weeds/vegetables/fruits with spices)/class-VI to VIII (upper primary)/ day with protein 20g, rice 150g, pulses (dal) 30g, and oil and fat 7.5g, totaling 700 calories for VI to VIII, following the nutritional guidelines for the minimum amount of food and calorie content per child per day [1-3,24]. And the preparation 'Menu Chart (MC)' for consumption of 'Biomedicines Midday Meals' (BMDM) were

- Day 1: (48g/73g weeds Amaranth + 2g spices; 1g ginger, 0.5g turmeric, and 0.5g garlic) = Total 50g/75g.
- Day 2: (48g/73g vegetables; okra + 2g spices; 1g ginger, 0.5g turmeric, and 0.5g garlic) = Total 50g/75g.
- Day 3: (48g/73g vegetables; cowpea + 2g spices; 1g ginger, 0.5g turmeric, and 0.5g garlic) = Total 50g/75g.

- Day 4: (48g/73g fruits; cucumber + 2g spices; 1g ginger, 0.5g turmeric, and 0.5g garlic) = Total 50g/75g.
- Day 5: (Mixed in ratio; amaranth, okra, cowpea, cucumber, ginger, turmeric, and garlic@ 3:2:1:2:1:0.5:0.5 respectively) = Total 50g/75g.
- Day 6: (Eggs with ginger, turmeric, and garlic@ 1:0.5:0.5 respectively) = Total 50g/75g.

Note: The BMDME Menu diversity was achieved by using a wide variety of seasonal vegetables and locally available ingredients, and was dependent on various factors, including regional palate, taste, and flavors. It was adopted a cyclic approach with preference to local palate by the mixing of amaranth, okra, cowpea, cucumber, ginger, turmeric, and garlic (weeds-vegetables-fruits-spices)@ ratio 3:2:1:2:1:0.5:0.5 respectively, and were consumed @ three alternative days/week/student [5-18,43,50,53,75].

**Study (Treatment) Sample Area:** The student community of Kanchannagar D.N. Das High School (HS), Burdwan Municipality, PurbaBardhaman District, West Bengal, India, was the 'Treatment Samples' (Figure 1), and the locality serves as the 'Treatment Area' of Monkey pox or COVID-19 infected or reinfected with ethical consideration and permission [5-18,43,50,53,75,76].

**Symptoms of Monkey pox, COVID 19, etc:** The observation of the main clinical symptoms is fever, cough, tiredness, loss of taste or smell, sore throat, headache, aches, and pains, diarrhea, a rash on the skin, discoloration of fingers or toes, red or irritated eyes, etc [5-18,43,50,53,75,76].

**Collection and Analysis the Pellets for Identification and Presence of Animals:** For analysis, the pellets were immersed in water in plastic boxes for 10 minutes. Bones and sclerosis fragments were separated from the pellets by morphological characteristics. Each pellet before being dissected was photographed and length was measured. Pellets were separated with sharp forceps and contents were checked for tiny mammals, birds, and insects. The dissected bird of night pellets were critically examined and materials identified were designated as small mammals, birds, and insects, as predominant prey items. All the identified food items were compared and contrasted with available reference materials for various rodent species, mainly on the idea of their dentition and skull patterns, etc. and therefore, the other prey were identified

using any recognizable remains, and the species richness estimation regarding the relative population abundance of prey items was calculated to explain the results meaningfully [61,62,64-70,77-80]. Analysis was done regularly, and everyone the information was counted for statistical analysis by the analysis of variance (ANOVA).

**Counting:** A team of students helped to the proper count of different visitors in trees as well as in the school campus. The direct counting technique is used for counting the roosting in campus buildings but is difficult to count visitors inside the trees [61-73,77-81].

**Covid Protocols:** The school students, NGOs, and different young volunteers organized many social-awareness virtual camps (VC) among the communities in different ways; using masks mandate, cleaning hands with soap, maintaining physical distance, and avoiding touching eyes-nose-mouth, etc. [40,43,50,71-73].

**School Health Nutritious Food Science Technology Biodiversity Wildlife Conservation Applications Ecology:** The students, NGOs, scholars, researchers, artists, teachers, staff, community, photographers, different scientists, academicians, clinicians, administrators, institutions, farmers, media personnel, and visitors make the news of BMDME, and published it in different medical journals [5-18,43,50,53,75,76].

