

HEALTH IMPACTS OF WATER AND SANITATION SERVICES IMPROVEMENTS FROM THE SECONDARY CITIES PROJECT, EGYPT

Report

Prepared by John Snow, Inc. in association with
El-Zanaty & Associates



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in Association with
Dr. Ahmed Abdel-Warith, Consulting Engineers (AAW)

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List of Abbreviations

ARI	Acute Respiratory Infection
CAOA	Central Agency for Organization and Administration
CAPMAS	Central Agency for Public Mobilization and Statistics
CCO	Curative Care Organization
CDD	Control of Diarrheal Diseases
DHS	Demographic and Health Survey
EOC	Essential obstetric care
EPI	Expanded Program on Immunization
GOE	Government of Egypt
HIC	Health information center
HIO	Health Insurance Organization
HSRP	Health Sector Reform Program
MCH	Maternal and child health
MOF	Ministry of Finance
MOHP	Ministry of health and population
MSS	Ministry of Social Solidarity
NICHP	National Information Center for Health and Population
PVOs	Private voluntary organizations
SCP	Secondary Cities Project
UNFPA	United nations fund for population activities
UNICEF	United nations children's fund
USAID	United States Agency for International Development
VIP	Ventilated improved pit
WHO	World Health Organization

EXECUTIVE SUMMARY

The United States Agency for International Development (USAID), with the support of the Government of Egypt (GOE), has initiated the Secondary Cities Project (SCP) in 1992 to meet the growing need for improved water and wastewater sanitation in a diverse selection of cities (Mansoura, Nuweiba, Luxor, and the Aswan Cities of Nasr City, Kom Ombo, and Darawo) in Egypt. Camp, Dresser and McKee (CDM) International Inc. provided engineering design and construction management (ED/CM) services on the SCP under a direct contract with USAID for the period 1996 to 2005. During the period, major water and wastewater improvements were designed and constructed in the selected cities under the \$325 million dollar Secondary Cities Project Grant Agreement. CDM International Inc. was requested to provide continuing and new services to the SCP under the USAID Environmental Health Indefinite Quantity Contract (EH IQC) (GHA-I-00-04-00006-00) funding mechanism. One of the main purposes of the EH IQC is to provide access to a broad range of expertise in interventions to reduce exposure to agents of disease and to hazards which exacerbate disease, by focusing on improvements in the physical environment and in key behaviors.

One of the activities required under the EH IQC Task Order No. 03 between USAID and CDM is to facilitate the measurement of the health impact with data collected by the urban clinics and health facilities in two (2) of the Secondary Cities: Mansoura and Luxor. John Snow, Inc. (JSI), a subcontractor to CDM under the EH IQC, has the lead in public health, infection control and facility hygiene, integrated programming for urban health and protection for the human environment, monitoring and evaluation. JSI in association with El-Zanaty and Associates have prepared this report to provide their findings as required by the Health Impact Documentation and Measurement Activity under the EH IQC GHA-I-00-04-00006-00, Task Order No 03.

The SCP has two main cluster interventions that impact on the public health. The first intervention subsumes the activities of the infrastructure component of the project i.e., the increased availability and improved quality of potable water and wastewater collection through sewer connections. The second intervention is comprised of the current and potential activities of the institutional component of the project: health and hygiene educational campaigns, improvement in the quality of potable water delivered. These two interventions are expected to produce both long-term and short-term effects on the beneficiaries' populations.

This study was designed to assess the benefits of the program reflected in significant lessening of diseases related to water and waster sanitation contamination. Overall, it is believed that the activities under this program have made a major impact on the lives of people in the involved areas. The main purpose of the current study, though, is to measure the health impact of the hygiene improvement intervention program.

The current study analyzed available quantitative data collected from some of the health facilities in Luxor and Mansoura cities to provide the program managers and staff with indicators of health impact measurement in the two cities. The study utilized a quantitative approach using one administered questionnaire to assess the available resources and hygiene behaviors in the health facilities in the project areas under study. In addition, a spreadsheet was developed to collect monthly morbidity and mortality data recorded in the health facilities regarding water and wastewater related diseases. Also, population estimates and mortality due to diarrhea cases for children under 5 years old were collected.

Data were collected from all the urban facilities in Luxor city (6 facilities) and Mansoura city (17 facilities).

Disease surveillance, demographic information, and data related to vital statistics on mortality, births and other data needed were collected from the Ministry of Health and Population (MOHP). In both Luxor and Mansoura these data were collected either at the central level or at the directorate level when the data were not available at the facility level, especially for previous years. The information collected from different sources was compared to check the accuracy of the collected data. The sources included the data collected directly from the health units on the number of consultations for each disease category and the data on a compact disk (CD) provided by Health Information System (HIS) on the number of consultations for some of the diseases. Very minor discrepancies were found and corrected in the collected data set (99.3 percent of the data collected by the interviewers matched the data in the HIS CD).

The results obtained from the information collected from the 23 health facilities show that the proportion of facilities with access to an improved water source was 0.83; the proportion of health facilities with adequate sanitation facilities was 0.96; the proportion of health facilities with adequate medical waste disposal was 0.96; the proportion of health facilities that use auto-disable syringes for immunization was 1.00; the proportion of health facilities with adequate hand washing facilities was 0.26; and the proportion of health facilities with adequate vector control was 0.25.

In order to investigate the health impact of the SPC project in the two targeted cities, the available data on morbidity and mortality from 1998 to 2005 were analyzed. Descriptive and trend analyses of available data showed that the monthly average number of diarrhea consultations reported in most of the facilities (especially those in Luxor) declined significantly through the period of study. Also the monthly average number of acute respiratory infection (ARI) consultations declined significantly through the period of study in the city of Luxor. Comparing the yearly number of diarrhea consultations to the yearly number of all consultations showed that the ratio of the diarrhea consultations to the total consultations declined significantly, especially in Luxor. The results showed also that, in most facilities, the prevalence of diarrhea among children 0-5 was reduced significantly especially in Luxor. Furthermore, the ratio of immunization fluctuated slightly from year to year, which was believed to indicate that the health improvement in both cities was due to the improvement in water safety and basic sanitation provided by the SCP project.

Analysis of child mortality due to disease contracted from contaminated water would require the availability of data on the number of deaths due to diarrhea and ARI by age and sex. However, these types of data were not available. On the other hand, available data from the HIS CD on child mortality due to diarrhea in Mansoura city showed that the percent of child mortality in the 0-5 age range due to diarrhea was reduced significantly city decreasing from 21.4 in 1996 to 5.1 percent in 2003.

1.1 Background

The United States Agency for International Development (USAID), with the support of the Government of Egypt (GOE), conceived the Secondary Cities Project (SCP) in 1992 as a demonstration of decentralized water and wastewater sector improvements for a diverse selection of cities in Egypt. Governmental reforms and institutional development assistance programs for the candidate cities were needed to provide the framework for the emerging independent public utility operations. Engineering designs for new and rehabilitated water and wastewater facilities were directed towards establishing viable utility works that would meet the current and future demands of the population in the selected cities.

Camp, Dresser and McKee (CDM) International has been working in implementing the Water and Sanitation for Health (WASH) Project and Environmental Health Project (EHP) the last few years in four governorates in Egypt. CDM, prime contractor, and its partners (including John Snow, Inc. [JSI]) were awarded a 5-year (2004-2009) USAID Environmental Health Indefinite Quantity Contract (EH IQC) (GHA-I-00-04-00006-00). The main purpose of the EH IQC is to provide access to a broad range of expertise in interventions to reduce exposure to agents of disease and to hazards which exacerbate disease, by focusing on improvements in the physical environment and in key behaviors. CDM International Inc. has the overall EH IQC which includes responsibility, direction and reporting, program management, water supply and sanitation, technology assessment, solid waste management. JSI has the lead in public health, infection control and facility hygiene, integrated programming for urban health and protection of the human environment, monitoring and evaluation. A Task Order Agreement (EH-IQC-JSI-05-TOA-03) was signed between CDM and JSI to facilitate the measurement of the health impact with data collected by the urban clinics and health facilities in Mansoura and Luxor that are the target of this phase of the SCP activity. In turn, JSI signed a subcontract with El-Zanaty and Associates to collect the required data from the health facilities in the municipalities of Mansoura and Luxor, develop a database, enter the data, analyze the data and produce a final report.

The SCP includes the six cities of Luxor, Mansoura, Nuweiba and the Aswan Cities of Darawo, Kom Ombo and Nasr City.

The SCP has two main cluster interventions that impact on public health. The first intervention includes the activities of the infrastructure component of the project i.e., the increase in the availability and quality of potable water and wastewater collection through sewer connections. The second intervention comprises current and potential activities of the institutional component of the project i.e., health and hygiene educational campaigns, and improvements in the quality of potable water delivered. These two interventions are expected to produce both long-term and short-term effects on the beneficiaries' populations.

In order to assess the impact of these projects, a study was requested in Mansoura and Luxor.

Overview of Mansoura Project

The focus of this project was the development of wastewater collection facilities to provide the basis for a new system which would replace much of the existing system. The work included construction of two new wastewater pump stations, associated force mains, and collector sewers leading to the stations. Additionally, the project included the installation of new water transmission mains that would deliver water from the new Mansoura Water Treatment Plant and improved hydraulics of the existing system by increasing the service pressure.

Overview of Luxor Project

The focus of this project was new wastewater collection facilities for the Karnak, Khotaba, Malkata, and Aqualta areas of Luxor and increased wastewater treatment capacity by construction of new stabilization pond treatment system adjacent to the existing City of Luxor Wastewater Treatment Plant. In addition, two new wastewater pump stations were constructed to serve Karnak/Malkata and Khotaba areas.

1.2 Objectives

The main goal of this study was to measure the impact of the SCP on the health of the population after increasing the availability and quality of water and wastewater collection through sewer connections. The specific objectives of this study were the following:

1. Identify and quantify the health impact expected to be gained in the involved areas over the period of the program.
2. Conduct a survey to establish a baseline against which the impact can be measured on the health status of the project beneficiaries. The survey results were a control against which both short-term and long-term health effects were measured.

1.3 Overview of Health System in Egypt

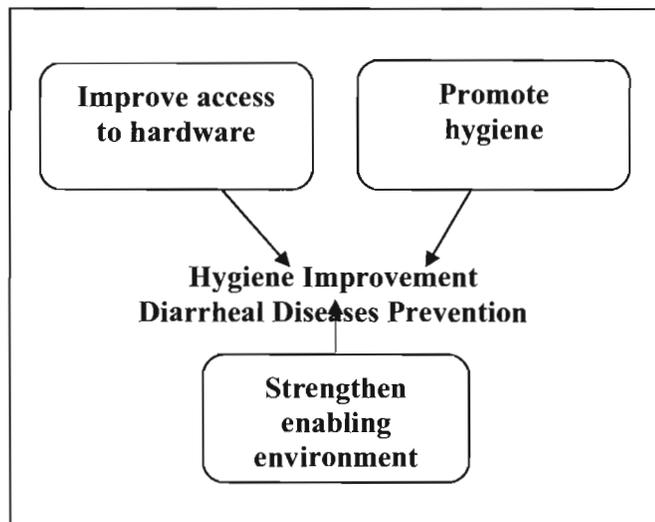
The Egyptian health system has a strong infrastructure of physicians, clinics and hospitals, availability of technology and pharmaceuticals, and excellent physical access to care, with 95 percent of the population within five kilometers of a medical facility. A high birth rate combined with a longer life expectancy is increasing the population pressure on the Egyptian health system. By the year 2020, it is estimated that the population of Egypt will have grown to about 92 million.

The Egyptian government is implementing Health Sector Reform Program measures, with the help of external funding and technical assistance, notably from the World Bank, USAID, and the European Commission. The plan is to provide services using a family health model, where maternal, child, reproductive tract, and infectious disease services are offered as a package of services in one facility. Providers are trained to provide services in an integrated manner, and family health records are maintained.

For a detailed description of the health system in Egypt as it relates to health facilities and outpatient services see Appendix A.

1.4 Hygiene Improvement Framework (HIF)

Improved water and sanitation facilities, along with their proper use, can lead to a reduction in disease. However, one of the most important lessons learned from water and sanitation programs is that water and sanitation facilities alone seldom result in improved health. There are other critical factors that contribute to improving the health of the population studied for example, hygiene promotion and education, and an enabling environment.



The Hygiene Improvement Framework (HIF) is a three-pronged approach to water and sanitation efforts that combines access to facilities and the promotion of behavior change with encouraging policies and institutions.

According to the HIF, sustainable hygiene improvement patterns require improving facilities, in addition to promotion and education activities on health hygiene practices, and the development of policies, institutions and community capacity to manage and sustain hygiene improvements.

Hygiene improvement has proven benefits and health outcomes. It is a comprehensive approach to combat diarrhea. A 30 to 50 percent reduction in the burden of diarrheal diseases can be achieved through improved water supply, sanitation, and hygiene (Esrey SA, Potash JB, Roberts L, Shiff C, 1991).

Framework Components

Improve access to hardware includes the following.

- Providing safe water supply systems, continuously, to communities and households
- Providing improved sanitation facilities to dispose of human excreta, especially the feces of young children
- Increasing the availability of technologies and materials to improve household-level hygiene, such as soap, water treatment, and safe storage containers

Promote hygiene in order to increase the adoption of key hygiene practices involves the following.

- Communication: develop a comprehensive communication strategy to raise awareness of the importance of improved hygiene and to support hygiene behavior change
- Social mobilization: involve various groups and sectors in the disease prevention to achieve and preserve behavior change

- Social marketing: adopt marketing principles and strategies to achieve social goals. This would involve cooperation between the public and private sector in order to generate demand for hygiene products such as soap.
- Community participation: identify barriers to adopting improved hygiene practices, and design and monitor hygiene improvement programs
- Advocacy at all levels: influence policy and action at all levels to promote hygiene improvement and its interventions

Strengthen the enabling environment through the following activities.

- Policy improvement: assess the adequacy of national policies, identify gaps, and develop new policies
- Institutional strengthening: assist institutions define their role and mission, improve management, increase technical competence, and train their staff
- Community involvement: develop local structure to operate and maintain local water supply, sanitation and hygiene systems
- Financing and cost-recovery activities: assist local communities devise strategies to recover costs
- Cross-sector and public-private partnerships: support collaboration between various sectors (e.g., public health and public works) and between public and private partners (e.g., various ministries and soap manufacturers)

The purpose of this study is to identify and quantify the health impact that was gained in the involved areas over the period of the implementation of the program. This study assesses the benefits of the program reflected in the significant decrease of disease related to water and waste sanitation contamination. Generally, it is believed that the activities under this program have made a major impact on the lives of people in the involved areas.

The current study analyzes available quantitative data collected from some of the health facilities in Luxor and Mansoura cities in order to provide the program managers and staff with indicators of health impact measures in the two cities. These data include information about monthly morbidity and mortality related to water and wastewater diseases from the year 1998 to the year 2005.

The contractor developed a health facilities questionnaire based on the Service Provision Assessment (SPA) facility resources questionnaire to assess the basic conditions of water supply, sanitation, and hygiene situation in these facilities. The data collected included information from the health facilities such as the availability of safe water for drinking, the safe disposal of feces into toilet facilities, safe disposal of solid waste, and hygiene behaviors such as hand washing at health facilities and other hygiene practices.

The study implementation, instruments, and database components are described in the following section.

2.1 Study Design and Implementation

The survey was designed based on JSI's experience in assessing hygiene improvement interventions to prevent childhood diarrhea through a combination of improving access to water and sanitation hardware and household technologies, promoting proper hygiene, and strengthening the enabling environment to ensure the sustainability of hygiene improvement activities. Accordingly, the study utilizes a quantitative approach using one questionnaire to assess the available resources and hygiene behaviors in the health facilities in the project areas under study: Masoura and Luxor. In addition, a spreadsheet was developed to collect monthly morbidity and mortality data recorded in the health facilities on water and wastewater related diseases. Also, population estimates and mortality due to diarrhea cases for children under 5 years old were collected. Data were collected from all the urban facilities in Luxor city (6 facilities) and Mansoura city (17 facilities).

Development of instruments Three main instruments were developed to collect the required information at the health facility level. Detail information on these instruments is included in Appendix B.

Childhood morbidity and mortality spreadsheet

Health facility resources questionnaire.

