

Review of Trends, Policies and Programmes affecting Nutrition and Health in Egypt (1970–1990)

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by

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UNITED NATIONS ADMINISTRATIVE COMMITTEE ON COORDINATION – SUBCOMMITTEE ON NUTRITION (ACC/SCN)

The ACC/SCN is the focal point for harmonizing the policies and activities in nutrition of the United Nations system. The Administrative Committee on Coordination (ACC), which is comprised of the heads of the UN Agencies, recommended the establishment of the Sub-Committee on Nutrition in 1977, following the World Food Conference (with particular reference to Resolution V on food and nutrition). This was approved by the Economic and Social Council of the UN (ECOSOC). The role of the SCN is to serve as a coordinating mechanism, for exchange of information and technical guidance, and to act dynamically to help the UN respond to nutritional problems.

The UN members of the SCN are FAO, IAEA, IFAD, ILO, UN, UNDP, UNEP, UNESCO, UNFPA, UNHCR, UNICEF, UNRISD, UNU, WFP, WHO and the World Bank. From the outset, representatives of bilateral donor agencies have participated actively in SCN activities. The SCN is assisted by the Advisory Group on Nutrition (AGN), with six to eight experienced individuals drawn from relevant disciplines and with wide geographical representation. The Secretariat is hosted by WHO in Geneva.

The SCN undertakes a range of activities to meet its mandate. Annual meetings have representation from the concerned UN Agencies, from 10 to 20 donor agencies, the AGN, as well as invitees on specific topics; these meetings begin with symposia on subjects of current importance for policy. The SCN brings certain such matters to the attention of the ACC. The SCN sponsors working groups on inter-sectoral and sector-specific topics.

The SCN compiles and disseminates information on nutrition, reflecting the shared views of the agencies concerned. Regular reports on the world nutrition situation are issued, and flows of external resources to address nutrition problems are assessed. State-of-the-Art papers are produced to summarize current knowledge on selected topics. SCN News is normally published twice a year. As decided by the Sub-Committee, initiatives are taken to promote coordinated activities – inter-agency programmes, meetings, publications – aimed at reducing malnutrition, primarily in developing countries.

FOREWORD

Viewing improved nutrition as an outcome of development processes expands the area of concern for policy-makers and practitioners who seek to combat malnutrition. These processes operate at different levels in society, from the individual through to the whole arena of governmental policy and indeed international relationships. The SCN, in deciding on initiating a series of country-wide reviews of nutrition-relevant actions in 1990, aimed to provide a rich base of documented experience of why and how such actions were undertaken and what was their effect on nutrition.

This country-wide approach built on the progress made at the 1989 workshop on "Managing Successful Nutrition Programmes" held at the 14th IUNS Congress in Seoul. The focus here had been on nutrition programmes, and the essential factors determining their success, and the synthesis of findings and individual case studies were later published as ACC/SCN Nutrition Policy Discussion Paper No. 8.

Two other influential documents were the SCN's "Nutrition-Relevant Actions" that emerged from the 1990 workshop on nutrition policy held in London, and UNICEF's 1991 Nutrition Strategy document. Together these provided both a common analytical framework for organising the reviews and a common language for discussing the various actions that impinge on nutrition. The value of such a framework has been demonstrated by the ease with which it lends itself to analyses of both the nutrition problem and its potential solutions. The food – health – care triad of underlying causes of malnutrition, in particular, proved to be a very useful framework for orienting the inputs and subsequent discussions of the 1992 International Conference on Nutrition, co-sponsored by FAO and WHO. Communication and thus advocacy are facilitated when people share such a conceptual understanding.

UNICEF had originally proposed that a series of country-wide reviews be undertaken and the results presented at the 15th IUNS Congress in September 1993. At the time of writing, preparations for this workshop are well underway – in fact, the richness of documented material has necessitated the organisation of an additional two-day satellite meeting in Adelaide. We are extremely grateful to UNICEF for their financial support through this exercise. The series editor for these country reviews was Stuart Gillespie, and the SCN Advisory Group on Nutrition (AGN) also technically examined the drafts as these emerged. In addition, I would like to express gratitude to the external technical reviewers, selected for their in-depth knowledge of particular countries, who provided the authors with comments and suggestions on initial drafts.

The essential value of these country case studies lies in their ability to describe the dynamics involved when a national government attempts to combat malnutrition. Questions such as the role of the political economy in determining policy options, obstacles met in implementation, how programmes are modified or expanded, and how they are targeted, are all addressed. The need for actions to be sustainable to achieve results over the long-term, and the importance of both measurable objectives and a system of surveillance to monitor progress, are examples of important conclusions. These reviews thus provide valuable insights into the questions of "how" as well as "what", in terms of nutrition policy.