**Observations:** The experimental study of the 'PM POSHAN', 'Biomedicines midday meal ecology (BMDME)' in the school was impacted by the following observations [5-18,43,50,53,75,76,81]:

- The number of regular-, irregular- and non-consumer-'BMDME' engaging students, cause for and non-consumption, and their behavior especially in discipline, obedience, leadership, etc.
- The name, age, and consumption of the main 'Biomedicines midday meal'.
- Measure the height and weight of the 10 years to 14 years students.
- The presence or number of regular-, irregular-/frequent- and non-consumer- 'BMDME' visitor street dogs, monkeys, cats, wild cats, small mammals, squirrels, rats, mongoose, bats, mice, owls, pigeons, small birds, reptiles, toads, and insects, etc. (Figure 2).



Figure 2: Owl and Bats in the Kanchannagar D.N.Das High School during COVID-19 [68].

- The use of 'BMDME' west product.
- The understanding eco-system for nutrition, health, and well-being.
- The students were engaged collectively, and effective in a mindset for project-based joyful-learning applying methods of science or technology (hand-to-hand experiment) to prevent or tackle environmental degradation.
- The achievement of ecosystem sustainability, health safety, and security as well as well-being for all.
- The daily activities at all levels for rectification and re-designing to reduce the negative impacts on the ecosystem.
- The students to make a scientific inquiry, in their own localities, about the situation of health (both human and animals), nutrition, and well-being at individual, family, and community levels.
- Exploring and understanding ecosystem(s) in their neighborhoods and taking initiatives for ecosystem

conservation and restoration.

- The interlink BMDME of an ecosystem along with their implications.
- The innovative S&T solutions for the ecosystem, biodiversity conservation, ecology socioeconomic impact, restoration, nutrition, and health safety.

**Data Collection:** The collection of various types of data; school-related reported reference data to use for clarification/conclusion, pre-study, post-study, and direct observed daily data from the day-to-day activities at all levels (Figure 2), were written or noted down by the student's daily basis in the 'Logbook' and was authenticated by the guiding teacher [5-18,43,50,53,75-82].

**Data Analysis:** Here with the help of eminent bio-satiation and biologist cum educationalist, Dr. Tapan Mondal, Assistant Teacher in L.Sc., Ramnagar High School (HS), and our Assistant Teacher in Math, Purba Bardhaman, West Bengal, India, all the data were analyzed or followed here, the two ways of statistical analysis by the analysis of variance (ANOVA) with S.E. (Standard Error), critical analyzing

the significant level  $P < 0.01$  (<https://www.technologynetworks.com/informatics/articles/one-way-vs-two-way-anova-definition-differences-assumptions-and-hypotheses-306553>) were done [5-18,43,50,53,75,76].

## Results

### Impact on Consumption of 'PM POSHAN', 'Biomedicines-Midday Meals Ecology' (BMDME)

Table 1, directly showed the study (clinical) reports on consumption of 'Biomedicines-Midday Meals Ecology (BMDME)', the 'PM POSHAN', in Kanchannagar D.N. Das High School (HS), of the 4-average age group from 4th-July 2022 to up-to-date 2022 (6 weeks) as follows;

- The large number of students bearing average age groups, 10-11 years (Class-V), and 11-12 years (Class-VI), regularly consumed 'BMDM' (as treated) more than the other two VII and VIII -classes ecology.
- The 'BMDM' non-consumption (control) ecology was addicted or habituated to junk foods suffering from obesity, malnutrition, colds, cold and flu, and eye diseases.
- The regular 'Biomedicines-Midday Meals' consumer or

taker ecology gradually increased in average height and weight than control ones (others BMDM-non-consumer) within six weeks of experiments based on Day-0 (before/pre-study), Day-21 (middle of the study), and Day-42 (after/post-study).

