

Trip Report: Doris Howes Calloway, Co-Administrator, Nutrition CRSP  
January 31 - February 7, 1984 - Visit to Egypt

Objectives: To evaluate progress on implementation of Phase II CRSP  
research, USAID contract #DAN-1309-G-SS-1070-00

Persons Contacted

Dr. Hekmat El-Sayed Aly, Nutrition Institute  
Professor Seinab Bishry, Department of Psychiatry, Ein-Shams, University  
of Cairo  
Dr. Ahmad M. Dakroury, Head, Department of Nutritional Biochemistry and  
Metabolism, Nutrition Institute  
Dr. Mohammad El-Ghorab, Department of Nutritional Biochemistry and  
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Dr. Abdul Wahab El-Nagger, Hadayk El-Kouba, Cairo  
Dr. Farouk Abd El-Wahab, Director, National Sport Research Center  
Professor Daisy Fleita, American University, Cairo  
Professor Mamdouh Gabr, Faculty of Medicine, University of Cairo  
Dr. Osman Galal, Director Nutrition Institute, Ministry of Health, Cairo  
(CRSP-PI)  
Dr. Wafaa Antonius Moussa, Department of Surveys, Surveillance &  
Programs, Nutrition Institute  
Dr. Amin Kamel Said, Department of Clinical Nutrition, Nutrition  
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Dr. Farouk Shaheen, Department of Surveys, Surveillance & Programs,  
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Dr. Saneya Abdel Azim Wahba, Data Management, National Research Center,  
seconded to Nutrition Institute

Professor Feisal A. Unis, Department of Psychology, University of Cairo

Professor Gail Harrison, University of Arizona (CRSP-P.I.)

Professor Avelle Kirksey, Purdue University (CRSP-PI)

Professor Norge Jerome, University of Kansas (CRSP-PI)

Professor Ted Wachs, Senior Investigator, Purdue University

Ms. Nancy Meyer, Administrative Assistant (Purdue Univ.) Nutrition  
Institute, Cairo

Ms. Mary Mudd, Graduate Student, University of Arizona

Dr. William Oldham, USAID, Director, Office of Health & Population,  
Cairo

Mr. John Wiles, USAID, Nutrition Officer, Office of Health & Population,  
Cairo

Dr. Seham Faid, National Research Center, Dokki, Cairo

The site visit began with a meeting of all principal investigators and senior scientists involved in the CRSP, at the Nutrition Institute, Director Osman Galal presiding. Dr. Galal stressed the importance of the CRSP project in guiding development of the next Egyptian national 5-year plan. The present plan (1982-7) is focused principally on productivity and lacks a nutrition component. The intention is to incorporate primary health care and nutrition objectives in the 1987-92 plan, based on findings of the research now in progress. The Nutrition Institute is, therefore, committed to conduct CRSP-type research as an obligation to the Egyptian government, as well as to Purdue University and USAID.

The technical discussion centered on problems of scheduling and data management. The complexity of the research and distributed authority for component portions of the project has led to overlapping interview schedules for individual households and to delay and lack of coordination in submission of completed forms and other data. Responsibility for these functions has now been centralized with Dr. Wafaa Wahba in charge. The need for an orderly flow of field data was emphasized and after further discussion, senior scientists agreed to submit forms within 48 hours of completion, the time lag being allowed for quality control checks by the scientists in charge of the components. (Subsequent discussion with Dr. Wafaa Moussa indicated that the dietitians could not comply with this schedule because of the manner in which they record information. See below.) Second level data management, from forms to computer, had not yet been arranged and several alternatives were discussed. Acting on a suggestion made by Dr. Oldham to Dr. Balderston, the possibility of shared use of the computer facility of the Rural Health project group was investigated and later proved to be the least costly option available. The equipment is not currently used after 3 pm and the proposal is for the CRSP project to use it from 3 to 11 pm. The CRSP will have to purchase equipment to interface between the existing PDP 11 and US IBM equipment, at a cost of about \$10,000; this will also enhance the analytical capability of the Rural Health group.

I then met privately with collaborating non-Nutrition Institute Egyptian scientists to determine if collaborative arrangements (financial and other) are satisfactory to them. All those present concurred that present arrangements are appropriate.

