

Malfait P, Moren A, Etchegorry MG, Begkoyian G, Malenga G, Stuckey J, Dillon JC, Hakewill P, Toole MJ **Une épidémie de pellagre parmi la population Mozambicaine réfugiée au Malawi.** Bulletin épidémiologique hebdomadaire. 1991; # 13/91: 51-52. (French)

Study method

Because of the high number of reported cases of clinically diagnosed pellagra between February and October 1990, in the Mozambican refugee population in Malawi, a system of surveillance was set up to identify pellagra by case definition, within the refugee community. For each case information concerning age, sex, nationality, date of arrival in Mozambique were recorded. At the same time the food rations were evaluated for niacin content and the quantity of this vitamin needed to prevent pellagra was determined.

Findings

See CDC. Outbreak of pellagra among Mozambican refugees - Malawi, 1990. MMWR April 05, 1991 / 40(13); 209-213

Relevance to emergency relief

It was recommended that the international agencies responsible for supplying food for refugee populations comply with guidelines for including vitamins necessary to maintain health when refugees cannot get access to the food where these vitamins are normally available. The importance of regular surveillance of populations to detect nutritional deficiencies early, was emphasised. Systems were recommended to evaluate food rations destined for refugees, for nutritional content.

Key words: Malawi, Mozambican refugees, pellagra, food rations, nutritional deficiencies, guidelines, surveillance.

***CDC Nutritional needs surveys among the elderly -- Russia and Armenia, 1992.**
MMWR October 30, 1992 / 41(43);809.

Study method

During March-May 1992, CARE, in collaboration with CDC, conducted population-based household surveys of persons aged greater than or equal to 70 years in three cities: Moscow (population: 9 million) and Ekaterinburg (population: 1.1 million [Western Siberia]), Russia, and Yerevan (population: 1.2 million), Armenia, to collect baseline information on indicators of nutritional risk among elderly populations and to identify subpopulations most in need of relief services. Trained teams visited each participating household and administered questionnaires regarding demographic information, living situations, self-reported medical and dental conditions, home stores of food, economic status, aid received from various sources, and diet and other practices related to nutrition.

Findings

The ongoing social, political, and economic changes in the 15 republics of the former Soviet Union have resulted in hyperinflation of the Soviet Union ruble (SUR), regional conflicts, and other hardships for the populations of these republics. Most of the elderly people surveyed were women living on pensions that were below the World Bank estimated poverty level. Savings were low and many suffered from chronic illnesses or dental problems including missing teeth that impaired eating.

Caveats

Virtually all of the elderly in the sites were on these listings; however, prisoners and approximately 3000 refugee pensioners in Yerevan were excluded from the lists

Relevance to emergency relief

Rapid nutritional-assessment surveys of this type are important in determining the health status of refugees and other displaced populations. This report underscores the utility of such surveys in also supporting international assistance efforts for nonrefugee populations

It is important to target humanitarian relief to elderly people in private homes as well as in institutions otherwise most elderly and others at highest risk might be excluded from aid. Medical and dental assistance is crucial because medical and dental conditions may be important contributors to nutritional risk. Finally, commodity aid (eg., rice, wheat, butter oil, sugar, beans, and milk powder) may be more beneficial than monetary aid for those elderly persons with limited ability to leave their homes to shop. Repeating surveys are necessary to identify problems that need to be addressed. In addition, use of market data, ie product availability and price, can clarify survey results. For example, market data can be used to assess distribution and price of milk and preference of the elderly for milk. Sharing of information with other agencies is crucial for collaboration in providing appropriate coordinated humanitarian aid. Follow-up surveys are important to evaluate the impact of the humanitarian interventions.

Key words: Russia, Armenia, refugees, displaced, elderly, food, surveys, nutritional assessment.

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***CDC. Emergency public health surveillance in response to food and energy shortages - Armenia, 1992. MMWR February 05, 1993 / 42(04); 69-71.**

Study method

To assess and monitor the current health and nutritional status of residents of Armenia, the Emergency Public Health Information Surveillance System (EPHISS) was designed to retrospectively and prospectively monitor health and nutritional indicators. EPHISS staff collected anthropometric (ie., height and weight) data from medical records for children born in July and August of 1990, 1991, and 1992 from selected paediatric clinics in the capital, Yerevan.

To assess food security among elderly pensioners living on a fixed income, EPHISS staff repeated a nutritional needs survey in December for comparison with results obtained in a similar survey in April 1992.

Data from the MOH were used to assess communicable disease occurrence and crude and infant mortality rates.

Findings

Living conditions in Armenia have deteriorated since 1988 as a result of an economic blockade related to a territorial conflict between Armenia and a neighbouring country. The effects of this blockade - a drastic reduction in available food, heating fuel, gasoline, electricity, health services, drugs, and vaccines - have placed residents of Armenia at increased risk for morbidity and mortality from nutritional deficiencies, infectious diseases, and hypothermia.

The comparison of data from each of these years in two pilot clinics indicated that the nutritional status of infants and young children had deteriorated; wasting was present.

The survey suggested that conditions had deteriorated since the previous survey: increases were noted in the percentage of persons who reported selling personal possessions to buy food. Among the elderly, most pensioners surveyed reported having insufficient money to buy food; insufficient food; no savings; less than 1 day's food supply at home and more than half had weight loss of 5 kg or more during the previous 6 months.

Monthly incidence rates of measles, diarrhoeal illness, viral hepatitis and tuberculosis had increased markedly. Data on economic and environmental indicators indicated an overall inflation rate of 360% from April through December 1992 reflecting a loss of real purchasing power in comparison with the pension rate.

