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Analysis of KAP study and PMI management study: a progress report.

by

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# PART I

December 30, 1983 - January 13, 1984

## Introduction

During this consultation visit, emphasis was placed on analysis and planning for further analysis on the KAP study and the PMI management study which have been underway for some time. The primary goal of the consultation was to develop analysis software and direction so that the analysis might be finished for both studies by May, 1984. While certainly progress was made in this direction, some work was inhibited by the state of emergency which was declared on the second day of the visit and which lasted throughout the visit. This state of emergency shortened the government working days considerably and also placed demands on staff and resources at INSE which competed with the ongoing analysis taking place there. Dr. Hedi Mhenni returned to the United States at the end of the visit and remained here for nearly three weeks. during which time several questions in the analysis plan were addressed and the formal questions and analytic procedures were finalized.

## KAP Survey

Activities regarding the KAP survey were in three areas: clarification of the interfacing with the data-base management system, verification of status of data entry and cleaning, and analysis.

### Data Base Management System

The data base management system for the KAP study was designed by Dr. Ben Abdullah of INSE. It is constructed through an interactive data entry program written by Dr. Ben Abdullah after modification of a prototype left by Dr. Vermillion on the last consultation visit. The system divides the data by chapters of the questionnaire (e.g.,

diarrhea questions, demographics, feeding practices, etc.) and stores in each content file only those cases with valid data for that chapter. A logical heading file serves as a directory for each case indicating which chapters exist for that case and which are missing. Such a system was necessary, given the amount of storage available on the Hewlett-Packard 87 computer at INSE. This flexible system allows for storage of only valid values and avoids excessive storage of blank or missing values.

The one problem which exists with a data base management system such as this is the retrieval for analysis of specific cases or subsets of cases and the selection of identified chapters for examination. During the visit, Dr. Vermillion and Dr. Ben Abdullah discussed programming requirements for simple retrieval of specific cases using interactive code which does not require programming proficiency. The intent here is to allow physicians and other non-programmers to be able to select cases based on case specific characteristics (e.g. whether the residence is urban, whether the family had an infant die at birth, whether the youngest child recieved a bottle before age 5 months, etc.). The logic for such a retrieval program was examined and prototypical programs were tried. In addition, programming necessities for identification of cases which did not exist in desired chapters were discussed and delineated.

The data base management system meets the requirements of the storage for this study and the retrieval programs under design by Dr. Ben Abdullah should allow for easy access to the date for future analysis by all interested INSE personnel. In addition, Dr. Ben Abdullah has been conducting workshops for staff at INSE in programming and use of the HP 87 XM. Considerable interest has been

generated for involvement in ongoing research at INSE.

Data Entry

The status with data entry at this time is somewhat behind what was projected in the last project report. All of the data for Mellassine have been entered and verified, and those for Siliana have been begun, but the data for Sfax and Sousse have not yet been started. It appears that the Sfax data will need another round of verification before data entry since some of the questionnaires appeared on spot checking to have not been fully coded. The data from Sousse had not yet arrived in Tunis, and although Dr. Soussi was scheduled to arrive with the questionnaires during the consultation visit, this was not possible given the state of emergency and difficulty in travelling long distances during the permitted hours.

The data entry process has been retarded primarily for two reasons. First, the Hewlett Packard computer is capable of supporting only one user at a time. This has meant that while programming is in progress it has been impossible for data entry to take place simultaneously. Also, only one data entry clerk can work at a time, thus slowing down the progress of the data entry. Also, the fact that only one floppy disk drive is available has slowed considerably the process of copying entered data for back-up copies and has inhibited the quick and smooth data entry which had been anticipated.

