

Emergency Humanitarian Nutrition and Health Response for Vulnerable Children in Shijaia Area Gaza Strip



Final Report

April 2008 through July 2009

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List of Abbreviations

CBC	Complete Blood Count
DCA	DanChurch Aid
EHN	Emergency Humanitarian Nutrition
Ht	Height
MOH	Ministry of Health
MOSA	Ministry of Social Affairs
NECC	Near East Council of Churches
NGOs	Non Governmental Organizations
NIS	New Israeli Shekels
SC	Shijaia Clinic
SD	Standard Deviation
UHC	Union of Health Care
UNICEF	The United Nations Children's Fund
UNRWA	United Nations for Refugees Work Agency
WHO	World Health Organization
Wt	Weight

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Executive Summary

As a response to the emergency situation in the Gaza Strip, DCA supported the implementation of a one year humanitarian emergency nutrition project in Shijaia area; an area that is served by NECC. The project aimed at decreasing the prevalence of malnutrition and anemia among children under 5 years old and to speed up the recovery process of malnourished and anemic children. The project utilized a comprehensive approach that incorporates carrying out house to house screening, identifying anemic and malnourished cases, initiating treatment on spot, managing the identified cases at the NECC clinic, providing health education and counseling, provision of referral services when needed, provision of iron and enriched milk supplementation and possibly provision of social assistance through other agencies.

Although the political situation was very difficult, the project made excellent achievements and almost met all its intended goals in a timely manner. The preparation, coordination and the rigorous planning made the project effective and efficient. The project teams were timely hired and trained on using the developed field manuals, work processes and related equipment and tools. To facilitate monitoring and tracking, a set of indicators with anticipated targets and detailed action work plan were developed. Also, a detailed computerized database was developed. The developed database constituted an important element in the project success as it facilitated the follow up of cases at the operational level. Two health education brochures were developed (anemia and malnutrition) and 30,000 copies were printed, of them, 28,000 were disseminated at the house to house visits and the provided health education sessions.

Within the project life span, in accordance with the project plans, all the households in Shijaia area were visited (13799). The visited households contained 82,464 beneficiaries among them children constituted 18.2% (14976). The project identified 5795 children as anemic which equals 43.3% of the total children examined. Of them, 56.5% were suffering from mild anemia while the rest were suffering from moderate anemia. Regarding malnutrition, the project recognized 1307 children as moderately or severely malnourished representing 8.7% of the total screened children. Of the total malnourished children identified in the project, around 80% were suffering from moderate malnutrition while the rest were complaining from severe malnutrition (20%). Regarding the type of malnutrition, stunting constituted the most commonly found feature of malnutrition (7.7%) indicating chronic exposure to food insufficiency followed by underweight (2.3%) and wasting (1.1%). Socio-demographic profile indicates that males,

economically disadvantaged and non-refugees were more affected by malnutrition and anemia than their counterparts. Young children (6 months to 2 years) were more affected by anemia than the older ones. Children aged 2-4 years were affected the most by malnutrition.

The appropriate management regime and the follow up of cases resulted in significant improvement in the status of the malnourished and anemic children enrolled in the program. Around 70% of anemic children recovered and returned to normal or improved in less than 2 months period. The percentage of those who recovered or improved has increased with staying longer in the program and receiving the required medications as it reached around 80% at 3-4 months. The recovery rate obtained in this program far exceeds the target of the project that half of the anemic children will improve, recover, or prevented from further deterioration within three months. The conditions of only 4% of the anemic children were deteriorated at three months since their enrollment of the program.

The project was successful in inducing positive impacts on the health status of the malnourished and anemic children. Regarding children with underweight and wasting, more than 80% were improved and/or returned to normal at three to four months interval since their enrollment in the project. The recovery rate obtained in this program far exceeds the target of the project that 50% of the malnourished children improve, recover, or prevented from further deterioration within the recommended four months since the enrollment in the program. Regarding stunting which reflects chronic exposure to malnutrition, 33% of the stunted children were recovered and/or improved at 3-4 months interval since their enrollment in the program. The recovery/improvement rate among stunted cases increased to around 40 with staying longer in the program. The percentage of the stunted cases deteriorated at around 4 months was less than 5%. Again, it is difficult to expect significant changes in the anthropometric indicators for the stunted children quickly as it requires time to return to normal. However, as with the anemic children, the impact of the program has exceeded the expectations as less than 10% of cases were deteriorated after the enrollment in the program. Although the last war on Gaza has led to interruption of treatment plans for two months in average, the average time for recovery of all kind of malnutrition and anemia cases was around 2-3 months as detailed in the report.

One of the success factors for project was the coordination and the integration with the relevant players such as the MOH and Ard El Enssan which provided back up referral sites and the Ministry of

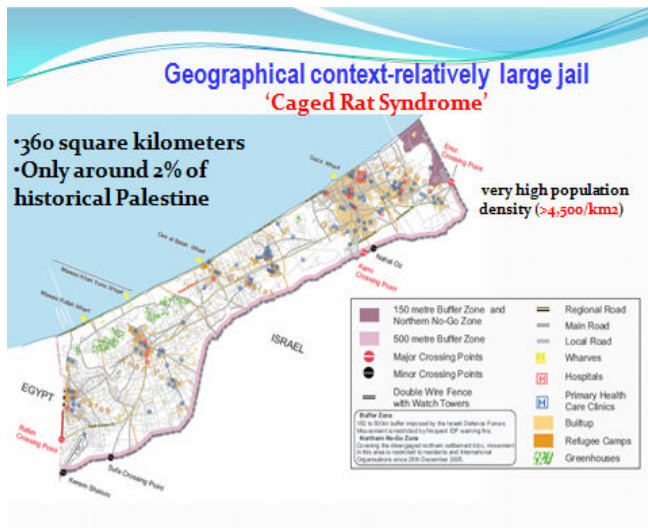
Social Affairs which provided food rations to contribute to treating the severe cases who belonged to poor families through improving food security. UNICEF, MOH and other NGOs also provided medications particularly iron supplementation. Additionally, in February 2009, as a response to the emergency situation which has been exacerbated after the war on Gaza, the community workers working on the project distributed 27396 packages of Dano milk and similar number of bottles of water provided by DCA to 6849 children in Shijaia area.

The main challenge faced the project was the war which has led to the total demolition of Shijaia Clinic and the interruption of the treatment plans of cases for two months. Follow up of defaulters and bringing them back to the project constituted a real challenge also. Compliance with treatment and the response of severe cases to the treatment also constituted a real concern. However, efforts to bring defaulters including contacting them via phone twice and then carrying out an additional home visit was some what successful in brining defaulters back to the program with a success rate of around 70%. The most frequently reported reasons for not coming included forgetting the appointment, family issues, geographical distance of the clinic, sickness of the mother, follow up with other health providers, waiting time and crowdedness of the clinic and children don't like the medication particularly iron.

This unique project addressed the problem of anemia and malnutrition not only by discovering the undiscovered cases, as most projects do, but by providing effective management for the identified cases. The success of this project could be attributed to many factors including the appropriateness of project design, comprehensiveness of the intervention which addresses the multidimensional aspects of malnutrition incorporating; identification of cases, provision of treatment, providing health education and individual counseling, appropriate follow up and referral services. The design and use of data base was also very helpful not only for monitoring purposes but also for the follow up of cases and for organizing the work at the operational level. It was impossible to keep tracking of cases without the availability of database. More importantly, the success of the project was highly attributed to the management of the NECC which maintained high commitment, close supportive supervision with reflective and experiential learning orientations. In conclusion, primary health care based nutrition interventions are successful to compact the effect of anemia and malnutrition that could be used in analogous cultures. Carrying out repetitive assessments alone is unlikely to solve the malnutrition related problems. Rather, implementing appropriate interventions with rigorous follow up measures are more likely to produce the intended outcomes.

Background and justification

Since the year 2006, the psychosocial and physical well-being of the Palestinians particularly women and children in the Gaza Strip is under severe strain, mainly due to the prevailing contextual factors resulting from the Israeli occupation, political conflict, siege imposed on Gaza and its associated features manifested in poverty, unemployment, lack of basic requirements such as food, fuel, electricity and so on.



The combination of economic and social collapse, and the inability of official services to treat the symptoms of the crisis, has exacerbated the deterioration of the health status of the population in Gaza. Many of the primary health care achievements that have been achieved in the last years are at risk. For instance, infant mortality rate has increased, prevalence of anemia, infections and

malnutrition are dramatically increased to unprecedented levels affecting both the macro and micro level nutritional deficiencies. Areas where Near East Council of Churches (NECC) works are not exceptions, as it is noticed that the prevalence of malnutrition and anemia at the NECC's health centers has increased as well (NECC records).

Results from nutrition assessments in the Gaza Strip indicate a worrying increase in the number of malnourished cases particularly among children and pregnant women in the last years. The prevalence of moderate and severe stunting (chronic malnutrition) among children under 5 years old ranges from 10-15%; five to seven times more than what is considered as acceptable by the WHO-in a normally nourished population-constituting a public health problem. With a constantly increasing trend, iron deficiency anemia is reported to affect nearly half of children under five years of age in the Gaza Strip. With slight variations among studies, there is a consistency in the literature that anemia represents a chronic major public health problem in the Gaza Strip. Other serious micronutrient deficiencies such as Vitamin A representing a major public health problem as well with more than 75% of children are either suffering from Vitamin A deficiency or at the border level. Additionally, the prevalence of Vitamin D deficiency associated with rickets is rapidly increasing. The same applies to Zinc and Iodine although not adequately recently investigated. Based on the above, this project reflects a response to a real need.