Caveats

During 1991, the infant mortality rate was 17.9 deaths per 1000 live births; data for 1992 were not yet available.

Relevance to emergency relief

Armenia was particularly vulnerable because of an ongoing territorial dispute that resulted in an influx of approximately 300,000 ethnic Armenian refugees from Azerbaijan and because of the economic blockade imposed by neighbouring republics, which effectively terminated any substantive importation of fuel and food. The monthly EPHISS public health bulletin reported critical markers of health and nutritional status that had an impact on the health of people residing in Armenia and the condition of refugees. In such situations, simple data-gathering techniques and the prompt dissemination of information are needed to identify targets for intervention and allow prioritisation of scarce resources among competing health needs, eg vaccine-preventable diseases and provision of safe drinking water. It is important that agencies involved work together to strengthen the gathering and dissemination of essential public health information.

Key words: Armenia, refugees, economic blockade, food shortages, savings, health status, surveillance.

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***Ross DA, Taylor N, Hayes R, McLean M. Measuring malnutrition in famines: are weight-for-height and arm circumference interchangeable? International Journal of Epidemiology 1990; 19(3): 636-45.**

Study method

Data from two surveys in Sudan were used to examine whether weight-for-height (WFH) and mid-upper arm circumference (MUAC) could be used interchangeably at a population level to define the proportion of children aged one to four years that are malnourished, whether they identify the same individual children as malnourished, and whether the relationship between WFH and MUAC varied with age

Findings

A MUAC cut-off of 13.0 cm consistently defined approximately the same proportion of children malnourished as 80% WFH in all seven groups of children examined, even though the proportion of children with less than 80% WFH varied between 8.6% and 30.7%. However, sensitivity/specificity analysis showed that many of the children identified as malnourished by the two indices were not the same individuals. Both the MUAC cut-off defining the same proportion malnourished as 80% WFH, and the sensitivity/specificity values, varied substantially with age.

Note

Studies of other populations have revealed both different MUAC cut-offs defining the same proportion of children malnourished as 80% WFH, and different sensitivities and specificities of MUAC relative to WFH.

Relevance to emergency relief

The direct comparison of data from surveys using WFH and those using MUAC is not recommended.

Key words: Sudan, famine, children, malnutrition, MUAC, WFH.

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Toole MJ¹, Bhatia R². **A case study of Somali refugees in Hartisheik A camp, Eastern Ethiopia: health and nutrition profile, July 1988-June 1990.** Journal of Refugee Studies 1992; 5 (3/4): 313-326.

Study method

Nutrition: Beginning in September 1988, using a two stage cluster technique, a series of cross-sectional anthropometric samples of children under 5 were surveyed in Hartisheik A. The first survey was conducted by SCF (UK) and the second in June 1989 was conducted by a joint team from UNHCR, ARA, the Ethiopian MOH and SCF. The quantity and composition of rations was examined.

Mortality: To assess mortality during the first 12 months after Hartisheik A opened, the joint agency team conducted a cluster sample survey in July-August 1989 using a standard questionnaire.

Health: camp medical records were examined.

Findings

The malnutrition prevalence between February and May 1989 was associated with elevated crude and child mortality rates. There was low enrolment in selective feeding programs. Malnutrition and deaths were associated with inadequate rations. Micronutrient deficiencies were present.

Ration distribution was irregular because officials were waiting distribute rations according to official population figures.

Diarrhoeal diseases were found to be the leading cause of hospital deaths and the second most common outpatient diagnosis with a peak between April and June 1989. More than 5000 refugees were diagnosed with hepatitis (probably hepatitis E). Health staff were very involved in delivering supplementary feeding programs and may have neglected communicable disease control and surveillance. Measles was not a problem, probably due to the high immunisation coverage of the population through the community based Primary health Care program in northern Somalia before their departure.

Notes

A major problem in early 1989 was the lack of a precise population figure for the camp. The improvement in nutritional status of children less than 5 years old cannot be explained by the improved population figures because the census did not take place until after August. The improvement in nutritional status of the children coincided with the onset of the rainy season, a time when food availability traditionally improved in communities of animal herders such as rural Somalis. Many refugees maintained small herds of goats and sheep near the camp. The decrease in diarrhoea and hepatitis detected by the surveillance system coincided with the increase in water availability.

Relevance to emergency relief

In this case a comprehensive feeding program which targeted the population most at risk (children under 5) led to recovery. Improved census data led to more equitable distribution of rations.

This case study demonstrated the close relationship between inadequate general food rations, deteriorating nutritional status of children under 5 years old and raised child mortality rates. It highlights the importance of ongoing community based mortality surveillance, close attention to equitable and regular distribution of rations which include appropriate micronutrients and nutritional surveillance to detect and register individuals for supplementary feeding programs.

Even if there is a high measles immunisation rate in refugees when they arrive in a new setting, measles immunisation must be planned promptly to maintain the protection.

The need to agree on a consistent and reliable method for accurate enumeration of refugees is crucial for planning and monitoring food distribution

Seasonal rain cannot be depended on for water supply, there must be long term arrangements for reliable water supply

Lessons learned from case studies like Hartisheik A should be translated into appropriate policies and guidelines.

Key words Ethiopia, Somali refugees, Hartisheik, mortality, health status, surveillance, measles, water supply.

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Nieburg P¹, Person-Karell B², Toole MJ³. **Malnutrition-mortality relationships among refugees.** Journal of Refugee Studies 1992; 5 (3/4): 247-256.

Study method

Mortality data and data concerned with nutritional status from relief operations in Thailand and Sudan were analysed and compared with similar data from 40 other refugee settings.