The country reviews are intended for a wide audience including those directly concerned with nutrition in developing countries, development economists, and planners and policy makers. Along with the output of the Adelaide meeting, they will be valuable for advocacy in underscoring that effective actions *will* improve nutrition. It is hoped that these reviews and the proceedings of Adelaide will provide guidance for a strengthening and expansion of future actions for reducing nutritional deprivation.

Dr A. Horwitz
Chairman, ACC/SCN

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Meanwhile it is important to acknowledge the work done by the United Nations, Administrative Committee on Coordination – Subcommittee on Nutrition, ACC/SCN, WHO, Geneva, to publish a summary of this study in the second report on the World Nutrition Situation, March 1993 and to format the study for publishing.

The authors are also grateful to UNICEF Egypt for its approval to publish the study and its assistance in presenting the results of the study in the XV Congress of the International Union of Nutritional Sciences, September 1993, Adelaide, Australia.

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Prof. Wafaa Moussa

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I. INTRODUCTION

Objectives of the Study

The main objective of this report is to review the different policies, as well as programs affecting health and nutrition status of Egyptians over the period 1970–1990. The study will attempt to outline and examine critically the major trends in the health and nutrition status of the Egyptians in the light of:

- the Egyptian socio–economic setting;
- the different programs affecting health and nutrition status of Egyptians;
- the interactions between the different socio–economic variables and their implications on the health and nutrition indicators.

Background of the Study

Characteristics of nutrition and health problems vary by country, in accordance to the different socio–economic setting and the various policies adopted. The impact of socio–economic policies and programs on the nutrition status of the population is a critical and vital aspect in recent years. Nutrition is recognized in a significant number of studies as an outcome of various inputs. Adequate food and access to health services are regarded usually as the main determinants for the nutrition status of the population. However recently most studies agreed upon the importance of the impact of different socio–economic policies and programs on the nutrition status (Cornia, et al., 1989). Egypt like many other countries witnessed several changes in the performance of its economic and social policies over the past twenty years.

The question that is raised now is: what are the implications of the changes in the socio–economic policies in general on health and the nutrition status of Egyptians. Several questions may be also addressed in this

respect like: does the nutrition status of the population necessarily accompany the changes in the different socio-economic policies? What is the role of the different interventions in the elimination of some important nutrition problems? Was malnutrition regarded as a medical problem or rather a socio-economic responsibility? Are nutritional and health considerations reflected in Egyptian socio-economic programs and policies?

In this respect, it is noteworthy to mention that it is difficult to determine the impact of the different programs and policies on health and nutrition.

One of the difficulties is that the determinants of health and nutrition status are mainly the decisions of the individuals. This fact is because the effects of the socio-economic policies and programs on health and nutrition depend on the changes in the composition of incomes, the changes in the relative prices and their implications on the people's attitudes. Many variables have to be taken into consideration, such as (Weil, 1990):

- the preferences of the individuals concerning their current and future consumption;
- the various linkages between the formal and the informal sector;
- the labour absorption capacity in the different sectors;
- the demand elasticity on the health services and nutrient intakes by the different income categories;
- the substitution possibilities between the different nutrient intakes and other goods;
- the decisions of the individuals concerning their time allocation;
- short and long term effects of some socio-economic policies;
- the discrepancies in policy objectives with respect to efficiency, equity and welfare considerations, especially supply side policies.

However, to take all the previous facts into consideration, a field study is needed. The nature of this study is rather analytical. It is an analysis of the impact of some socio-economic policies and programs on the nutrition status of the Egyptian population at the macro level, rather than an examination of cases at the micro level. The study is in time series analysis within a theoretical framework.