Demographic data spreadsheet

Training of field staff

Approximately 12 field staff attended the training

At the end of the training sessions, 8 field staff collected the data.

Data collection

The field staff were divided into three teams. One team collected data from facilities in Luxor. One collected data from Mansoura, and one collected data from the MOHP. It took one day to collect the data from each facility. Since, Luxor city includes six health facilities, and Mansoura includes 17 health facilities, each team took approximately 10 working days to complete data collection.

Disease surveillance, demographic information, and vital statistics on mortality, births and other relevant data were collected from the MOHP either at the central level or at the directorate level in both Luxor and Mansoura in case the data were not available at the facility level especially for previous years.

Data processing and data analysis

The spreadsheet and resources questionnaires were entered using Census and Survey Processing System (CSPRO) software. The CSPRO is a software package for entry, editing, cross-tabulation, and dissemination of census and survey data. Verification and consistency checks were done in order to be sure about the quality and accuracy of the data.

Verification involved the re-keying 100 percent of questionnaires to eliminate data entry errors. Once the data were entered and a clean tape was prepared, they were converted to Statistics Package for Social Sciences (SPSS) under Windows file to be used for the analysis. Descriptive and trend analysis of key health indicators were then conducted using SPSS.

The analysis of morbidity and mortality data presented in the following chapters is mainly descriptive and trend analyses of the available data.

GIS of the health facilities information using water supply and sanitation infrastructure map

Using the GPS points of each facility with the information collected from the facility, a GIS information system using AutoCAD format was developed and related to the water supply and sanitation infrastructure maps in Luxor and Mansoura.

2.2 Quality Control

For quality assurance of the fieldwork, the following procedures were followed:

- 1- Five percent of the spreadsheets were selected for recheck by the supervisor during data collection.
- 2- Effective supervision of the interviewing teams during the fieldwork
- 3- The fieldwork coordinator, as well as office staff, periodically visited the teams and performed spot checks at all stages.
- 4- Throughout the fieldwork, close communication was maintained between office and fieldwork teams.

For quality assurance of the data entry, the following procedures were applied.

- 1- Data processing staff including, coders, office editors, and data entry personnel, attended the interviewers training program to be familiar with the type of information to be collected.
- 2- Data collected from different sources were compared to verify the accuracy of the collected data. The sources included the data collected directly from the health units on the number of consultations for each disease category and the data on the CD provided by HIS on the number of consultations for some of the diseases. Very minor discrepancies were found and corrected in the collected data set (99.3 percent of the data collected by the interviewers matched the data in the CD).
- 3- After the completion of the initial data entry, 100 percent of questionnaires were reentered to eliminate data entry errors and for the purpose of validation.

2.3 Database Description

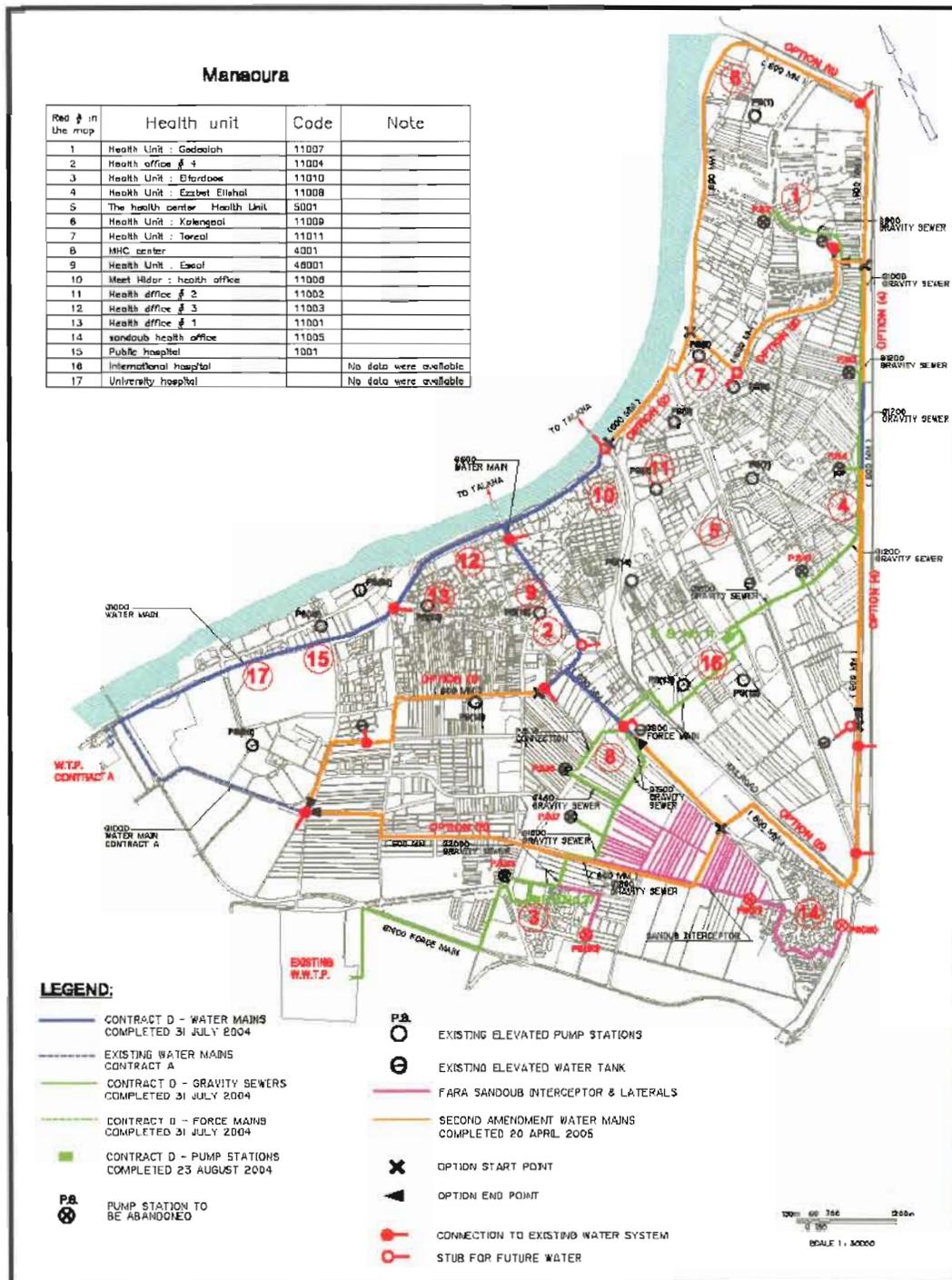
Having collected the data set from the health facilities and from the HIS CD, the study team prepared an ACCESS database that included the following five tables:

- 1- Consultation And Immunization
- 2- Diarrhea and Dehydration
- 3- Endemic Diseases
- 4- Inpatient Frequencies by Diagnosis
- 5- Population

and four lockup tables:

- 6- Governorates
- 7- Facility
- 8- DataType
- 9- Disease Codes

Fig. 2.1: Linking Health Facilities and Water and Wastewater Interventions in Mansoura



2.4 Limitations of the Study's Data

The study's aim was to assist program planners and managers design, implement, and evaluate water supply, sanitation, and hygiene interventions. The study focused on providing current information on and assessing the health impact of the Environmental Health Program applied in Luxor and Mansoura. The study designers determined that to accomplish these goals, morbidity and mortality data related to diseases caused by contaminated water should be collected and analyzed. The required information for these analyses included the number of monthly consultations and hospitalizations for each disease for all facilities in the two cities, starting from the year 1998 up to 2005.

Additionally, information was required regarding the distribution of morbidity and mortality data according to sex and age group as well as demographic data by age and sex, the population served by the facility, and mortality data on children aged 5 years or less. The study team made every effort to collect such information, either directly from the health facility or from data available in the HIS at governorate level. For several reasons, however, the study team collected only some of the required information. In reviewing the findings in the study's report, the reader should be aware of the following limitations:

1. The required data included the monthly number of consultations and hospitalizations in total (from 1998 to 2005) and for each of the diseases caused by contaminated water and poor hygiene practices, including Diarrhea, Dysentery, Bilharzias, Hepatitis A, Typhoid and Paratyphoid, Trachoma/eye infections, child growth disorders, Shigella, Ascariasis, Sore throat, Fever, Measles, Mastoiditis, Ear infection, Anemia, and acute respiratory infection (ARI) as well as immunization (vitamin A, DPT3, Polio 3).
2. One of the requirements was to obtain the joint distribution of morbidity and mortality caused by the above diseases according to sex and age.
3. The study team was constrained by the lack of recording practice in most of the facilities in the two cities. Also, the HIS CD included only part of the required information, mainly information on morbidity due to diarrhea, ARI, Bilharzias, and Ascaries.
4. No information was available about the hospitalizations caused by each of the above diseases, because the common practice in the hospitals in both cities was to recode the aggregated (total) number of hospitalizations.
5. The analysis of morbidity and mortality data given in the next chapter is based on the available data collected from the facilities or included on the HIS CD.

This chapter presents an analysis of the collected data on health facility resources, shows descriptive statistics of the available morbidity and mortality data, and introduces trend analyses of the available data. The results of this chapter highlight the health impact of the SCP on Luxor and Mansoura cities.

3.1 Rapid Health Facility Assessment (RHFA)

The availability of safe water for drinking, the safe disposal of feces into toilet facilities, safe disposal of solid waste, and hygiene behaviors such as hand washing at health facilities are important for infection control. To assess where health facilities meet minimum standards of hygiene improvement, a sample Rapid Health Facility Assessment (RHFA) instrument was developed based on the SPA facility resources questionnaire. This questionnaire collected information about each facility's infrastructure information. A copy of this questionnaire is presented in Appendix B. The data were collected from 23 health facilities (six from Luxor and 17 from Mansoura).

In Egypt as elsewhere, health facilities provide essential preventive services and health education to community members and organizations. Thus, they should serve as an example and should meet basic standards of water safety, sanitation, waste disposal, and hygiene.

Six hygiene improvement areas were addressed in the RHFA questionnaire. The questions were purposefully simplified by addressing only water supply, sanitation, and hygiene issues that could be readily observed. Unlike other health care quality assessments, this questionnaire does not attempt to assess actual practices of health workers.

Improvements in the six areas stated above can strengthen health services in important ways, especially oral rehydration, growth monitoring, child feeding, micronutrients, care of the sick child and well child, antenatal care, and postnatal care. Injection safety is covered as well, because of the need to minimize the risk of disease transmission through inadequately sterilized syringes and needles and to dispose of medical waste. The questions in this instrument check only for the availability and usability of the most basic infrastructure and materials, but do not attempt to relate these to facility size or client volume.

Six indicators were assessed with the instrument that measured the capacity of health facilities to provide safe water, adequate toilet facilities, prerequisites for basic hygiene such as hand washing supplies and location, safe disposal of medical waste, and vector control.

3.1.1 Water Supply Indicator

This indicator measures the proportion of health facilities with access to an improved water source that is available daily. This was only an approximation of "safe" drinking water, because no testing of water quality was performed. Facilities should have access to an improved water source (supply point) on the premises. An improved water source includes only water piped into facility, water piped into yard or plot, standpipe, tube well/borehole, protected dug well, protected spring, rainwater collection, or bottled. An unimproved water source includes unprotected dug well, unprotected spring, surface water

(river, dam, pond, stream), small vendor, tanker-truck, or any other type of unprotected supply. The term protected source means that measures are in place to prevent water from becoming contaminated, especially through runoff. The water supply source is considered accessible if it is on premises and water is available daily, i.e., facilities run without interruptions of the main source for drinking water for less than an entire day during the last two weeks.

Table 3.1 shows the results obtained from health facilities regarding access to improved water. All the respondents in the 23 facilities in Luxor and Mansoura reported that the main water source for the health facility is piped water. All the respondents reported that the water source is inside the facility/on the premises. Four respondents reported interruptions of the main source for drinking water for an entire day or more during the last two weeks (three of them from Luxor). Accordingly, the overall proportion of facilities with access to an improved water source is 0.83 (0.5 in Luxor and 0.94 in Mansoura). This proportion is calculated as:

proportion of facilities with access to improved water source

$$= \frac{\text{Number of health facilities with access to improved water}}{\text{Total number of health facilities assessed}}$$

Table 3-1 Facilities With Access to Improved Water			
Number of health facilities with access to improved water in Luxor and Mansoura, RHFS 2006.			
	Governorate		
	Mansoura count	Luxor count	Total count
The main water source for the facility			
Piped	17	6	23
The period taken to go to the main water source			
1 mn	2	0	2
4 mn	1	0	1
On premises	14	6	20
The availability of water from this source at least one whole day in the last two weeks			
Yes	16	3	19
No	1	3	4
Total number of assessed facilities	17	6	23

3.1.2 Excreta Disposal Indicator

This indicator measures the proportion of health facilities with improved, hygienic, gender and child appropriate toilet facilities for patients. The term “hygienic” is used to approximate safe disposal and potential use by patients and staff. An adequate toilet facility must have a basic superstructure of walls, roof, and door that can be closed (to keep animals out). For health facilities, it is essential that there be a place for hand washing (includes the presence of water and soap) within or next to the toilet facility. Finally, health facilities should have gender and child appropriate sanitation facilities. The improved sanitation facilities are those with flush toilet connected to sewer system, flush toilet connected to a septic tank, flush or pour-flush latrine connected to a pit, ventilated

improved pit (VIP) latrine or simple pit latrine with slab (slab that can be cleaned), basic superstructure present, and gender and child appropriate sanitation facilities.

On the other hand, not improved sanitation facilities include those with flush or pour-flush latrine that empties into the open without connection to a pit, sewage system or septic tank, pit latrine without slab, bucket latrine (where excreta are manually removed), hanging latrine, toilet facility shared with households outside the health facility confines (staff may share facilities with patients under simplest conditions), open defecation in field or bush, into plastic bags (“flying toilets”), open/uncovered latrines (referring to a lack of superstructure), no separate facilities for men and women, or no child-friendly facility. Hygienic means the absence of visible fecal matter on exposed surfaces (on seat, floor, walls, door, etc.) and existence of a hand washing facility.

The results shown in Table 3.2 indicate that all the surveyed facilities have sanitation facilities with flush toilet connected to sewer system, flush toilet connected to a septic tank, or flush or pour-flush latrine connected to a pit. All of the health facilities have sanitation facilities inside except for one facility which has the sanitation facility outside on the premises. The results obtained also reveal that all the sanitation facilities have walls, 22 of them have doors and floors, and only two of them have damaged superstructure. Only 10 facilities have separate sanitation facilities for men and women, while none of them has a facility for children. Also, one facility was shown to have visible fecal matter present on the floor of its sanitation facility.

According to this information, the proportion of health facilities with adequate sanitation facilities is 0.96, if we ignore the requirement of separate facilities for men and women and child-friendly facility. Taking these requirements into account, however, results in a zero proportion of health facilities with adequate sanitation facilities. This proportion is calculated as:

proportion of facilities with adequate sanitation facilities

$$= \frac{\text{Number of health facilities with adequate sanitation facilities}}{\text{Total number of health facilities assessed}}$$

	Governorate		
	Mansoura count	Luxor count	Total count
Table 3-2 Health Facilities With Adequate Sanitation Facilities			
Number of health facilities with adequate sanitation facilities in Luxor and Mansoura, RHFS 2006.			
The type of toilet that available at the facility for client			
Modern flush toilet	9	5	14
Traditional tank flush	5	0	5
Traditional bucket flush	3	1	4
The place that the toilet facility located			
Inside or attached to facility	16	6	22
Elsewhere on premises	1	0	1
Observing if there is a child-friendly facility			
Does not exist	17	6	23
Separate toilet facilities for staff			
Yes	5	5	10
No	12	1	13
Total number of assessed facilities	17	6	23

3.1.3 Medical Waste Management Indicator

This indicator measured the proportion of health facilities with adequate medical waste disposal. Medical waste poses special hazards, because of its potential for containing infectious and chemical contaminants, and it requires stricter disposal practices than solid waste from households. The careful treatment of medical waste is a must for a safe environment. Medical waste includes syringes, needles, intravenous fluid containers, dressings, expired drugs, and any materials biometrically contaminated. It is recommended that health facilities dispose separately of medical and other solid waste because of safety reasons and the need to preserve space for medical waste by not mixing it with other waste that may accumulate in a much larger volume. The term adequate waste disposal refers to removing all medical waste from the environment. Adequate waste disposal includes the presence of a dedicated waste disposal pit on the facility premises, covering waste with a layer of dirt (about a four-inch thickness is recommended), the presence of a superstructure that bars access to the pit from humans and animals (at minimum a fence and a gate that locks), the presence of regular waste removal service where such a service is available (in such cases a waste pit may not be required), and the presence of safe sharps/needle disposal. Health facilities should use puncture-proof containers for the collection and disposal of used disposable and auto-disable syringes, needles and other injection materials as per WHO/UNICEF recommendations.