Findings

Preventable excess mortality among refugees has been associated with malnutrition by many data sets and several lines of reasoning. The mechanism seems to be greater severity and frequency of 'expected' infections.

Note

Other potentially serious problems of refugee malnutrition, eg deficiencies of zinc or iron, need to be explored. The persistence of post-emergency phase excess mortality despite provision of adequate rations, suggests that other factors need investigation.

Relevance to emergency relief

Vigilance remains necessary long after the emergency phase to detect increases in mortality and morbidity along with investigation of causes when necessary. The fact that ration inadequacies continue to occur beyond the immediate emergency phase of population displacement means that monitoring of ration content and distribution needs to continue along with periodic nutritional (including micro-nutrient) status surveillance. Donors need to be made aware of the need to respond appropriately to evidence of ration inadequacies and micronutrient deficiencies.

Key words. Thailand, Sudan, refugees, malnutrition-mortality relationship.

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*Malfait P, Moren A, Dillon JC, Brodel A, Begkoyian G, Etchegorry MG, Malenga G, Hakewill P. **An outbreak of pellagra related to changes in dietary niacin among Mozambican refugees in Malawi.** International Journal of Epidemiology 1993; 22(3) 504-11.

Study method

To assess the causes of increased pellagra incidence in Mozambican refugees in Malawi, a matched-pair case-control study was conducted to assess the role of groundnut consumption, garden ownership and home maize milling.

Findings

This outbreak followed a 5-month cessation of groundnut distribution (the major source of niacin) to refugees. The results confirmed the protective role of the daily consumption of groundnuts, as well as the independent role of garden ownership and home maize milling.

Relevance to emergency relief

Recommended corrective action included early case finding and treatment, distribution of niacin tablets, prompt identification of groundnut supply on the world market, fortification with niacin of the food ration and diversification of the food basket through access to local markets.

Key words: Mozambican refugees, Malawi, pellagra, niacin, groundnuts

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Yip R, Sharp TW. **Acute malnutrition and high childhood mortality related to diarrhoea. Lessons from the 1991 Kurdish refugee crisis.** Journal of the American Medical Association 1993; August 4, 270 (5): 587-90.

Study method

A cross sectional rapid nutrition survey among children and a retrospective mortality survey covering a 2 month period from the outset of the crisis was undertaken in households of Kurdish refugees in a resettlement camp in northern Iraq

Findings

The elevated presence of wasting and the reduced mean weight for height status in children under 2 years old indicated generalised weight loss with diarrhoea the most likely cause. The crude mortality rate was 8.9 per 1000 per month; two thirds of the deaths occurred in children 5 years old and younger and half among infants less than one year old. The high rates of malnutrition and mortality related to diarrhoea in infants and younger children of people from a previously healthy population took place rapidly despite prompt relief efforts.

Relevance to emergency relief

The experience emphasised the need for early and aggressive public health management of sanitation, water sources and diarrhoea control programs to augment the traditional focus on food and medical relief during the emergency phase of a refugee crisis.

Key words: Northern Iraq, Kurdish refugees, nutrition, mortality, wasting diarrhoea, mortality, public health.

*Smith MC, Zaidi S. **Malnutrition in Iraqi children following the Gulf War: results of a national survey.** Nutrition Review 1993, 51(3): 74-8

Study method

The community-based Iraq Infant and Child Mortality and Nutrition Survey conducted between August 25 and September 5, 1991 was designed to estimate mortality and nutritional status of Iraqi infants and children under five years of age after the Gulf conflict of 1991. A random

multistage cluster sample was selected, including a subsample of 2676 children in the anthropometric analysis.

Findings

The percentage below -2 standard deviations was 21.8% for height-for-age, 11.9% for weight-for-age, and 3.4% for weight-for-height.

Note

It is possible that the observed prevalence of wasting was an underestimate, resulting from a survivor bias.

Relevance to emergency relief

This observation suggests that cross-sectional nutritional surveys may not be the most appropriate method for assessing the effect of the Gulf conflict on the nutritional status of children in Iraq. Longitudinal information on child mortality and nutritional status would be more useful in predicting the likelihood of famine.

Key words: Iraq, Gulf conflict, children, infants, nutritional status, mortality, wasting.

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McNabb SJN¹, Welch K², Laumark S³, Peterson DE⁴, Ratard R⁵, Toole MJ⁶, Farley TA⁷.

Population-based nutritional risk survey of pensioners in Yerevan, Armenia.

American Journal of Preventive Medicine 1994; 10 (2): 65-70.

Study method

A self-report questionnaire gathered data from a stratified systematic sample of pensioners from all eight administrative areas of the Armenian capital, Yerevan. Data included weight and height, demographic characteristics, living conditions, medical and dietary history, income and aid received from various sources

Findings

Analysis of the results showed that recent weight loss was common but wasting was not. Recent weight may be due to shortage and high price of food. Pensioners with illnesses affecting eating and those who had not received aid were at especially high risk of nutritional disease

Caveats

The population may not be considered an emergency population but the effects of long term political instability was affecting the health status of the community.

Relevance to emergency relief

This study is an example of an activity undertaken to detect early warning signs of potential nutritional disaster when populations are forced to move for any reason.

Key words: Armenia, Yerevan, political instability, pensioners, weight loss, food, prices.

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Dowell SF¹, Toko A², Sita C³, Piarroux R⁴, Duerr A⁵, Woodruff BA⁶. **Health and nutrition in centres for unaccompanied refugee children: Experience from the 1994**

Rwandan refugee crisis. Journal of the American Medical Association. 1995; 273 (22): 1802-1806.