Theoretical Framework

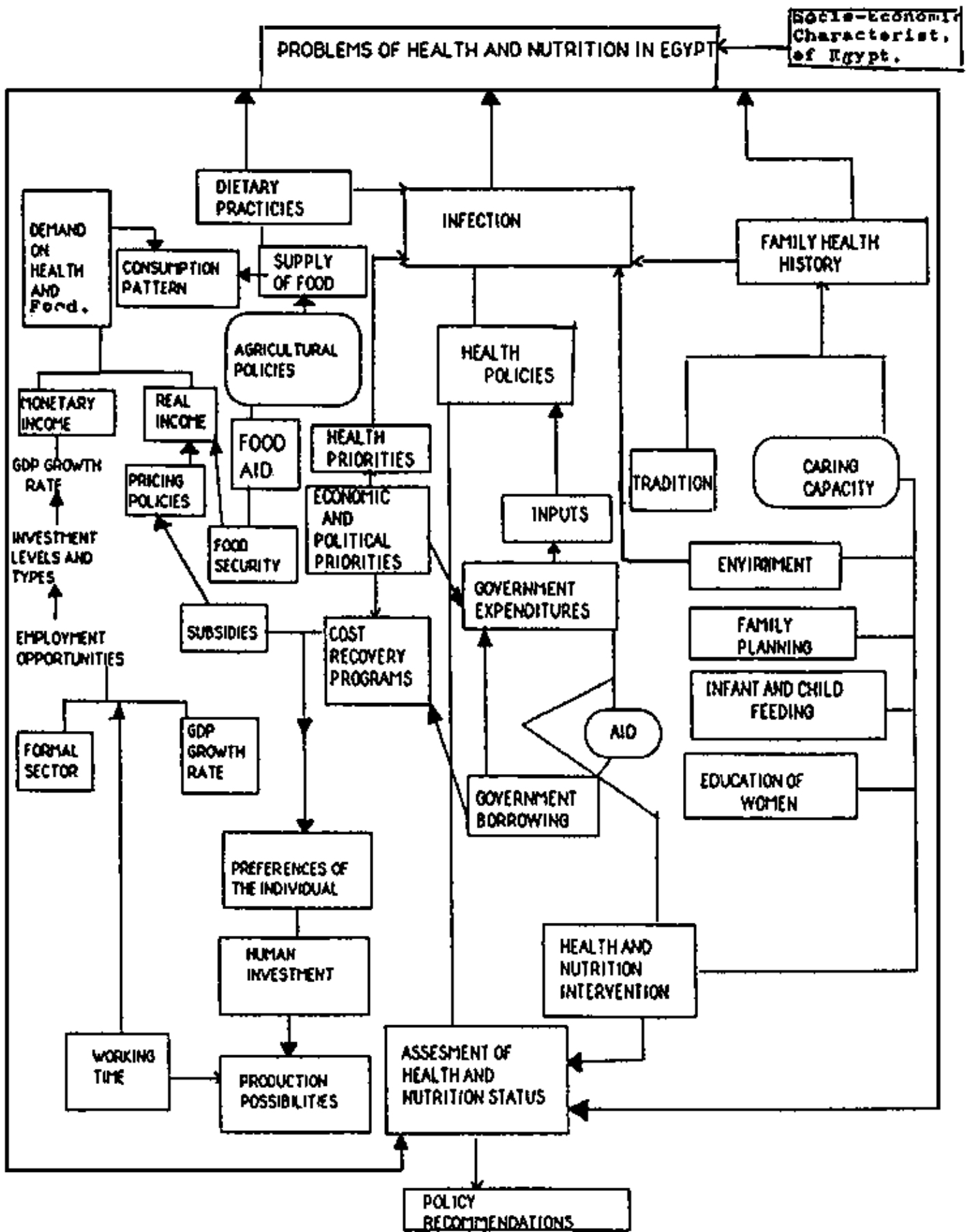
Economic theory provides different frameworks for analyzing the various links between the economic policies and health and nutrition status. However, one should note that any theoretical framework should be based on a typology of policies and trends. This typology must link:

- the socio-economic characteristics of Egypt (political trends, demographic factors, government expenditure, employment policy and education policies);
- health and nutrition problems;
- specific factors related to demand and supply of food;
- health policies and health services;
- factors related to family health history.

The following chart is an attempt to discuss all previous factors and may provide a framework for our further analysis as follows:

The study requires *firstly* to introduce a trend analysis of the nutrition and health status. *Secondly*, to determine the basic characteristics of Egypt, the political changes, demographic aspects and the development

strategy. *Thirdly*, it is agreed upon that *dietary practices, infection and family health history* are the three main determinants of both nutrition and health problems from a medical, economic and social point of view. Dietary practices in turn are influenced by two main factors, demand on health and nutrition and supply of food. If we begin with the supply of food, the agricultural policies play a vital role in this respect. Other important factors are food subsidies and ration system. Food aid also is a crucial factor in Egypt. It is important to note that food intake and consumption are direct outcome of both aspects supply and demand. However food distribution is to a large extent related to poverty and income distribution in the society. Consumption and food intake, regarded as basic determinants of health and nutrition problems, are an outcome of demand and supply analysis.



DETERMINANTS OF HEALTH AND NUTRITION STATUS

Concerning now the demand on food and health services, we may state, at first, that the income whether in monetary or real terms is a major determinant of demand on health services and nutrient intakes. GDP rate of

growth, investment levels, types of investment and employment opportunities are all vital aspects determining the rate of growth of the monetary income. The relationship between the formal and informal sector has to be examined in this respect. Real incomes will be influenced by other economic policies such as pricing policies, subsidies, cost recovery programs and privatization.