Plans for measurement of metabolic rate were discussed with Drs. El Naggar and Farouk Abdel Wahab, who have local responsibility for this component. The Beckman equipment (selected by all CRSP physiologists) has arrived but training in its use has not been completed, awaiting arrival of a Beckman technician from Europe. There is not now a protocol for this testing and the question of BMR versus RMR was raised. The tentative plan is to measure BMR because of expected difficulty in standardizing meals and meal-times. It was stated, however, that pilot testing produced some high RQ's indicating that subjects were not in basal, fasting state. We discussed the units in which data are to be reported, in view of the fact the results of pilot tests were presented in a form that does not meet CRSP requirements. Protocols must be developed according to CRSP agreement and it was suggested that documents should be obtained through Dr. Gardner, UCLA. He might also visit the project, if he travels to Kenya, for further interproject standardization. Investigators (and, later, USPI's) were reminded that work performance measures, for which there is local enthusiasm, are not part of the core design and are not to be initiated pending review of all non-core research.

The day ended with a tour of Nutrition Institute facilities. Extensive renovation is in progress and several upgraded laboratories in which CRSP samples are to be analyzed are already in use and others are nearing completion. The data management group occupies a small laboratory space which it will soon outgrow as there is insufficient filing capacity for the volume of paper that will be generated when the full sample population is enrolled and all tests are in place. The CRSP

project has two administrative offices assigned for its exclusive use and has a generous time-share of Institute meeting and conference rooms. Because of the volume and type of analyses required for the CRSP, equipment has needed to be augmented from CRSP funds.

The next four days were occupied with visits to the project village Kalama, conferences with individual senior scientists and examination of all existing forms, protocols and instruction manuals.

The rendezvous point for CRSP workers in Kalama is the health clinic, where we were greeted warmly by the resident physician, dentist and nurses. The clinic principally provides outpatient services but there are a few emergency beds. The CRSP has renovated for its use a small house adjacent to the clinic where BMR measurements and biological procedures are to be carried out. I was told that the clinic physician has requested that this house be returned for his occupancy. Dr. Galal has received assurances that project use will continue unless a second, larger, unused clinic facility can be renovated at a cost, to the project, of about \$5,000. A potential problem will be avoided if, as Dr. Galal suggests, additional renovation is at fixed cost and the responsibility of the government, however that can be arranged.

Visits made to study households with project field physicians indicate a need for further training. One gave packets of cookies and candy to children; apart from the prohibition of food donation in a study focusing on food deprivation, household conditions were such that it would have been virtually impossible to determine how much was eaten by a target toddler or schooler. There were several deviations from written protocols for simple medical procedures and failure to use

printed forms properly. For example, skin-testing had been done on a 13-month-old infant (non-target) and he was brought by a brother to the clinic for anthropometric measurement and measured under conditions clearly and unnecessarily frightening to him. In one household, the lead male and female were wrongly identified, grandparents being targetted instead of parents. Over half of physicians field time was occupied in attending to medical complaints of non-study households. This service does build good will but at a high cost to the project. It was, however, evident that the doctors were welcomed by and enjoyed good relations with study families. Deficiencies encountered were subsequently reported to Drs. Farouk Shaheen and Gail Harrison. Dr. Shaheen had already instituted weekly meetings with the young doctors as a group and assured us that deficiencies can and will be corrected. To make more efficient use of physicians' time, it was recommended: that doctors be assisted by a paramedical person to serve as recorder (This requires that all medical forms be printed in Arabic as well as English.); and that one project doctor attend at the clinic each day project physicians are in the field, to take all referrals for medical service to nonproject households (This assignment should be rotated.).

Dr. Wafaa Moussa, who with Dr. Norge Jerome is in charge of food intake measurement, described the present operating procedure. This is not as described in the field manual. Dietitians first record the total amount of food prepared for the household and then determine the amount eaten by each target subject. Amounts prepared are determined by recall of raw ingredients used in mixed dishes (the main components of most meals); the volume or weight of these ingredients (or proxy substitutes)

is measured, using a spring scale of 500 gram capacity. Portions served to target S's are recalled in common measures. Because recipes must be calculated to derive nutrient values of the total prepared before the content of portions can be assigned, dietitians record information in notebooks and transcribe the data onto forms later. Entries are then checked by two reviewers for accuracy. This process entails about a 5-to 7-day delay in submission of records. Intake is being recorded 2 or 3 days each month, to accumulate 7 days of intake information for each household each three months. Food eaten by lead males away from home is not being recorded. Nine dietitians are assigned to the project and because of prevailing working conditions, each can interview two households per day. Dietitians are also assigned the tasks of monitoring mother-child interaction. Assuming that each dietitian works 22 days per month, 396 household visits can be scheduled, which would be insufficient for coverage of required household enrollment at project midpoint. It was noted that only 6 days of food intake need be recorded each 3 months, which will reduce workload by 1/7th, and that dietitians could be relieved of the interaction assignment. Since there were said to be no other dietitians that can be released to the project, another suggestion made is to employ diet aides as interviewers; these could be trained and supervised by the dietitians.