Study method

Surveillance systems were put in place to monitor the activities in large centres which were set up in accordance with the UNICEF/UNHCR guidelines to provide care for the high proportion of unaccompanied children among the refugees in from Rwanda who arrived in Goma, Zaire between July and October 1994. A team made up of CDC, UNICEF and Medecins du Monde consultants assessed the health and nutritional status of the children receiving care.

Findings

The extremely high mortality rates among the unaccompanied refugee children during the first 6 weeks after arrival in Goma, Zaire illustrated that unaccompanied children were at particular risk for disease and death even after placement of centres created specifically for their care. There had been a concern that the concentration of resources would create a privileged class of children and induce adults to abandon children for whom they would otherwise have provided care from these centres.

Caveats

The authors suggested caution in the interpretation of the results because the data were collected rapidly to respond to changing health and nutritional status of the children in the first 6 weeks of the refugee crisis and the validity may be questionable because of differences between methods of collection from different centres and the comparisons between different time periods.

Relevance to emergency relief

It was recommended that in future refugee situations, special solutions needed to be designed and developed ahead of time to improve the survival of unaccompanied children

Key words: Zaire, Goma, Rwandan refugees, unaccompanied refugee children, survival, health, nutritional status.

1,5,6 Centres for Disease Control and Prevention, Atlanta Ga, 2,3 UNICEF Zaire, 4. Medecins du Monde, France

- * Bern C, Nathanael L, **Is mid-upper-arm circumference a useful tool for screening in emergency settings?** Lancet 1995; 345(8950): 631-3.

Study method

In Rwandan refugee camps in eastern Zaire in August, 1994, a two-step procedure of screening for referral to supplementary feeding programs was used: mid-upper-arm circumference (MUAC) followed by weight-for-height for children with MUAC of less than 12 cm. To assess the usefulness of this procedure, data were analysed from complete screening of 3681 children in three camps

Findings

The performance of MUAC varied with the cut-off chosen. MUAC preferentially selects younger children as malnourished, and misses older children with low weight-for-height. The groups of children chosen by low MUAC and by low weight-for-height have poor overlap, varying from 20% to 39% overlap depending on age. Thus two-step screening does not save as much time as might be expected and low MUAC cannot be used as a substitute for low weight-for-height.

Relevance to emergency relief

In refugee emergencies, rapid collection of nutritional data provides important information for public health planning. For decision-making in refugee settings, weight-for-height surveys or screening are probably more efficient strategies for data collection.

Key words: Zaire, Rwandan refugees, screening, MUAC.

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- *Robertson A, Fronczak N, Jaganjac N, Hailey P, Copeland P, Duprat M. **Nutrition and immunisation survey of Bosnian women and children during 1993**. International Journal of Epidemiology 1995; 24(6):1163-70

Study method

A cluster survey of households of displaced people and refugees who depended largely on international donations of food aid in the Bosnian regions of Sarajevo, Tuzla, Zenica and Bihac was conducted. Children from 6 to 59 months and their mothers were selected and their nutritional status was examined. Children aged 13-25 months and infants under 16 weeks were also assessed for their immunisation status and infant feeding practices respectively.

Findings

There were no clinical signs of protein-energy undernutrition or micronutrient deficiency in children. Similarly, there were no clinical signs of undernutrition in adults, although 10.8% of the resident women in Sarajevo and 11.9% in Zenica had a Body Mass Index (BMI) below 18.5. Immunisation coverage, except for BCG was poor. Only 5% of mothers were exclusively breastfeeding babies under 16 weeks.

Caveats

While the coverage of the survey was not nationwide and was limited to the first year of the war, the results indicate that in this period serious hunger and undernutrition were prevented in Bosnia, though they suggest that appreciable loss of weight is likely to have occurred.

Relevance to emergency relief

Ongoing surveillance is needed in emergencies to monitor nutritional status and to identify priority interventions. In this case, immunisation expansion and health education campaigns promoting breastfeeding were needed. Relief agencies need to be prepared to increase food aid.

Key words: Bosnian women, refugees, displaced people, surveillance, nutritional status, mothers, children, body mass index, immunisation, breastfeeding.

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- * Robertson A, Fronczak N, Jaganjac N, Hailey P, Copeland P, Duprat M. **Nutrition and infant feeding survey of women and children in Sarajevo during July 1993**. European Journal of Clinical Nutrition 1995, (49) Suppl 2: S11-6.

Study method

During July 1993, a random cluster survey was conducted in besieged Sarajevo to collect baseline information on nutritional status and infant feeding practices and to identify areas for action. In a separate sample, 19 collective centres were included. A structured questionnaire on infant feeding practices was administered to mothers of babies. Subjects included residents and refugees.

Findings

There were no indications of undernutrition in children above the 2.5% which would normally be expected in a population. The weights of refugee women in collective centres were significantly higher than the weights of resident women. Only 6% of mothers with babies less than 16 weeks old were exclusively breast feeding.

Relevance to emergency relief

Nutritional monitoring was possible and useful in assessing breast feeding practices and nutritional status. The level of exclusive breast feeding was extremely low, probably due to lack of relevant education of health workers. Special strategies are needed to promote breast-feeding in low breast-feeding populations such as those in eastern Europe and Iraq. Regular surveillance of nutritional status is important to identify changes and training health workers remains a priority in emergency situations.

Key words: Sarajevo, women, children, nutrition, infant feeding, surveillance.

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- * Smajkic A, Zec S, Telebak B, Filipovic-Hadziomeragic A. **Changes in nutrition among residents and refugees in Sarajevo during the war.** European Journal of Clinical Nutrition 1995; (49) Suppl 2: S17-22.