There is a consensus that malnutrition is mainly attributed to lack of food security, poverty and difficult hardship conditions. Many of the families with malnourished members are newly added to the category of poor due to the current conditions. Another important element contributing to nutritional deficiency is the social and demographic characteristics of the Gaza population. Research reports and participants responses



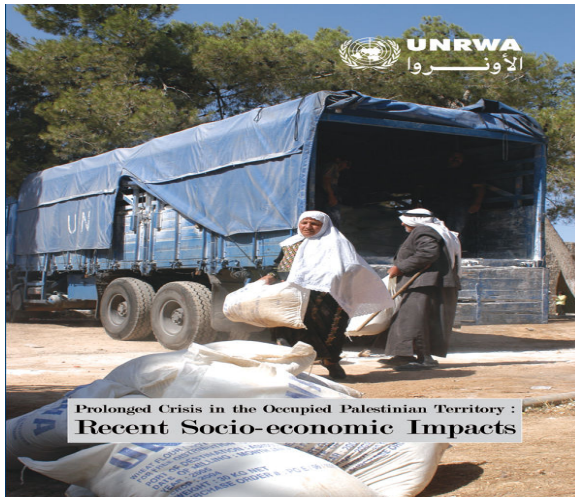
indicate that family size, crowded households, low education level of mother, low income and unemployment are important risk factors for nutritional disorders. Additionally, sanitation, water supply, maternal health indicators such as parity status, feeding practices, social practices and eating habits, parasitic infestations and the number of meals consumed daily are all found to be affecting malnutrition. Moreover, nutritional reports indicate that malnutrition is more prominent in rural marginalized areas and in areas subjected to frequent Israeli incursions.

There was broad consensus in the literature that food insecurity in the Gaza Strip is chronic and increasingly widespread affecting around 56% of population. World Food Program reports indicate that real food consumption per capita has fallen by 25-30% since the year 2000. A third of the Palestinians have reported a fall in income this year, the poor suffered most heavily with a 40% drop. Noticeably, food insecurity affects more non-refugees, rural areas, marginalized areas and areas suffered from Israeli incursions associated with the destruction of their assets.



Without doubt, the main reason for food insecurity in Gaza is political. Concisely, the rapidly increasing prices of food (at least doubled in the last year), the declining productivity of the agricultural sector and the collapse of domestic industries in the Gaza Strip as a result of the Israeli measures all are leading to reducing the food security level.

Due to the chronicity of the situation, the ordinary coping mechanisms were almost totally exhausted. To cope with food insecurity, Gazans have reduced



the number of meals consumed daily and/or skipped the meals of one day entirely. Many have substituted their normal diets with cheaper, dried and stored food which has less nutritious values. The literature shows that half of the population reported decreasing their spending on food, 89% reduced the quality of food they buy while 75% reduced the quantity since January 2008 and almost all people have reduced their consumption of fresh fruit,

vegetables and animal protein to save money. Another important yet widely spread coping mechanism is seeking assistance from humanitarian aid providers. Currently, around 80 percent of households in the Gaza Strip are receiving some type of in-cash or in-kind assistance, with higher levels of coverage for refugees, particularly amongst the poorest segments of the population. Negative coping mechanisms were frequently noticed and documented such as isolation, disengagement, disassociation with others, development of aggressive behaviours, children labour, searching in garbage, selling hard and soft assets when available, increasing drift phenomenon, feeling hopelessness and powerlessness. From a cultural perspective, some of these coping mechanisms are new probably strange to the Palestinian culture such as drift and search in garbage. Families' awareness and healthy practices regarding food storage, food consumption, food alternatives, breast feeding, feeding practices, birth spacing, sanitation and hygiene are important strategies to improve the nutrition status in the Gaza Strip.



Whilst severely malnourished children are referred for in patient care at specialized facilities run by other agencies, the growing numbers of moderately malnourished and anaemic children were not identified and not being adequately treated. Reviewing the medical records of the NECC revealed that the average time for regaining their normal weight for age and height was approximately 10 months, and in some cases is longer. For children in the crucial years just after breast feeding, malnourishment during this crucial period will lead to irreversible developmental deficiencies for the

rest of their lives. It is worth pointing that causes of anaemia and malnutrition are multi-factorial including; lack of food at the household level due to the collapse of the economy, eating patterns and habits, cooking practices, lack of awareness and the presence of other diseases particularly infections. Current approaches to malnutrition and anaemia focus on identifying and addressing medical conditions, providing supplementations and educating mothers about proper early childhood nutrition. However, still in the Gaza Strip, the management of malnutrition and anaemia still requires empowerment particularly the issue of follow up and proper treatment according to the international standards. DanChurch Aid (DCA) and NECC planned to play an important role in supporting the nutritional status in Shijaia area by recognizing and effectively managing malnutrition and anemia through implementing appropriate and effectively-coordinated interventions. The project tried to address this issue by implementing a comprehensive standardized up-to-date nutritional intervention.

Project objectives

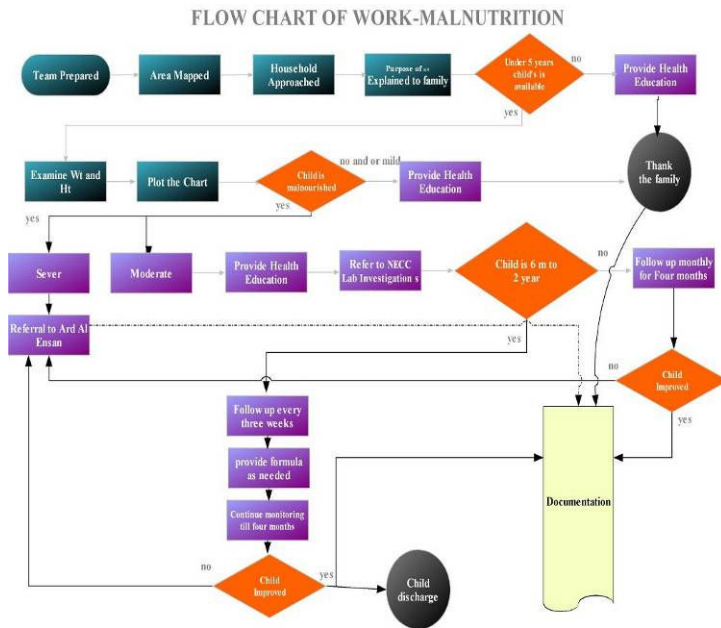
- To identify and target the moderately malnourished and anemic children within El Shijaia catchment areas including those who are not currently presenting themselves for treatment at the health center.
- To reduce the amount of time required for moderately malnourished and anemic children to regain their normal weight curve and hemoglobin level.
- To improve the management practices of malnutrition and anemia and the medical complications arising from them (moderate malnutrition and anemia).
- To reduce the number of patients presenting themselves at health clinics with public health-related diseases, such as gastrointestinal infections due to fecal-oral contamination, and skin and eye infections, through increased health and hygiene education.

Target population

The primary target of the project was children below the age of 5 who were malnourished and/or anemic. Some of the malnourished children are also anemic. Children diagnosed to be malnourished and anemic or 'just' anemic were treated according to their diagnosis and individual needs. The secondary target of the project was the community members in Shijaia area in Gaza (75,000). The community members exposed to health education messages about food, nutrition and hygiene to sustain public health practices.

Project Strategy and methodology

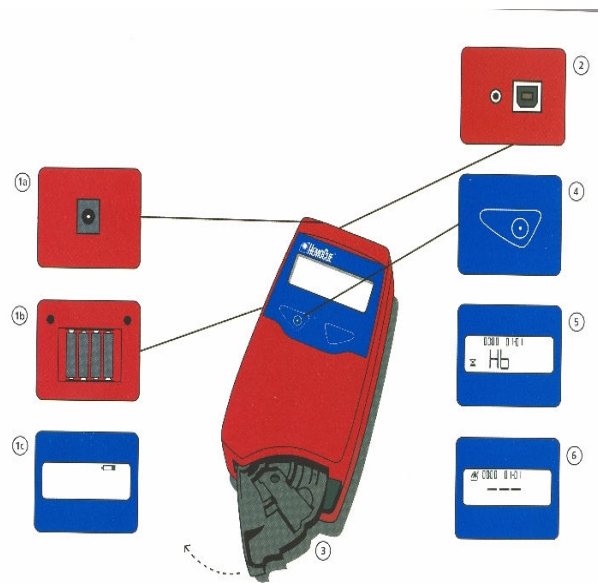
A comprehensive primary health care based strategy was designed and rigorously implemented. Through house to house screening, the project



identified undiscovered malnourished and anemic cases in the Shijaia area in Gaza. Although the project was originally designed to treat moderately malnourished cases, it also included the severe cases. Treatment immediately initiated on spot according to the Palestinian nutrition protocols with the Shijaia clinic representing the site for the follow up and the management of the diagnosed cases.

Depending on the type and the severity of anemia and malnutrition, individual management plan were developed according to the standardized nutrition protocols. Referral services for complicated and non-responsive were provided. Through coordination with other agencies, social assistance including food rations had been provided to poor families. Also, the provided health education helped families to develop healthy nutritional practices including appropriate eating practices, proper hygienic measures and seeking medical advice as needed from the NECC health facilities. A strategy to follow up defaulters was devised consisting of carrying out phone calls and then home visits. Finally, the project helped to develop the capacity of the NECC to identify and manage the moderately and severe anemic and malnourished cases at its health program.

Regarding instrumentations, the HemoCue system has been used in this project to examine hemoglobin level which consists of a battery operated photometer and disposable cuvette coated with dried chemical (Sodium Azide) which also serves as a blood collection device. This one step blood collection that uses a cuvette but does not require wet reagents makes this system uniquely suited for rapid field work. Also, it is easy to train non-laboratory personnel to operate the device, and it is not dependent on electricity. In addition to the operational features, laboratory evaluation using standard methods found the HemoCue system to



have satisfactory accuracy and precision. Long term field experience has also shown the instrument to be stable and durable.

Regarding weight and height, standardized Seca scales were used. Portable Digital Scales for babies and children up to five years with LCD display and Detachable tray-convert to a stand by removing the tray were used for measuring weight. Also, the used scale is comfortable and equipped with securely fitted weighing tray to keep baby safely in place. It is characterized by high accuracy rate, high sensitivity less than 10-50 grams easily calibrated and verified. The experience showed the validity and suitability of these scales in the field.

Timeframe

The project officially started on April 1st 2008. However, the preparation started two month earlier including the preparation for procurements, mapping, planning, and designing the project related processes. Due to delay in the delivery of materials such as milk and equipment as a result of closure, the hiring of field staff delayed till the mid of May 2008. Field work officially started on June 16th 2008 after a two stage piloting process which was accompanied by initiating treatment at the spot. Field work continued till the war on Gaza which started on December 27th and continued till January 18th and resulted in the demolition of Shijaia Clinic, loss of all equipment and commodities, loss of medical records and thus it has led to the total suspension of the project operations.

After an extensive search, on February 1st 2009, the NECC management succeeded to find a place for the project operations. The project team started calling all the cases, case by case and gave appointments to clients starting from February 1st through March 20th 2009. On February 21st 2009, the community health workers started carrying out home visits and screening all the children in the targeted area. To reach all beneficiaries, and to compensate the suspension period during the war, non-cost extension of the project took place till the end of July 2009. Field work was completed by June 15th 2009.



