

Report on the  
**Moringa & Amaranthus Dissemination Seminar:  
Sustainable support for malnourished children with anemia**

On Monday April 3rd, and April 4th 2017 a seminar on how to support early childhood development under nutritional & medical aspects took place, as well as on how to use local resources for improving nutrition & health in the rural area. This seminar was hosted by Shining Eyes e.V. and funded by the foundation FIAT Panis Germany. The Seminar was conceptualized by Monika and Silvia Golembiewski.

The initial idea behind this seminar found its origin through the nutrition intervention study implemented from February 2015 to August 2016 by Shining Eyes in cooperation with the NGO Bolpur Manab Jamin, funded by Shining Eyes, FIAT Panis and the Rotary Club. This study is part of a PhD project of the economist Silvia Golembiewski and the nutritionist Caroline Stiller. The purpose of this study was to investigate whether the adding of Moringa oleifera and Amaranthus tricolor leaf powder versus an adjusted amount of an industrial micronutrient supplement show a comparable effect on the hemoglobin level in children. As a follow-up project participatory learning and action modules are started in 24 villages, accompanied by medical checkups and screening for emergency patients, anemic children, moderately and severely wasted children, TB patients and pregnant women. This holistic approach was funded by FIAT Panis as well, in the scope of "Auslobung für die praktische Erprobung von Forschungsergebnissen zur Bekämpfung von Hunger in Erinnerung an den 90. Geburtstag von Dr. Hermann Eiselen."

Shining Eyes is a non-profit charitable NGO founded in 2009. Monika Golembiewski -the head of the NGO- has been active in India since 1994 to provide medical care and awareness to the Santal families in the rural areas around Bolpur, soon after her son Nico and his wife Silvia Golembiewski joined the work of Shining Eyes and are guiding and structuring Shining Eyes actions in India together.

To use natural resources available and revitalize traditional knowledge about herbs and the power of nature for health is one way Shining Eyes wants to strive for. For many years Shining Eyes is using the Moringa leaf powder in programs to promote health. The Moringa & Amaranthus Seminar intended to disseminate the positive experience with Moringa during the long-term intervention study as well as to multiply the knowledge and experience Shining Eyes has had with Moringa over the years through the cooperation of the two German horticulturists Rolf and Anne Bucher.

The workshop will help to create a pool of innovative ideas which helps to develop new strategies for change.

On the first day we could welcome the German ambassador Mr. Schrod, as well as the BDO Mr. Samit Panigrahi further the SDO Sampa Hazra followed his invitation.

Silvia Golembiewski guided the audience through the speeches in the two days of seminar and organised an interactive exchange of experience at the end of the workshop. After the welcome speech by Dr. Sujit Kumar Paul, Visva-Bharati University, the first presentation by Dr. med. Monika Golembiewski gave an insight into the situation on-site, this means illustration of prevalences of malnutrition and key findings of the village work of Shining Eyes and thereby experienced challenges and taken measures. The approach of Shining Eyes to combat malnutrition and advocating disease prevention includes the village projects kitchen gardening, nutrition programs, sanitation programs, and awareness training. Further medical checkups are a main determinant of village work building the bridge to diagnostic and follow up. During a

village checkup it is screened for tuberculosis, pregnant women, malnourished or anemic children and with the subsequent coordination of diagnostics, prenatal care, home-based supplementary feeding or iron drop therapy. Severely sick patients are referred by a hospital coordinator to other health institutions.



**Pictures:** Workshop pictures: recipe tasting of self-designed Moringa-Date-Balls, Moringa Cookies, and the two meals Halwa and Khechuri enriched with Moringa/Amaranthus leaf powder. An insight on natural medicine made from herbs or roots was also given (Lina – a Santal). PD Dr. rer. nat Scherbaum together with the German ambassador Mr. Schrod. C. Stiller –nutritionist- on the right side, organised and contributed to the exemplary recipe preparation.

The nutritionist Caroline Stiller commented on the two local growing plants *Moringa oleifera* and *Amaranthus tricolor* as potential solutions for a sustainable prevention of anemia together with intensive awareness trainings and kitchen garden projects. At first the two plants *Moringa oleifera* and *Amaranthus tricolor* were introduced by picturing nutrient compositions in detail, thereby highlighting the holistic nutrient composition of *Moringa* compared to other plant foods, considering the quantity and quality of protein, as well as the high amounts of vitamin A, C, B-vitamins, and E-vitamin and adequate amounts of iron or calcium. *Amaranthus* is outstanding in the iron content but also shows highly satisfying amounts of vit A and C. Then study outcomes of the long-term nutrition program hosted by Shining Eyes were introduced. The preliminary results revealed a more positive trend of hemoglobin development from February 2015 to August 2016 in children of all intervention groups in comparison to the control group. The leaf-powder supplemented intervention arm showed comparable results in hemoglobin

development as compared to the commercial micronutrient supplemented intervention arm, followed by the plain nutrition intervention offering merely plain meals without additional enrichments. Further analysis will show whether the results are significant.