Study method

To assess how food shortage has been reflected in changes in nutritional status and dietary intake of resident and refugee populations in wartime Sarajevo, longitudinal observations were carried out on residents (who stayed in their homes) and refugees (living in collective centres). The same households were visited in October 1992-March 1993 and November 1993-January 1994. Nutritional information was gathered through anthropometric measurements, medical examination and questionnaires which included a seven day dietary recall.

Findings

Results from the first round of data collection showed a higher level of undernutrition among refugees compared to residents. The second round revealed higher levels of undernutrition among residents than refugees. Daily energy intake in the first round met only half recommended dietary allowances for the former Yugoslavia which is 2700 kcals per day. Refugees were found to consume slightly higher quantities of energy compared to residents. In the second round, energy intake had increased both among refugees and residents.

Relevance to emergency relief

The accuracy of data obtained through dietary intake surveys in emergency conditions may be questionable. Dietary intake was found to be low but this may have been partly due to under-reporting. The population of Sarajevo had been forced to eat a monotonous diet during the war which is deficient both in quantity and quality. Nevertheless the nutritional status of the resident and refugee populations had been maintained. Surveillance is needed to identify adverse changes in nutritional status so that international relief agencies can respond appropriately.

Key words: Sarajevo, war, refugees, residents, nutrition, food shortages.

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- * Dzumhur Z, Zec S, Buljina A, Terzic R. **Therapeutic feeding in Sarajevo during the war.** European Journal of Clinical Nutrition 1995;49 Suppl 2: S40-2

Study method

About 17% of the total child population in the age group one to 14 years in besieged Sarajevo were assessed for eligibility to join a therapeutic feeding program. All those who were found to be underweight (weight for age < 10th percentile), or suffering from certain diseases or disabilities were included in the program. Monitoring took place in health centres and clinics. The public were informed about the therapeutic feeding program through the media. All children who came forward for initial assessment were weighed and measured and were medically examined. Those found to be underweight were included in the program which provided high quality food items, donated as food parcels.

Findings

2.6% of the total child population were found to be underweight and enrolled in the program. Children were re-weighed at three monthly intervals. When a child's weight increased to 0.5 kg above 10th percentile, the child left the program. Half the children were suffering from chronic diseases while the remaining and around half were underweight only. Undernutrition was highest in the four to six year old age group. Over half of the children who were underweight but not sick gained a satisfactory weight during the study period and left the program.

Relevance to emergency relief

The results suggest that the therapeutic feeding program was successful in improving growth in a self-selected sample of underweight children. The program showed that it was possible to identify underweight children in a besieged city and to carry out a therapeutic feeding program.

Key words: Sarajevo, war, children, undernutrition, therapeutic feeding.

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- * Moro D. **Birthweight and breast feeding of babies born during the war in one municipal area of Sarajevo.** European Journal of Clinical Nutrition 1995; 49 Suppl 2: S37-9

Study method

To monitor the birthweight of children and the breast feeding practices of their mothers in one municipal area of besieged Sarajevo (Dobrinja) during the war, a sample of babies born in Dobrinja in the period 1 April 1992 to 1 April 1994 were monitored. Data were collected at the paediatric clinic, when babies were weighed and medically examined immediately after birth. Data on breast feeding practices of all children were gathered by interviewing the mothers.

Findings

Very few babies were low birth weight and half of the low birth weight babies had doubled their weight by three months of age. None of the low birth weight babies suffered from severe infections or psychomotor disorders in the first year of life. Most babies were breast fed until approximately one year of age and 17 children continued to breast feed after one year of age.

Relevance to emergency relief

Despite the adverse influence of the war on living conditions and the stress experienced by pregnant women and babies, levels of perinatal mortality and severe child morbidity were not uncommonly high in Dobrinja. A relatively high percentage of babies born during the war were of low birth weight but most achieved catch-up growth during the first year of life. The findings suggest that babies were adequately protected. This is probably due in part to the promotion of breast feeding and the distribution of supplementary food commodities to mothers and children initiated by the United Nations Children's Fund (UNICEF) and other humanitarian organisations.

Key words: Sarajevo, Dobrinja, mothers, babies, low birth weight, breast-feeding, supplementary food.

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- * Vespa J, Watson F. **Who is nutritionally vulnerable in Bosnia-Herzegovina?** British Medical Journal 1995; 311 (7006): 652-4.

Study method

To monitor nutritional status and food security, members of a representative range of household groups of residents and displaced people in three besieged areas of Bosnia-Herzegovina (Sarajevo, Tuzla, and Zenica) were prospectively followed. Data were collected every month from December 1993 to May 1994. A structured questionnaire was administered to gather information on household food security and all subjects were weighed and measured.

Findings

From December 1993 to February 1994, before a temporary cease fire, access to food was reduced. In February 1994 no significant signs of undernutrition were detected among children or adults, but elderly people had higher than expected levels of undernutrition, a higher rate of weight loss than other adults, and a higher prevalence of self reported illness.

Relevance to emergency relief

Elderly people in Bosnia-Herzegovina were at greater risk of undernutrition than other age groups. Undernutrition may be precipitated in elderly people by sickness, cold, stress, and problems related to food preparation. The health and welfare of elderly people during the emergency in emergencies in areas such as Bosnia-Herzegovina require special attention, and integrated age care programs are needed.

Key words: Bosnia-Herzegovina, food security, elderly people, nutritional status

* World Health Organisation, Regional Office for Europe, Zagreb Area Office, Croatia

- * Watson F, Kulenovic I, Vespa J. **Nutritional status and food security: winter nutrition monitoring in Sarajevo 1993-1994.** European Journal of Clinical Nutrition 1995; 49 Suppl 2. S 23-32.