The results shown in Table 3.3 indicate that nine health facilities dispose of medical wastes using an incinerator, 13 health facilities dispose of them using waste removal services, while one facility disposes of them elsewhere. Also, six health facilities dispose of sharps (needles, blades, etc) using an incinerator; 16 facilities dispose of them using waste removal services, while one facility disposes of them elsewhere. Twenty-two facilities use puncture-proof containers for sharps collection before their final disposal. According to this information, the proportion of health facilities with adequate medical waste disposal is 0.96. This proportion is calculated as:

proportion of facilities with adequate medical waste disposal

$$= \frac{\text{Number of health facilities with adequate medical waste disposal}}{\text{Total number of health facilities assessed}}$$

	Governorate		
	Mansoura count	Luxor count	Total count
The way that the medical waste is disposed of			
Incinerator	8	1	9
Waste collection	9	4	13
Elsewhere	0	1	1
The place that are used for sharps disposal			
Incinerator	5	1	6
Waste collection	12	4	16
Elsewhere	0	1	1
The type of container that is used for sharps disposal			
Puncture proof (plastic or metal)	15	6	21
Soft, not puncture proof	2	0	2
Total number of assessed facilities	17	6	23

3.1.4 Injection Safety Indicator

This indicator measures the proportion of health facilities that use auto-disable syringes for immunization as per WHO/UNICEF recommendation. Thus this indicator is calculated only for health facilities that provide immunization services. Injection safety is an important hygiene issue because of the risk of transmitting infectious diseases through inadequately sterilized syringes. Auto-disable syringes make sterilization unnecessary, but generate more medical waste than reusable syringes and require adequate disposal. Injection safety means that auto-disable syringes can be used only once and then are rendered unusable after use. WHO/UNICEF recommends that auto-disable syringes be used for all routine and immunization activities campaigns. The use of auto-disable syringes makes sterilization of immunization equipment obsolete (and is thus not addressed in the assessment), but sterilization may still be required for injection equipment for other uses.

The collected information indicates that only 18 facilities out of the 23 surveyed are providing immunization services. All of these facilities reported using auto-disable syringes. Thus the proportion of health facilities that use auto-disable syringes for immunization is 1.00. This proportion is calculated as:

proportion of facilities that use auto-disable syringes for immunization =

$$\frac{\text{Number of health facilities that use auto - disable syringes for immunization}}{\text{Total number of health facilities assessed that offer immunization services}}$$

3.1.5 Infection Prevention Indicator

This indicator measures the proportion of health facilities with adequate hand washing facilities for health personnel. Frequent hand washing with soap is crucial for infection prevention in health facilities in general and especially where surgical interventions are performed. Hand washing needs to be facilitated by conveniently located hand washing places at critical points within a facility where staff interacts with patients. All necessary supplies need to be present and in easy reach. Wastewater should also be safely disposed of because of the potential contamination with biomedical matter. Adequate hand washing facilities for health personnel should be easily accessible at key points within the health facility and need to meet the following criteria: at least one hand washing facility should be located in or near (adjacent or within a few steps) the room where clients are seen and treated; a place should exist in the facility that has all necessary items for hand washing, including water from a tap or container with spigot, basin or sink, soap or detergent, hand brush (especially where asepsis is important), and clean towel or cloth for drying hands. Wastewater from a sink or basin needs to be disposed of adequately to remove biomedical matter from the environment. Adequate wastewater disposal includes gray-water pit, soak-away pit, or absorption trench and a connection to a sewer or septic system.

The results presented in Table 3.4 show that seven facilities do not have hand washing places at points within the facility where personnel interact with patients. For the other 16 facilities that have such places (10 in Mansoura and six in Luxor), water from the tap or container is available in only 15 of them; soap or detergent is available in 14 of them, a basin or sink is available in 13 of them, a towel or cloth for drying hands is available in only six of them, and a drain is available in only seven of them. Fifteen out of the 16 facilities are either connected to a sewer system or septic system. According to this information, the proportion of facilities with hand washing facilities for health personnel is 0.70 (0.56 in Mansoura and 1.00 in Luxor). Taking into account the requirement of the

presence of water from a tap or container, basin or sink, soap or detergent, towel or cloth, and a drain, leads to a proportion of health facilities with adequate hand washing facilities equal to 0.26. This proportion is calculated as:

proportion of facilities with adequate hand washing facility

$$= \frac{\text{Number of health facilities with adequate handwashing facility}}{\text{Total number of health facilities assessed}}$$

Table 3-4 Health Facilities With Adequate Hand washing Facility			
Number of health facilities with adequate hand washing facility in Luxor and Mansoura, RHFS 2006.			
	Governorate		
	Mansoura count	Luxor count	Total count
Water from tap or container available			
Yes	9	6	15
No	8	0	8
Soap or detergent available			
Yes	8	6	14
No	9	0	9
Hand brush available			
Yes	0	0	0
No	17	6	23
Towel or cloth available			
Yes	3	3	6
No	14	3	17
Basin or sink available			
Yes	7	6	13
No	10	0	10
Drain available			
Yes	1	6	7
No	16	0	16
Waste bins present in client/patient areas			
Yes	9	6	15
No	8	0	8
Total number of assessed facilities	17	6	23

3.1.6 Vector Control Indicator

This indicator measures the proportion of health facilities with adequate vector control. Outbreaks of plague and typhus, which are transmitted by fleas harbored by rats, still play a role in several developing countries. Because of the serious health risk, patients admitted to health facilities need to be adequately protected from rats through appropriate barriers. Vectors considered here are limited to rodents (rats and mice). Appropriate control measures that can be verified easily through observation include that for all health facilities in areas with rats and mice infestation, rodent traps should be present. Only 4 facilities reported that mice and rats are common in the areas where they are located. Only one of them in Mansoura reported the existence of rodent traps in the facility. Thus the proportion of health facilities with adequate vector control is 0.25. This proportion is calculated as:

proportion of facilities with adequate vector control

$$= \frac{\text{Number of health facilities with adequate vector control}}{\text{Total number of health facilities assessed that are exposed to vectors}}$$

3.2 Descriptive Statistics and Trend Analysis

Lack of safe water, basic sanitation, and hygiene are the main reasons for most of the disease burden in many third world countries. For example, the lack of safe water and basic sanitation may account for as much as 88 percent of the disease burden due to diarrhea. Studies have shown that hygiene improvement interventions such as improved water, sanitation, and hygiene have resulted in a 30 to 50 percent reduction in the burden of diarrheal diseases (Advancing Hygiene Improvement for Diarrhea Prevention: Lessons Learned, 2004). This section describes patterns and general trends in the available morbidity and mortality data collected from the health facilities in the two cities. The name, type, code and address of each of these facilities are given in Appendix C.1. The main goal of this section is to investigate the health impact of the SPC project applied in both cities.

3.2.1 Monthly Average Diarrhea and ARI Consultations

The data collected in this study indicate that to a large extent SPC interventions have successfully reduced childhood diarrhea in most of the catchment areas served by the assessed health facilities through the comprehensive hygiene improvement approach (construction of infrastructure). Table 3.5a shows the yearly total number of diarrhea consultations, the number of months data was available, and the average monthly number of diarrhea cases for the years from 1998 to 2005 for nine facilities from Mansoura. Also Table 3.5b shows these measures for six facilities in Luxor. The yearly total number of diarrhea consultations was divided by the number of months data was available to give the monthly average number of consultations per year. As shown in these tables and Figures 3.1 and 3.2, the average monthly number of diarrhea consultations reported in most of the facilities (especially those in Luxor) declined significantly through the period of study. Generally, the number of diarrhea consultations after 2003 is notably smaller than that before 2003 in most of the facilities. Notice that, Contract D in Mansoura and Contract C in Luxor were completed in 2003 and 2004, respectively.

Table 3.5a Consultations for Diarrhea in Mansoura

The yearly aggregated and monthly average number of consultations for diarrhea cases in the city of Mansoura, RFHS 2006.

Facility code	Measure	1998	1999	2000	2001	2002	2003	2004	2005
1001	Aggregated number of diarrhea cases	*	*	64	*	238	264	197	277
	Number of months	*	*	4	*	9	10	9	12
	Monthly Average	*	*	16.00	*	26.44	26.40	21.89	23.08
4001	Aggregated number of diarrhea cases	*	*	199	171	160	150	131	174
	Number of months	*	*	12	12	12	12	12	12
	Monthly Average	*	*	16.58	14.25	13.33	12.50	10.92	14.50
5001	Aggregated number of diarrhea cases	233	250	184	184	191	139	120	117
	Number of months	12	12	12	12	12	12	12	12
	Monthly Average	19.42	20.83	15.33	15.33	15.92	11.58	10.00	9.75
11004	Aggregated number of diarrhea cases	*	*	140	154	129	127	132	107
	Number of months	*	*	12	12	12	12	12	12
	Monthly Average	*	*	11.67	12.83	10.75	10.58	11.00	8.92
11006	Aggregated number of diarrhea cases	*	*	37	29	19	19	*	*
	Number of months	*	*	12	10	8	7	*	*
	Monthly Average	*	*	3.08	2.90	2.38	2.71	*	*
11007	Aggregated number of diarrhea cases	*	26	66	37	62	68	65	58
	Number of months	*	8	12	11	12	12	12	12
	Monthly Average	*	3.25	5.50	3.36	5.17	5.67	5.42	4.83
11008	Aggregated number of diarrhea cases	461	474	241	179	157	104	112	112
	Number of months	12	12	12	12	12	12	12	12
	Monthly Average	38.42	39.50	20.08	14.92	13.08	8.67	9.33	9.33
11009	Aggregated number of diarrhea cases	*	*	32	23	16	25	38	51
	Number of months	*	*	11	9	8	10	9	12
	Monthly Average	*	*	2.91	2.56	2.00	2.50	4.22	4.25
11010	Aggregated number of diarrhea cases	*	*	82	77	100	81	111	96
	Number of months	*	*	12	11	12	12	12	12
	Monthly Average	*	*	6.83	7.00	8.33	6.75	9.25	8.00
46001	Aggregated number of diarrhea cases	*	*	*	*	*	77	*	*
	Number of months	*	*	*	*	*	12	*	*
	Monthly Average	*	*	*	*	*	6.42	*	*

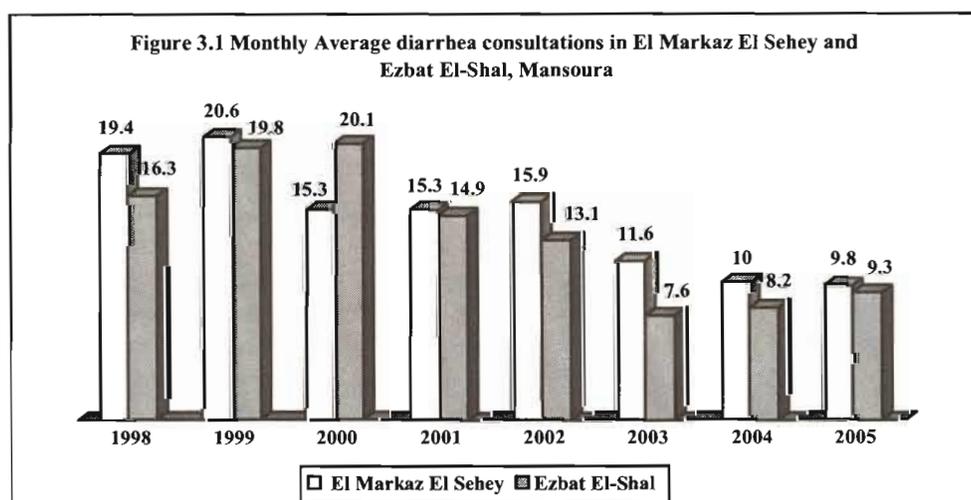


Table3.5b Consultations for Diarrhea in Luxor

The yearly aggregated and monthly average number of consultations for diarrhea cases in the city of Luxor, RFHS 2006.

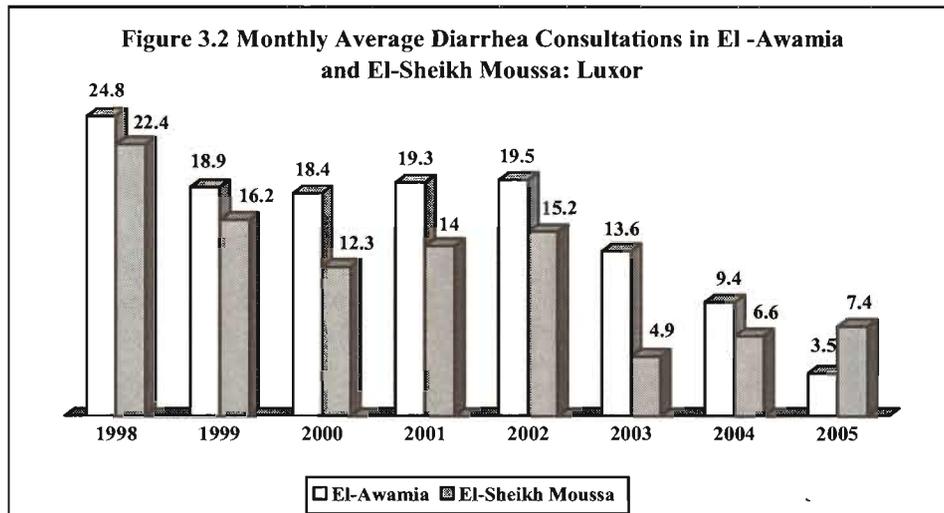
Facility code	measure	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1001	Aggregated number of diarrhea cases	372	301	411	501	317	*	*	*	*	228
	Number of months	12	9	10	12	12	*	*	*	*	6
	Monthly Average	31.0	33.44	41.10	41.75	26.42	*	*	*	*	38.00
4001	Aggregated number of diarrhea cases	292	189	248	412	166	97	77	57	28	*
	Number of months	12	11	12	12	12	12	11	9	6	*
	Monthly Average	24.33	17.18	20.67	34.33	13.83	8.08	7.00	6.33	4.67	*
5001	Aggregated number of diarrhea cases	495	369	298	208	221	231	233	149	103	50
	Number of months	12	11	12	11	12	12	12	10	11	9
	Monthly Average	41.25	33.55	24.83	18.91	18.42	19.25	19.42	14.90	9.36	5.56
5002	Aggregated number of diarrhea cases	371	375	269	194	148	168	182	54	26	*
	Number of months	11	11	12	12	12	12	12	11	4	*
	Monthly Average	33.73	34.09	22.42	16.17	12.33	14.00	15.17	4.91	6.50	*

Table 3.5c shows the yearly total number of acute respiratory infection (ARI) consultations, the number of months data was available, and the average monthly number of ARI consultations in the city of Luxor. (This information was not available in the city of Mansoura). As shown in Table 3.5c, for most of Luxor health facilities, the number of ARI consultations declined significantly through the period of study.

Table3.5c Consultations for ARI in Luxor

The yearly aggregated and monthly average number of consultations for ARI cases in the city of Luxor, RFHS 2006.