Moreover Moringa oleifera leaf powder production and its storage was indicated and diverse recipes were introduced (Moringa Cookies, Moringa-Date-Balls, Moringa-Chickpea-Rice Balls, Halwa and Khechuri enriched with Amaranthus and Moringa leaf powder in the ratio 2:1).

PD Dr. rer. nat. Scherbaum from University of Hohenheim Germany focused on the first 1000 days of a child's life, and the importance of mother child interaction. A balanced nutrition before conception and during pregnancy, followed by an exclusive breastfeeding phase for the growing infant and in-time introduction of nutrient-dense complementary feeding after six months is crucial for healthy growth of the infant. If the health status of the mother is already weak and the feeding of the infant poor, then malnutrition is carried on to the next generation often closely linked to poverty. Further the nutrition of the father plays a more important role than assumed in the past. This means due to yet unknown epigenetic mechanisms the fathers have to gain a more important role when talking about child health, not last because the fathers are also the decision-takers and without them mothers are still powerless for change even though awareness may be there. This means future awareness trainings should be offered for men and for women. Further she pointed out that traditional recipes can be upgraded by making small changes in the composition thereby implying a significant improvement in the overall nutrient composition balancing some nutrient deficits.



**Pictures:** Workshop pictures. On the left PhD student Silvia Golembiewski (economist), followed by Dr. Swapan, Prof. Kumkum, and St. Theresa Sister who notes down acquired knowledge on Moringa recipes.

Dr. med. Monika Golembiewski commented on the consequences of maternal malnutrition with regard to physical and mental impairments of the fetus. Malnutrition affects organ development of the heart, kidney and lungs and implies multiple metabolic dysfunctions e.g. high blood pressure, or diabetes. The nutritional influences on epigenetics are immense. Further drug or alcohol abus, stress or infections were listed as main damaging factors for the growing child. Preventive precautions were named as well to point out potential awareness topics in order to preclude risks for child health in time, amongst others child spacing is important to name.

Further Dr. Monika emphasized how important motoric and cognitive input is for the differentiation and connection of neurones during childhood. Cognitive learning has to be promoted in the first two years of a child's life as this early time period is of utmost importance for neural networking and decides over the learning capacity of the child in future life. Only if a child receives adequate nutrition and is intellectually challenged at the same time, it will receive its full maturity of brain after the second year of life.

Prof. Dr. Swapan Mukhopadhyay followed on and gave insights into crucial steps of anatomic brain development, as well as the impressive ability of the brain to reconstruct itself in order to retain abilities after injuries.



**Pictures:** Moringa leaves drying and usage of leaf powder in cooking program, an exemplified design of a kitchen garden, anthropometric measurements to seek out wasted children, health worker applies Tonoferon-iron drops to an anemic child, medical checkup in the village by Shining Eyes.

At the end of the first workshop day a podium discussion closed the day. Questions raised were the appropriate dosage of leaf powder to achieve a good compliance and how to erase the fear of the Santhals that "Moringa could lower the blood pressure to a harmful extent". One key statement named, was that the frequency in which leaf powder is offered to a person is more important than the dosage. In general the consumption should be in a regular manner. (Proposed dosage of leaf powder/or fresh leaves were included in the Conference posters).

Dr. Susanta Kumar pointed out that Moringa can be utilized in many spheres of life and should be further promoted. On the other hand the audience was aware that malnutrition can be combatted by not only one strategy but many measures have to be taken into consideration at the same time.

Amongst others most important will be to raise the awareness for a healthy living in each Santal family. Only then villagers themselves will recognize conditions of sickness early in enough, and will adapt to potential changes in a sustainable way. The kitchen garden approach was well received and is one promising strategy to achieve a self-sufficient living for each family with a

diversified diet -including Amaranthus and Moringa amongst other dark green leafy vegetables and a variety of colours inside the garden according season. The diversified kitchen garden plays a key role for improving nutrition in a holistic approach.

When considering the Moringa leaf powder production on government level a main issue of concern was a high-quality production of this leaf-powder as nutrients will be lost easily in terms of wrong harvest, production or storage conditions. If the government wants to include leaf powder in regular terms with a broad impact, then quality control is one major issue that has to be assured. A network has to be developed which is well connected and inter-related. Moringa and Amaranthus leaf powder have to be produced with the highest quality standard available to prevent the formation of bacteria and preserve as many nutrients as possible. In general a high interest for natural approaches was there, but also for further final study results that manifest the beneficial role of these two plants.



**Pictures:** Workshop pictures. Monika Golembiewski presents the risks for child health and the importance of a balanced nutrition and cognitive stimulation in early childhood to achieve full brain potential, Moringa contains all nutrients and fatty acids needed to promote brain development, PD Dr. rer. nat. Scherbaum comments on the vicious circle of malnutrition across generations.