However, since the decisions of the individuals depend on the changes in the relative prices of all goods and services, prices of substitutes and complementary goods are important to be taken into consideration. In this respect one may recall some economic policies, such as the trade policies (currency devaluation, import policies) that will affect the prices of some imported food as well as pharmaceuticals and other imported goods and inputs. Moreover, as incomes depend on the production possibilities of the individuals and the time devoted to production, other factors will influence the previous interactions (Behrman J.R., 1988).

Preferences of the individuals concerning their current consumption (income, subsistence needs) and future consumption (education and health) must affect the health and nutrition indicators. A general notion argues that, when people become poorer they prefer usually current consumption at the expense of future consumption, which will finally affect their production possibilities. As known, poor people have just one asset: labour. Moreover, the time allocated for production will be affected by the time the individual allocates for leisure and to satisfy other needs. No doubt it will be affected by the decrease in the magnitude of free health services and subsidized food by increasing the time that people have to spend in queues to obtain such services and goods. The result will be either a decline in the demand on such services and goods or a decrease in the time spent in work and consequently a decline in incomes.

If we study now the second determinant of the nutrition and health problems: infection, we note that health policies and the environment may be regarded as the main determinants of it. Economic and political changes are affecting the society's welfare policies and in turn the priorities in the health sector. Moreover economic circumstances, such as government expenditure, budget deficit and government borrowing determine the physical and monetary inputs in the health sector. Health and nutrition programs and interventions are an outcome of the health policies and are determined by domestic and external variables (such as foreign aid).

Family health history is the third factor determining problems of nutrition and health. Caring capacity and family planning are all interrelated issues in family health history. One might distinguish between caring capacity within the family and in the society. Women's role and education is a critical factor beside family planning, children's feeding and the environment.

Lastly, but not least it is difficult to argue that the report will include 'an analysis of all previous variables. However, we will try to highlight the most important policies and programs in order to examine their impact on the health and nutrition status of Egyptians.

II. MAIN HEALTH AND NUTRITION PROBLEMS: A TREND ANALYSIS OF THE SITUATION

Neo–Natal, Post–Neonatal, Infant Child Mortality Rates and Maternal Mortality Rates

On average Egypt has done well in safeguarding the nutrition and health status of the Egyptians. This is indicated in the impressive gains in the profile of mortality rates shown in Figure 1 and Table 1 App. The figure shows a sharp on–going declining trend since 1970s.

In 1988 neo–natal death rates reached 12.7 per thousand live births and post–neonatal death rate accounted for 30.6 per thousand live births after a remarkable decline in it in the last 12 years (El Deib, 1991) and particularly after 1984. In this year the diarrhea project and several immunization campaigns started. However, the improvement in neo–natal mortality rates are minor due to under–registration of births and deaths and incomplete reporting in the first months (El Deib, 1991).

In spite of a significant decline in the infant mortality rates from 87 per thousand in 1976 to 43 per thousand in 1988, it is still high when compared with many other developing countries. Still the Egyptian situation is unusual for a country which has an extensive network of national health services. This might be due to poor water supplies and a lack of environmental sanitation and a curative oriented health sector. Child mortality in

Egypt declined from 17.3 per thousand in 1976 to 6.7 per thousand in 1988.