Demolished Shijaia Clinic-Jan 2009



New established Shijaia Clinic-May 2009

Although the project has officially ended in July 2009, the care of the enrolled cases will continue within Shijaia clinic regular operation. The program of intervention will continue using the same standardized approach which the project utilized. Children targeted will enjoy the rigorous well baby care program provided at the NECC clinics.

Key achievements

Immediately after receiving the approval notification from the DCA, the NECC team developed an action plan to guide the project operations. The developed plan efficiently guided the implementation. The work was very intense during the project life starting by timely completing the needed preparations, procuring the items needed, hiring and training the project teams, carrying out the field work and starting managing malnourished and anemic cases at the clinic. Although, the political situation was very difficult during the project life span, the NECC management succeeded to overcome all the difficulties faced related to the demolition of Shaijia'a clinic as a result of the war on Gaza, shortage of supplies and drugs, lack of equipment in the local market, frequent electricity cuts and the lack of fuel. Fortunately, the NECC was successful in achieving all the project targets particularly the identification of anemic and malnourished cases and treating them with appropriate measures resulting in a timely recovery of high percentage of cases to normal.

The following paragraphs summarize the key achievements as follows;

a. Recruitment of project staff

Through an equal opportunity approach, the project's positions were advertised and the needed teams were selected. Because of delay in arrival of materials and equipment, the field teams officially started on May 15th 2008 with around one month delay. As planned, 6 community workers, one team leader, a secretary, a logistic person, a part-time accountant and a driver were provided. Additionally, an additional team member was hired later (in August 2008) to help in performing the project activities in the clinic. Guided by a detailed plan, the staff received an orientation about the NECC activities, project activities and the operation field as



detailed later. Team members were provided with job descriptions and also they received training on their assigned tasks.

b. Health education materials

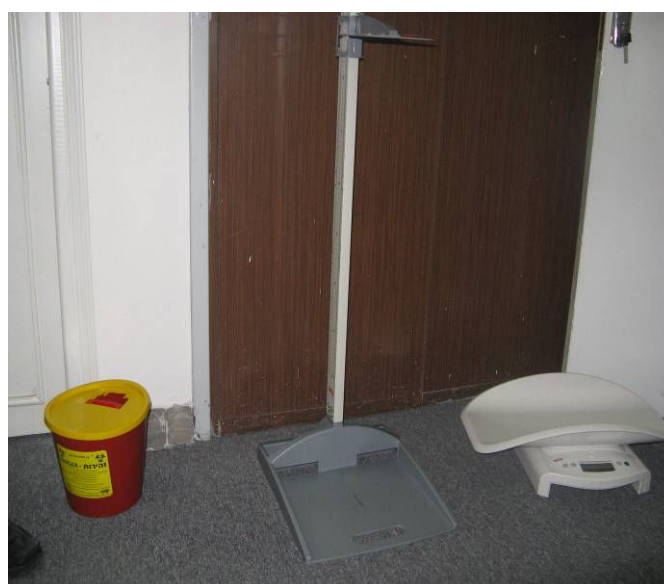
Two brochures; one about anemia and the other about malnutrition were produced using the material available in existing pool of educational materials in Gaza; particularly the materials produced by the Hanan Project.

In total, 15,000 copies of each of the two brochures were printed and almost disseminated during the house to house screening and also during the focused health education sessions as part of family orientation and counseling about malnutrition and anemia.



c. Procurement of equipment and disposables

After finalizing the specifications of the requested equipment, open tendering process was carried out and purchase requests were issued. Requested items delivered with some delays. Items not delivered were either replaced by a suitable alternative or temporarily borrowed from other organizations. All equipment and disposables needed were made available to the team. With the demolition of the clinic during the war on Gaza, all equipment and disposables were lost. Again, NECC secured all the needed equipment in a timely manner.



d. Procurement of medications and fortified formula

After determining the needed amounts, procurement of milk formula and medications took place according to the international procurement guidelines.

The originally proposed Vita milk was procured but unfortunately un-cleared at Ashdod Port. To avoid further delay, the project team with the help of a nutritionist selected another available alternative called "Materna".

The amount of the needed milk and iron were continuously monitored. It is noticed that the number of population in the area is larger than what is expected and subsequently the number of children is greater. Additionally, the prevalence anemia is higher than the previously reported figures. This necessitated securing extra amounts of medication and milk. Other agencies had contributed to securing the project needs particularly the UNICEF. As a result of the strict follow up of the NECC management, enough stock of drugs, milk and disposables were maintained at the NECC warehouse and no shortage has been reported during the project time.



e. Mapping Al-Shajaia Area

A map for Shijaia area has been prepared in consultation with the Gaza Municipality. The two main quadrants of El-Shajia area were also mapped. Jidaida, a large quadrant in Shejiaa area has been further defined into 8 smaller blocks with block 2, subdivided into 4 smaller neighborhoods. Turkman, the second main quadrant has been divided into 11 blocks. For each block, boundaries were identified with distinguished marks; populations were estimated and the potential number of children were identified.

Each visited area is marked on a map at the notice board and the team proactively monitored the field site visits with regular checking and revisiting houses.



f. Design of work

Clear work processes flow charts were developed; one for anemia and the other for malnutrition. Field guidelines and checklists were prepared, piloted and finalized. Logistic arrangements were finalized and repeatedly tested in the field. Reporting requirements and forms were prepared and finalized. Annual action plan with clear time frame was designed and shared with the staff. A 5-day training course was provided to the team working on the project about the work processes and procedures. This training was provided by the local consultant and the health program coordinator and focused on:

- Work processes and procedures
- Field guidelines
- Roles and responsibilities of the different team members
- Performing standardized measurements for wt and ht
- Documentation and reporting
- Possible problems and solution
- Practical application of all the steps

g. Project Monitoring plan

Based on the project concept paper, project logical frame and the action plan, performance monitor plan has been developed. In total, 16 indicators were developed with clear definitions, defined responsibilities and time frame for data collection and reporting. To facilitate data management and monitoring, data base was developed with the capacity to generate reports. The data base represented a crucial element in the success of the project.

	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
1	Emergency Humanitarian Nutrition (EHN) and Health Response for Vulnerable Children in Shijala Area											
2	Activity/time											
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32	Starting Field Work - Jedlada											
33	Conducting household visits in Betaji Block 2 (A,B,C,D)											
34												
35												
36												
37												
38												
39												
40												
41	Conducting household visits in Moshaha Block (1)											

h. Collecting baseline data

Based on the project developed monitoring plan, data were collected from the clinic records in reference to;

- Percentage of anemic and malnourished children presenting to the clinic
- Percentage of children presented to the clinic with sanitary related diseases such as diarrhea and skin diseases
- Percentage of children with anemia who recovered and or prevented from further deterioration

- Percentage of children with malnutrition who recovered and or prevented from further deterioration
- Length of interval between diagnosis of anemia till recovery in months
- Length of interval between diagnosis of malnutrition till recovery in months.

i. Training of NECC and the project teams



A training plan has been developed and implemented prior to starting field work (May 18th through June 6th 2008). Additional three training days were provided later and focusing on the management of severe and non-responsive cases of anemia and malnutrition plus counseling skills. The later was a response to the field needs in order to increase compliance and recovery rates of cases. The training included 30 persons from the NECC clinics and the

project implementation team and focused on the state-of-the-art practices in nutritional assessments and interventions. The training was provided by local experts.

i. Coordination and integration

NECC coordinated with the relevant parties and stakeholders at different levels including the Ministry of Health (MOH), Ard El Enssan, Ministry of social Affairs (MOSA) and others. MOH provided backup referral sites for the severe cases and also for conducting investigations that are not provided at the NECC facilities such as urine, stool and blood cultures and advanced laboratory tests. MOH treated cases referred from the project freely in its premises. Similarly, cooperation and coordination took place with Ard El Enssan, a specialized Palestinian Non-Governmental Organization (NGO) in nutrition. As reported in the previous reports, agreements were reached with Ard El Enssan to refer the severe cases to them. Regular monthly meetings were held between the Medical Director of Ard El Enssan and the Medical Coordinator of the NECC, to jointly follow the progress of cases. One aspect remains as a challenge is how to strengthen the referral system and how to monitor the progress of the referred cases. The later issue still requires more active steps in coordination and integration.

The Palestinian Medical Relief Society (PMRS) donating 5000 cans of Pedisure milk for children aged 3-10 years old and this enabled the NECC to expand

the provision of milk for malnourished children aged 3-5 years who were not entitled to that before.

NECC actively participated in nutrition related meetings and forums to discuss the nutrition status of the Palestinian children and to coordinate interventions. Other organizations such as PMRS and nutrition services providing organizations are now learning from the NECC experience and try to benchmark it. As aforementioned, another example of coordination, the UNICEF donated 28,800 bottles of iron and the Union of Health Care donated 10,000 bottles of iron. Additionally, MOH donated 1320 bottles of iron and 1000 bottles of multi-vitamins. Moreover, Public Aid Society donated 4,000 bottles of iron.

Another aspect of coordination which took place with the Ministry Of Social Affairs which provides food rations and financial assistance to the needy families with malnourished and anemic children. Monthly, NECC provided the MOSA with a list of needy families who fulfilled the following criteria;

- Having one child with anemia and/or malnutrition
- Household with more than 3 members
- Monthly income is less than NIS 500
- Not receiving regular assistance from other agencies
- Field workers observations indicate the needs for assistance

j. Program management and control



Special attention has been paid by the NECC senior management to this project. The Medical Committee of the NECC reviewed and endorsed the program and supervised its overall implementation. The Executive Secretary of the NECC supervised the overall implementation of the program. The Executive Secretary at least once weekly, met the consultant and the Medical Coordinator. Additionally, at every month, the Executive Secretary had a meeting with all the project teams to discuss progress and challenges.

The Local Consultant at least visited the field every week and met the project staff. The Medical Coordinator visited the field more than twice a week and

discussed challenges and problems with the concerned people. Daily reports were submitted by each field team to the team leader. Team leader should regularly submit daily report to the management of the project. Reports submitted were appropriately followed and measures were taken accordingly. Coordination meetings with the administrative and technical teams at various levels were done periodically and on ongoing bases.