Facility code	measure	1998	1999	2000	2001	2002	2003	2004	2005
1001	Aggregated number of ARI cases	*	429	273	*	*	*	*	*
	Number of months	*	10	12	*	*	*	*	*
	Monthly Average	*	42.90	22.75	*	*	*	*	*
1002	Aggregated number of ARI cases	1501	1136	987	624	1186	637	280	*
	Number of months	10	12	12	11	12	10	6	*
	Monthly Average	150.10	94.67	82.25	56.73	98.83	63.70	46.67	*
4001	Aggregated number of ARI cases	737	1298	868	742	773	673	364	*
	Number of months	11	12	12	12	12	12	6	*
	Monthly Average	67.00	108.17	72.33	61.83	64.42	56.08	60.67	*
5001	Aggregated number of ARI cases	620	718	523	301	148	337	293	387
	Number of months	12	11	11	8	5	11	7	11
	Monthly Average	51.67	65.27	47.55	37.63	29.60	30.64	41.86	35.18
5002	Aggregated number of ARI cases	285	442	466	588	665	640	478	311
	Number of months	12	12	12	12	12	12	6	4
	Monthly Average	23.75	36.83	38.83	49.00	55.42	53.33	79.67	77.75
5003	Aggregated number of ARI cases	366	227	95	161	179	147	169	*
	Number of months	7	9	4	7	10	11	8	*
	Monthly Average	52.29	25.22	23.75	23.00	17.90	13.36	21.13	*



3.2.2 Proportion of Diarrhea Consultations to the Total Consultations

To investigate the trend of the proportion of total diarrhea consultations to the total consultations, the ratio of total diarrhea consultations was obtained whenever possible for the facilities. This ratio was obtained by dividing the yearly total number of diarrhea consultations by the yearly total number of all consultations. If the number of consultations was missing for any month during the year, this number was estimated by the average monthly number of consultations. According to the available data, this ratio was obtained for four facilities in Mansoura and two facilities in Luxor. Table 3.6 shows this ratio obtained for the years from 1998 to 2005. As shown in this table, the ratio of the diarrhea consultations to the total consultations has declined significantly, especially in Luxor.

Table 3.6: Proportion of Total Diarrhea Consultations

The proportion of the total number of consultations for diarrhea cases in the city of Mansoura and Luxor, RFHS 2006.

Facility code	1998	1999	2000	2001	2002	2003	2004	2005
Mansoura								
5001	*	*	*	7.6	*	4.6	1.3	1.5
11004	*	*	2.1	3.6	3.2	2.6	3.3	2.6
11008	*	*	*	*	5.0	3.1	2.9	2.5
46001	*	*	*	*	*	0.7	*	*
Luxor								
5001	33.6	24.7	28.0	20.9	21.7	14.0	10.7	*
5002	23.8	16.3	9.0	8.8	10.3	2.6	1.2	*

3.2.3 Prevalence of Diarrhea Among Children 0-5 Years Old

The prevalence of diarrhea for children ages 0-5 years in the period of study was also estimated for some of the facilities when information was available. The population size in the catchment area served by a facility was given for some facilities and estimated for other facilities using the data available in the Central Agency for Public Mobilization and Statistics (CAPMAS), Egypt. The population size for children ages 0-5 years was then estimated using the population distribution by age in both cities. The population size and number of children ages 0-5 in Luxor and Mansoura cities are given in Appendix C.2. The population size in the catchment areas served by some of the health facilities was obtained for some years. Using the data in Appendix C.2, the number of children ages 0-5 years in some of the catchment areas was obtained and presented in Appendix C.3.1 for Mansoura facilities and Appendix C.3.2 for Luxor facilities. The prevalence of diarrhea was then obtained by dividing the total number of diarrhea consultations by the estimated number of children ages 0-5 in the catchment area.

Table 3.7 shows the prevalence of diarrhea in some of the health facilities in both cities. As shown in this table, the prevalence of diarrhea among children has been reduced significantly in the catchment areas served by the two facilities in Luxor. For instance, the prevalence of diarrhea among children in El-Awamia in 1998 was 34.8 percent while it decreased to 5.1 percent in 2005. In Mansoura, however, the prevalence of diarrhea has declined in some catchment areas and stayed about the same level during the period of study in other catchment areas.

Table 3.7 Prevalence of Diarrhea Among Children 0-5 years

The prevalence of diarrhea among children 0-5 years in Mansoura and Luxor, RFHS 2006.

Facility code	1998	1999	2000	2001	2002	2003	2004	2005
Mansoura								
11004	*	*	3.1	3.3	2.7	2.6	2.7	2.1
11006	*	*	3.1	2.4	1.5	1.5	*	*
11007	*	1.1	2.7	1.5	2.5	2.6	2.5	2.2
11008	6.4	6.4	3.2	2.3	2.0	1.3	1.4	1.4
11009	*	*	3.1	2.2	1.5	2.3	3.4	4.5
11010	*	*	4.8	4.4	5.6	4.5	6.0	5.0
Luxor								
5001	34.8	23.8	24.9	25.5	25.2	15.8	10.7	5.1
5002	22.6	16.0	11.9	13.1	13.7	4.0	1.2	6.1

It is worth noting that the prevalence of diarrhea in Egypt as reported in the Egypt Demographic and Health Survey, 2005 (EDHS 2005) is 18.4 percent. In Qena, the governorate that includes Luxor city, the prevalence of diarrhea is 15.8 percent. The prevalence of diarrhea in Dakahlya Governorate or its capital city, Mansoura is not reported in EDHS, 2005, however. The EDHS, 2005 estimated the prevalence of diarrhea in a sample of governorates. The prevalence of diarrhea in 2005 reported in Table 3.7 is lower than the prevalence of diarrhea in Egypt for all the catchment areas served by the facilities included in the table. In particular, the prevalence of diarrhea in Mansoura facilities, shown in Table 3.7, is significantly smaller than the overall prevalence of diarrhea in Egypt. Readers should consider the figures in Table 3.7 cautiously as they are rough estimates of the diarrhea prevalence, and the accuracy of these numbers depends on the recorded number of diarrhea consultations in the health facilities.

3.2.4 Analyzing Available Mortality Data

The fight against diseases related to water and wastewater contamination has played an important part in the SCP since its inception several years ago. Efforts are typically concentrated on the improvement of sanitation interventions to manage the diseases, prevent them, and reduce mortality for children ages 0-5. To examine whether the intervention resulted in reducing mortality for

children below five years old, accurate data about the total number of deaths and deaths in children ages 0-5 should be recorded and available. The study team, however, was constrained by the lack of recording of deaths by age categories and by cause of death in the health facilities under investigation. The only information available in some facilities was the total number of reported deaths in the catchment area. Table 3.8 shows the number of deaths per 1000 persons in some of the catchment areas served by some of the facilities in the study.

The figures provided in Table 3.8 are not sufficient, however, to provide insight into the impact of the SCP project on the mortality rate. On the other hand, available data obtained from the HIS CD showed that the percent of mortality among children ages 0-5 due to diarrhea cases declined through the period of study in the Mansoura city. Table 3.10 shows this ratio in several years. As shown in this table, the percent of mortality among children ages 0-5 due to diarrhea was reduced significantly in Mansoura city from 21.4 percent in 1996 to 5.1 percent in 2003.

Table 3.8 Death Rates

The number of deaths per 1000 persons reported in some of the health offices in Mansoura and Luxor, RFHS 2006.

Facility code	1998	1999	2000	2001	2002	2003	2004	2005
Mansoura								
11002	*	*	*	*	27.61	32.51	35.54	31.82
Luxor								
11001	18.22	14.64	11.93	11.69	11.65	8.88	9.19	*
11002	2.65	9.93	16.21	17.17	17.28	23.05	23.49	*

Table 3.9 Children Mortality Due to Diarrhea in Mansoura

The number and percent of mortality of children age 0-5 due to diarrhea in Mansoura, RFHS 2006

Year	1996	1997	1998	1999	2000	2001	2002	2003
Total number of child deaths	2086	662	813	797	964	*	*	889
Child deaths due to diarrhea	447	67	103	89	59	*	*	45
Percent	21.4	10.1	12.7	11.2	6.1	*	*	5.1

3.2.5 Health Impact of Completed Contracts

During the period of study, one contract was completed in the city of Luxor (contract C) in October 2003 and two contracts were completed in the city of Mansoura (contract D and FARA 02). The above analysis of health indicators does not show significant health improvement after 2004 in Mansoura or after 2003 in Luxor. Inspection of health indicators reveals that the health improvement was accomplished gradually through the study period, and no sudden improvement was observed immediately after the completed date of contracts.

CDM has been working the last few years to implement the Water and Sanitation for Health (WASH) Project and Environmental Health Project (EHP) in four governorates in Egypt. CDM, the prime contractor, and its partners (including John Snow, Inc.) were awarded a 5-year (2004-2009) USAID EH IQC (GHA-I-00-04-00006-00). The current study was designed to assess the benefits of the program reflected in the significant reduction of diseases related to water and waster sanitation contamination in two cities in Egypt: Mansoura and Luxor. The results of the analysis support the conclusion that the activities of the program have made a major impact. The health impact of the intervention is discussed in Chapter 3 where a summary of the results is given.

To investigate the results of the SCP in the two target cities, the Rapid Health Facility Assessment (RHFA) instrument was developed based on the SPA facility resources questionnaire. With this instrument, data were collected about the infrastructure from 23 health facilities (six in Luxor and 17 in Mansoura). The results showed that the proportion of facilities with access to an improved water source was 0.83; the proportion of health facilities with adequate sanitation facilities was 0.96; (if the requirements of separate facilities for men and women and child-friendly facilities were ignored); the proportion of health facilities with adequate medical waste disposal was 0.96; the proportion of health facilities using auto-disable syringes for immunization was 1.00; the proportion of health facilities with adequate hand washing facilities was 0.26; and the proportion of health facilities with adequate vector control was 0.25.

The health impact of the SPC project in both cities was investigated using the available data on morbidity and mortality from 1998 to 2005. Descriptive and trend analyses showed that the monthly average number of diarrhea consultations reported in most of the facilities (especially those in Luxor) declined significantly through the period of study. Also, the monthly average number of ARI consultations declined significantly through the period of study in the city of Luxor. Comparing the yearly number of diarrhea consultations to all consultations showed that the ratio of diarrhea to total consultations declined significantly, especially in Luxor. According to the reported number of diarrhea consultations and the estimated number of children 0-5 years old in the catchment areas served by health facilities in both cities, the prevalence of diarrhea among children was calculated. In most facilities the results showed the prevalence of diarrhea among children 0-5 was reduced significantly, especially in Luxor. The decline in the prevalence of diarrhea consultations and prevalence may be attributed, not only to improvement in basic sanitation and water resources, but also to increased immunization rates. To investigate that, the ratio of the total yearly immunized children with Polio3 and DPT3 vaccinations to the number of children ages 0-5 was estimated for some of the facilities with available data. The results were that the ratio of immunization fluctuated slightly from year to year. Thus, the decline of diarrhea prevalence and consultations can be attributed, to a large extent, to the improvement in water safety and basic sanitation the result of the SCP.

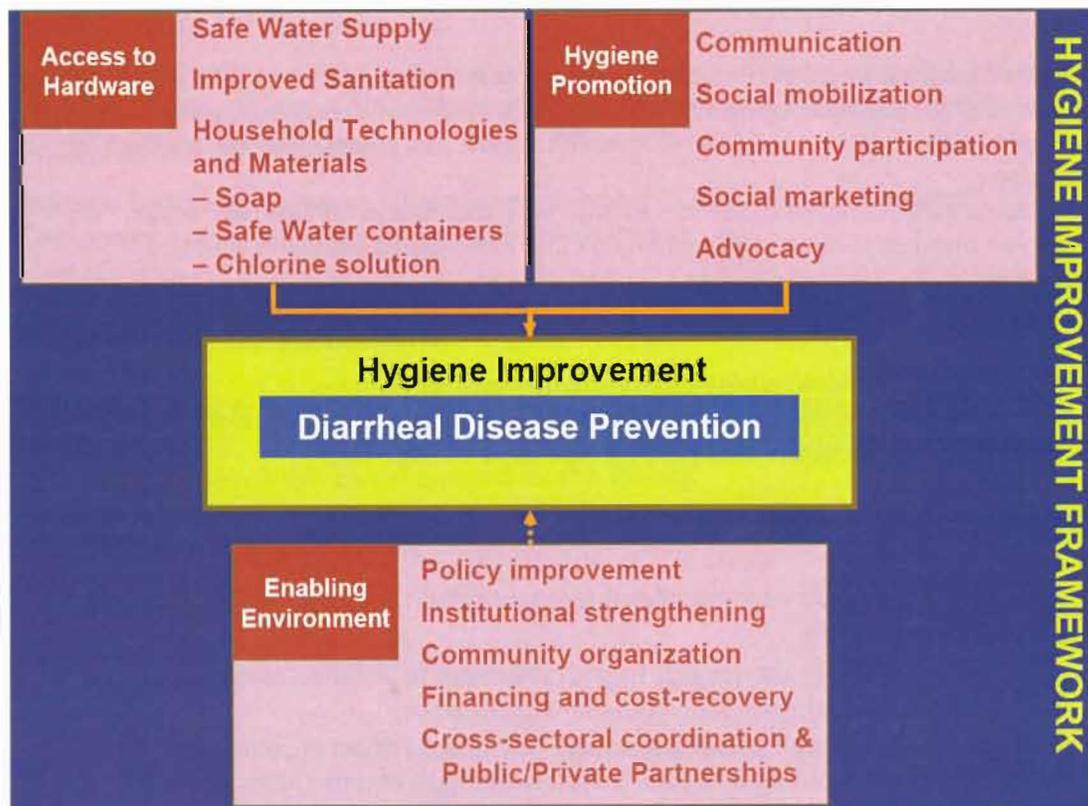
An analysis of child mortality due to water contamination diseases would require data on the number of deaths due to diarrhea and ARI by age and sex. However, this type of data was not available. However, available data from CDM on the child mortality due to diarrhea in Mansoura city showed the percent of mortality in children 0-5 due to diarrhea was reduced significantly in Mansoura city, from 21.4 percent in 1996 to 5.1 percent in 2003.

Water and sanitation improvements, in association with hygiene behavior change, can have significant effects on population and health by reducing a variety of disease conditions such as diarrhea, intestinal helminthes, guinea worm, and skin diseases.

Reliable health data collected from health facilities can be a good, and often easily accessible, source of information about water- and sanitation-related diseases among school-age children. If possible, the data should be disaggregated by age, sex, rural/urban/urban poor, and having/not having improved water supply and sanitation infrastructure.

Although, a significant decrease was observed in both morbidity and mortality due to diarrhea in Luxor and Mansoura, this impact should not be considered attributable to only the SCP water and waste water interventions. The assessment must recognize that evidence of impact appears only after a critical mass of behavior change has been achieved. Because only a small proportion of people with diarrhea seek official medical care, minor helminth infections will not show up in official statistics. Even with a critical mass of adequate interventions, it takes about a generation for impact to become evident in official statistics.

Fig. 4.1: Hygiene Improvement Framework



A comprehensive approach to preventing diarrhea must address the three key elements of any successful program to fight disease (Fig. 4.1): access to the necessary hardware or

technologies, promoting healthy behaviors, and support for long-term sustainability. The Hygiene Improvement Framework (HIF) developed by EHP has three core components:

- Improving Access to Water and Sanitation “Hardware”
- Promoting Hygiene
- Strengthening the Enabling Environment.

In the case of Mansoura and Luxor a lot of work was done in the area of access to hardware. However, activities in hygiene promotion and strengthening the enabling environment were very limited. Also, the health information system was not able to provide most of the data planned in the study. Monthly reports were often incomplete or misplaced. Nevertheless, a health impact database was developed with data from the facility-based routine information system, facility assessment survey, vital registration, disease surveillance, environmental services and water and wastewater utilities. This database should be updated annually to provide feedback on morbidity and mortality due to diarrheal diseases and other water borne diseases. To achieve this, MOHP should strengthen its national information system to improve data reporting and completeness. In the meantime, the following tasks could be done to implement the hygiene improvement framework:

- Expand the child health program to include a hygiene promotion
- Systematic integration of hygiene promotion into existing health programs, such as nutrition, HIV/AIDS, IMCI, maternal health
- Add a hygiene promotion component to the SCP.

Because of the weakness of the health information system in both Luxor and Mansoura, NOPWASD in collaboration with the health authorities should organize annual rapid surveys to collect data on the following health impact and essential family practice indicators:

1. Percentage of children under <36 months with diarrhea in the last two weeks, where diarrhea is defined as more than three loose stools passed in a 24 hour period
2. Percentage of caretakers washing hands properly with soap and at appropriate times
3. Percentage of children whose feces were disposed safely
4. Percentage of households that practice safe drinking water management
5. Percentage of caretakers who practice safe food management

Conclusions/Recommendations

The following steps are recommended to ensure that the progress that has been made to date continues.

- 1- Update annually the Health Impact database in collaboration with local health authorities in Mansoura and Luxor.
- 2- Conduct a thorough health assessment before the Project is completed. The assessment should include data from the facilities, communities, and households.