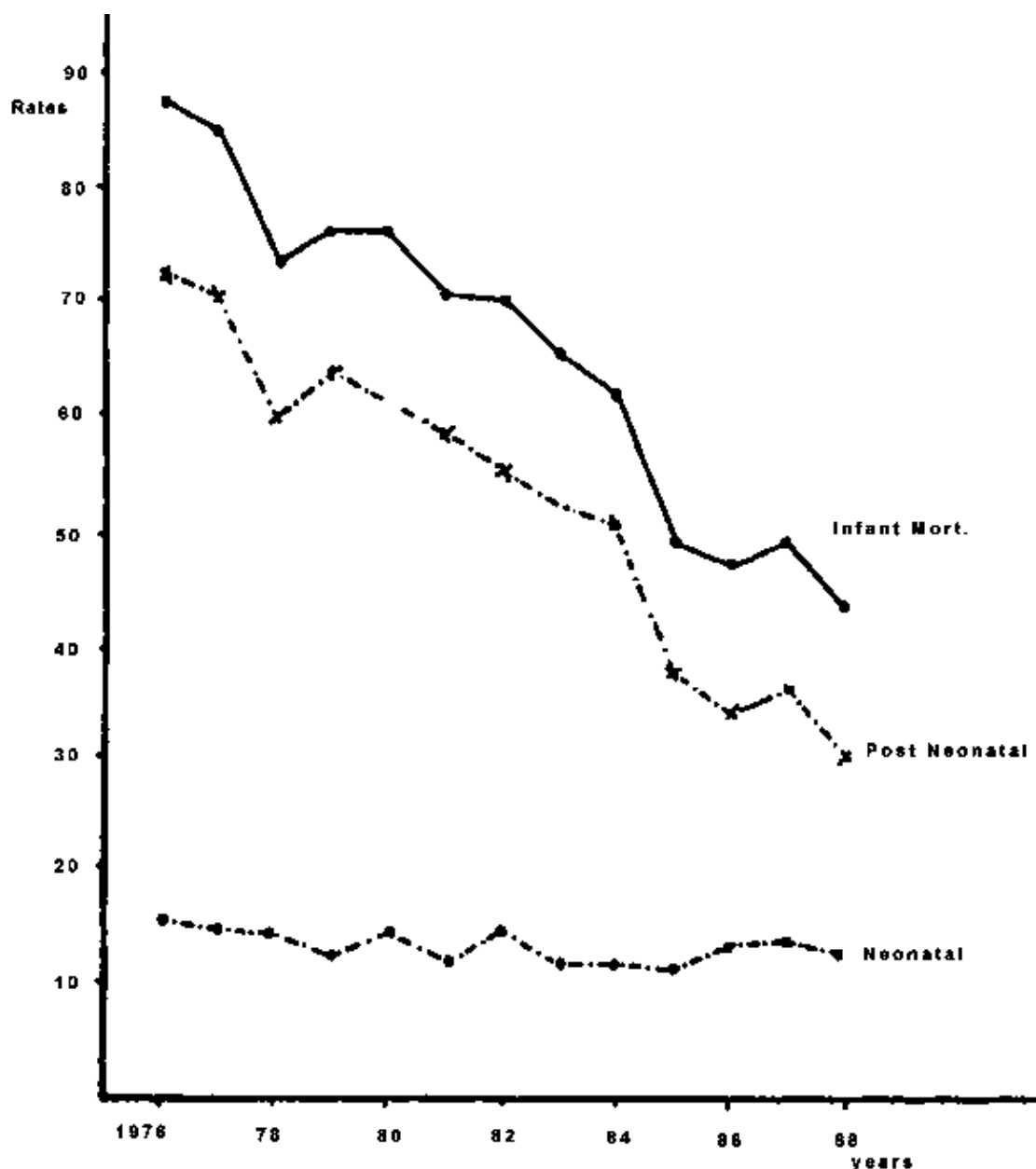


Figure 1. Neo-Natal, Post Neonatal and Infant Mortality. Rates during the Period 1976 – 1988 (El Deeb 1991)

The leading cause of death in infancy according to vital statistics is diarrhea and other intestinal diseases, which are responsible for more than half of all deaths over the last two decades. (Figure 2A & B) (El-Deeb, 1991). The second most important cause is acute respiratory infections which accounts for one fifth to one quarter of all infant deaths. Deaths due to pregnancy complications are third. Almost 10% of infant deaths is due to pregnancy complications.

It is believed that the decline in infant mortality rates reflect the impact of two major programs directed at child survival; the National Control of Diarrhea Disease Project (NCDDP) and the Child Survival Project (CAPMAS and UNICEF, 1988). Deaths of diarrhea diseases declined of about 40 percent and 30 percent among infants and children, respectively over the last five years (Figure 3) and meanwhile acute respiratory infection diseases revealed an increase in the proportion of death of infants by 8%. Finally, with respect to the high proportion of infant deaths due to complications of pregnancy and deliveries, it was proved that poor health conditions of mothers lead to higher levels of infant mortality. Education of mothers and place of residence were the main socio-economic causes of variations in IMR (Nawar et al., 1988).