Dr. Wafaa raised several important questions about a modified sampling frame, food coding, quality control, food analysis, and assumptions about preparation losses of nutrients. (Please see attachment #1.) The statistical basis of the present design was explained. It was suggested that quality control for food entries

should be computed from records in hand (pilot and current) of average portions eaten by each target age/sex group; values outside two standard deviations should be rejected unless accuracy has been verified by dietitians' annotation of the original record. Dr. Wafaa asked about the necessity of recording and coding noncaloric additives to food; these substances contribute little to the weight of mixed dishes. Since blood pressure is being recorded and there is little information about Egyptian sodium intake, Dr. Wafaa was encouraged to follow up her interest in gathering this information. It was agreed that all items eaten or drunk should be recorded, irrespective of energy content.

There is no easy answer to the problem created by recording the weight of raw food prepared but not the finished product, and yet estimating portion sizes of cooked food served and eaten. Some foods increase in volume when cooked (e.g. rice) and others are reduced (e.g. leafy greens). Dr. Wafaa has recorded recipes and values for some typical dishes but it is difficult to judge without more information if the variation from cook-to-cook and at different times is so large that 'standard' factors for yield cannot be accepted. (I agreed to and did, later, explore the question with FAO, but there seems to be no alternative to measurement of weight of cooked dishes, or their moisture content by analysis, or both. FAO does not propose any standard factors for preparatory losses.) Energy and protein content of raw foods can be computed using the FAO table of food composition because most of the analyses for the Middle East region were supplied by the Egyptian Nutrition Institute (confirmed by FAO). These tables are, however, incomplete as regards some vitamins and minerals. Protocols are yet to

be developed by the SCB for total diet analysis and will be discussed at the May meeting.

The food intake subroutine during illness has yet to be developed by project personnel and should be presented for review by the SCB in May, or earlier.

Visits made to households with the dietitians and separately reveal that the food intake methodology needs to be redesigned. The equipment and recording system currently in use are likely to fall short of accomplishing what is intended (i.e. household food consumption and within-home food consumption by target subjects) and, in any case, different information is required to meet CRSP objectives. In particular, I saw large amounts of sugar being given to children by women and other children in a manner that would defy accurate recording; target infants and toddlers were fed by more than one adult and it was not evident that a second feeder was contributing information; it was reported that children were given sugar-water to drink ad lib. during the night; and some food disappeared to foraging domestic animals unobserved by recorders. To obtain accurate records, more intensive participation of lead women will be required and there will need to be one-on-one observation of target toddlers and infants during most of their waking hours. If total intake by lead males cannot be recorded accurately, (and culturally this maybe impossible) then hypotheses linking their intake and function cannot be tested.

Forms and protocols for reproduction studies, prepared by Drs. Amin Said and Avelle Kirksey are all in hand and need only minor revision. Voluntary pregnancy testing is being arranged to aid in

final selection of the sample population. Project staff were reminded that the entire sample of pregnant women (and all others) must be entered by October, 1984. As noted in the project annual report, Dr. Kirksey has made a serendipitous observation that indicates a potentially serious problem of vitamin B-6 nutriture among lactating women and their infants. Anecdotal information from Dr. Amin suggests that sugar water is commonly given to infants in early life, which would further dilute the nutritional quality of the diet. If there is a serious essential nutrient problem in the population, as seems likely, additional non-core research to define it must be given high priority.

Dr. Wachs was in the field to provide additional training on schooler cognitive measures. He and Dr. Seinab Bishry were satisfied that the in-school observation instrument and its application are satisfactory. I did not see other cognitive measures being made, but the forms and instructions are complete and Dr. Faisal Unis is well-trained and appears to have field arrangements in hand. We discussed introduction of a new low-cost core measure suitable to the very young. The matter was referred for interproject reconciliation by the project psychologists, for resolution at the May SCB meeting.

Socioeconomic information, care-giving activity measures and case studies are the responsibility of Dr. Jerome and Dr. Hekmat Aly. Forms and manuals retranslated from Arabic, were reviewed but I did not observe their use. This component differs from the others in that a few village residents have been hired as observers/recorders in order to cover the requisite hours of the day. Completed case studies are due in April.