Analysis

The analysis which has taken place up to this point has been primarily descriptive in nature. The main finding which is apparent among the Mellassine data is that 3% of the sample can be classified

as malnourished according to the World Health Organization classification scheme (using two standard deviations below average as the definition of below normal on weight for age, height for age, and weight for height). This compares favorably to a concurrent study done on a census of all school-age children from Mellassine which found a 5% malnutrition rate using the same definitions. A breakdown f classifications of the youngest child in each family according to weight for age, height for age, and weight for height according to the data in Mellassine for the KAP study follows:

| weight for age | height for age | weight for height | number | % |
|---|---|---|---|---|
| low | low | normal | 8 | 1.45 |
| normal | normal | normal | 402 | 73.09 |
| high | high | normal | 4 | 0.72 |
| low | high | low | 1 | 0.18 |
| low | normal | low | 3 | 0.54 |
| normal | high | low | 5 | 0.90 |
| high | low | high | 0 | 0.00 |
| normal | low | high | 9 | 1.63 |
| high | normal | high | 0 | 0.00 |
| normal | low | normal | 76 | 13.81 |
| normal | high | normal | 12 | 2.18 |
| high | normal | normal | 11 | 2.00 |
| normal | normal | low | 8 | 1.45 |
| low | low | low | 1 | 0.18 |
| normal | normal | high | 4 | 0.72 |
| low | normal | normal | 6 | 1.09 |

It is clear here that the distribution of children according to the WHO classification indicates that those in classifications 1, 4, 5, and 6 are malnourished. This is a total of 17 children in the 550. It is also clear that there is one child who is at great risk in terms of nutritional status, the child who is low on all three indicators. INSE plans to identify this child from the dossier and intervene in the immediate future. Also, it was disturbing to find that the second most frequent category found, those children normal in weight for age, low in height for age, and normal in weight for height are not identified in the WHO classification as significant in terms of nutritional status. This absence served as one primary question which was addressed in meetings which Dr. Mhenni had in the United States during his consultation visit. Indeed we found that the WHO had rewritten this section of their report on measuring nutritional status and indicated that the nine classifications which they cited were only examples of what would be found in the field.

Analysis plans were formalized using not only categorical nutritional outcome data, but also continuous measures of anthropometric status as standardized by the WHO norms. A computer program to derive standard scores based on the WHO norms was given to Dr. Mhenni to be applied to the KAP data. In particular, priorities were given to analysis tasks, with higher priority given to questions particularly related to knowledge, attitudes and practices of mothers and then relationships of these to anthropometric status of the children.

The consultation visit included also discussions with doctoral students working on these data regarding analysis in their theses. At least six theses are currently in progress using the data from the KAP

and management studies.

Management Study

Dr. Vermillion, Dr. Martita Marx and Dr. Mhenni met several times regarding the PMI management study. The central data for this study were to have been collected from the Ministry of Health and compiled for data entry before the consultation visit. It appeared that this had not yet been completed, so, together with Abdelfatteh Affes we examined the records at the Ministry for some of the gouvernorats and delegations which were missing. It became clear that the central records were incomplete, irregular, and often missing. For approximately 50 of the 123 centers there are usable data at the Ministry level. For those centers in this group included in the sample it will be possible to perform comparative analysis regarding levels of service, coverage, and utilization statistics. For any analysis using all centers in the sample, however, it will be necessary to use only the monthly statistics for November, 1983 which are included in the center-level questionnaire. This absence of data is itself a finding for the management study, however. One clear positive outcome of this study will be a reporting form which is simple enough to be actually used by all PMIs. Representatives from INSE and the Sante de Bas, the two organizations which direct the PMIs will be meeting with Dr. Marx to discuss modifications of the central level reporting requirements and forms.

The data from the centers selected for study had just begun to be received in Tunis during the consultation visit. Again, the state of emergency interfered with the delivery of these forms. From those which had been received, it appeared that great variation exists among

the PMIs in terms of staffing, practices, and inventory of supplies and equipment. Plans for analysis were discussed and a preliminary analysis program was developed. Formulae for imputing missing values and for developing coverage statistics were derived from census, family planning, and INSE data which were available. Software was developed for merging data from central level files with center-level statistical data.

Data entry for the PMI management study will begin in February and should be completed by the end of the month. The data entry program will be one derived from the KAP study, and the data base management scheme will be less complicated, with one file containing all of the center and Ministry data, since the amount of data is much smaller for this study. The analysis should begin in February with completion in April.