The second day was opened by Boro Baski, a Santhal - who found beautiful words for a true approach, if we want to change something, the change has to come from inside. To build trust among the Santhals and those not belonging to the tribe is the main step. We have to see the Santhals from our hearts then we will understand how to bring progress. This trust-building is one major issue Shining Eyes longs for and has attained during the last years.

Prof. Kumkum- Bhattacharya, Visva Bharati University, Santiniketan took up from here and pointed to the importance to raise the position of women and that only a better nutrition will make the change. Here education is one key role to raise awareness but also nutrition is equally important to maxing out education to achieve full potential. Moringa is a plant well known however not excessively used; the knowledge about possibilities how to use it has to be spread.

PD Dr. rer. nat. Scherbaum further commented on how to achieve a more balanced and healthy diet. Here she gave hints how to change existing eating habits with easy measures and in small steps, thereby improving the overall nutrient density in a significant manner. Especially she highlighted the vulnerable periods of pregnancy, lactation and complementary feeding, not to forget the months before becoming pregnant, which are crucial for child’s health, as well.

Sibdas Baski pictured the plants *Amaranthus viridis* and *Moringa oleifera* and emphasized the favorable nutrient composition.

Then Dr. med. Golembiewski gave insight into how to organize and conceptualize a holistic awareness program in the village. The main aim of every awareness program should be to loose no single child, to reach all people in need and to build trust and knowledge. This illustration showed the close interrelation between implementation and control group. To assure adequate compliance having the control group is decisive for success. Awareness programs and interactive trainings are one key for self-reflection and making new experiences. Families realise a change in the health seeking behavior of their children through preventive actions, followed by modification of own habits and independant action.

Swapan Bikash Saha -the director of nutrition of CINI (Child in Need Institute) reported the nutrient amounts per 100g of NutriMix. He illustrated the success stories of children who gained weight effectively after NutriMix therapy and counselling. Further he outlined the different steps of a health program: screening for malnutrition, intensive and repeated counselling sessions, home-based supplementary feeding, continued follow-up and monitoring.

To round up the seminar key drivers for success of programs fighting child malnutrition were distributed to the audience by Silvia Golembiewski. Each guest was invited to participate in group work and do brainstorming. Later the thoughts of the group works were presented. Main issues were to empower women, by education. Further to achieve change in small steps, by using already existing recipes or structures. Interactive cooking sessions may be one part of it, to start with the things villagers can provide. This means everybody is required to bring what he/she has, or what they think what should be in the daily diet. Then lacking food are contributed by the host of session.



**Pictures:** The change of food habits has to start at home. Picture on the top (left) shows a typical situation as to be found in the village: the father is not fully aware of the child's hunger or his needs. The following picture illustrates a woman who received cooking training for a balanced and diversified meal. German students train social workers how to teach villagers in the food circle (illustrating different food groups that should be present in the daily diet). Families learn how to prepare complementary food and how to use instant mix powder enriched with commercial micronutrients to feed their child.

In order to make women understand and easily remember again already existing structures have to be used, e.g. the colours of the Indian flag to reflect different food groups as staple foods or roots (white), protein rich foods (red) and vegetables and fruits (green). Further the 3G (everybody knows from mobile shop), could illustrate the function of different food groups Go foods (staples for energy), Grow foods (meat, egg, legumes, nuts for protein), Glow foods (vegetables and fruits that strengthen the immune system and concentration and let the eyes glow/shine for vitamins and minerals).

To make people more accountable they have to be linked up to each other to build a network of experts. Knowledge exchanges have to follow. Everybody who likes to change something has to spend time inside the community, again to build trust and in order to understand all interrelations and influencing parameters.

We have to make us a facility of what is already existing. We need to train facility worker. This means worker who link up to each other, give the structure, who try to seek out vulnerable children in the Anganwadi Centres and who try to find sustainable solutions to combat malnutrition. Further the facility worker will provide training to the AWC worker in teaching modules like malnutrition, anemia, emergency signs or hygiene. The Anganwadi workers should learn how to transport critical knowledge in a comprehensive way. Best is to picture complex information as simple as possible packed in real stories experienced by people. The whole sessions have to be repeated and interactive with role playing to track progress. Generally Anganwadi Centers shall provide cognitive input for the children, along with high quality food. Food alone is not sufficient. Learning has to be in a creative more open-minded way. To the children we want to give the possibility to create own ideas and strategies to seek out structures for good livelihoods in the future.

Further the inclusion of Moringa and Amaranthus leaves in the awareness trainings of the community or leaf powder in the nutrition programs, should be advocated. Facility worker have to train in crucial awareness to include leaves in the family diet and get involved in leaf powder production. In this way we achieve sustainability in many areas. No parallel structures have to be created, rather we have to pull in the same direction at one time, for maxing out what we have.

In this way we can strengthen the link between health, nutrition and agriculture.