- The regular consumed (treated) 'BMDM' were achieved in growth or managed good health ecology or decreased obesity, malnutrition, colds, cold and flu, and eye diseases, etc. than control ones.
- The average regular 'BMDM' consumer or taker number and health ecology were gradually increased in six weeks from Day-0 to Day-42.
- The average regular attendance in school due to consumption of nutritious 'Biomedicines-Midday Meals Ecology (BMDME)', the 'PM POSHAN', were increased.
- The irregularly consumed 'BMDM' also gained better health ecology than the control ones.
- The biomedicines-meals were not only very-much-effective in preventing cold and flu, coronavirus-2/-3infections-or-reinfections with different diseases, but also improved 'Obesity -Sedentary-Life-Style, Food-Habits, Health-Hazards, and Bio-Medical-Ecology-Research'.

**Table 1:** Study reports on consumption of 'Biomedicines-Meals' in Kanchannagar D.N. Das High School (HS).

| Average Students Age Groups (years) with Total Number (Treated/Control) |   | Students Sample (Class-V to Class VIII, and Age Groups 10 years to 14 years) of the Study (Clinical) Area, Kanchannagar D.N. Das High School (HS), Burdwan Municipality, Purba Bardhaman for the six weeks up-to-date August 2022 |        |        |                                 |                       |                    |                             |                       |                    |                                      |              |            |           |
|---|---|---|--------|--------|---------------------------------|-----------------------|--------------------|-----------------------------|-----------------------|--------------------|--------------------------------------|--------------|------------|-----------|
|   |   | Average Number of Students BMDM Treated (Consumed) / Control (Avoid)  |        |        | Average Height (cm) of Students |                       |                    | Average Weight (g) Students |                       |                    | Remarks by Visiting Doctors (D 0-42) |              |            |           |
|   |   | Day-0   | Day-21 | Day-42 | Pre-Study (Day-0)               | Middle-Study (Day-21) | End-Study (Day-42) | Pre-Study (Day-0)           | Middle-Study (Day-21) | End-Study (Day-42) | Obesity                              | Malnutrition | Cold-Flue  | Eyes      |
|   |   |   |        |        |                                 |                       |                    |                             |                       |                    |                                      |              |            |           |
| I-Age Group: (10-11) Total Num ber: 61                                  | T | 40bx  | 50cy   | 51by   | 124.5cx ±0.05                   | 143.2cy ±0.11         | 143.7dy ±0.03      | 19.6cx ±0.04                | 31.7cy ±0.03          | 33.5dy ±0.05       | 2dx ±0.02                            | 5dy ±0.01    | 2dx ±0.02  | 0         |
|   | C | 21dx  | 11fy   | 10dy   | 124.3cx ±0.05                   | 127.5fy ±0.13         | 128.3fy ±0.09      | 19.8cx ±0.06                | 20.9fx ±0.07          | 22.5fy ±0.05       | 4cx ±0.02                            | 17cy ±0.03   | 9cz ±0.03  | 3bx±0.01  |
| II- Age Group: (11-12) Total Num ber: 96                                | T | 65ax  | 71ay   | 72ay   | 130.2bx ±0.06                   | 143.1cy ±0.09         | 146.3cz ±0.03      | 24.1bx ±0.07                | 34.5cy ±0.05          | 37.6cz ±0.02       | 2dy ±0.02                            | 3ex ±0.01    | 1ez ±0.01  | 0         |
|   | C | 31cx  | 25ey   | 24cy   | 130.6bx ±0.06                   | 132.2ex ±0.12         | 132.9ey ±0.09      | 24.6bx ±0.06                | 26.8ey ±0.04          | 27.5ey ±0.07       | 8ax ±0.04                            | 20zy ±0.05   | 18az ±0.02 | 5ay ±0.01 |
| III- Age Group: (12-13) Total Num ber: 93                               | T | 62ax  | 72ay   | 73ay   | 137.5ax ±0.07                   | 146.2by ±0.12         | 150.1bz ±0.07      | 25.2ax ±0.04                | 36.1by ±0.03          | 43.4bz ±0.02       | 1ex ±0.01                            | 5dz ±0.03    | 3dy ±0.01  | 0         |
|   | C | 31cx  | 21ey   | 20cy   | 137.2ax ±0.07                   | 138.9dx ±0.13         | 140.2dy ±0.08      | 25.5ax ±0.05                | 26.8ex ±0.06          | 29.7ey ±0.03       | 6bx ±0.02                            | 22bz ±0.04   | 13by ±0.01 | 5ax ±0.01 |