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APPENDIX A

OVERVIEW OF THE HEALTH SYSTEM IN EGYPT

1. Overview of Health System in Egypt

Information is presented with respect to the following:

- General organization of the health system
- The package of health services provided at different facility levels
- Issues related to the health system and quality of care.

General Organization of the Health System

Egypt has a highly pluralistic health care system. Health services in Egypt are currently managed, financed, and provided by various sectors of the government, under different ministries and different laws, operating with variable levels of independence. Services are also provided by the private sector by providers of variable qualification and variable levels of services.

1.1 Public Sector

“Public sector” refers to both the governmental and institutional public sectors. Differentiation of the two categories is based on the ownership and the degree of operational independence granted to them by law; however, both categories are considered governmental.

Public Governmental Sector. The Public Governmental Sector represents activities of ministries that receive funding from the Ministry of Finance (MOF). As in many lower- and middle-income countries, the government health services in Egypt are organized as an integrated delivery system in which the financing and provider functions are included under the same organizational structure. This means that government providers receiving budgetary support from the government general revenues (Ministry of Finance MOF) are also subject to the administrative rules and regulations that govern all civil service organizations. For example, staff is subject to the Civil Service Employment Law, and remuneration is based on the civil service salary scale determined by the Central Agency for Organization and Administration (CAOA).

Egypt has 14 medical schools (Faculties of Medicine) affiliated with the major universities and 36 university hospitals. University hospitals are regarded as secondary and tertiary care facilities and tend to be much more advanced in terms of technology and medical expertise in comparison with MOHP facilities. These university hospitals are operated under the authority of Ministry of Higher Education (MOHE).

Public Institutional Sector. The Public Institutional Sector is composed of quasi-governmental organizations in which government ministries have a controlling share of decision-making, including the Health Insurance Organization (HIO), the Curative Care Organization (CCO), and other public sector organizations providing mainly hospital services. Although the distinction between the government sector and the parastatal or quasi-governmental sector is usually made when describing the Egyptian health sector, both sectors are, in practice, run by the state. From an operational and a financial perspective, the parastatals are governed by their own set of rules and regulations, have separate budgets, and exercise more autonomy in daily operations. However, from a political perspective, MOHP has a controlling share of decision making in parastatal organizations.

CCO is a nonprofit system established in 1964 under the ultimate authority of MOHP. There are six CCOs operating 12 hospitals, accounting for about 4 percent of Egypt's total hospital beds.

The Egyptian HIO was created in 1964. It is a parastatal, government-owned entity under MOHP. There are four broad classes of HIO beneficiaries: all employees working in the government sector; some public and private sector employees; pensioners; and widows.

1.2 Private Sector

The Private Sector includes for-profit and nonprofit organizations and covers everything from traditional midwives, private pharmacies, private doctors, and private hospitals of all sizes. Also in this sector are a large number of nongovernmental organizations (NGOs) providing services, including religiously affiliated clinics and other charitable organizations, all of which are registered with the MOHP as well as the Ministry of Social Affairs (MOSA).

2. Organization of the Ministry of Health and Population

MOHP operates through functional structures, with administrative and technical personnel at four levels. These are the central level, governorate level (Health Directorates), health district level, and the health care provider level.

2.1 Central-Level Organizational Structure

MOHP was formed through a merger of the former Ministry of Health (established in 1936) and the former Ministry of State for population. The MOHP central organizational structure is headed by the Minister of Health and Population, employing almost 5,000 personnel, including professionals and supporting staff, who are in charge of central functions, such as planning, supervision, and program management.

The MOHP is divided into seven broad functional divisions:

- 1) The Minister's Office Affairs Sector
- 2) The Training and Research Sector
- 3) The Health Care and Nursing Sector
- 4) The Preventive Affairs and Endemic Diseases Sector
- 5) The Curative Health Sector
- 6) The Health Regions Sector
- 7) The Central Department for General Secretariat

The Central Department for General Secretariat is directly accountable to the Minister of Health and Population. The seven functional divisions embrace 23 central departments and 73 general departments at the central level. The seven sectoral heads report directly to the Minister of Health and Population. In addition, the central department heads for preventive care, laboratories, primary health care, endemic diseases, curative care, research and development, pharmaceuticals, dentistry, family planning, and nursing report directly to the Minister of Health and Population. In addition to these functional units, the central organization structure includes certain policymaking, planning, and advisory bodies, such as councils, executive committees, and advisory committees. In general, this central structure includes 103 sectoral, central, and general departmental units integrated under

the Minister of Health and Population, who constitutionally is the key policy formulator and decision maker.

2.2 Governorate-Level Organizational Structure

The previously described central organizational level is replicated at the governorate level. The governorate-level health directorates are responsible to the Minister of Health and Population on technical functions, but report to the Governorate Executive Council, headed by the Governor, for day-to-day management of activities throughout the governorate.

Egypt has 26 governorates. There are, however, 27 Health Directorates in operation because Luxor has a separate Health Directorate, despite being administratively part of Qena Governorate.

Each Governorate Health Directorate is headed by an Undersecretary or a Director General called “the Director of Health Affairs,” whose functional grade differs according to governorate size. The Director of Health Affairs supervises the Health District Directors.

2.3 District-Level Organizational Structure

The district-level organizational structure is simply a replication of that of the governorate, except that the basic functions are implemented on a smaller scale.

Each of the 235 health districts report to their Governorate Health Directorates. Each district has a Director, who is sometimes also the District Hospital Director, supervising a team of physicians, nurse supervisors, and administrators.

2.4 MOHP Service Delivery Structure

MOHP is currently the major provider of primary, preventive, and curative care in Egypt, with more than 3,645 health facilities and 66,440 beds spread nationwide. There are no nationwide formal referral systems in the MOHP delivery system. Rather, there are a number of pilot referral systems, in some districts under various health projects.

MOHP service delivery units are organized along a number of different dimensions. These include geographic (rural and urban), structural (health units, health centers, and hospitals), functional (maternal child health centers), or programmatic (immunization and diarrheal disease control).

Specifically, with respect to inpatient services, MOHP is the largest institutional provider of inpatient health care services in Egypt. Hospital services are provided through the following types of facilities:

- Integrated hospitals are small (20 to 60 beds) hospitals providing primary health care and specialized medical services in the rural areas. Integrated hospitals contain well-equipped surgical theaters, x-ray equipment, and laboratories, and they are responsible for serving a catchment population of between 10,000 and 25,000 people.
- District hospitals (100 to 200 beds) provide more specialized medical services and are available in every district. District hospitals are responsible for serving an average catchment population of between 50,000 and 100,000 people in the urban district area. Some districts are significantly larger, covering 300,000 people.

- General hospitals (more than 200 beds) contain all medical specialties. General hospitals are available in every capital of a governorate.
- Specialty hospitals are located in urban areas and include such specialties as eye, psychiatric, chest (34), fever (88), heart, ophthalmology (31), tumors, gynecology, and obstetrics. Specialty hospitals are available in all governorates.
- The private sector has 2,024 inpatient facilities, containing about 22,647 beds. This accounts for approximately 16 percent of the total inpatient bed capacity in Egypt.

3. MOHP Public Health Programs

MOHP has attempted to target many health priorities in Egypt through vertical programs that rely heavily on donor assistance. These programs include the following:

3.1. Population, Reproductive Health, and Family Planning Programs

As early as 1953, a National Committee for Population Matters was established to review population issues. This committee developed three successive population policies: the first was enacted in 1973; the second was enacted in 1980, which saw the creation of the National Population Council in 1985; and the third was enacted in 1986. In 1991, the National Population Council developed specific objectives for population activities through the introduction of a population strategy. Throughout these years, the population program has continued to develop with varying degree of success and with the support of various donors, principally USAID, UNFPA, and the Social Fund for Development.

Donor assistance has mainly concentrated on providing supplies and technical support. Donors have provided more than 50 percent of the funding for public-sector population program activities and almost 70 percent of the funding for these activities in the private sector.

3.2. Diarrheal Diseases and Acute Respiratory Infection Programs

The Control of Diarrheal Diseases (CDD) program and the Acute Respiratory Infection (ARI) program were components of projects supported by USAID. The CDD program is older by a few years and has its own department in MOHP. It has benefited from having been a priority since the 1980s. It was only in the late eighties that the ARI program gained impetus with the development of World Health Organization (WHO) programs focusing on ARI.

Both the CDD and ARI programs have adopted WHO case definitions and case management protocols. In principle, standardized treatments are available in health facilities, and a high proportion of the staff has been trained.

The CDD program has been effective in reducing infant mortality caused by diarrheal diseases; they are now the second leading cause of infant deaths.

3.3 Expanded Program on Immunization

The Expanded Program on Immunization (EPI) is probably the most accessible, available, and utilized public health program in Egypt. According to health officials, many parents do not request health services for themselves or their children, but they do have their children immunized. The program has been quite effective in reducing the incidence of some vaccine-preventable diseases, such as diphtheria and poliomyelitis.

3.4. Maternal Health

Reducing maternal mortality was also a key goal of the National Five-Year Plan (1998-2002) of MOHP. The national program to reduce maternal mortality is overseen and implemented by the Directorate of Maternal and Child Health Care under the Division/Sector of Primary Health Care of MOHP. Particular attention has been paid to improving the quality of delivery care as well as to encouraging appropriate care-seeking behavior. All public health facilities provide maternal and child health (MCH) services.

At the national level, the MCH directorate has defined a package of MCH services, which includes basic and comprehensive essential obstetric care (EOC) for normal delivery and management of obstetric complications. Clinical protocols and service standards for EOC and competency-based training curricula and materials have been developed and officially approved for national use. Quality of care has also been addressed through a series of administrative decrees covering issues such as the presence of senior obstetricians during deliveries, midwife training and licensing, improvement in blood transfusion services, and use of facility-generated revenues for local service improvement.

A Women's Health Project was implemented from 1995 to 2001, funded partially by the Social Fund for Development, in cooperation with MOHP.

4. Health Sector Reform

Over the past two decades, the government of Egypt has launched small scale reform efforts in an effort to address some of the health system problems. In 1997, the Ministry of Health and Population (MOHP) of the Government of Egypt (GOE) launched a comprehensive Health Sector Reform Program (HSRP) aiming to develop a national health system, based on social insurance that would address existing problems in equity, access, efficiency, quality and financial sustainability. The Egyptian government is implementing Health Sector Reform (HSR) measures, with the help of external funding and technical assistance, notably the World Bank, USAID, and the European Commission.

The government of Egypt has articulated in the HSRP Strategy Paper as its long-term goal the achievement of universal coverage of basic health services for all its citizens. It has also stated the importance of targeting the most vulnerable population groups as its priority.

The strategy of the Health Sector Reform Program is to gradually transform the health care system over the next two decades to keep pace with the growing population and its transition in the burden of disease from communicable diseases to more costly non-communicable adult and chronic diseases. The Ministry of Health and Population is leading the process by drawing on the expertise, experience, and collaboration of all sectors of the healthcare system, public and private. This incremental approach will ensure that the human, financial and institutional resources and capabilities are adequate to successfully implement the reforms and meet the expectations of the population.

5. Private and Nongovernmental Sector

Private-sector provision of services includes everything from traditional healers and midwives, to private pharmacies, private doctors, and private hospitals of all sizes. Also in this sector are a large number of NGOs providing services, including religiously affiliated clinics and other charitable organizations, all of which are registered with the Ministry of Social Solidarity (MSS).

5.1 Private Practices

Physicians represent the most powerful professional group in the health sector. Doctors are permitted to work simultaneously for the government and in the private sector. Those who are employed by the government but run a private practice because of their low salaries account for a large portion of private providers. Many other physicians, however, cannot afford to open their own private clinics and work in more than one nongovernmental religious or private facility in addition to their government jobs.

The Egyptian Health Care Provider Survey (Nandakumar et al., 1999) showed that 89 percent of the physicians with private clinics had multiple jobs. Seventy-three percent of the physicians had two jobs (i.e., they had another job outside their private clinic), 14 percent had three jobs, and 2 percent had four jobs.

5.2 Private Facilities

After the declaration of an open economic policy in 1974, the private health sector began to grow. Between 1975 and 1990, the total number of private beds rose significantly (Kemprecos and Oldham, 1992). Private care facilities in Egypt range from hospitals that are large, modern, and sophisticated, to smaller hospitals, day care centers, and polyclinics.

5.3 Private Voluntary/ Nongovernmental Organizations

In the private sector, there are also many private voluntary organizations (PVOs) providing care through polyclinics and small hospitals that are usually affiliated with charitable or religious organizations. Among the various PVOs, the mosque clinics, operated by Muslim social agencies, are perceived to be popular and successful providers of ambulatory health care in Egypt and have become the stereotype for nonprofit organizations.

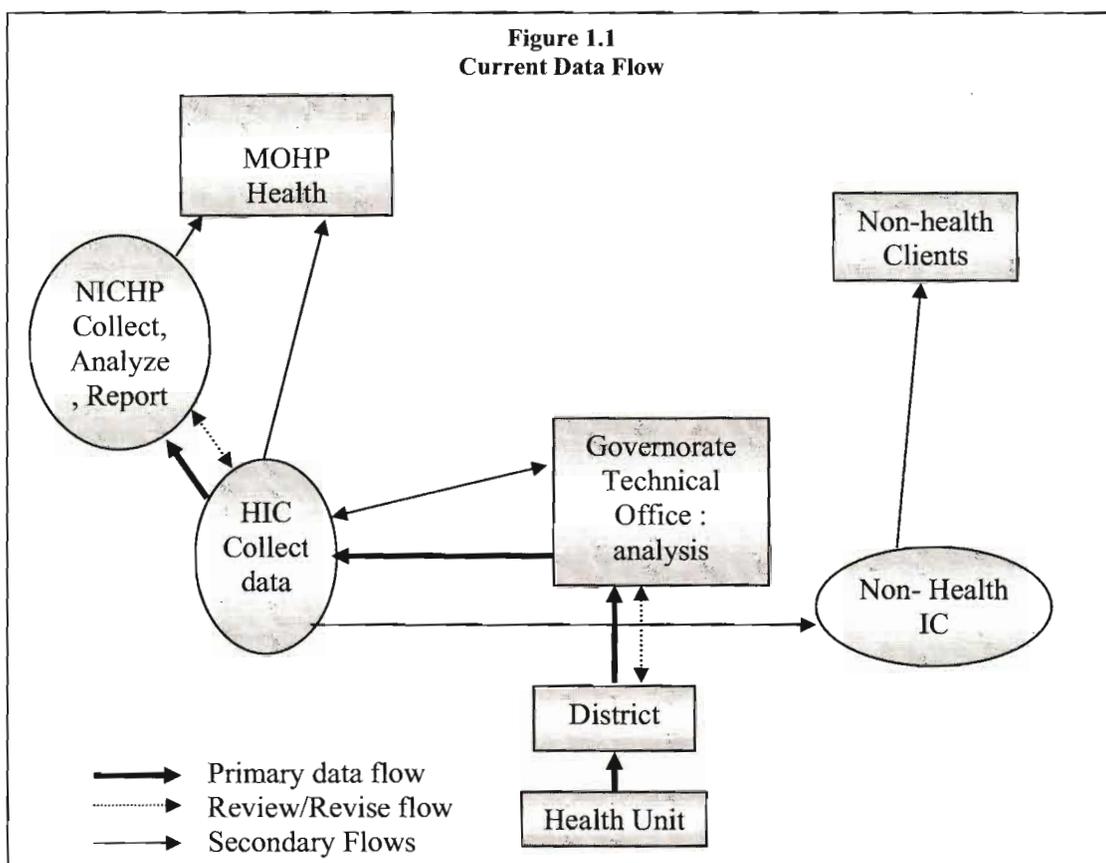
The PVO health sector is financially self-supporting through user fees. Small PVO clinics, however, are generally losing financially on current operations and are vulnerable to service disruption and failure.

The health system applied in Luxor and Mansoura cities is a district-level organizational structure, which is similar to that of the governorate system that described earlier, except that the basic functions are implemented on a smaller scale.

6. Health Information System (HIS)

This section describes how data are collected and used inside MOHP and the nature of the sources and flows of such data. The MOHP operates facilities that serve as a safety net program of services for all Egyptians. These facilities include general (multi-specialty), district, and rural integrated hospitals/clinics. Health centers are also operated in urban and rural areas. Public health offices which are responsible for tracking vital events and for performing (and tracking) some basic clinical functions like vaccinations are also part of the MOHP network.