Study method

To monitor nutritional status and food security throughout the winter of 1993-1994 in the besieged city of Sarajevo, 4 different household groups of residents and refugees were prospectively followed in selected local communities and collective centres. An additional sample of all elderly inhabitants of the old people's home were nutritionally assessed only. Data were collected every month from December 1993 to March 1994. Information on household food security was collected through structured questionnaires and all subjects were weighed and measured.

Findings

While the nutritional status of adults and children consistently remained normal, high levels of undernutrition were detected among the elderly. Between December 1993 and February 1994, adults lost an average of 260 grams in weight. Indicators of household food security (food stocks per person, market food prices and access to food aid) showed negative trends during the same time period.

Relevance to emergency relief

Whilst there was no nutritional disaster in Sarajevo over the winter 1993-1994, there were signs that capacity to cope was weakening in some groups. The elderly were identified as the most nutritionally vulnerable due to sickness, cold, stress and problems related to food preparation. The most food insecure group were refugees in collective centres who were highly dependent on food aid, were less likely to have relatives outside Sarajevo to support them, had fewer possessions to sell and were least likely to have gardens.

In order to provide early warning of any deterioration in nutritional status, identification of the nutritionally vulnerable is crucial to enable humanitarian agencies to respond appropriately.

Key words: Sarajevo, refugees, food security, nutritional status, elderly.

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Watson F, Vespa J. **The impact of a reduced and uncertain food supply in three besieged cities of Bosnia-Herzegovina.** *Disasters* 1995; 19(3): 216-34.

Study method

To provide early warning of a deterioration in the food and nutrition situation, nutritional status and household food security were longitudinally monitored in three besieged cities of Bosnia-Herzegovina (Sarajevo, Zenica and Tuzla) during the winter and spring of 1993 to 1994.

Findings

The findings show the effects of an uncertain and reduced food supply on a previously well-fed healthy population in an industrialised country. Before the cease-fire, which came into effect at the end of February 1994, trends in various indicators (weight loss, decline of household food stocks, rising food prices, reduction in food aid distribution, sale of possessions) suggested that the situation was deteriorating. The elderly were found to be more nutritionally vulnerable than children or adults, households with the least access to resources were the most food insecure, while the city of Zenica appeared to be particularly hard hit. Access to food improved as a result of the cease-fire, however, which was reflected in improvements in indicators of food security and weight gain.

Relevance to emergency relief

The objectives were to provide early warning of a deterioration in the food and nutrition situation and identify particularly vulnerable groups so that action could be taken to prevent potential undernutrition and target resources to the most needy. The value and constraints of an Early Warning System set up to monitor trends in an emergency in a European context are discussed.

Key words: Bosnia-Herzegovina, besieged cities, food supply, vulnerable groups, elderly, nutritional status, early warning system.

* Centre for International Child Health, University of London.

*Cemerlic-Zececic E, Catibusic F, Milicic D. **Nutritional influences on growth and prevalence of anaemia in children during the war in Sarajevo.** *European Journal of Clinical Nutrition* 1995; (49) Suppl 2: S43-5.

Study method

To assess growth and prevalence of anaemia in hospitalised children during the war in Sarajevo, a random sample of children who were patients in the Kosevo Hospital, Sarajevo, paediatric

clinic over a period of six months (1 June to 31 December 1993) were anthropometrically measured and had blood samples taken to determine prevalence of anaemia.

Findings

More than two thirds of children fell within the 10th to 90th percentile - weight for height. Children had a high level of anaemia with the highest prevalence in the age group between 6 and 12 months but war and disruption of the food supply had not had the expected negative impact of child growth and prevalence of anaemia.

Relevance to emergency relief

It was suggested that reasons for the maintenance of reasonable nutritional status could include: increased levels of breast feeding, distribution of supplementary food commodities enriched with micronutrients, and good parental care. However, because other studies have shown more negative impact, vigilance by NGOs is always needed to identify vulnerable groups. Regular surveillance is important in populations exposed to war conditions.

Key words: Sarajevo, war, children, nutrition, anaemia, food supply, surveillance.

*Paediatric Clinic, University of Sarajevo.

***Collins S. Using middle upper arm circumference to assess severe adult malnutrition during famine.** Journal of the American Medical Association 1996; 276(5): 391-5.

Study method

To examine the use of middle upper arm circumference measurement (MUAC [cm]) and body mass index measurement (BMI [kg/m²]) in the screening of severely malnourished adults during famine, a nonrandomised cohort study, correlating measurements of MUAC and BMI was conducted in the Concern Worldwide adult feeding centre in the village of Ayod in south Sudan. The area has experienced several years of war, leading to severe famine during early 1993. A total of 98 adult inpatients belonging to the Nuer tribe. Criteria for entry into the study were prior admission to the feeding centre and the ability to stand and have a BMI measured.

Findings

MUAC measurement was easier to perform on severely malnourished adults than BMI assessment. For MUAC, the patient could be standing, sitting, or, in extreme cases, lying. For BMI, patients were required to stand. Measuring BMI required a height board, weighing scales, and mathematical calculations; to measure MUAC, only a tape measure was required. A correlation between measurements of MUAC and BMI was demonstrated. The proportions of the population and the actual individuals identified as malnourished by the 2 indicators were similar.

Relevance to emergency relief

The MUAC measurement reflects adult nutritional status as defined by BMI. During famine, MUAC may be better suited to screening admissions to adult feeding centres than BMI. Studies to assess the capacity of MUAC cutoffs to predict mortality in severe adult malnutrition are needed.