Dr. Mhenni's Consultation Visit to the USA

The primary goal of Dr. Mhenni's consultation visit to the USA was to further the analysis and to clarify questions regarding the analysis. Work was conducted on the IBM mainframe computer at Boston University to demonstrate types of analyses which are possible for the complete data set across gouvernorats with the Tunisia data. The analysis plan was finalized and written up to provide a sourcebook for Dr. Ben Abdullah in his subsequent work on the analysis. In addition, a series of meetings was held in Boston, Washington, D.C., and New York city to ask specific questions regarding the analysis and to profit from experience of others working on similar data bases.

In Boston, Dr. Mhenni met with Dr. Warren Berggren and Dr. Gretchen Berggren several times to examine the WHO classification

schemes for malnutrition. Meetings were held at the Harvard School of Public Health to discuss analytic stratgies with Dr. Gretchen Berggren and with Dr. James Hebert, a nutritional epidemiologist. In addition, Dr. Mhenni met with Dr. Marian Zeitlin and with Dr. Stanley Gershoff of the Nutrition School at Tufts University to examine nutrition classifications and to discuss similar ongoing studies and methodologies. Dr. Mhenni met with Juan Mandelbaum and Olivia Holmes, consultants to the project to discuss the progress of the communication component of the project and to elicit further suggestions for development of nutritional messages. Also, a luncheon meeting was held at INCS to demonstrate the diaporama which was developed during the Mandelbaum and Holmes consultation visit and to discuss the project.

In Washington, D.C., Dr. Mhenni met with John Alden of Pritech to discuss the Pritech project and to discuss the KAP and PMI management studies. Several suggestions were obtained for direction in the analysis which will be examined in the study. In New York, Dr. Mhenni met with Dr. Virginia Laukaran and Dr. Peggy McElroy at the Population Council. Dr. Laukaran discussed findings and methods of the four country study which is presently being analyzed and the relevance of the methods there to the KAP study in Tunisia. Problems in the use of life-table analyses were addressed as were problems in the power of statistical tests using log-linear models with interactive hypotheses. Dr. Mhenni and Dr. McElroy discussed the ongoing family planning project in Tunisia. In addition, Dr. Mhenni was placed on the mailing list for Population Council publications at his address in Tunisia. A meeting was also held with Dr. Peter Purdy, the Administrative Director of the Margaret Sanger Center of New York City to discuss

evaluation issues in health care studies in the US and Tunisia and to discuss health, nutrition, and family planning issues as they are comparable and different for both countries. Another meeting was with Dr. Robert J. Haggerty, president of The William T. Grant Foundation. Dr. Haggerty is the President of the American Pediatric Association and is a member of the board of the International Pediatric Association. Dr. Mhenni and Dr. Haggerty discussed the comparative nutritional problems of children in the US and Tunisia and the role of the physician in terms of nutritional and health problems.

Problems in the Consultation Visit

The primary problem in the consultation visit in Tunisia was the state of emergency which lasted throughout the visit. This presented difficulties in arranging meetings with key individuals located outside Tunis (and sometimes with those located in Tunis). In addition, the room at INSE which housed the computer was being used also to house sophisticated laboratory equipment which is usually located at the school of medicine but was moved since all schools in the country were closed by government order. Transportation was also difficult, with taxis and busses frequently unavailable. It was impossible to work late with the computer since it was expected that individuals would leave government facilities by 4 o'clock in the afternoon.

In addition, the computer is small for the analyses and storage requirements being made on it. This was envisioned early in the project and is certainly surmountable, but does require more time than the original schedule allocated. The floppy disk drive on the computer failed during the visit and had to be disassembled by Tunis

Electric, the local Hewlett Packard Service outlet. It was brought back to the US with Drs. Vermillion and Mhenni and is currently with Hewlett Packard for service in the US. This repair will take six to eight weeks and it tying up the ability to back up entered data and programs. Again, this is a surmountable problem, since the system is still usable with the hard disk, but it does present inconvenience and consumes time on a daily basis. Again, if possible, a second floppy disk drive would facilitate copying of disks and would also provide a back-up in the case of a disk failure as is currently being experienced.

# PART II

April 13 - 20, 1984

## I. PURPOSE OF THE TRIP

This consultation visit focused on providing assistance in developing programs for analysis of the KAP study and of the PMI management study. During the visit, an SAS program was written to provide basic frequencies for distributions of variables in the management study. In addition, the three data sets collected in the study were merged to form one working data base, and variables were constructed to serve as criterion measures in the study. On the KAP study, analysis continued and consultation was provided in further analytic strategies.