Control measures were strictly developed and followed including

- Standardized procedures are agreed upon, documented and followed strictly
- Intensive training was provided to the team which included a lot of demonstrations and role playing
- Piloting and field testing was done at two stages and changes introduced.
- Field work was daily reviewed and checked by the team leader, the Medical Coordinator and the consultant plus the Executive Secretary.
- Data entry model has built in control measures-control checks
- Data from the field were checked, cleaned and analyzed
- Data from the field were checked from logical perspectives
- The team leader re-visited houses and documented that in special forms
- Re-measurement by the team and the clinic team were done at the clinic, for all children referred to the clinic.
- Data re-entered to check reliability and validity

k. Start of field work

The household screening officially started on June 16th 2008 after two stage-piloting; the first started in early June and the second started one week later. During piloting, teams were introduced to the interviewing techniques, approaching families, using the equipment and filling the forms. During piloting, it was noticed that the team need extra training in hemoglobin testing; therefore, further training were organized. The reporting forms were also tested and minor changes were introduced.



I. Community acceptance

The field observation and the field work indicated that the community was receptive to the program. Almost rarely families refused that the community workers enter their houses and performed the needed assessments. The families refused had either medical staff members within the family or are receiving medications from other health providers. NECC management introduced the project to the community



before the start and gained their commitment, ownership and support to program. The Medical Coordinator visited the community leaders and together introduced the project to the "Dewans"- places where families meet usually the house of the head of the tribe-in the area. The field team approached the community in a politically appropriate way and maintained strict adherence to ethics and maintained families' privacy. A lateral effect of the program is the noticeable increase in the beneficiaries who benefited from the NECC center.

Results according to the project indicators

The coming pages demonstrate the key achievements of the project in reference to the project indicators.

Beneficiaries targeted

The target of carrying out house to house survey in order to screen all children under 5 in Shijaia area has been achieved. The idea was to reach new beneficiaries who don't usually present to Shijaia clinic has been achieved. Although the field work was interrupted by the war and the subsequent demolition of the NECC clinic for around 2 months, the NECC was successful in compensating that and in reaching all the planned beneficiaries.

The trained three field teams (six community workers), in average conducted the home to home visits to around 60 houses per working day, 20 house per each team per day. The field work was carried out in a smooth way and the visiting teams learned from their experience how to do the work efficiently and effectively. The field teams' tasks were expanded by adding additional tasks and included the following activities;

- Distribution of water and milk as an emergency assistance intervention

- Visiting houses and introducing the project to families
- Collecting some demographic data
- Assessing households status to recognize the need for assistance
- Measuring hemoglobin, wt. and ht. for all children under 5 in every household in the visited areas
- Providing iron supplementation on the field
- Providing health education
- Referring anemic and malnourished children to the clinics
- Contributing to the follow up of defaulters cases
- Providing focused health education in non-traditional methods
- Instructing families about the needed investigations and providing cups for collecting specimens.

As illustrated in the Table 1, in total, the number of households visited is 13,796 with 82,448 beneficiaries. The project indicator of targeting 10,000 households were met and further exceeded. The majority of the visited households were headed by fathers (93.8%). The median number of household members is 6. Around 60.6% of the families visited were having children under five years old. The number of children screened since the beginning of the project is 14,976 representing 18.2% of the entire surveyed population nearly equally distributed in reference to gender (males 51.2 and females 48.8). This result is congruent with the Palestinian Central Bureau of Statistics which indicates that 17-18% of the population is aged between 0-5 years. The target of reaching and assessing 15,000 children is fairly met.

Figure 1: Distribution of families visited per quarter

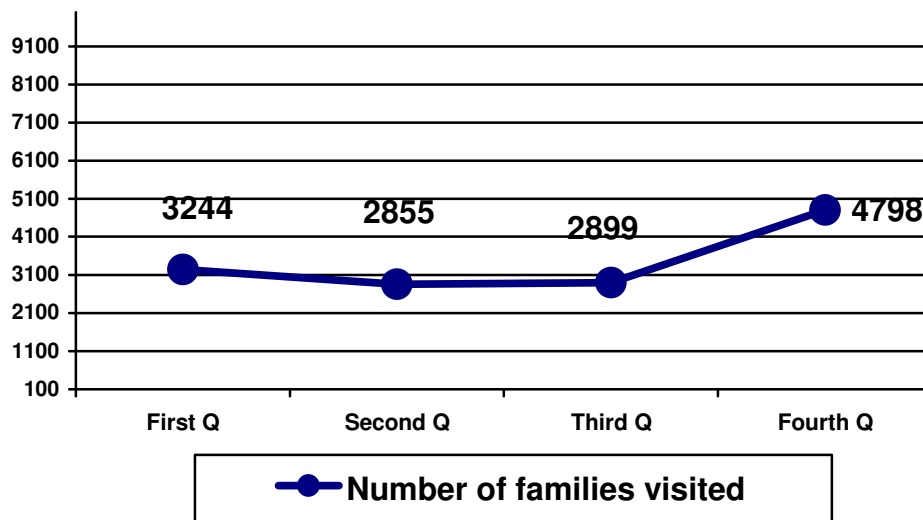


Figure 2: Distribution of children screened by quarter

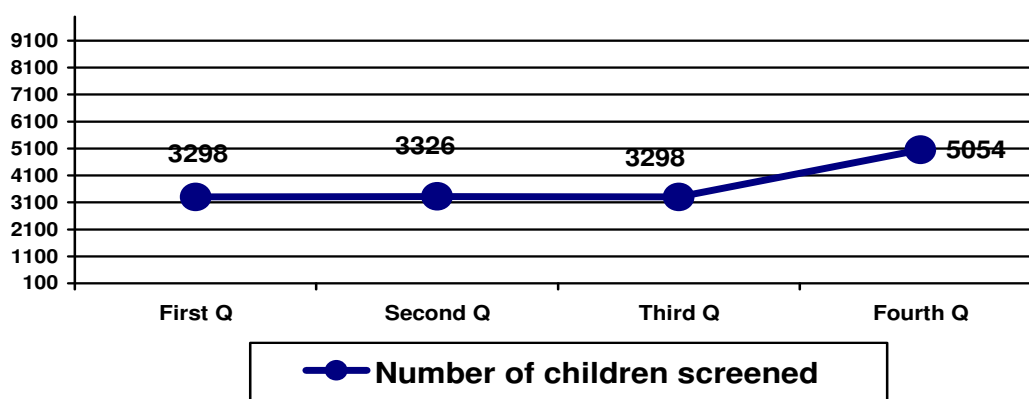


Figure 1 and 2 show that the number of families and children screened were the highest in the last quarter of the project. The work in the last quarter has been intensified to compensate the time lost during the suspension of the project operations during the war and its consequences.

Table 1: Distribution of screened families according to certain demographic characteristics

Variable	Number	%	Notes
Number of houses visited	13796		
Total number of surveyed population	82448		
Households with children under 5 Y	8356	60.6	
Total number of children surveyed	14976		18.2% of surveyed population
Head of the household			
Father	12948	93.8	
Mother	873	6.1	
Others	14	0.1	Grandfather and uncle
Citizenship status			
Refugee	3566	25.8	
Non-Refugee	10233	74.2	
Receiving social assistance			
Yes	3260	23.6	
No	10539	76.4	
Type of social assistance			
Financial	337	2.0	
Food rations	3140	22.8	
Living under poverty line			
Living under the poverty line (\$ 2)	11073	80.2	
Living under the absolute poverty line (\$ 1)	9634	69.8	

Out of the total surveyed population, 23.6% reported receiving humanitarian assistance mainly food and financial assistance particularly from the UNRWA. This figure is less than the reported figure for Gaza as a whole resulting from the fact that Shijaia area is mainly a non-refugee area. This low prevalence of beneficiaries who were receiving social assistance reflects the citizenship status of beneficiaries who are non-refugees and therefore are not entitled for the assistance provided by UNRWA. According to the project hardship criteria, 1732 families of the population visited were living in hardship conditions as observed by the community workers.

Table 1 shows that more than 80% of families surveyed were living under the poverty line (at 2 US \$ per person per day). Around 70% were living in absolute poverty (at 1 US \$ per day). It is worth pointing that, around half of the informants reported having no income at all.

Children Enrollment Status

As aforementioned, 14,976 children were assessed for anthropometric measurements and the hemoglobin level of 13,396 children was assessed. Out of them, 6498 were found anemic, malnourished and/or suffering from both. Those children have been enrolled in the program and continue their management plans at the Shaijaia Clinic. The status of those children can be summarized as detailed in the table down below.

Table 2: Distribution of the enrolled cases by their status

Category	Number	Percentage	Notes
Enrolled in the program and still under treatment	2726	42	
Discharged due to recovery	1171	18	
Referred to another medical centre	405	6.3	
Didn't come to the NECC clinic	243	3.7	
Discontinued the follow up at the NECC clinic	1621	24.9	
Not improved and referred to the Well baby clinic	37	0.57	
Moved to another residency place	34	0.52	Changed their place of residency
Follow up with another clinic	209	3.22	
Found normal	38	0.58	Referred to the clinic by the field workers then at the clinic found normal
Found to be Thalasemic	6	0.09	
Died	8	0.12	
Total	6498	100	

Of the children identified as anemic and/or malnourished cases who were enrolled in the program, still 41.95% were under treatment either receiving their therapeutic or prophylactic medications. Till, the end of the project, 1171 (18%) were graduated; meaning that for anemic cases their hemoglobin became normal and also they had received three prophylactic doses of iron (three months). For malnourished cases, they return to normal anthropometric measurements. Typically discharge takes place at around 4 months for malnourished cases and around 4-6 months for anemic cases. It is worth noting that some children were enrolled in the project in June 2009 and require longer period to be graduated. Therefore, the number of graduates will be increased in the coming months.

Among the children enrolled in the program, 420 cases were referred for other organizations to receive treatment or to undergo further investigations there. The cases were either referred to Ard El-Enssan or to El-Nasser Hospital-MOH. Of the enrolled children, 37 cases didn't improve although they received the entire package of services and they referred to the NECC well baby program in order to continue their follow up there. The majority of those children were suffering from stunting associated with other diseases such as congenital anomalies which are incurable. The families of 34 cases changed their residency place and moved to new areas outside Shijaia area. Unfortunately, 8 cases were died mostly for reasons not directly related to malnutrition and anemia including accidents (3 cases), infections, meningitis and congenital anomalies.