Key words: Sudan, famine, adults, nutritional status, MUAC, BMI.

*Concern Worldwide, Dublin, Ireland.

***Ferro-Luzzi A, James WP. Adult malnutrition: simple assessment techniques for use in emergencies.** British Journal of Nutrition 1996; 75(1): 3-10.

Study method

Anthropometric data from nine detailed adult surveys from Asia, Africa and the Pacific were analysed and extrapolated.

Findings

A series of MUAC cut-off points were identified to allow the screening of individual adults under extreme conditions, eg. during famine. Grade 4 malnutrition was specified for those with a MUAC < 200 mm for men and < 190 mm for women since these MUAC values correspond to the loss of fat stores at BMI of < 13.

Relevance to emergency relief

According to the results of this study, the measurement of mid upper arm circumference (MUAC) can now be used as a screening method for underweight (normally assessed from the BMI) or as an additional criterion with the BMI to identify the preferential loss of peripheral tissue stores of fat and protein. Food supplementation is clearly needed in these individuals. Extreme wasting (grade 5 malnutrition) corresponds to MUAC values of < 170 and < 160 mm for men and women respectively. Adults with these values have extremely low BMI, ie about 10, have lost most, if not all, of their protein stores and are at a high risk of imminent death. They will need immediate special feeding regimens to ensure their survival. The sex-specific MUAC values corresponding to BMI of 16, 13 and 10 can now therefore be used for rapid screening and the choice of remedial action.

Key words: refugees, famine, adult malnutrition, BMI, MUAC, wasting.

*Istituto Nazionale della Nutrizione, Roma, Italy

- * Pappagallo S, Bull DL. **Operational problems of an iron supplementation program for pregnant women: an assessment of UNRWA experience.** Bulletin of the World Health Organisation 1996, 74(1) 25-33.

Study method

A retrospective survey of 1267 antenatal records was conducted in health centres located in the West Bank, Gaza, Syrian Arab Republic, Jordan, and Lebanon was conducted to assess a large-scale iron supplementation program for the 70 000 pregnant refugee women cared for by the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA)..

Findings

The following operational problems were identified: late entry to antenatal care; high drop-out rate from antenatal care; low compliance in follow-up haemoglobin examinations; and misdirected continued testing of women who were not anaemic at registration.

Relevance to emergency relief

Routine iron supplementation of all pregnant women should be considered only in those countries where severe anaemia is prevalent and should always be coupled with additional interventions that are effective at improving iron deficiency anaemia in a given population. In most countries attention should be directed towards changing dietary habits to enhance the availability of local foodstuffs that are rich in iron. One initial haemoglobin test may help in focusing on the relatively few initially anaemic subjects who need further attention. Repeated testing during pregnancy is unwarranted.

Key words: Palestine refugees, UNWRA, women, antenatal care, testing, anaemia, iron supplementation

* United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), Amman, Jordan.

*Hassan K, Sullivan KM, Yip R, Woodruff BA. **Factors associated with anaemia in refugee children.** Journal of Nutrition 1997, 127(11) 2194-8.

Study method

A nutrition survey was performed in 1990 among children from 6 months to 35 months of age living in Palestinian refugee camps in Syria, Jordan, the West Bank, Gaza Strip and Lebanon

Findings

Anaemia was present in half to three quarters of children and was related to breastfeeding, maternal literacy and having a recent or current episode of diarrhoea or fever.

Relevance to emergency relief

Early childhood anaemia is associated with factors reflecting poor socioeconomic status and recent diarrhoeal and febrile illnesses in Palestinian refugee camps. Attention to distribution of appropriate food rations is needed in refugee communities

Key words: Palestinian refugees, children, anaemia, breastfeeding, maternal literacy, diarrhoea.

*Adolescent Health, Grady Health System, Atlanta, GA 30322, USA.

*Nathanail L, Clarke P. **Household food economy assessment of Khudunabari and Beldangi Refugee camps, Jhapa District, South-east Nepal.** Report submitted to UNHCR/WFP May 1997; Save the Children Fund (UK).

Study method

The household food economy assessment focussed on two camp sites in Jhapa. Khudunabari and Beldangi. Methods included a review of existing literature about the camps, extensive interviews with refugee and non-refugee groups and individuals and visits to markets within and outside the camps.

Findings

The refugee camps were very well organised. All distributions and other activities were organised through the Camp Management Committee. The Nepal Government set rules to cover trade, absence from camps, firewood collection, livestock and cultivation. General rations were provided every two weeks and vegetables once a week. Nonfood assistance such as building materials and kerosene were provided according to family size. All sections of the population were dependent on rations for their main sources of energy. A very small proportion of food was sold to provide other commodities.

Relevance to emergency relief

Control of trade and denial of income generating activities reduces the capacity of refugees to maintain sufficient energy requirements and clothing.

Key words: Nepal, Jhapa, Khudunabari, Beldangi, refugees, food rations, vegetables, markets, labour, expenditure.

* Save the Children Fund (UK).

Institute of Medicine **Vitamin C fortification of food aid commodities: final report.** 1997. *National Academic Press. Washington USA.

Study method

A global literature search was conducted to determine the extent and scope of vitamin C deficiency in emergency populations and the relationship between iron deficiency and vitamin C deficiency. Information was gathered on cost of various methods of providing vitamin C and distribution of CSB and WSB. A pilot study was conducted to determine the effect on vitamin C levels of food manufacture, packaging, storage, shipping, distribution and cooking.