## II. ACCOMPLISHMENTS

During the consultation visit, the following things were accomplished:

A. Three SAS programs were written for the management study, one for the demographic data, one for the statistical reports from the Ministry of Health, and one for the questionnaires from the PMI's included in the interview.

B. The three data sets were merged into a single data base.

C. Criterion variables were constructed from the statistical reports and the demographic data.

D. Descriptive frequencies were generated for the management study data.

E. Basic correlational analyses and crosstabulations were performed to examine relationships for the management study.

F. Scaling was refined for the KAP study.

G. Analytic strategy and analysis priorities were discussed for the KAP study.

H. Programming for the KAP study was examined.

I. The floppy disk drive for the HP-87 was delivered to INSE to permit continued data entry for the KAP study.

J. Meetings were held with doctoral students to discuss theses being prepared on the KAP data.

III. BACKGROUND

The KAP study was conducted last year to provide information relating to practices and beliefs of mothers and their relationship to children's nutritional status. This was to provide a basis for development of nutritional messages to be developed under the contract. This study was conducted in the gouvernorats of Sousse, Sfax, and Siliana and also in the area of Mellassine, in the gouvernorat of Tunis. Six hundred mothers were interviewed in each of the four target areas. Coding has been completed on all 2400 questionnaires and the data entry is complete for the Tunis area. Because the floppy disk drive was inoperative on the computer available for the analysis, data entry had not yet been completed for the other three regions, although now this task has begun. Analysis has progressed, even using hand calculations in several instances for the Tunis region. The data for the Sfax region seem to be of questionable validity on a cursory examination of the questionnaires, but this will of course need to be further examined when the completion of data entry is completed for this region. While some preliminary findings are encouraging (for example, malnutrition is lower for young children 0-6 years of age in Mellassine than for school age children), some findings indicate specific needs for nutritional messages (for example, 50 percent of the infants in Mellassine are introduced to foods other than mother's milk by the age of 3 months). A full report on the KAP study should be available by the end of this summer.

The management study was conducted to examine systemic problems with the PMI's around Tunisia. A random sample of half of the 132 PMI's was selected and the sage femme at each center completed a questionnaire about the center. In addition, data were collected from

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the Ministry of Health files on each of the centers and demographic data for each center was collected from census reports and from family planning documents. Problems existed with the quality of data found in Ministry folders, but complete data was available or able to be imputed for a reasonably large proportion of the centers. Diligent work on the part of the Tunisians involved in the project, in particular Dr. Hedi Mhenni, insured a complete response to the questionnaires. Preliminary analysis of the data indicate wide variation in the equipment and supplies available in the centers as well as in the nutritional activities, family planning activities, and health activities across centers. It is important to note that Dr. Ben Abdullah arranged access to the VAX computer at the Faculty of Medicine for this analysis since the HP was unable to have further data entered because of hardware problems. Again, a complete report of the findings of this study should be available during the summer.

## IV. PERSONS CONTACTED

USAID:

Ms. Dale Gibb, HPN Officer
Mr. Jerry Wein, Deputy Mission Director
Mr. James Phippard, Mission Director

INCS:

Ms. Martita Marx, Management Study Consultant

TUNISIAN COUNTERPARTS:

Dr. Bechir Hamza, Director, INSE
Dr. Gharbi, Associate Director, INSE
Dr. Hedi Mhenni, Associate Director, INSE
Dr. Ben Abdullah, Information Specialist, INSE

## V. RECOMMENDATIONS

1. Completion of the KAP and management analyses should be encouraged. This is near completion and promises to be fruitful in terms of directions for information messages to be generated.

2. INCS should provide technical assistance to develop educational messages after the analysis reports have been completed and directions for these messages are forthcoming. This technical assistance should be similar to that provided earlier in the project on the preparation audio-visual nutritional messages.

3. A conference to review the accomplishments of the project would be consistent with the desires of the Tunisians involved in the planning and implementation of the project. Such a conference should include the principals involved in the project.