The MOHP activities (including data gathering) are directed from the governorate level with 27 offices and with support from the 233 district level offices (Gary Gaumer, 1998). The line sectors of the MOHP have, over the years, established data collection requirements from the delivery units. There, requirements are represented in a set of manual forms. The data are gathered primarily from manual registries kept by units and



aggregated as required by the instructions on the form. Figure 1.1 illustrates the flow of data to the National Information Center for Health and Population (NICHP).

Basically, the governorates are responsible for collecting and verifying all data. Data flows to the technical office of each governorate, which is composed of sector employees who review and approve the content, passing it on to the health information center (HIC) of the governorate. Some data is automated at this point (but only in some governorates and only for certain forms). The data are carried, by hand, once a month to the NICHP. Here, the unit head (one per form) reviews the data, returning incomplete or questionable items to

the governorate on the occasion of the next monthly visit by governorate staff. When the unit head determines that data on the form is complete and accurate, it is keypunched and entered onto the NICHIP database. Statistical estimates are made for items that remain incomplete. (While records are flagged for this procedure, there is no knowledge of how frequently this actually occurs.)

Data Available at Health Facilities

Data available for each health facility in both Mansoura and Luxor differ according to the type of the facility and services provided. The data that was available at the facility level was not available in electronic form, and the team copied the information from the log book in special form. The type of data collected at the facility level is presented in Tables A.4 and A.5 with clarification in which forms were collected (electronic or filled form the facility log book). If the data was available from the health facility only and not available from the HIS, it was add to the HIS files and used in the analysis.

APPENDIX B
DATA COLLECTIONS INSTRUMENTS

1. **WATER-RELATED DISEASES MORBIDITY AND MORTALITY COLLECTED IN THE HEALTH FACILITIES**
2. **RAPID HEALTH FACILITY ASSESSMENT QUESTIONNAIRE**

Indicator	1998											
	1	2	3	4	5	6	7	8	9	10	11	12
	Total Female	Male	Total Female	Male	Total Female	Male	Total Female	Male	Total Female	Male	Total Female	Male
Template for field data collection												
1. Outpatient health care consultations												
Total number of consultations												
Consultations for diarrhea with severe dehydration												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for diarrhea with some dehydration												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for diarrhea with no dehydration												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Severe persistent diarrhea												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Persistent diarrhea												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Dysentery												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Immunization												
Vitamin A												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
DPT 3												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Polio 3												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for bilharzia												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												

Template for field data collection	1	2	3	4	5	6	7	8	9	10	11	12
Consultations for hepatitis A												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for hepatitis B												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for hepatitis C												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for typhoid												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for paratyphoid												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for trachomatous infections												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for child growth disorders/weighting												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for Shigella												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for Ascariasis, Trichuriasis, Hookworm diseases												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for Streptococcal sore throat												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for Non-streptococcal sore throat												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												
Consultations for Very severe febrile disease												
i. among children age 0-5												
ii. among children 10-15												
iii. among adults 16+												

1998		جميع الميولات حسب الولاية											
Template for field data collection		1	2	3	4	5	6	7	8	9	10	11	12
Consultations for Fever possible bacterial infection													
i. among children age 0-5													
ii. among children 10-15													
iii. among adults 16+													
Consultations for Fever bacterial infection unlikely													
i. among children age 0-5													
ii. among children 10-15													
iii. among adults 16+													
Consultations for Severe complicated measles													
i. among children age 0-5													
ii. among children 10-15													
iii. among adults 16+													
Consultations for Measles with eyemouth complications													
i. among children age 0-5													
ii. among children 10-15													
iii. among adults 16+													
Consultations for Mastoiditis													
i. among children age 0-5													
ii. among children 10-15													
iii. among adults 16+													
Consultations for Acute ear infection													
i. among children age 0-5													
ii. among children 10-15													
iii. among adults 16+													
Consultations for Chronic ear infection													
i. among children age 0-5													
ii. among children 10-15													
iii. among adults 16+													
Consultations for Severe malnutrition													
i. among children age 0-5													
ii. among children 10-15													
iii. among adults 16+													
Consultations for Severe anemia													
i. among children age 0-5													
ii. among children 10-15													
iii. among adults 16+													

Template for field data collection		1998											
جميع البيانات اليومية		1	2	3	4	5	6	7	8	9	10	11	12
2. Hospitalizations													
All hospitalizations													
i. Total number of hospitalizations (all causes)													
ii. among children age 0-5													
h. among children 10-15													
c. among adults 16+													
iii. Total number of hospitalization days (all cases)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for diarrhea with severe dehydration													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for diarrhea with some dehydration													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for diarrhea with no dehydration													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all cases)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations severe persistent diarrhea													
i. Total number of hospitalizations (all causes)													
ii. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
iii. Total number of hospitalization days (all cases)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
2. Hospitalizations for severe dehydration													
i. Total number of hospitalizations (all causes)													
ii. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
iii. Total number of hospitalization days (all cases)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													

	1	2	3	4	5	6	7	8	9	10	11	12
Hospitalizations persistent diarrhea												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations dysentery												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations Immunization												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations Vitamin A												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations DPT 3												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												

Template for field data collection		1998											
		1	2	3	4	5	6	7	8	9	10	11	12
Hospitalizations Polio 3													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for bilharzia													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for hepatitis A													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for hepatitis B													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for hepatitis C													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													

جمع البيانات حسب سنة

الجدول المستعمل للتدقيق من تعليمات نظام الإبلاغ 3 (الجزء 3 من الملحق 3)
 1- عدد فترات حدوث المرض المستعمل للتدقيق (كل الأسباب)
 بين الأعمار من 0-5
 بين الأعمار من 10-15
 بين الأعمار من 16+
 2- عدد فترات أيام حدوث المرض المستعمل للتدقيق (كل الأسباب)
 بين الأعمار من 0-5
 بين الأعمار من 10-15
 بين الأعمار من 16+
 الجدول المستعمل للتدقيق من تعليمات نظام الإبلاغ 3 (الجزء 3 من الملحق 3)
 1- عدد فترات حدوث المرض المستعمل للتدقيق (كل الأسباب)
 بين الأعمار من 0-5
 بين الأعمار من 10-15
 بين الأعمار من 16+
 2- عدد فترات أيام حدوث المرض المستعمل للتدقيق (كل الأسباب)
 بين الأعمار من 0-5
 بين الأعمار من 10-15
 بين الأعمار من 16+
 الجدول المستعمل للتدقيق من تعليمات نظام الإبلاغ 3 (الجزء 3 من الملحق 3)
 1- عدد فترات حدوث المرض المستعمل للتدقيق (كل الأسباب)
 بين الأعمار من 0-5
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 بين الأعمار من 16+
 2- عدد فترات أيام حدوث المرض المستعمل للتدقيق (كل الأسباب)
 بين الأعمار من 0-5
 بين الأعمار من 10-15
 بين الأعمار من 16+
 الجدول المستعمل للتدقيق من تعليمات نظام الإبلاغ 3 (الجزء 3 من الملحق 3)
 1- عدد فترات حدوث المرض المستعمل للتدقيق (كل الأسباب)
 بين الأعمار من 0-5
 بين الأعمار من 10-15
 بين الأعمار من 16+
 2- عدد فترات أيام حدوث المرض المستعمل للتدقيق (كل الأسباب)
 بين الأعمار من 0-5
 بين الأعمار من 10-15
 بين الأعمار من 16+

1998		جميع المبادرات العمومية											
Template for field data collection		1	2	3	4	5	6	7	8	9	10	11	12
Hospitalizations for typhoid													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for paratyphoid													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for rickettsial infections													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for child growth disorders/stunting													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for shigella													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													

Template for field data collection		1998											
		1	2	3	4	5	6	7	8	9	10	11	12
Hospitalizations for Ascariasis, Trichuriasis, Hookworm disease													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for Streptococcal sore throat													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for Non-streptococcal sore throat													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for Very severe febrile disease													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
Hospitalizations for Fever possible bacterial infection													
i. Total number of hospitalizations (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													
ii. Total number of hospitalization days (all causes)													
a. among children age 0-5													
b. among children 10-15													
c. among adults 16+													

جميع صفحات البيانات

1998

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1998

1998

1	2	3	4	5	6	7	8	9	10	11	12	مجمع التقييمات
Template for field data collection												
Hospitalizations for Fever bacterial infection unlikely												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations for Severe complicated measles												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations for Measles with oropharyngeal complications												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations for Mastoiditis												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations for Acute ear infection												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations for Meningitis bacterial infection unlikely												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations for Meningitis viral infection unlikely												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												

1998												جميع سنوات السبعينات
Template for field data collection												
Hospitalizations for Chronic ear infection												
1. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations for Severe malnutrition												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
Hospitalizations for Severe anemia												
i. Total number of hospitalizations (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
ii. Total number of hospitalization days (all causes)												
a. among children age 0-5												
b. among children 10-15												
c. among adults 16+												
3. Child Mortality (Deaths among children age 0-5)												
A. Total number of child deaths												
B. Number of child deaths due to diarrhoeal illness/disease												

بعد ذلك املوا الأرقام بسبعة صفرين الإضافي

جمع سنوات السبعينات

شؤون المستشفى لعلاج التهابات الأذن

1. عدد المرضى لحالات التهابات الأذن (كل الأسباب)

أ. بين الأطفال من 0-5

ب. بين الأطفال من 10-15

ج. بين البالغين 16+

ii. عدد الأيام التي فيها تم المستشفى لعلاج التهابات الأذن (كل الأسباب)

أ. بين الأطفال من 0-5

ب. بين الأطفال من 10-15

ج. بين البالغين 16+

شؤون المستشفى لعلاج سوء التغذية الحاد

1. عدد المرضى لحالات سوء التغذية الحاد (كل الأسباب)

أ. بين الأطفال من 0-5

ب. بين الأطفال من 10-15

ج. بين البالغين 16+

ii. عدد الأيام التي فيها تم المستشفى لعلاج سوء التغذية الحاد (كل الأسباب)

أ. بين الأطفال من 0-5

ب. بين الأطفال من 10-15

ج. بين البالغين 16+

شؤون المستشفى لعلاج فقر الدم الحاد

1. عدد المرضى لحالات فقر الدم الحاد (كل الأسباب)

أ. بين الأطفال من 0-5

ب. بين الأطفال من 10-15

ج. بين البالغين 16+

ii. عدد الأيام التي فيها تم المستشفى لعلاج فقر الدم الحاد (كل الأسباب)

أ. بين الأطفال من 0-5

ب. بين الأطفال من 10-15

ج. بين البالغين 16+

3. معدل وفيات الأطفال (الوفيات الأطلاق من 0-5)

A. عدد المرضى بالوفيات الأطلاق

ب. عدد وفيات الأطفال بسبب مرض الإسهال

Information of Demographic Data for city

	1998	1999	2000	2001	2002	2003	2004	2005
A. Total population								
B. Population 0-5 years old								
Male								
Female								
Total								
C. Population 10-15 years old								
Male								
Female								
Total								
D. Population 16+ years old								
Male								
Female								
Total								

ARAB REPUBLIC OF EGYPT
CAMP, DRESSER, & McKEE, INC.
JOHN SNOW, INC.
EL ZANATY & ASSOCIATES

RAPID HEALTH FACILITY ASSESSMENT

FACILITY QUESTIONNAIRE

DATA COLLECTED FROM THIS STUDY IS CONFIDENTIAL AND WILL
BE USED FOR SCIENTIFIC PURPOSES ONLY

FACILITY QUESTIONNAIRE

IDENTIFICATION	
<p>NAME OF FACILITY:.....</p> <p>FACILITY LOCATION:.....</p> <p>CODE OF FACILITY:.....</p> <p>FACILITY:.....</p> <p>TYPE OF HEALTH FACILITY:.....</p> <p>11=General Hospital 21=MCH Center</p> <p>12=District Hospital 23=Urban health unit</p> <p>13=Fever Hospital 24=Health Office</p> <p>14=Complementary 26=Other</p>	<p style="text-align: center;"> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> FACILITY CODE <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> TYPE OF HEALTH FACILITY </p>
<p>OPENING DATE OF THE FACILITY: / /</p>	<p style="text-align: center;"> DAY MONTH YEAR <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> </p>

INTERVIEWER VISITS		FINAL VISIT	
	1	2	3
DATE	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
INTERVIEWER	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
SUPERVISOR	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

<p>IF GPS READINGS ARE TAKEN, NOTE THE LATITUDE, LONGITUDE AND ALTITUDE HERE.</p> <p>LATITUDE IN DEGREES, MINUTES, SECONDS</p> <p>LONGITUDE IN DEGREES, MINUTES, SECONDS</p> <p>ALTITUDE IN METERS</p>	<p style="text-align: center;"> <input type="text"/> <input type="text"/> LONGITUDE IN DEGREES, MINUTES, SECONDS <input type="text"/> <input type="text"/> LONGITUDE IN DEGREES, MINUTES, SECONDS <input type="text"/> <input type="text"/> ALTITUDE IN METERS </p>
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	OFFICE EDITOR	CODER	KEYER
NAME	_____	_____	_____
DATE	/ / 2005	/ / 2005	/ / 2005
SIGNATURE	<div style="border: 1px solid black; width: 100%; height: 100%; display: flex; justify-content: space-between; align-items: center;"> <div style="width: 45%;"></div> <div style="width: 5%;"></div> <div style="width: 45%;"></div> </div>	<div style="border: 1px solid black; width: 100%; height: 100%; display: flex; justify-content: space-between; align-items: center;"> <div style="width: 45%;"></div> <div style="width: 5%;"></div> <div style="width: 45%;"></div> </div>	<div style="border: 1px solid black; width: 100%; height: 100%; display: flex; justify-content: space-between; align-items: center;"> <div style="width: 45%;"></div> <div style="width: 5%;"></div> <div style="width: 45%;"></div> </div>

BACKGROUND CHARACTERISTICS

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
1	What is your position in this health facility?	11 IN-CHARGE..... 12 MEDICAL..... 13 DOCTOR..... 14 NURSE..... 15 16 MIDWIFE..... 17 AUXILIARY..... 96 SUPPORT (cleaning, security, maintenance) COMMUNITY HEALTH WORKER/ VOLUNTEER..... OTHER _____ (SPECIFY) _____	
2	Routinely, how many days each week is the facility open for outpatient adult curative services?	NUMBER OF DAYS..... <input type="checkbox"/> 8 DON'T KNOW.....	
3	What is the type of ownership?	1 PUBLIC, 2 GOVERNMENT..... 3 PUBLIC, COMMUNITY 4 PRIVATE, NGO..... PRIVATE, OTHER.....	
4	What type of services does this facility provide? (CHECK ALL THAT APPLY)	OUTPATIENT..... INPATIENT..... MATERNITY..... OTHER _____ (SPECIFY) _____	A B C X

5	Now I have some questions about the staff who provide OUTPATIENT services . We want to know the highest technical qualification and the number of staff who are permanently assigned for outpatient services. This may include staff who also rotate to inpatient service. If someone is a specialist physician or nurse, we want to know their basic qualification (e.g. Nurse or Doctor) regardless of specialty or position.		TOTAL NUMBER	
	1) OB/GYN PHYSICIAN		OB/GYN	<input type="text"/> <input type="text"/>
	2) FAMILY PLANNING PHYSICIAN		FAMILY PLANNING	<input type="text"/> <input type="text"/>
	3) PEDIATRICIAN		PEDIATRIC	<input type="text"/> <input type="text"/>
	4) FAMILY PHYSICIAN		FAMILY	<input type="text"/> <input type="text"/>
	5) OTHER PHYSICIAN SPECIALIST		OTHER SPECIALTY	<input type="text"/> <input type="text"/>
	6) GENERAL PRACTITIONER		GENERALIST	<input type="text"/> <input type="text"/>
	7) NURSE WITH MIDWIFERY		NURSE W/ MIDWIFRY	<input type="text"/> <input type="text"/>
	8) NURSE		NURSE	<input type="text"/> <input type="text"/>
	9) OTHER (SPECIFY)		OTHER	<input type="text"/> <input type="text"/>
	10) SUM THE NUMBER OF STAFF REPORTED IN 1-9 AND CHECK: you have told me that you have ____ (number of staff) who provide outpatient services. Is this correct? IF NOT CORRECT, PROBE AND CHANGE 1-9 AS NECESSARY.		YES, NUMBER CORRECT.....	<input type="text"/> 1 <input type="text"/> 2 NO