Of the total surveyed children, the families of 1606 children didn't continue follow up with the NECC due to various reasons. Additionally, 243 cases although admitted to the program, didn't come to the clinic at all although they were given appointment by the field team. The most frequently reported reasons for not coming included forgetting the appointment, family issues (mostly pressure on the mother from the family), geographical distance of the clinic, sickness of the mother, follow up with other health providers, waiting time and crowdedness of the clinic and children don't like the medications particularly iron.



However, the project team was active in bringing those children to the program through contacting and revisiting them. The project team made 1837 calls to the families of the malnourished and anemic children to bring back defaulters as a first call. Moreover, 1168 were called at least twice and 499 home visits were

made as a complementary to the telephone calls. However, the first call to defaulters was successful in bringing the majority of them back to the program-only 35% didn't come or refused to come. Similarly, the second call contributed to bringing back around 70% of participants. The home visits contribution was less effective as people who don't want to continue in the program already had made their minds-only 30% of clients came back to the program after being visited. However, this area requires further attention.

Anemia status

It is worth reminding the reader that in this project, anemia is operationally considered to be present if the Hb value is below 11 g/dL for children less than 5 years old. Anemia is classified into three categories according to severity as described in the provided table (3).

Table 3: Classification of severity of anemia

Adopted Classification of Severity of Anemia (Hb, g/dL)			
Age group	Mild	Moderate	Severe
Children 0.5-4.9 years	10.0-10.9	7.0-9.9	< 7.0
Children 5.0-11.9 years	10.5-11.4	7.5-10.4	<7.5

Sources: WHO,1997; Dusch, 1996.

The revealed mean hemoglobin level of the children surveyed was 10.7 and the median was 11. Out of the total children examined (6-59 months-13,396), 5795 were identified as anemic representing around 43.3%. It is worth noting that children less than 6 months are not examined for anemia according to the international protocols therefore not included in the reported percentages.



Among those anemic, 56.5% were with mild anemia and 43.4% were with moderate anemia and only five cases were diagnosed as severely anemic (hemoglobin below 7).

It seems that the prevalence of anemia decreased throughout the project life span. Figure 3 shows that the prevalence of anemia was the highest in the first quarter, while it was the lowest in the last quarter. This variation could be attributed to the socioeconomic characters of the visited neighborhoods each quarter and also to the instability of the political context which highly affecting food security.

Figure 3: Distribution of the prevalence of anemia per quarter

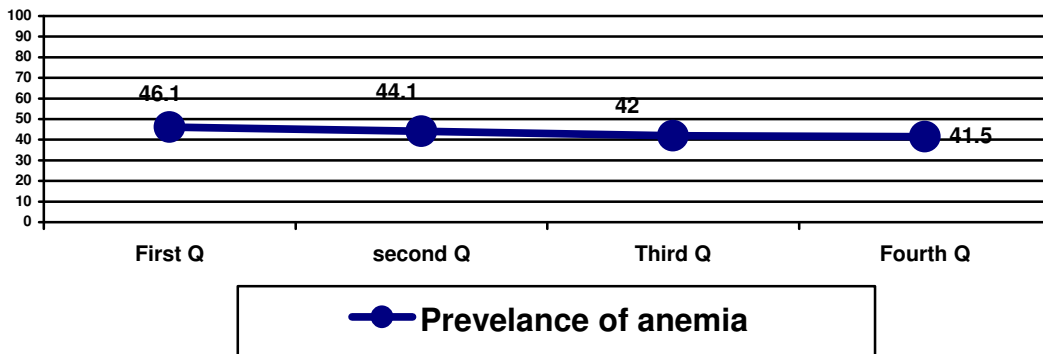


Figure 4: Classification of surveyed children by anemia status

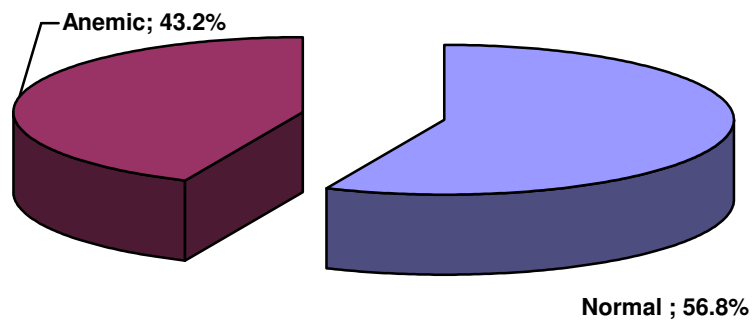
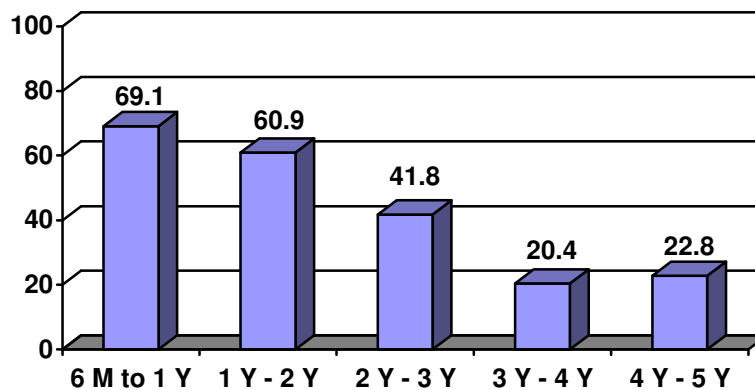


Table 4: Distribution of the surveyed children by anemia and its severity

Classification	Number	Percentage
Normal	7601	56.8
Anemic	5795	43.2
Total	13396	100.0
Classification of anemic cases by severity		
Mild	3272	56.5
Moderate	2518	43.4
severe	5	0.1
Total	5795	100.0
Gender		
Male	3087	44
Female	2708	42.4
Refugee Status		
Refugee	1378	41.6
None refugee	4417	43.5
Age group		
6 months to one year	1182	69.1
1 Y- 2 Y	1898	60.9
2 Y- 3 Y	1196	41.8
3 Y- 4 Y	844	29.3
4 Y- 5 Y	627	22.8

As shown in table 4, it seems that anemia affecting both males and females with females being less affected than their male counterparts; 42.4% and 44% consequently. Anemia is higher among children aged 6 months to 1 year with a prevalence of around 70% followed by children aged 1-2 years with a prevalence of 60% (figure 5). As the child gets older, the possibility of anemia occurrence decreases. Anemia affects non-refugees (43.8%) more than refugees (41.6%). Differences were noticed across the different neighborhoods particularly the newly built areas. Cases identified as hardship/social cases according to the project criteria were having higher prevalence of anemia (48.1%) than the better off ones (43%).

Figure 5: Distribution of anemia by age group



The program of treatment of anemia adopted in the project is compliant with the national protocols and consists of providing iron supplementation for three months maximum, 3-6 mg per kg body weight per day followed by a prophylactic dose for additional three months (1-3 mg per kg per day) in order to keep adequate storage of iron. Iron supplementation is combined with ingestion of healthy food and the utilization of appropriate anemia preventive practices.

It is worth noting that the course of treatment for anemic children is expected to be completed within three months. However, some usually recover before and others continue longer in the program and receive additional care.

As aforementioned, due to the war on Gaza and the subsequent suspension of the project activities, treatment of admitted children were interrupted for two months in average (range 37 days to 90 days). However, the following table (table 5) shows the status of children illustrated by the different periods.

Table 5: Change in the status of anemia cases per enrollment period

Change period	Recovered		Improved		Remained the same		Deteriorated		Total
	No	%	No	%	No	%	No	%	
Less than 45 days	258	33.8	113	14.8	315	41.2	78	10.2	764
45 days to 60 days	352	66.3	23	4.3	120	22.6	36	6.8	531
61 days to 90 days	566	65.7	64	7.4	190	22	42	4.9	862
90 to 120 days	935	72.5	90	7.0	216	16.8	48	3.7	1289
More than 120 days	2411	72.4	239	7.2	542	16.3	137	4.1	3329

The table (5) above indicates that gradually anemic cases are rapidly improving. The rate of improvement increases by time as in less than 45 days, 33.8% of cases recovered to normal and an additional 14.8% were improved from moderate to mild anemia. Of those who stayed between 45 to 60 days, 66.3% were recovered and 4.3 % were improved. 65.7% of those who stayed between two to three months were completed recovered and returned to normal and an additional 7.4% were improved. By staying three to four months in the program, 72% of anemic children were recovered and returned to normal hemoglobin level and an additional 7% were improved. By time, the percentage of those who improved per the specified time periods increases and the percentage of anemic cases who remained the same decreases.

As revealed from figure 6, and table 5, around 90% of cases are recovered, improved, or prevented from further deterioration. Among those who stayed more than 90 days, only 3-4% of cases had deteriorated. In other words, using the indicator language (indicator 4), the majority of cases were either improved, or at least didn't further deteriorate in a timely way-relatively very short period (only 4% deteriorated).

Figure 6: Change in the status of anemia per enrollment period

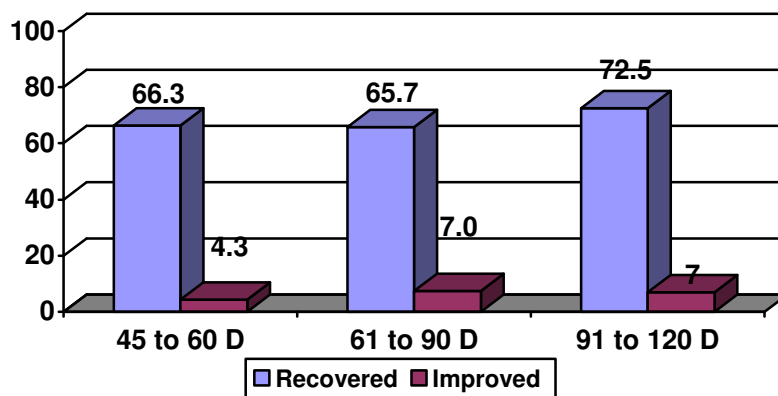
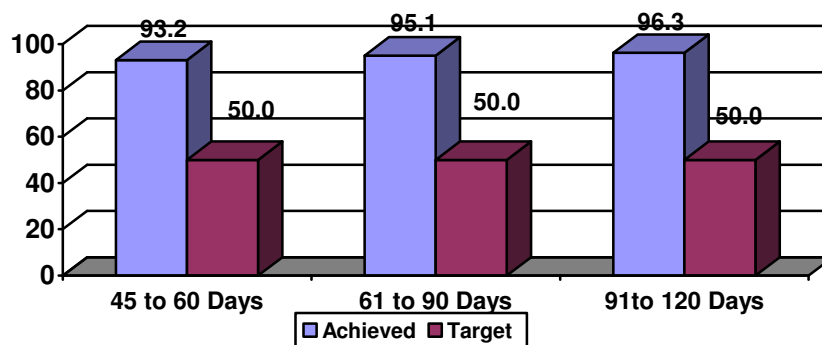


Figure 7: Comparisons between anticipated targets and actual achievements



In the figures above (6,7), the achieved percentages are much higher than the anticipated targets at the different intervals. In line with the indicator definition, the achieved figure operationally includes the percentages of those recovered, improved, and/or prevented from further deteriorated.