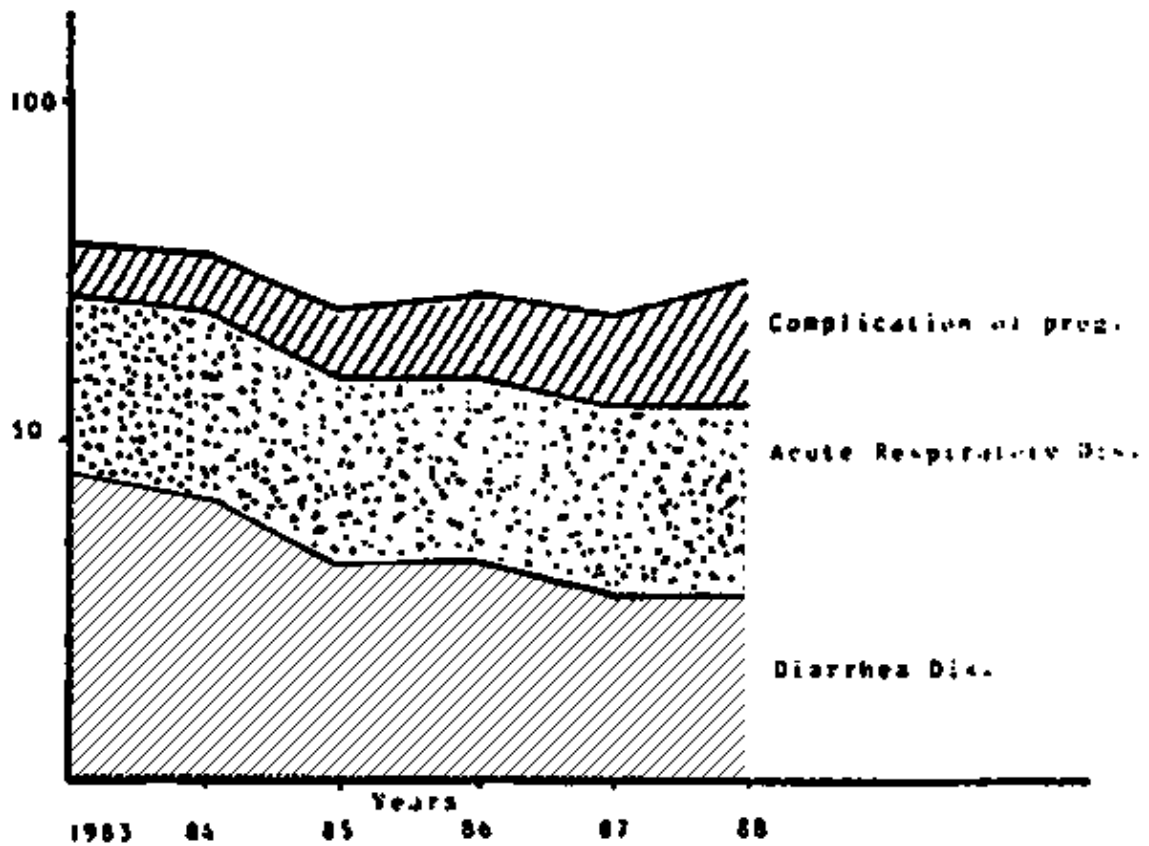


Figure 2A. Proportions of Infant Deaths by Main Cause of Death.