No.	QUESTIONS AND FILTERS	CODING CATEGORIES					SKIP TO
		CATCHMENT POPULATION					
6	Do you have an estimate of the size of the catchment population that this facility serves, that is, the size of the population living in the area served by this facility?	<input type="text"/>	9999995				
		NO CATCHMENT AREA					

	IF YES: How many people is that?	DON'T KNOW SIZE OF CATCHMENT POPULATION	9999998
7	Does this facility ever have electricity? (from any source)	YES..... ... NO	1 2 → 9
8	Is the electricity always available during the times when the facility is providing services or is it sometimes interrupted? IF SOMETIMES INTERRUPTED, ASK: On how many days during the past week was the electricity not available for two (2) or more hours?	ALWAYS AVAILABLE..... # OF DAYS NOT AVAILABLE FOR MORE THAN 2 HOURS IN THE PAST WEEK	0

WATER SUPPLY

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
9	What is the main water source for this facility?	PIPED..... 10 .. PROTECTED WELL/ BOREHOLE..... 20 .. UNPROTECTED WELL/ BOREHOLE..... 21 30 96 RIVER/LAKE /POND..... 00 → OTHER..... 13 - (SPECIFY) NO WATER SOURCE.....	
10	How long does it take to go to your main water source, get water, and come back?	MINUTES ON PREMISES..... 99 DON'T KNOW..... 6 99 8	
11	In the last 2 weeks has the water from this source been unavailable for at least 1 whole day?	YES..... 1 .. NO..... 2 8 DON'T	

12	Do you store water in the facility?	KNOW..... YES..... ... NO	1 2 18
13	How long does it usually take to fill a [NAME OF A CONTAINER COMMONLY USED] from your main water source? [NOTE THE VOLUME OF THE CONTAINER FOR WATER FLOW CALCULATIONS: LITERS/GALLONS]	MINUTE OR LESS MORE THAN 1 MINUTE/ 5 MINUTES MORE THAN 5 MINUTES/LESS THAN 1 HOUR 1 HOUR OR LONGER DON'T KNOW.....	1 2 3 4 8
14	may I see the containers, please?	YES..... ... NO	1 2
15	WHAT TYPE OF CONTAINERS ARE THESE? (OBSERVE AND CHECK ALL THAT APPLY) Narrow mouthed: opening is 3 cm or less (interviewers use template)	NARROW MOUTHED..... WIDE MOUTHED..... OF BOTH TYPES.....	1 2 3
No.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
16	ARE THE CONTAINERS COVERED? (OBSERVE AND CHECK)	ALL ARE..... SOME ARE..... NONE ARE.....	1 2 3 ,
17	DO THE CONTAINERS HAVE A SPIGOT? (OBSERVE AND CHECK)	ALL DO..... SOME DO..... NON DO.....	1 2 3

18	Do you treat your drinking water in any way to make it safer to drink?	YES..... 1 ... 2 NO..... 21
19	what do you usually do to the water to make it safer to drink (for patient and staff)? (ONLY CHECK MORE THAN ONE RESPONSE, IF SEVERAL METHODS ARE USUALLY USED TOGETHER, FOR EXAMPLE, CLOTH FILTRATION AND CHLORINE)	A..... B..... C..... BLEACH/CHLORINE..... D..... SIEVE IT THROUGH CLOTH..... E..... F..... WATER FILTER (CERAMIC, SAND, COMPOSITE)..... X..... Z..... SOLAR DISINFECTION..... SEDIMENTATION..... OTHER..... (SPECIFY) DON'T KNOW.....
20	When did you treat the drinking water the last time using this method?	TODAY..... 11 YESTERDAY..... 12 ... 13 OVER ONE DAY/LESS THAN ONE WEEK..... 14 ... 15 ONE WEEK AGO OR MORE/LESS THAN A MONTH..... 98 AGO..... ONE MONTH AGO OR MORE..... ... DON'T REMEMBER.....
21	What is the main source of water used by this facility for hand washing?	PIPED..... 10 ... 20 PROTECTED WELL/ BOREHOLE..... ... 21 UNPROTECTED WELL..... 30

		BOREHOLE..... 96
		RIVER/LAKE /POND..... 00
		OTHER.....
		(SPECIFY)
		NO WATER SOURCE.....

EXCRETA DISPOSAL

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
22	What type of toilet facility is available at this facility for clients/patients? (OBSERVE AND CHECK ONE)	MODERN FLUSH TOILET..... 11 TRADITIONAL TANK FLUSH..... 12 TRADITIONAL BUCKET FLUSH..... 13 PIT TOILET/LATRINE TOILET..... 21 BUCKET TOILET..... 41 NO FACILITY/FIELD..... 61 OTHER..... 96	32
23	Where is this toilet facility located?	(SPECIFY) INSIDE OR ATTACHED TO FACILITY..... 1 ELSEWHERE ON PREMISES..... 2 OUTSIDE PREMISES..... 3	
24	Client/patient toilet facility: OBSERVE THE SUPERSTRUCTURE OF WALLS, ROOF AND DOOR?	HAS WALLS..... A HAS A..... B ROOF..... C HAS DOOR(S)..... D SUPER STRUCTURE..... E	

		DAMAGED..... NO SUPER STRUCTURE.....	
25	Client/patient toilet facility: IF DOOR(S) ARE PRESENT, CAN THEY BE CLOSED?	YES..... 1 ... 2 NO.....	
26	Client/patient toilet facility: IF ANY TYPE OF PIT LATRINE, ARE THE HOLES COVERED?	YES..... 1 ... 2 NO..... 3 NOT A PIT LATRINE.....	
27	Client/patient toilet facility: ARE THERE SEPARATE FACILITIES FOR MEN AND WOMEN?	YES..... 1 ... 2 NO.....	
28	Client/patient toilet facility: IS THERE FECAL MATTER PRESENT INSIDE THE FACILITY ON FLOOR OR WALLS OR OTHER SURFACES (HUMAN OR ANIMAL)?	YES..... 1 ... 2 NO.....	
29	Client/patient toilet facility: IS THERE A CHILD-FRIENDLY FACILITY?	PIT LATRINE WITH SMALLER HOLE A LOWER SEAT B POTTY AVAILABLE C NONE D	
30	Client/patient toilet facility: IS THERE A PLACE FOR HANDWASHING IN THE TOILET FACILITY OR NEXT TO IT?	YES..... 1 ... 2 NO.....	32
31	Client/patient toilet facility: ARE THE FOLLOWING ITEMS PRESENT AT THE PLACE FOR HANDWASHING? (OBSERVE AND CHECK ALL THAT	WATER FROM TAP OR CONTAINER A SOAP OR DETERGENT B C D	

APPLY)		E F
	TOWEL OR CLOTH BASIN OR SINK DRAIN NONE OF THE ABOVE.....	

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
32	Are there separate toilet facilities for staff?	YES..... ... NO.....	1 2 → 37
33	What type of toilet facility is available at this facility for staff? (OBSERVE AND CHECK ONE)	MODERN FLUSH TOILET..... TRADITIONAL TANK FLUSH..... TRADITIONAL BUCKET FLUSH..... PIT TOILET/LATRINE TOILET..... BUCKET TOILET..... NO FACILITY/FIELD..... OTHER..... (SPECIFY)	11 12 13 21 41 61 → 96 37
34	Where is this toilet facility located?	INSIDE OR ATTACHED TO FACILITY..... ELSEWHERE ON PREMISES..... OUTSIDE PREMISES	1 2 3
35	Staff toilet facility: IS THERE A PLACE FOR HANDWASHING IN THE TOILET FACILITY OR NEXT TO IT?	YES..... ... NO.....	1 2 → 37

41	Is the waste in the pit covered with dirt? (VERIFY BY OBSERVATION)	YES..... 1 ... 2 NO 8 CANNOT DETERMINE	
42	Where are used sharps (needles, blades, etc.) disposed of?	INCINERATOR..... 1 ... 2 WASTE PIT 3 4 WASTE COLLECTION..... ELSEWHERE.....	

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
43	Where are used sharps (needles, blades, etc.) put in the facility before their final disposal? (ASK TO SEE CONTAINER)	DEDICATED SHARPS CONTAINER..... 1 BIN FOR GENERAL WASTE..... 2 NO SPECIFIC PLACE..... 3	46 46
44	WHAT TYPE OF CONTAINER IS USED FOR USED SHARPS - NEEDLES, BLADES, ETC.? (OBSERVE)	PUNCTURE PROOF (PLASTIC OR METAL) 1 SOFT, NOT PUNCTURE PROOF..... 2	
45	IS THE CONTAINER COVERED?	COVERED WITH LID 1 NOT COVERED 2	
46	Is there a waste removal service that collects medical waste from this facility?	YES..... 1 ... 2 NO 48	48
47	How regular is the medical waste removal service?	AT LEAST ONCE A WEEK 1 2	

		REGULAR, BUT NOT EVERY WEEK..... IRREGULAR.....	3
--	--	---	---

SAFE INJECTIONS

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
48	Does this health facility provide any immunization services (routine, fixed, mobile, campaign)?	YES..... ... NO	1 2 → 53
49	Are auto-disable syringes for immunization as per WHO/UNICEF recommendation used? (ASK TO SEE SYRINGES)	YES..... ... NO NONE AVAILABLE.	1 2 9
50	Where are auto-disable syringes placed after use? (ASK TO SEE CONTAINER)	DEDICATED SHARPS CONTAINER..... BIN FOR GENERAL WASTE..... NO SPECIFIC PLACE.....	1 2 → 53 3 → 53
51	WHAT TYPE OF CONTAINER IS USED FOR USED AUTO-DISABLE SYRINGES?	PUNCTURE PROOF (PLASTIC OR METAL) SOFT, NOT PUNCTURE PROOF..... COVERED WITH LID ... NOT COVERED	1 2
52	IS THE CONTAINER COVERED?	COVERED WITH LID ... NOT COVERED	1 2

INFECTION PREVENTION

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
53	Is there a place for hand washing in the room where clients/patients are seen or next to it?	YES..... ... NO	1 2 → 56
54	Are the following items present at the place for hand washing?	WATER FROM TAP OR CONTAINER	A B

	(OBSERVE AND CHECK ALL THAT APPLY)	C D E F Y
55	Where is the wastewater disposed off? (OBSERVE)	SEWER SYSTEM 1 2 3 4 5 6 SEPTIC SYSTEM LATRINE GREY WATER PIT OR TRENCH COLLECTION FOR REUSE DISPOSED ELSEWHERE IN THE OPEN
	(OBSERVE AND CHECK ALL THAT APPLY)	
No.	QUESTIONS AND FILTERS	CODING CATEGORIES
56	VISIT THE LOCATIONS WHERE CLIENTS/PATIENTS ARE SEEN AND JUDGE THE GENERAL STATE OF CLEANLINESS: rank on a scale from 1 to 5 as follows: 5 No evidence of dirt, refuse, or human waste 4 (between 5 and 3) 3 Generally clean, some dust or litter, no human waste 2 (between 3 and 1) 1 Dirt, refuse and human waste like feces or blood	RANK. <input type="text"/>
57	Is there disinfectant available to clean medical equipment, furniture, or floors? (ASK TO SEE)	YES..... 1 .. NO 2
58	Is there evidence of promotional activities related to water, sanitation and hygiene?	YES..... 1 .. NO 2

	(ARE POSTERS AND OTHER EDUCATIONAL MATERIALS ON DISPLAY IN CLIENT/PATIENT AREAS)	.....
59	Are waste bins present in client/patient areas?	YES..... ... NO	1 2

PEST AND VECTOR CONTROL

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
60	Are rats and mice a common nuisance in this area?	YES..... ... NO	1 2
61	Are rodent traps or poisons in place? (OBSERVE)	YES..... ... NO	1 2

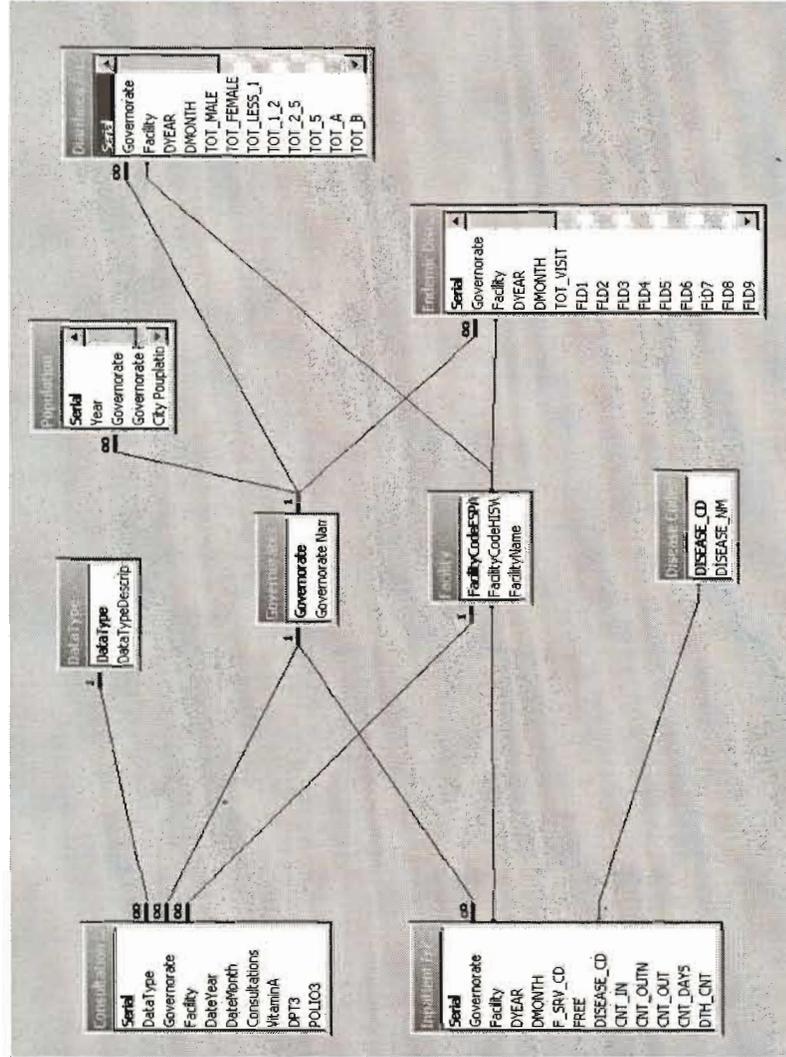
OBSERVATIONS

THANK THE RESPONDENT FOR PARTICIPATING IN THE SURVEY. COMPLETE QUESTIONS 62-63.											
62	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%; text-align: center;">DEGREE OF COOPERATION.</td> <td style="width: 20%; text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">.....</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">FAIR</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">GOOD</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">VERY GOOD</td> <td></td> </tr> </table>	DEGREE OF COOPERATION.	1	2	FAIR	3	GOOD	4	VERY GOOD	
DEGREE OF COOPERATION.	1										
.....	2										
FAIR	3										
GOOD	4										
VERY GOOD											
63	<p>INTERVIEWER'S COMMENTS:</p> <p>_____</p> <p>_____</p> <p>_____</p>										
64	<p>SUPERVISOR'S COMMENTS:</p> <p>_____</p> <p>_____</p> <p>_____</p>										
65	<p>OFFICE EDITOR'S COMMENTS:</p> <p>_____</p> <p>_____</p> <p>_____</p>										

For an illustration of the relation between these tables see Diagram 2.1 below.

Diagram 2.1

Relational Database Structure



The Health information system database is a relational database. It has a friendly graphic user interface in both Arabic, and English languages. Through the user interface the user can:

- 1- Manipulate data (Data entry, data editing, and queries).
- 2- Create reports on both facility level, and Ministry of health level.

- 3- Generate monitoring reports.
- 4- Generate quality assurance reports.
- 5- Transfer data from the facility to the governorate level, or to the ministry of health.
- 6- Replicate data from the ministry, or from the governorate to the local facility database.
- 7- Read system documentation.

Facility data is coded using the international WHO codes (e.g., Disease codes, Operations codes, etc.)