The interruption of treatment during and after the war is an important confounder that needs to be considered in interpreting the results achieved. However, calculating the median and mean duration to recover to the normal indicated a positive signal. The mean period for improvement for the cases enrolled after the war (children screened and admitted after February 2009) was 60 days and the median was 38 days with a standard deviation 33.9 and a mode of 31 days. This is much optimistic than our goal to reach 50% improvement within 3 months. Because of the interruption as a result of the war, the mean for improvement for all anemic children admitted since the beginning of the project was higher than the previously reported figure as the mean was 99 days, the median was 62 and the mode was 32.

Although the program has been designed to focus on the moderate cases, it has expanded and enriched its interventions to treat severe cases. NECC introduced new lines of treatment for anemic cases that didn't improve particularly providing focused counseling, folic acid, multi-vitamins and stressing on eating food rich diet which contributed to improving the recovery percentage.

Malnutrition status

Malnutrition is a multi-factorial condition caused by inadequate intake or inadequate digestion of nutrients. It may result from eating an inadequate or unbalanced diet, digestive problems, or other medical conditions. In a normally nourished population only 2.28% of the population would be below - 2 SD.

In this project, the cut-off of -2 Z-score is used to diagnose malnutrition. This means that the Z-score was the mean to identify the prevalence rates of acute malnutrition (underweight or weight-for-age) and wasting or weight-for-height) among children. The cut-off points for classifying different levels

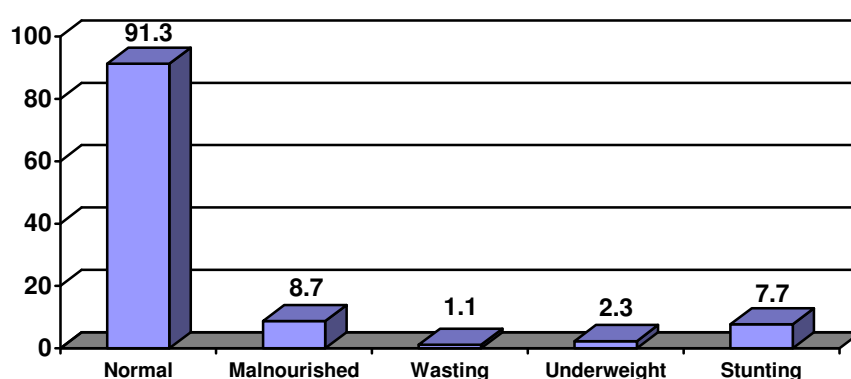
acute malnutrition are as following: <-1 Z-score- means mild acute malnutrition, <-2 Z-score means moderate and -3 Z-score means severe acute malnutrition. Internationally, mid malnutrition is not included in estimating the prevalence of malnutrition and the focus is on moderate and severe malnutrition.

Types of malnutrition

- Wasting is a condition measured by weight-for-height; a condition that results from the loss of both body tissue and fat, in a body; a condition that usually reflects severely inadequate food intake happening at present (Acute malnutrition).
- Stunting children or low height-for-age is defined as below 2 z-score of the WHO reference value, regardless of reasons for their shortness. This index is an indicator of past under nutrition or chronic malnutrition; it cannot measure short term changes in malnutrition. Stunting is a slowing of skeletal growth that results in reduced stature or length; a condition that usually results from extended periods of inadequate food intake, especially during the years of greatest growth for children.
- Underweight is a condition measured by weight-for-age; a condition that can also act as a composite measure of stunting and wasting.

As shown in Figure 8, among the surveyed children in this project 8.7% were suffering from any kind of malnutrition (1307 out of 14976).

Figure 8: Distribution of surveyed children by malnutrition and its types

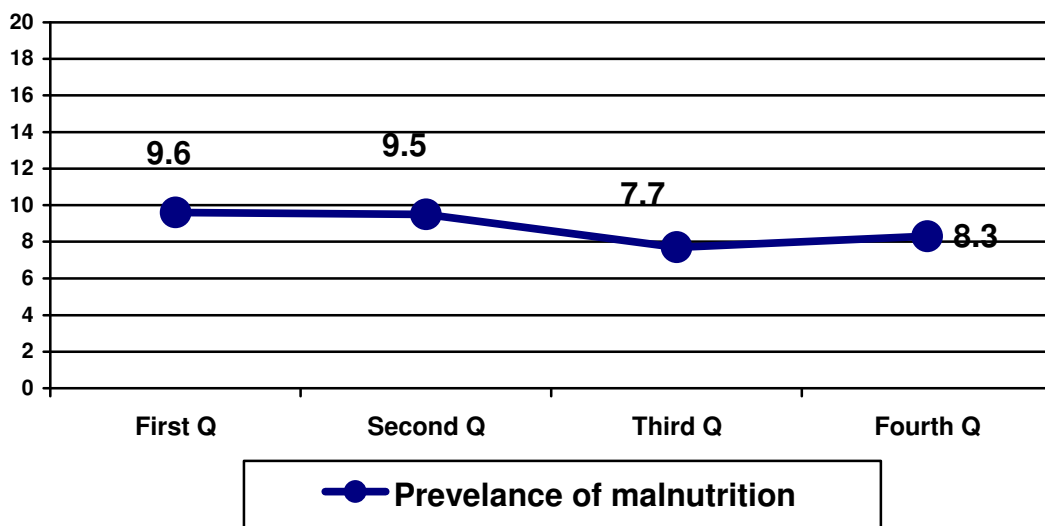


Out of total malnourished children, 79.9% were suffering from moderate malnutrition and 20.1% were suffering from severe malnutrition as described below (table 6). The prevalence of stunting (7.7%) was higher than the other features of malnutrition. This reflects the chronic exposure to malnutrition. Wasting was the least prominent feature of malnutrition (figure

8). There were slight variations in the prevalence of malnutrition throughout the project period.



Figure 9: Distribution of the prevalence of malnutrition per quarter

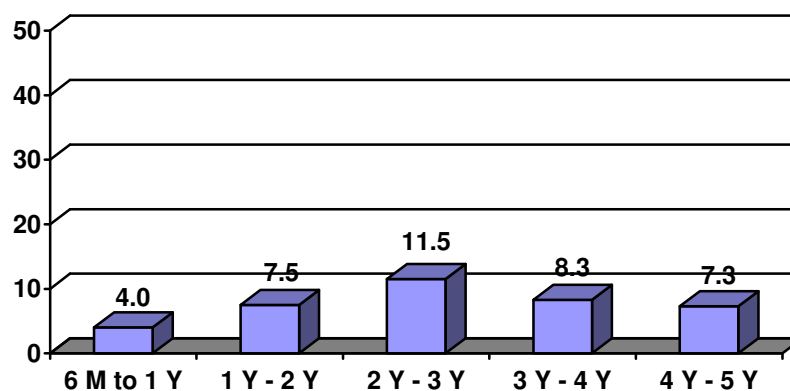


It seems that malnutrition is affecting both males and females nearly equally with no significant differences between the two categories although males are slightly having higher prevalence of wasting. The prevalence of malnutrition is higher among children 2-3 years with a prevalence of 11.5% (figure 10). Malnutrition is more common among large size family. None-refugees are more affected by malnutrition than the refugees. Differences were noticed across the different neighborhoods and malnutrition was higher among the old built areas. Congruently, cases identified as hardship/social cases according to the project criteria were having higher prevalence of malnutrition than the better off ones.

Table 6: Distribution of the surveyed children by malnutrition related factors

Classification	Number	Percentage
Normal	13669	91.3
Malnourished	1307	8.7
Total	14976	100
Classification of malnutrition by severity		
Moderate	1044	79.9
severe	263	20.1
Total	1307	100
Classification of malnutrition by type		
Wasting	159	1.1
Underweight	349	2.3
Stunting	1160	7.7
Gender		
Male	608	7.8
Female	552	7.7
Refugee Status		
Refugee	277	7.5
Non refugee	883	7.8
Social status		
Social case	496	9.3
Not a social case	664	6.9
Age group		
6 months to one year	68	4
1 Y- 2 Y	235	7.5
2 Y- 3 Y	330	11.5
3 Y- 4 Y	241	8.3
4 Y- 5 Y	209	7.3

Figure 10: Distribution of malnutrition by age group



The management of malnutrition includes; conducting further lab analysis and physical examination combined with treating the underlying causes, provision of health education, follow up and providing enriched milk. Identified

malnourished cases were seen monthly at the NECC clinics. Severe cases referred to Ard El Enssan and/or to Ministry of Health facilities. As aforementioned, due to the war on Gaza and the subsequent suspension of the project activities, treatment of admitted children were interrupted for two months in average (range 37 days to 90 days). However, the coming table (7) shows the change in the status of children illustrated by different periods.