|  |   |      |      |      |               |               |               |              |              |              |           |            |            |           |
|--|---|------|------|------|---------------|---------------|---------------|--------------|--------------|--------------|-----------|------------|------------|-----------|
| IV- Age Group: (13-14) Total Num ber: 89 | T | 45bx | 56by | 68az | 137.5ax ±0.03 | 153.1ay ±0.11 | 156.3ay ±0.03 | 26.2ax ±0.04 | 40.1ay ±0.03 | 45.7az ±0.03 | 2dx ±0.02 | 1fy ±0.01  | 2dx ±0.02  | 0         |
|  | C | 44bx | 33dy | 21cz | 137.7ax ±0.03 | 139.6dx ±0.13 | 141.1dy ±0.07 | 26.4ax ±0.04 | 29.8dy ±0.06 | 32.8dy ±0.04 | 9ay ±0.03 | 30az ±0.05 | 13bz ±0.07 | 3bx ±0.01 |

Note: 'T= Treated and C= Control', 'a,b,c'- different small letters in a column, and 'x,y,z' different small letters in a row show significant difference by the analysis of variance 'ANOVA' (P<0.01).

**Impact on Biodiversity for Consumption of 'PM POSHAN', 'Biomedicines-Midday Meals Ecology' (BMDME)**

Table 2 indirectly showed the study (clinical) reports on biodiversity due impact of 'Biomedicines-Midday Meals Ecology (BMDME)' on the school campus for the six weeks as follows.

- The regular visitors increased gradually from Day-0 (pre-study), and Day-21 (middle of the study) to Day-42 (end of the study), and they were different small and big birds like mynah, dove, magpie, tailor birds, drongo, oriole, bulbul, crow, cuckoo, babbler, kingfisher, woodpecker, and some migratory birds also, and many animals were a squirrel, bats, snake, mongoose, mice, frogs, cats, wild cats, street dogs, goats, different types of insects, monkeys, and cow, etc. also.
- The total average visitor's percent of the regurgitated

pellets of the owl from Day-0 to Day-42 duration, were analyzed, identified, and increased; bats- 1st highest, mice/rats- 2nd highest, moles, and mongoose – 3rd highest, squirrels- 4th highest, small birds specially babbler- 4th highest, coleopteran insects and other animals like toads, frogs, etc were the 5th highest respectively (P<0.1 by ANOVA).

- Here the barn owl was the topmost carnivore maintaining 'Biomedicines-Midday Meals Ecology (BMDME)' in the school campus "Food Chain and Food Web Relationship".
- The wild cat, owls, and bats were mainly shown at the night.
- All visitors mainly came for BMDME.
- All the visitors made the joyful school environment.

**Table 2:** Study reports on biodiversity due impact of 'Biomedicines-Meals' in the Kanchannagar D.N. Das High school campus.

| Serial Number and Name of the Common Visitors (Animals) |                                 | Average Visitors in the Study Area of Kanchannagar D.N. Das High School for the 6 weeks up-to-date |                       |                    |                            |        |        |       |  |
|---|---------------------------------|--|-----------------------|--------------------|----------------------------|--------|--------|-------|--|
|   |                                 | Pre-Study (Day-0)  | Middle-Study (Day-21) | End-Study (Day-42) | Counting from Regurgitated |        |        | Total | Remarks/ Notes<br>(Gradually increase due to BMDME') |
|   |                                 |  |                       |                    | Owl-Pellets                |        |        |       |  |
|   |                                 |  |                       |                    | Day-0                      | Day-21 | Day-42 | Both  |  |
| 1   | Street Dogs                     | 2  | 4                     | 6                  | 0                          | 0      | 0      | 12    | Yes  |
| 2   | Cats/ Wild Cats                 | 2  | 4                     | 6                  | 0                          | 0      | 0      | 12    | Yes  |
| 3   | Monkeys                         | 7  | 15                    | 42                 | 0                          | 0      | 0      | 64    | Yes  |
| 4   | Mongoose                        | 2  | 9                     | 17                 | 1                          | 3      | 5      | 37    | Yes  |
| 5   | Rats / Mice                     | 10   | 17                    | 22                 | 6                          | 18     | 22     | 95    | Yes  |
| 6   | Moles                           | 7  | 19                    | 21                 | 8                          | 19     | 20     | 94    | Yes  |
| 7   | Bats                            | 2  | 6                     | 12                 | 20                         | 30     | 30     | 100   | Yes  |
| 8   | Squirrels                       | 4  | 12                    | 22                 | 4                          | 6      | 11     | 59    | Yes  |
| 9   | Owls/ Barn Owls                 | 2  | 4                     | 6                  | 0                          | 0      | 0      | 12    | Yes  |
| 10  | Pigeons                         | 2  | 4                     | 8                  | 0                          | 0      | 0      | 14    | Yes  |
| 11  | Small Birds (Babblers)          | 8  | 16                    | 23                 | 2                          | 5      | 3      | 57    | Yes  |
| 12  | Reptiles (Snake, lizards, etc.) | 7  | 18                    | 21                 | 1                          | 3      | 7      | 57    | Yes  |