The database has data for the following items:

- 1- The facility activities.
- 2- Primary health care.
- 3- Preventive health care.
- 4- Family planning.
- 5- Administrative data.
- 6- Vital statistics.

The database is protected by a password.

Characteristics of the Health Facilities Visited

	Governorate	Facility Code	Longitude	Latitude	Altitude in meters	The main water source for the facility	The period that taken to go to the main water source, get wa	The availability of water from this source at least one whole	The type of toilet that available at the facility for client	The place that the toilet facility located	Observing if there is a child-friendly facility	Separate toilet facilities for staff
1	Mansoura	1001	31.36652470	31.04465425	4.3	Piped	On premises	No	Traditional tank flush	Inside or attached to facility	None	No
2	Mansoura	4001	31.37871802	31.032225708	7.0	Piped	On premises	No	Traditional tank flush	Inside or attached to facility	None	Yes
3	Mansoura	5001	31.39338434	31.04118347	8.8	Piped	On premises	No	Modern flush toilet	Inside or attached to facility	None	Yes
4	Mansoura	11001	31.37172818	31.04556084	2.4	Piped	On premises	No	Traditional bucket flush	Inside or attached to facility	None	Yes
5	Mansoura	11002	31.39499903	31.04603291	9.4	Piped	On premises	No	Traditional tank flush	Inside or attached to facility	None	No
6	Mansoura	11003	31.37688339	31.04567349	2.7	Piped	On premises	No	Traditional bucket flush	Inside or attached to facility	None	No
7	Mansoura	11004	31.38142169	31.03973508	10.7	Piped	On premises	No	Traditional tank flush	Inside or attached to facility	None	No

8	Mansoura	11005	31.38762295	31.01777852	9.1	Piped	On premises	No	Modern flush toilet	Inside or attached to facility	None	No
9	Mansoura	11006	31.38843298	31.01770341	8.5	Piped	On premises	No	Modern flush toilet	Inside or attached to facility	None	No
10	Mansoura	11007	31.40813649	31.05915964	9.1	Piped	On premises	Yes	Modern flush toilet	Inside or attached to facility	None	No
11	Mansoura	11008	31.40508405	31.04235291	10.4	Piped	1	No	Modern flush toilet	Inside or attached to facility	None	No
12	Mansoura	11009	31.40762150	31.06757641	7.0	Piped	1	No	Modern flush toilet	Inside or attached to facility	None	No
13	Mansoura	11010	31.37206614	31.02307320	7.0	Piped	On premises	No	Traditional tank flush	Inside or attached to facility	None	No
14	Mansoura	11011	31.39951050	31.05186403	7.3	Piped	4	No	Traditional bucket flush	Elsewhere on premises	None	No
15	Mansoura	46001	31.37870193	31.04109228	8.8	Piped	On premises	No	Modern flush toilet	Inside or attached to facility	None	Yes
16	Luxor	1001	25.70787907	32.64538586	79.8	Piped	On premises	Yes	Modern flush toilet	Inside or attached to facility	None	Yes
17	Luxor	1002	.	.	.	.	.	.	.	.	.	.
18	Luxor	4001	25.68878710	32.63246298	80.5	Piped	On premises	No	Modern flush toilet	Inside or attached to facility	None	Yes

19	Luxor	5001	25.68347633	32.63371825	78.9	Piped	On premises	Yes	Modern flush toilet	Inside or attached to facility	None	Yes
20	Luxor	5002	25.71617782	32.652222549	79.2	Piped	On premises	Yes	Traditional bucket flush	Inside or attached to facility	None	No
21	Luxor	5003	.	.	.	.	.	.	.	.	.	.
22	Luxor	11001	25.69724143	32.65005291	80.2	Piped	On premises	No	Modern flush toilet	Inside or attached to facility	None	Yes
23	Luxor	11002	25.68849206	32.64037013	80.8	Piped	On premises	No	Modern flush toilet	Inside or attached to facility	None	Yes
Total	N	23	21	21	21	21	21	21	21	21	23	21

APPENDIX C

TABLES

Appendix C.1 Codes and Addresses of Mansoura and Luxor Facilities

Information on Facilities:			
Facility Name	Facility Code	Facility Type	Address
Mansoura Facilities			
Gedela	11007	Urban Health Unit	Urban Unit - Behind Abou El Naga School
El Essaaf	46001	Urban Health Unit	El Sheikh Hassanien Square (Dakhalia AID Building)
El Fardous	11010	Urban Health Unit	Building No.2 - Behind the Central
Ezbat El-Shal	11008	Urban Health Unit	Mansoura - El Minia Building
El Markaz El Sehey	5001	Urban Health Unit	El Shenawy Land - Governorate Population Building
Kolangail	11009	Urban Health Unit	Kolangail - The Post Road Behind The Post Office
Torail	11011	Urban Health Unit	Torail - El Sherief El Radey Road
Mansoura	4001	Mother Care Center	El Oberge Road - Branch of Aabdel Salam Araf Behind the Saftawy Mosque
Mansoura	11004	Urban Health 4	El Awkaf Building - Road Port Said in front of El Shab Club
Meet Haydar	11006	Urban Health	Road El Mahata - in front of Sedy Gaber Mosque
Mansoura	11002	Urban Health 2	Mansoura City - Road Aziz behind the Bus Station
Mansoura	11003	Urban Health 3	Mansoura City - El Thety Square
Mansoura	11001	Urban Health 1	Mansoura - No. 12 at Road Mohamed El Bana Building - above the library Koshek
Sandoub	11005	Urban Health	Sandoub - Behind the Primary School
El Ayada	1001	General Hospital	Mansoura - The Cross of Road El Gomhoria with Gehan El Sadat Street
Luxor Facilities:			
El-Sheikh Moussa	5002	Urban Health Unit	El-Sheikh Moussa - Karnak Road - Corniche El- Nil
El-Awamia	5001	Urban Health Unit	El-Shohadaa St. from Khaled Ibn El-Waleed St.- Behind the Educational Bldg.
Luxor	11001	Urban Health 1	El-Sawaky - Beside the Gas Store- East Railway Station
Luxor	11001	Urban Health 2	El-Khalig St.- beside Health Organization
Luxor	1001	General Hospital	Cornich El- Nil - beside Luxor Temple
Luxor	4001	Mother Care Center	Mohamed Farid St.- from El-Mahata St., behind Luxor Hotel, beside Educational Club
East El-Kobahy	5003	Urban Health Unit	
El-Karna	1002	General Hospital	

Appendix C.2 Population Size and Children Age 0-5 in Mansoura and Luxor.

Year	Mansoura		Luxor	
	Population	Children 0-5	Population	Children 0-5
1998	377648	41140	157186	17512
1999	385177	41960	160388	17869
2000	391965	42699	163603	18227
2001	399714	43544	166966	18602
2002	407334	44374	170181	18960
2003	415152	45225	173248	19302
2004	423233	46106	176430	19657

Appendix C.3.1 Estimated Population Size and Children Age 0-5 for Some Catchment areas of Mansoura Facilities.

Year	Facility code	Estimated population size	Estimated # of Children 0-5	Year	Facility code	Estimated population size	Estimated # of Children 0-5
1998	11001	87728	9557	2002	11007	23195	2527
1999	11001	89477	9747	2003	11007	23640	2575
2000	11001	91054	9919	2004	11007	24101	2625
2001	11001	92854	10115	2005	11007	24562	2676
2002	11001	94625	10308	1998	11008	66628	7258
2003	11001	96441	10506	1999	11008	67956	7403
2004	11001	98318	10711	2000	11008	69154	7533
2005	11001	100200	10915	2001	11008	70521	7682
1998	11002	41299	5510	2002	11008	71866	7829
1999	11002	42122	5620	2003	11008	73245	7979
2000	11002	42865	5719	2004	11008	74671	8134
2001	11002	43712	5832	2005	11008	76100	8290
2002	11002	44545	5943	1998	11009	9141	996
2003	11002	45400	6057	1999	11009	9324	1016
2004	11002	46284	6175	2000	11009	9488	1034
2005	11002	47170	6293	2001	11009	9676	1054
1998	11004	30498	4386	2002	11009	9860	1074
1999	11004	31106	4474	2003	11009	10049	1095
2000	11004	31655	4553	2004	11009	10245	1116
2001	11004	32280	4643	2005	11009	10441	1137
2002	11004	32896	4731	1998	11010	14835	1616
2003	11004	33527	4822	1999	11010	15214	1657
2004	11004	34180	4916	2000	11010	15577	1697
2005	11004	34834	5010	2001	11010	15909	1733
1998	11006	9522	1139	2002	11010	16270	1772
1999	11006	9712	1162	2003	11010	16649	1814
2000	11006	9883	1182	2004	11010	17090	1862
2001	11006	10079	1206	2005	11010	17544	1911
2002	11006	10271	1229	1998	11011	32459	3536
2003	11006	10468	1252	1999	11011	33106	3606
2004	11006	10672	1277	2000	11011	33689	3670
2005	11006	10876	1301	2001	11011	34355	3743
1998	11007	21505	2343	2002	11011	35010	3814
1999	11007	21934	2389	2003	11011	35682	3887
2000	11007	22320	2431	2004	11011	36377	3963
2001	11007	22761	2480	2005	11011	37073	4039

Appendix C.3.2 Estimated Population Size and Children Age 0-5 for

Some Catchment areas of Luxor Facilities.

Year	Facility code	Estimated population size	Estimated # of Children 0-5
1998	5001	7689	857
1999	5001	7831	872
2000	5001	7973	888
2001	5001	8142	907
2002	5001	8310	926
2003	5001	8487	946
2004	5001	8652	964
2005	5001	8835	984
1998	5002	10673	1189
1999	5002	10908	1215
2000	5002	11156	1243
2001	5002	11478	1279
2002	5002	11888	1324
2003	5002	12238	1363
2004	5002	12583	1402
2005	5002	12928	1440
1998	11001	36172	4030
1999	11001	36737	4093
2000	11001	37224	4147
2001	11001	37911	4224
2002	11001	38534	4293
2003	11001	39184	4366
2004	11001	39845	4439
2005	11001	40546	4517
1998	11002	34330	3825
1999	11002	34847	3882
2000	11002	35407	3945
2001	11002	35756	3984
2002	11002	38534	4293
2003	11002	39184	4366
2004	11002	39845	4439
2005	11002	40546	4517

Table C.4 Collected Data and its Source: Mansoura

Health unit	Code	Diseases	Data available		Electr onic	Look book
			From	To		
Public hospital	1001	Inpatient frequenters by diagnosis	January 1998	February 2006	✓	✓
		Diarrhea	April 2002	December 2005	✓	✓
		Endemic diseases	January 1998	February 2006	✓	✓
MHC center	4001	Diarrhea	January 2000	December 2005	✓	✓
		Immunization	January 2000	December 2005	✓	✓
		Vitamin A	January 2000	December 2005	✓	✓
		DPT 3	January 2000	December 2005	✓	✓
		Polio 3	January 2000	December 2005	✓	✓
The health center: health unit	5001	Diarrhea	January 1998	December 2005	✓	✓
		Endemic diseases	January 1998	February 2006	✓	✓
Health office # 4	11004	Severe malnutrition	5, 10(2001), 1,4,5,7,8,11(2002), 3,4,5,6,8,9,10(2003), 1,3,4,6,(2004), 3(2005) Hand		✓	✓
		Diarrhea	January 2000	December 2005	✓	✓
		Vitamin A	January 1998	December 2005	✓	✓
		DPT 3	January 1998	December 2005	✓	✓
		Polio 3	January 1998	December 2005	✓	✓
Meet Hidar: health office	11006	Non-streptococcal sore throat	October 2002	December 2005	✓	✓
		Diarrhea	January 2000	December 2004	✓	✓
		Immunization	January 2003	December 2005	✓	✓
		Vitamin A	January 2004	December 2005	✓	✓
Health unit: Gedeah	11007	DPT 3	January 2004	December 2005	✓	✓
		Polio 3	January 2004	December 2005	✓	✓
		Diarrhea	January 1999	December 2005	✓	✓
		Immunization	January 1999	December 2005	✓	✓
		Vitamin A	March 2001	December 2005	✓	✓
Health unit: Ezzbet Ellshal	11008	DPT 3	January 1998	December 2005	✓	✓
		Polio 3	January 1998	December 2005	✓	✓
		Endemic diseases	January 2002	December 2005	✓	✓
		Diarrhea	January 1998	December 2005	✓	✓
		Immunization	January 1998	December 2005	✓	✓
Health unit: Kolengeal	11009	Vitamin A	January 2005	December 2005	✓	✓
		DPT 3	January 1998	December 2005	✓	✓
		Polio 3	January 1998	December 2005	✓	✓
		Endemic diseases	January 1998	December 2005	✓	✓
		Diarrhea	January 1998	December 2005	✓	✓
Health unit: Elfardoos	11010	Acute ear infection	January 1998	December 2005	✓	✓
		Immunization	January 2002	December 2005	✓	✓
		Vitamin A	January 1998	December 2005	✓	✓
		DPT 3	January 1998	December 2005	✓	✓
		Polio 3	January 1998	December 2005	✓	✓
		Endemic diseases	January 2002	December 2005	✓	✓
		Acute ear infection	January 2002	December 2005	✓	✓
Severe anemia	January 2003	December 2005	✓	✓		
Health unit: Esaaf	46001	Diarrhea	September 2001	December 2005	✓	✓
		Endemic diseases	September 2001	December 2005	✓	✓

Health unit	Code	Diseases	Data available		Elect-ronic	Look book
			From	To		
Health unit: Toreal	11011	Immunization	January 2002	December 2005		✓ ✓ ✓
		Vitamin A	January 2002	December 2005		
		DPT 3 Polio 3	January 2002	December 2005		
Health office #2	11002	Immunization	January 2002	December 2005		✓ ✓ ✓
		Vitamin A	January 2002	December 2005		
		DPT 3 Polio 3	January 2002	December 2005		
Health office #3	11003	Immunization	January 2002	December 2005		✓ ✓ ✓
		Vitamin A	January 2002	December 2005		
		DPT 3 Polio 3	January 2002	December 2005		
Health office #1	11001	Diarrhea	January 1998	February 2006	✓	✓ ✓ ✓ ✓
		Immunization	January 2002	December 2005		
		Vitamin A	January 2002	December 2005		
		DPT 3 Polio 3	January 2002	December 2005		
Sanoub health office	11005	Immunization	January 2002	December 2005		✓ ✓ ✓
		Vitamin A	January 2002	December 2005		
		DPT 3 Polio 3	January 2002	December 2005		

Table C.5 Collected Data and its Source: Luxor

Health unit	Code	Diseases	Data available		Elect- ronic	Look book		
			From	To				
Public hospital	1001	Inpatient frequenters by diagnosis	January 1998	February 2006	✓			
		Diarrhea	January 1998	October 2001	✓			
		Endemic diseases	January 1998	February 2006	✓			
		ARI	January 1998	February 2006	✓			
MHC center	4001	Diarrhea	January 1998	July 2004	✓			
		Immunization Vitamin A	April 1999 January 2005	December 2003 December 2005		✓		
		DPT 3	April 1999 January 2005	December 2003 December 2005		✓		
		Polio 3	April 1999 January 2005	December 2003 December 2005		✓		
		Endemic diseases	January 1998	February 2006	✓			
		ARI	January 1998	February 2006	✓			
		Awammya: health unit	5001	Diarrhea	January 1998	November 2005	✓	
				Immunization Vitamin A	January 1998	December 2005		✓
DPT 3	January 1998			December 2005		✓		
Polio 3	January 1998			December 2005		✓		
Endemic diseases	January 1998			February 2006	✓			
ARI	January 1998	February 2006	✓					
Sheikh Mussa: health unit	5002	Diarrhea	January 1998	August 2005	✓			
		Immunization Vitamin A	January 1998	December 2005		✓		
		DPT 3	January 1998	December 2005		✓		
		Polio 3	January 1998	December 2005		✓		
		Endemic diseases	January 1998	February 2006	✓			
ARI	January 1998	February 2006	✓					
Health office 1	11001	Immunization Vitamin A	January 1998	December 2005		✓		
		DPT 3	January 1998	December 2005		✓		
		Polio 3	January 1998	December 2005		✓		
Health office 2	11002	Immunization Vitamin A	January 1998	December 2005		✓		
		DPT 3	January 1998	December 2005		✓		
		Polio 3	January 1998	December 2005		✓		