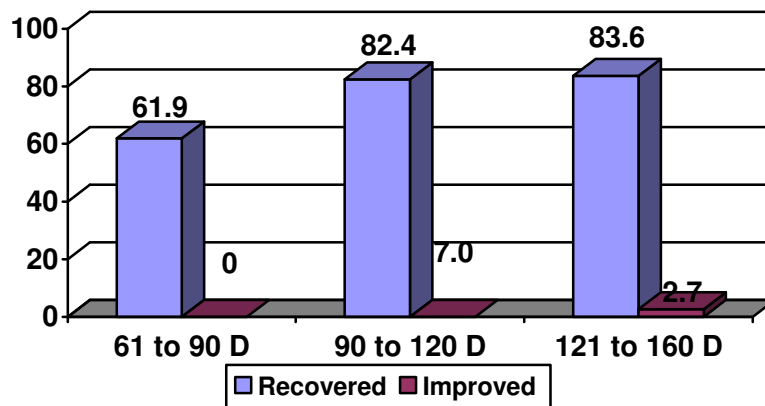
Table 7: Change in the status of malnourished cases admitted to the program per period of enrollment

Change period	Recovered		Improved		Remained the same		Deteriorated		Total
	No	%	No	%	No	%	No	%	
Wasting									
Less than 60 days	10	35.7	2	7.1	13	46.4	3	10.7	28
60-90 days and more	13	59.1	1	4.5	4	18.2	4	18.2	22
91-120 days	13	61.9	0	0.0	5	23.8	3	14.3	21
121-160 days	14	82.4	0	0.0	1	5.9	2	11.8	17
More than 161 days	61	83.6	2	2.7	8	11	2	2.7	73
Under weight									
Less than 60 days	19	21.6	1	1.1	64	72.7	4	4.5	88
60-90 days and more	36	59.0	0	0.0	23	37.7	2	3.3	61
91-120 days	48	62.3	2	2.6	22	28.6	5	6.5	77
121-160 days	57	85.1	4	6.0	6	9.0	0	0.0	67
More than 161 days	125	69.1	7	3.9	48	26.5	1	0.6	181
Stunting									
Less than 60 days	63	22.3	8	2.8	193	68.4	18	6.4	282
60-90 days and more	50	29.9	4	2.4	100	59.9	13	7.8	167
91-120 days	49	28.2	9	5.2	108	62.1	8	4.6	174
121-160 days	62	30.0	6	2.9	128	61.8	11	5.3	207
More than 161 days	150	33.7	28	6.3	248	55.7	19	4.3	445

The management of malnutrition takes in average 4 months to return to normal anthropometric measurements. The project had made excellent achievements in improving the conditions of the malnourished children particularly the wasted and underweight children. As clear from the table (7), almost 60% of the wasted children recovered within 3-4 months since the diagnosis. Additionally, 82% recovered within a period between 4-5 months.

It is worth noting that because wasting reflects short term exposure to nutritional deficiencies; it quickly can be corrected by appropriate management. Regarding underweight as clear from the table, 60% were recovered and returned to normal within two to three months. Only 3.3 of the cases with underweight were deteriorated during the same period. As cases with underweight spend longer periods in the management program, the chance of their recovery and improvement increases as it was 85% within a period of 121-160 days. The remaining cases were either recovered or remained the same within the recommended 4 months. However, none of the cases were deteriorated since their enrollment in the program at this time interval.

Figure 11: Change in the status of wasted children per enrollment periods



More than what was anticipated in the monitoring plan, almost 100% of children with underweight were improved, returned to normal and/or prevented from further deterioration (indicator 3).

Figure 12: Change in the status of children with underweight per enrollment period

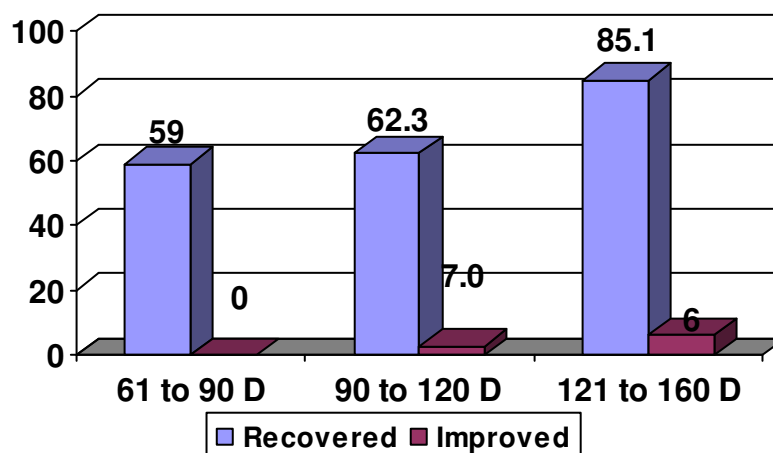
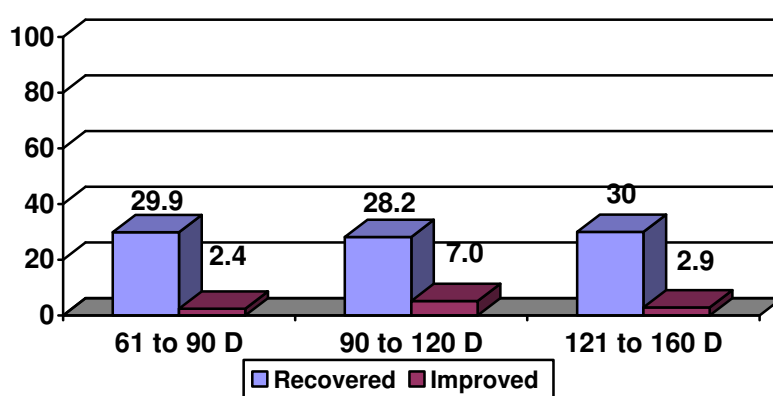


Figure 13: Change in the status of stunted children per enrollment period



Regarding stunting which reflects chronic malnutrition, it takes longer time to recover. In less than 2 months interval, around 25% were either recovered or improved. For the same period, 68.4% remained the same and prevented from further deterioration. Only 6.4% of cases deteriorated at that specified period. At 60-90 days of staying in the program, 32% were either recovered or improved and 68% stayed the same without further deterioration. With staying longer in the program (more than 4 months), 40% of cases were recovered or improved. Only 4.3% were deteriorated at the later interval. The target to reach 50% improvement is far exceeded in a very short time (achievement more than 95%).

As inferred from above, more than what was anticipated, the project made a significant progress towards decreasing the time needed for cases to recover. The aim was to decrease the average time to around 4 months. The baseline study showed that the average time for malnourished cases to recover was around 13 months.

Table 8: Distribution of recovered malnutrition cases by type and central tendency measurements by days

Variable	Mean		Median		SD	
	Project period	After the war	Project period	After the war	Project period	After the war
Wasting	83	45	55	35	79	35
Underweight	79	41	55	40	70	26
Stunting	102	61	68	61	93	34

The table above shows the central tendency distribution of the recovered cases demonstrated at two points; the project period which covers the entire project life including the suspension period (2-3 months) and the period after the war starting from March 1st as it gives clear picture due to continuity of the services without interruptions. The median time for recovery from wasting and underweight was less than two months indicating that half of cases had recovered within 55 days and the other had recovered after two months of enrollment in the program. Similarly, the mean and median for

recovery from stunting was around two months (68 days) which is almost half of the anticipated values.

Health education

During home visits, health education was provided to families particularly to caregivers focusing on malnutrition, healthy food, anemia preventive practices, environmental health and so on. Health education is provided based on the needs of families. It is worth noting that the recruited field community workers are experienced on providing health education. Although it is difficult to precisely estimate the effect of health education, one positive signal is that families are compliant with providing the needed medications particularly iron which is manifested in the significant improvement in hemoglobin level which has increased by time.

Unfortunately, due to the loss of the records as a result of demolition of Shijaia clinic, it was difficult to estimate the change in the cases reported to the clinic in the year 2008 with sanitary related conditions such as diarrhea, skin diseases and parasitic infestations.

During the project life, health education in the field was provided during home visits to 26901 individuals. The target to reach 10,000 caregivers throughout the project life was achieved. Additionally, the project staff provided focused health education to caregivers of the malnourished and anemic children once a week accompanied by food demonstration. Since the beginning of the project,



1777 participants had participated in focused health education sessions provided through 62 sessions. The target of reaching 1000 caregivers has been exceeded. During field visits and focused health education sessions carried out around 28,000 copies of health education brochures were disseminated in the field during house visits and also for women who had participated in the focused health education sessions.

Staff training

The training that has been implemented with the start of the project is followed by field supervision and on the site training. The on the job training was provided by the Medical Coordinator and the Technical Consultant. The provided training focused on solving problems in the field, strengthening

weak points in the implementation and ensuring the appropriate implementation. On-the-job-training on information technology was provided to the project team particularly regarding using the project database.

The target of providing a 10 training day course to 20 participants was almost achieved in the preparatory stage of the project. In the first quarter, a training course was organized and implemented throughout 7 intensive days focusing on anemia, malnutrition, childhood illnesses and health education. Additionally, one training day on nutritional counseling and two training days on the management of severe malnutrition and anemia were implemented in the last quarter. In total, 30 staff members from the different categories were participated. Reviewing records and observing performance of trainees indicate that trainees are using the provided knowledge in their practice.

Drugs and formula distributed



As aforementioned, the treatment program of anemic and malnourished includes distribution of milk and the provision of medications. In total, 10,150 bottles of iron were dispensed in the field and 17754 were dispensed in the clinic. According to the protocols, iron treatment should be provided up to three months as a therapeutic dose followed by additional three months as a prophylactic dose.

So far, 27904 bottles of iron were dispensed. The pre-established target of distributing 18,000 far exceeded because the prevalence of anemia is higher than what was anticipated and the population in the area is larger than what was originally anticipated. It is expected that the iron consumption will increase by time as a result of the enrollment of more anemic children who require between 4-6 months to be discharged.

In total, 7001 cans/packages of enriched milk were distributed to the malnourished children above 6 months of age up to three years. With the availability of Pedisure milk, children aged 4-5 were included. The

management program for treating malnourished children requires up to 4 months; therefore, it is anticipated that the consumption of Materna will continue in the coming months. Additionally, 6849 children were benefited from the emergency intervention in which 27.396 packages of Dano milk were distributed accompanied by 27396 bottles of water.

Lab tests



To screen all children in Shijaia area for anemia, hemoglobin testing was carried out for all children aged from 6 months to 5 years. Anemic children and malnourished one undergo further investigations. In this quarter, the tests provided in the table below were performed.

Table 9: Distribution of lab test carried out by quarter and test type

Test type	Location	First quarter	Second quarter	Third quarter	Last quarter	Total
Urine analysis	NECC clinic	90	382	279	646	1397
Stool analysis	NECC clinic	98	423	328	757	1606
Complete blood count	NECC clinic	87	333	294	590	1304
Hemoglobin testing	In the field-household	3153	2,883	2901	4459	13,396
Hemoglobin testing	In the clinic-follow up	1143	1716	1671	3596	8126
Total		4571	5,737	5473	10048	25,829

Not available data were lost with the demolition of clinic

As noticed in the table above, the number of tests carried out within the project has continued to increase. In total, 25,829 tests were carried out which exceeds the preset target of reaching 20,000 tests. Because the prevalence of anemia was high, the hemoglobin related tests constituted the largest portion of the laboratory tests. Almost for all the malnourished cases, urine and stool testing were performed. The figures reported above don't include the tests carried out at the referral sites such as the MOH or Ard El

Enssan and also don't include the tests carried out in December 2008 which witnessed the demolition of the clinic and the loss of lab records.