The immunology laboratory, established by Drs. Daisy Fleita, Ronald Watson, and Otto Sieber, is ready to process blood samples, pending receipt of one additional standard. Obtaining blood samples has not proved to be the problem anticipated and laboratory manuals are in good order.

The biological laboratory, supervised by Drs. Dakroury and El Ghorab, is now assaying hemoglobin, hemotocrit and ferritin in project blood samples, and checking urines for glucose, protein and ketones by the qualitative Combistix procedure. Given the prevalence of bladder stones in Egypt, it seems advisable to use an expanded Combistix paper to measure urine pH and concentration, and it was so recommended. The PI's might also wish to consider measurement of blood urea nitrogen if a hypothesis of essential nutrient deficiency is advanced. Dr. El Ghorab is quite interested in vitamin A nutrition and I encouraged him to seek independent grant support for additional analyses of project samples. Methods are not in place for assessment of parasite loads; the possibility of enlisting the assistance of the Tropical Disease Research Institute in this activity is being explored. Potential requirements for preparation of total diet composites were discussed and suggestions solicited. We agreed that the process of labeling, subdividing and storage and distribution of biological samples should be centralized.

I met twice with Dr. Gabr, who has continued a friendly interest in the project dating from his sponsorship of the proposal in the Ministry of Health. We discussed particularly the importance of coordination within the project and of quality control measures at all stages of data gathering and analysis.

I called on Dr. Oldham and Mr. Wiles at the USAID office to provide a brief report on the condition of the project and to thank them for their assistance in the computer problem. I reported on discussion I had with Dr. Seham Faid about the general availability of analytical laboratories in Cairo. I was advised that it is unlikely that equipment from previous projects in other institutions could be released to this CRSP. Dr. Oldham appreciates the difficulties presented in our type of collaborative research and is supportive of its multiple goals.

At the exit interview with the PI's, the following specific recommendations were made:

1. The project lacks internal coordination and direction. This may be a result of poor performance of the previous field work coordinator but also is ascribable to partitioning of responsibility and authority for project components, lack of inter-PI communication and sustained presence in the field. Barring agreement on a solid alternative plan, it seems necessary that a USPI must be in residence at all times, each for extended periods of time, with sufficient overlapping time during rotation. The USPI should relieve Dr. Galal of some of his day-to-day involvement with the CRSP, which is too demanding in view of his larger responsibilities. The USPI must be empowered to make on-site decisions, as is necessary for the smooth operation of the CRSP, on behalf of all PI's not in residence.

2. All forms used to gather project data must be reviewed and revised by U.S. and Egyptian principals to eliminate duplication of information requested of respondents. Forms should bear English and Arabic equivalents where that is feasible. Forms should be given

identifying numbers and date of original/revised versions. An archival copy of each form in both languages should be sent to UCB.

3. Training manuals and protocols must be reviewed and revised by U.S. and Egyptian principals. Where this has not already been done, they must be translated into Arabic and retranslated into English for verification. Documents must be submitted for all data-gathering analytical procedures. Documents are missing for: resting metabolic rate; immunological assays; parasitologic assays; sampling methods for saliva, tears, breast milk, urine, and feces; morbidity sub-routine; medical intervention lists and protocols. Archival copies of each should be filed in the NI and UCB.

4. A centralized control system for issuance of data forms and labels must be developed.

5. Protocol(s) for preparation of diets for analysis is requested.

6. Involvement of households is demanding and may result in high drop-out rate. Procedures should be reviewed for feasibility of merging some observational components.

7. Highly-trained, scarce staff must be used more efficiently to accommodate the full sample of households. The possibility of using dietary aides under the direction of dietitians, and nurses to assist doctors should be explored.

8. Additional methods should be explored for gathering information on non-household food consumed by adult men and schoolers. It will be necessary to verify toddler's food intakes by the child-following method. Intake of sugar in all forms is a central issue for infants and toddlers.

9. The complete sample of pregnant women (and all others) must be enrolled by October 1, 1984, and performance of all tests and measures must have reached 100% of core requirement.

10. In selecting additional households for enrollment, the eligible households should be stratified to guarantee adequate representation of low-intake families/target S's.

11. Emphasis on training/retraining and quality control must be continued.

12. Incentives may be required to sustain household participation. All projects staff should give thought to what these might be. Food and income are not allowable.

13. If an essential nutrient deficiency hypothesis is developed, proposals for noncore research to test it should be submitted for early review.

14. Cost-reducing strategies must be explored. Travel, particularly short-term, is a principal target for savings. This may mean restriction of travel by U.S. senior investigators whose principal interests are no longer reflected in the core design.