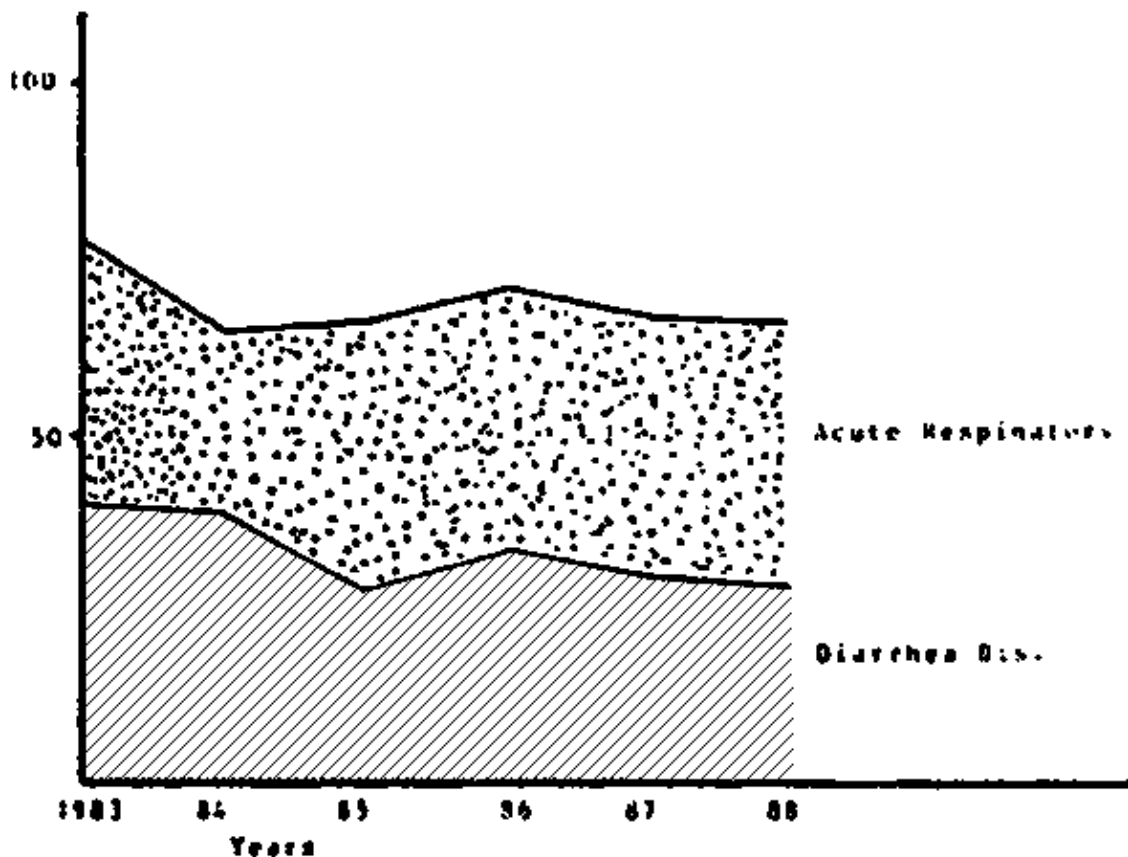


Figure 2B. Proportions of Child Deaths by Main Cause of Death. (El Deeb, 1991)

The variations in IMR and CMR by place of residence, clearly indicates significant geographical variations (Table 2 App.). Urban governorates, with the highest socio-economic development have the lowest IMR (35 deaths per thousand live births and 2.96 per thousand 1-4 year child). Upper Egypt governorates, the less privileged governorates, have the highest IMR and CMR (54-10.2) against (36-5.2) in Lower Egypt governorates for CMR and IMR respectively.

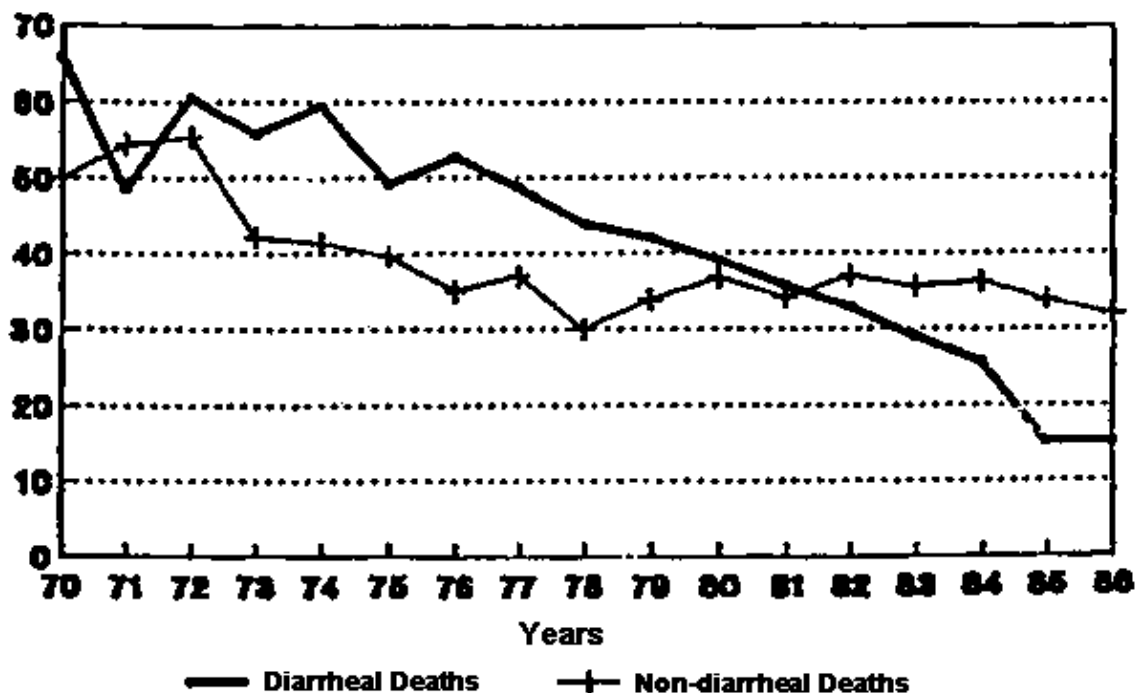


Figure 3. Infant Deaths per 1000 Live Births, Diarrheal and Non-diarrheal

Source: CAPMAS

Maternal mortality as well showed a progressive decline from 110 deaths per 100000 live births in 1970 to 54 deaths per 100000 live births in 1988. Maternal mortality rates differ by governorates from 40.9 deaths per 100000 live births in urban governorates to 52.5 in Lower Egypt and to 59 in Upper Egypt (CAPMAS, Births and Deaths Statistics, 1989). *This reflects again* differences in socio-economic conditions among governorates. For example, while 49 percent of deliveries occurred in hospitals in urban governorates, this ratio declined to 12 percent in Lower Egypt and to 9 percent in Upper Egypt (Sayed, H., et al., 1989). Meanwhile in accordance to the Social Indicators Survey of Egypt (1986) 32.5 percent of pregnant women in urban areas had a regular checkup during pregnancy, the corresponding figure was 17.6 percent in rural Egypt (Nassar, H. 1990).