|    |                             |   |    |    |    |   |   |    |     |
|----|-----------------------------|---|----|----|----|---|---|----|-----|
| 13 | Insects                     | 5 | 16 | 25 | 18 | 9 | 5 | 78 | Yes |
| 14 | Other Animals (Toads, etc.) | 2 | 7  | 11 | 6  | 4 | 2 | 32 | Yes |

## Conclusion

The consumption of nutritious 'Biomedicines-Midday Meals Ecology (BMDME)', the 'PM POSHAN', the weeds-vegetables-fruits-and-spices (i.e., the amaranth, okra, cowpea, cucumber, ginger, turmeric, and garlic respectively), once again are not only very much effective in preventing coronavirus-2/-3 infections or reinfections by boosting natural immunities on 'Global Pathogens and Emergency Treatment', but also improve 'Obesity-Sedentary-Life-Style, Food-Habits, Health-Hazards, and Bio-Medical-Physiology-Ecology-Research', and the 'Biomedicines-Meal-Physiology' Focused 'Global-Health Scientific-Technical-Research-Ecology Biodiversity-Wildlife-Conservation Issues' with the joyful school environment, and it also acts as the most cost-effective eco-friendly easily-manufacture-able easily-applicable easily-available and side-effects-free "Natural-Vaccine for All" [1-3,5-18,25-75,77-84,85]. In the year 'Azadi Ka Amrit Mahotsav Year, PM POSHAN', due to 'BMDME', the biodiversity of the school campus, is enriched by 'Complex Wildlife Ecosystem' where students, staff, communities, and different visitors are amicably co-existing with wildlife, and it is also helped to the sustainable opening of school with joyful learning environments and is also acquired natural immunity from the wild cat, bats, owls, and prevent pandemic deaths and social anxiety from Covid [1-3,5-18,25-75,77-83].

The COVID-19 pandemic has raised crucial awareness of the challenges and knowledge gaps facing efforts to ensure pandemic preparedness. In this 'BMDME' -study, discuss some of the key findings derived from the student's and visitors' response ('Complex Wildlife Biodiversity Conservation Ecosystem') to the SARS-CoV-2 pandemic and the 'BMDME' much-needed implementation for preventing any future pandemic by boosting natural immunities. So, the 'PM POSHAN', 'BMDME' and the biodiversity of 'Wildlife (Owl, wild cats, mongoose, and bats) Conservation' (Figure 2), are bringing together experts in infectious disease diagnostics, surveillance, vaccine development, and therapeutics, that will focus on solutions to the research, clinical and public health challenges of a novel virus outbreak that will enable a swifter and more focused response to the next global pandemic blocking the range of coronaviruses, and the 'BMDME' play important pathological role for T-bet+ B cells informing future immunotherapy design in type 2 diabetes and other inflammatory conditions also [1-3,5-18,25-75,77-85].

## Solution to the Problem

In the 'Azadi Ka Amrit Mahotsav', the "Bio-Medicines Midday

Meal Ecology (BMDME)", the 'PM POSHAN', the weeds-vegetables-fruits-and-spices (i.e., the amaranth, okra, cowpea, cucumber, ginger, turmeric, and garlic respectively), can solve the different problems as follows.