Summary of the project indicators results

Table 10: Summary table illustrating indicators status

#	Indicator	Definition	Baseline	Results	Notes	Explanation
1	Percentage of anemic children presenting to the SC Target: decreased by at least 30%	This doesn't include children involved in the EHN program	60% among children 6 months to 3 years	Didn't obtain because of demolition of the clinic and the loss of records	Not Available	All the clinic files were lost
2	Percentage of malnourished children presenting to the SC Target: decreased by 30%	This doesn't include children involved in the EHN program	10.6% among children less than 5 years	Didn't obtain because of demolition of the clinic and the loss of data	Not Available	No data is available as files were lost
3	Percentage of moderately malnourished children U5 diagnosed and prevented from further deterioration or timely improved (within 4 months) Target: Improvement by 50% from the baseline reading	This involves screened children and those who recognized as moderately malnourished and timely improved as a result of the project interventions. This includes the average time needed to return the malnourished child to normal (Ideally 4 months).	43.9% improved Within 13 months	95% recovered, improved, or prevented from further deterioration within 4 months <i>Mean period for recovery is 2-3 months</i>	Achieved	
4	Percentage of anemic children 6 months- U5 diagnosed and prevented from further deterioration or timely improved (within 3 months) Target: Improvement by	This involves screened children and those who recognized as anemic are timely improved as a result of the project interventions. This includes the average time	20.7% returned to normal Duration; 3.5 months	95% recovered, improved, or prevented from further deterioration within 3 months <i>Mean period for recovery is 2 months</i>	Achieved	

	50%	needed to return the anemic child to normal (Ideally 3 months).				
5	Number of clients presenting to clinics with public health related diseases such as diarrhea due to contamination Target: Reduced by 10%	This is a proxy indicators reflecting the change in behaviors	Diarrhea in 2007 was 64 Skin diseases was 471	Didn't obtain because of demolition of the clinic and the loss of data	Not available	lost with the demolition of the clinic files
6	Number of malnourished children screened and identified. Target: 15,000 will be screened Out of them around 2000 are expected to suffer from malnutrition	This includes number of children U5 who where screened (wt and height); and number of children who were identified as malnourished children (wasting, stunting, under weight)	Not applicable	Screened 14,976 Identified 1,307	Target almost achieved	The figures reflect the cases found in the area
7	Number of anemic children screened and identified Target: 13,500 children will be screened out of them 6000 are expected to suffer from anemia	This includes the number of children 6m-U5 who where screened (hemoglobin); and identified as anemic children (below 11)	Not applicable	Screened 13,396 Identified 5795	Target achieved	The figures reflect the cases found in the area
8	Number of population living in Shijaia who were exposed to health education messages about anemia and malnutrition Target: 10,000 care givers will directly receive health education messages	This includes the number of the visited household members who received health education plus the number of beneficiaries who attended health education activities pertaining to this project such as lectures, community events.	Not applicable	26901 beneficiaries	Target achieved	
9	Number of	This includes the	Not	28,000	Target	

	health education materials distributed Target: It is expected to distribute around 20,000 pamphlets	number of health education materials printed and distributed to beneficiaries at home visits and at the other health education activities	applicable	distributed	achieved	
10	Number of participants of health education activities such as meetings, community events, preschool activities, lectures, theatres Target: 1000 distributed as 4 meetings monthly, 25 participants each	This indicator reflects the number of beneficiaries attending health education activities such as community events, lectures, preschool activities, CBOs meetings and others by type of activities, participants and categories	Not applicable	62 sessions were provided with 1777 participants	Target achieved	
11	Number of fortified food formula distributed Target: vita milk 2,400 Cerelac 1400	This includes the number of formula bottles/boxes distributed to moderately malnourished children 6m-2 years children by categories, area	Not applicable	7001 cans/packages distributed	Target achieved	
12	Number of iron supplementation bottles provided Target: 18,000	This includes the number of iron bottles distributed to anemic children by categories, area	Not applicable	Distributed 27904 bottles	Target achieved	
13	Number of health personnel from the NECC clinics who received training on nutrition and comply with the technical standards in diagnosis and treatment of malnourished and anemic children	While the number of health workers who received training in nutrition is straightforward, and will be reported in reference to number of training days, training topics and so on, the	Not applicable	30 Participants attended 10 training days on malnutrition	Target achieved	

	Target: 20 participants	compliance with technical standards will be assessed through checklists and reviewing records.				
14	List of procurements procured, delivered and appropriately distributed Target: meet the procurement list mentioned in the proposal	This includes the procurement of equipment (hemocue, ht measurement, wt measurements and so on); the procurement of drugs and supplementation ; the procurement of disposables.		Achieved		
15	Number of households visited Target: around 10,000	This indicator reflects the number of households reached	Not applicable	13799	Target Achieved	
16	Number of lab tests done Target: 20,000	This indicator reflects the activities of the project at two levels Clinic lab (CBC, Stool analysis, Hemocue testing (field and clinic)	Not applicable	25829	Target achieved	

Key lessons learned

The lessons learned from this project are discussed in the text under each component. However, concisely, the following bullet points summarize the key lessons learned:

- Comprehensive PHC clinic-based approach is effective in controlling malnutrition and anemia if used appropriately.
- Malnutrition is a complex multi-faceted phenomenon which requires multidisciplinary actions. Health education alone is never effective in overcoming malnutrition but it is an essential component in the intervention package.
- Palestinian nutrition protocol is an appropriate guide to treat malnutrition and anemia. The appropriate implementation of the protocol can produce good outcomes.

- Anemia represents a serious public health problem that requires interventions. Focus should be directed towards anemia management and control replacing the old approach of just carrying out assessments for hemoglobin. Anemia management is cost effective as it requires relatively reasonable resources and produces positive outcomes.
- Follow up and monitoring is essential for the recovery of cases.
- Computerized health information system is very helpful at both operational and managerial levels.
- Building good relationships with the local community and appropriately involving the community leadership in the project related issues contribute to the community acceptance and gaining support to the project.
- Coordination and integration in Gaza is possible and it resulted in excellent working relationships among health organizations.
- Last but not least, the NECC management's commitment, appropriate planning and rigorous follow up, was the main driver for the project success.

Constraints

- The political situation resulted in shortage of materials and products in the local market. However, the NECC succeeded to find alternatives to items lacking in the local market.
- The war on Gaza resulted in the destruction of Shijaia Clinic has led to the suspension of the project operations and the loss of equipment, records and materials pertaining to the project.
- The interruption of treatment plans with the suspension of the program activities has led to delaying the implementation and necessitated the performance of a lengthily process of re-enrolling children in the program.
- The uncertain contextual factors such as poverty and availability of food in the local market could also be an intervening factor which affected the project interventions.
- Families' commitment to comply with the treatment regime also constituted an additional factor that caused some delay in the recovery of cases.
- Reluctance of some families to come for follow up due to different reasons including forgotten appointment, transportation difficulties, family pressure on women not to visit the clinic frequently-husbands opposition and so on. The NECC developed a plan to bring back defaulters to the program.
- Internal security situation affected the field work and the accessibility to houses which caused some delays.
- Electricity problems and frequent cuts affect the timely data entry and the use of the computer. This has been solved through the provision of lab tops.

Visibility

To give credit to the DCA, all the project documents and printed materials are banded by the DCA logo. Communities have been informed about the project, its objectives and the contribution of DCA in this regard. Additionally, the DCA logo is also banded on the bags carried out by teams visiting the houses. collaborating organizations such as Ard El Enssan and the MOH are aware that this project is supported through the DCA. The implemented community meetings to discuss the results and achievements of the project represented a good forum for visibility.



Sustainability

Sustainability has a different meaning in areas characterized by high degree of uncertainty such as the Gaza Strip. Despite the concern towards the sustainability of NECC's operations, it must also be recognized that there are limitations to sustain all the aspects of such an out reach service provision project like this. The underlying causes of the poor nutrition status and poor health status of Gazans and the difficulties faced by the health services are not under the control of the project as root cause of nutritional problems in Gaza mostly political in nature.

NECC is a well established organization with solid structure and strong foundation. The provided support through this project aimed to strengthen the identification and management of anemic and malnourished cases and to promote the nutrition services provided in the NECC clinic which will continue as a part of the regular activities within the clinic. Meaning that the strategies used to treat malnourished and anemic cases will continue but field community screening and the distribution of milk will not continue in its rhythm in the project. The beneficiaries of the project were encouraged to continue receiving the NECC services especially the well baby services. This also includes continuing the management of cases that haven't recovered yet and also continuing monitoring the discharged cases. For instance, cases discharged from the project are included in the well baby care services and they receive growth monitoring services regularly. For cases not presenting to the well baby services within the NECC clinic, 5% will be called through the

coming year and will be monitored to observe the change in those cases after the end of the project.



One of the project objectives was to build the capacity of the staff and to develop appropriate working strategies pertaining to nutrition. The project already left skills, strategies and tools which will continue to operate despite the discontinuity of the fund through this project. The project included a health education component where thousands of caregivers were received health education about nutrition, awareness, healthy eating practices, hygiene and

healthy sanitary conditions. Enabling communities to rely on themselves and to be able to control the spread of malnutrition and anemia is a sustainable approach. Benefited communities are the most sustainable.

Interestingly, the ownership of the project by the community was ensured throughout all the phases of the project. Before the start of the project, communities were informed and the community leaders supported the NECC in reaching houses. The local community helped the NECC to find a suitable place as a replacement to the NECC demolished clinic. The results of the project were presented to the local community as a part of promoting accountability and ensuring that the project activities such as healthy eating behaviors and follow up will continue.

Last but not least, the project served a needy population and addressed an important health problem which fitted within the overall health plan of the Palestinian population, through an integrated approach of services provision and strengthening communities' abilities to meet their needs. The project is considered a model for nutrition interventions that shifts from only just carrying out assessments to effective management and ensuring recovery of cases. Currently, other organizations already benchmark the achievements of this project and try to adopt its interventions.