Findings

Only a small proportion of US supplied CSB and WSB is designated for emergency programs so it would be wasteful to add vitamin C routinely to these products. The need for fortification is limited to localised areas, eg East Africa. In addition, although iron deficiency appears to be a much more widespread problem than scurvy in emergency feeding situations, the use of higher levels of vitamin C fortification to enhance iron absorption is not a cost-effective method of improving iron status. Results of the study raised serious questions about the ability of manufacturers to maintain consistent and appropriate levels of vitamin C in fortified products. Information indicated that vitamin C losses during shipping and storage are not a concern but losses during cooking may be a major limiting factor.

Relevance to emergency relief

The level of vitamin C fortification of blended food aid commodities should not be increased but maintained at current levels of 40 mg/100 gms. Other strategies to prevent or mitigate outbreaks of scurvy should however be implemented. These strategies include:

- a) Strengthening health surveillance systems in refugee camps to monitor populations at risk of vitamin C deficiency.
- b) Targeting identified populations at risk of scurvy with appropriate vitamin C interventions such as increased access to local foods and markets, local fortification of commodities, use of vitamin C tablets if scurvy is already present, managing two supplies of CSB and/or WSB, the conventionally fortified blends and a small proportion of highly fortified blends that would be targeted as part of the general ration to situations where risks of vitamin C deficiency are high.

Key words: vitamin C, fortification, food rations, scurvy

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Reed BA¹, Habicht JP². **Sales of food aid as sign of distress, not excess.** Lancet 1998; 351: 128-30.

Study method

Information gathering through open-ended interviews with key informants was followed by a survey of a random selection of 1005 households to study buying, selling and eating patterns.

Findings

In 1996 the sale and export of food aid from refugee camps near Uvira, Zaire, prompted a reduction in donated rations. Research revealed that the sales did not reflect an excess of food in the camps. They were provoked by the absence of important components of the food basket, by cultural aversion to the staple (maize) and oil provided, by difficulties in food preparation, and by the refugees' limited ability to diversify their diet and cover pressing non-food needs. Food sales improved the micronutrient content of diets but at the expense of energy lost from an already energy-deficient diet. At most 23% of the refugee households were eating sufficient and adequate diets; the poorest one-fifth of households were twice as likely to sell or exchange food as were other households and their diets were the worst.

Relevance to emergency relief

WFP has known since 1992 that Rwandans do not like maize and WFP/UNHCR policy is to distribute foods that are culturally acceptable, yet they continued to accept maize from donors anxious to unload surpluses and WFP even bought maize in Africa for distribution to these refugees because no other cereal was available at a comparable price per unit of energy. Given that relief efforts may never wholly satisfy needs directly, refugees must acquire necessities by other means. Instead of reacting negatively to refugee trading in donated food, relief organisations could have accepted this as a legitimate coping strategy and responded by facilitating the market.

Energy content is the yardstick most commonly used to judge ration sufficiency but our survey shows that neglect of cultural preference, micronutrient needs, and food preparation can seriously reduce energy intake. UN agencies and donors should take heed of existing policies that mandate the delivery of culturally acceptable foods (including non-caloric items), the provision of cereals in milled form, and access by refugees to complementary foods. Most disheartening is the fact that rations were reduced because food sales had been misinterpreted by donors and responded to inappropriately by WFP.

Key words Zaire, Rwandan refugees, food aid, selling patterns eating patterns, donors, maize.

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Centre for Research in the Epidemiology of disasters, Department of Public Health , Catholic University of Louvain in collaboration with the National Institute of Nutrition, Department of Human Nutrition, Rome, Italy, supported in the field by Save the Children Fund (UK)1998 **Needs assessment of reproductive health among refugee women.** Department of Public Health, Catholic University of Louvain, 1998. Report ECHO/TPSB7-219/96/05091. (see Reproductive health and women's issues)

Key words. Nepal, Bhutanese refugees, adolescents, pregnancy, reproductive health, gender, stunting

Subit C, et al*. **Nutritional anthropometric survey: Orunchinga - Uganda, 1998** Report to UNHCR

Study methods

As part of an assessment of nutritional status in all refugee settlements in Uganda, a systematic sample survey of 440 children under 5 from a population of less than 5000 people was carried out in 4 camps in Orunchinga, Uganda in late 1998. The survey included questions about immunisation status, many aspects of feeding, sources of food, family income, etc. Refugees from Rwanda, were settled in Orunchinga

Findings

The percentage of malnutrition of children between 6 and 59 months of age, was low and close to the reference population. The nutritional status had not changed since the survey conducted in June. The malnutrition level was slightly higher for Somalis and Zairians-Kenyans. The measles vaccinations coverage was still low

Relevance to emergency relief

Regular routine surveillance of nutritional status is important to identify children at risk to refer them to feeding centres and to follow defaulters. This strategy can lead to appropriate management of acute malnutrition and improved feeding program coverage. Implementation of strengthened health education programs focussing on child care and nutrition, weaning habits and reproductive health are recommended to improve health status.

Improved measles vaccination coverage and strengthened EPI systems should be the aim of refugee health programs to avoid the possibility of outbreaks of measles in refugee settlements.

As with the following study, although risk factors for sub-optimal nutrition were identified, it was not within the scope of this survey to analyse these risk factors but their identification would make it possible to target them in future interventions.

Note

Although the title of this and the following study suggests a nutritional survey, a wide range of information about food sources, income, family planning etc., was gained

Key words: Uganda, Orunchinga, Rwandan refugees, nutritional status, feeding programs, health education, immunisation

* The survey was conducted in response to request by UNHCR. It was implemented by Action Against Hunger - USA with the support of UNHCR and Uganda Red Cross and surveyors and supervisors from the communities.