- Prevent classroom hunger and malnutrition.
- Increase school enrollment and attendance.
- Enrich 'Education and Health' by the sustainable opening of intuitions,
- Prevent 'Global Pathogens' by boosting natural immunities.
- Improve students' lives, physical and mental activity, sedentary behavior, food habits, etc.
- Understand the eco-system for health and well-being, fostering health, nutrition, and well-being.
- Improve 'Obesity-Sedentary-Life-Style, Food-Habits, Health-Hazards, and Bio-Medical-Physiology-Ecology-Research'.
- The 'BMDME' act as a 'Social Vaccine', and the most cost-effective eco-friendly easily-manufacture-able easily applicable easily available, and side-effects-free "Natural-Vaccine for All"
- Plays a vital role in the socio-economic development of society, caste socialization, and origins from different community's mix, establishing a culture of unity and brotherhood.
- Enrich biodiversity conservation with a joyful learning environment on the school campus.
- Helps to clue infectious disease diagnostics, surveillance, vaccine development, and therapeutics by the 'Wildlife (Owl, wild cats, mongoose, and bats) Conservation'.

## Future Plan

The consumption of nutritious 'Biomedicines-Midday Meals Ecology (BMDME)', the 'PM POSHAN', the weeds-vegetables-fruits-and-spices, will undoubtedly have a profound impact on human health thus the scope of emergency medicine includes but is not limited to; Multi-Drug Resistance, Bioterrorism and Disaster Medicine, Cardiac Emergencies, Clostridium difficile Infection, Coronavirus (COVID-19), Ebola, Emerging and Re-emerging Infectious Diseases, Methicillin-Resistant Staphylococcus aureus (MRSA), Pain Management, Residents, Sepsis, Cerebrovascular Disease, Stroke/

Cerebrovascular Disease, Trauma, Wound Management, and Zika Virus. In the near future, 'Biomedicines MDME' may be used as different high-diluted or ultra-high-diluted forms of 'Community-Biomedicine-Meals-Physiology' for the 'Future-Universal-Preventive-Emergency-Pandemic-Vaccine' against any future chronic diseases with all-round development of socio-economy, society, and environment, with the help of artificial intelligence like the "Precision medicine in the era of artificial intelligence: implications in chronic disease management", and no need to 'Bio-Medical-Waste-Management' during COVID-19 pandemic, and it also expected to offer impetus for enhancing national disaster preparedness in future, and It was notable that the highest passive infection/reinfection was due to the potential effects of preventive-'Biomedicines MT'. So the potential very old common traditional cost-effective side-effect-free environment-friendly easily preparable easily-manufacture-able equitable-marketable easily-available and supply-able, the best quality nanoparticles- 'Biomedicines, preventing 'Neurotoxicity, Immunotoxicity and Drug Toxicity', and forming the "Vaccine Nationalism to Vaccine Equity— Finding a Path-Forward", that will resist COVID vaccine hesitancy against new variants, the 'Omicron-Deltacron- Rupacron-Futuracron-Like-Any-New-Variants' which has long been recognized as a problem in high- and middle-income nations of the world's poorest countries, lack of access to vaccines, and the -' the 'PM POSHAN', 'BMDME' and the biodiversity of 'Wildlife' may be 'Preventive-Natural-Gifts for the all poor', and Only the 'BMDME'-Innovations Can Steady-Reopen Different Research-Educational-Institutions Immunization Against 'Future A to Z Diseases': Advanced Scientific-Community Global-Health-Ecology Agriculture-Environment Science-Technology-Communication-Applications Socio-Economy". And researchers should campaign for equity in global collaborations and should be 'open-minded' to 'underwhelming', and in future "Only the 'High-Diluted-Combined-Biomedicines-Physiology' on 'Global Pathogens and Treatment' Reported or Focused Novel Findings Health-Ecology-Medicine-Science-Technology-Communication-Environment-Wildlife-Biodiversity Conservation-Socioeconomic-Issues" [5-18,25-73,81-94]. In near future, the 'PM POSHAN', ultra-high-diluted-combined-'BMDME' and the biodiversity of 'Wildlife, will 'Save the World' from any 'Future X-Pandemic' OR 'Future X-Diseases Causing Pathogen' restoring 'Human Civilization in Old Forms'.

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Subhas Chandra Datta. Biomed J Sci &amp; Tech Res



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