Protein Energy Malnutrition (PEM) and Growth Pattern

Undernutrition Among Infants and Preschool Age Children

Egypt conducted several surveys to investigate the undernutrition status among infants and preschool age children. Some were at the national level, such as the National Nutrition Survey (AID, 1978), the Health Examination Survey (HES) of the Health Profile of Egypt (HPE 1984), (Moussa, 1988) and the Demographic and Health Survey (DHS, 1988, Sayed et. al., 1989) and others were conducted in different areas like the Nutrition Status Survey II (AID, 1980) the Cairo University and MIT survey (1978) (El-Lozy et al., 1980), the Collaborative Research Support Program, 1985 (CRSP, 1987) and the Follow up Nutrition Survey, 1986 (Hussein et al., 1989). Table (1) represents the main characteristics of the previous surveys. Before examining the trends in PEM in the different surveys it is important to note that there are difficulties in this comparison due to the difference in the season of data collection or due to differences in training.

The data collection of the first National Nutrition Survey took place in winter 1978, a season of minimum prevalence of infant and childhood diarrhea. However, the Nutrition Status Survey II (AID, 1980) was carried out in late summer, a season of known high prevalence of diarrhea.

Table (1)

THE DIFFERENT SURVEYS INVESTIGATING THE UNDERNUTRITION STATUS OF THE INFANTS AND PRESCHOOL AGE CHILDREN

SURVEY	CONDUCTOR	SAMPLE SIZE	AGE	DATE COLLECTION	AREA
National Nutrition Survey (AID) 1978	Nutrition Institute, The Centre for Disease Control, Atlanta Georgia USA, UNICEF	9794	6 – 71 Months	Early January mid April 1978	330 Sample 11 universes by Using Geopolitical and Population Criteria
Cairo University & MIT Weighting Exercise, El-Lozy et al., 1980	Cairo University & MIT	4327	0 – 5 Years	April 1978	17 Rural Health Centres in Different Governorates in Upper and Lower Egypt
Nutrition Status Survey II (AID, 1980)	Nutrition Inst., The Centre for Disease Control, Atlanta Georgia, USA	1783	6 – 71 Months	August and September 1980	Two Universes: Lower Egypt: Damietta & Upper Egypt: Giza, Fayoum Kafr El-Sheikh. Ben Sueif, Mineya
The Health Examination Survey (HES) of the Health Profile of Egypt (HPE, Moussa. 1988)	Health Profile of Egypt (HPE) Ministry of Health (MOH)	2482	< 6 Years	Health Interview Survey (HIS) from Nov. 1979 to March 1984. The HES was in the last two Cycles	National
The Collaborative Research Support Program (CRSP, 1985)	Nutrition Institute & USA	312 Household	18 – 29 Months	Toddlers from October 1982 till December 1983	Village of Kalama Kalyoubia Governorate
Follow-up Nutrition Survey 1989 (Hussein et al 1985)	Nutrition Inst.	1020	6 – 71 Months	Summer 1986	34 sites previously surveyed in 1978 belonging to 6 governorates: 23 sites from small Villages: 9 sites from large Villages
Demographic and Health Survey DHS, 1988, (Sayed et al. 1989)	Egypt National Population Council & Institute Resource Development Macro System Inc.	1907	3–36 Months	November 1988 till mid January 1989	21 Governorates (all Governorates Excluding the Five Frontier Governorates)

Meanwhile, it is noteworthy that the data collection of the second Follow up Nutrition Survey in 1986 (Hussein et al., 1989) was also in summer, the season of high prevalence of diarrhea, showing relatively higher prevalence of acute malnutrition.

On the other hand, the Cairo University and MIT Weighing Exercise (1980) was not community based as all other surveys, as the data collection took place in the health centres and the results show relatively higher incidence of chronic and acute malnutrition than the AID 1978.

The Collaborative Research Support Program (CRSP) was a research to study the effects of malnutrition on body functions and the sample was a purposive sample and not a representative sample of the community.

Meanwhile, there are significant differences between the results of the HES of the HPE in 1984 and the National Nutrition Survey (1978 & 1980), that can be justified by different training systems or data collection techniques.

Finally, the analysis of the DHS 1988 data depended on the standard deviation and is to be compared with all other results. This is why a special comparative analysis was undertaken for the data of the National Nutrition Survey 1978 and the DHS 1988 (part V) (Garcia M., 1981).

The main concluding remarks of the national surveys and their follow-up surveys regarding the trends in undernutrition among infants and preschoolers show the following results:

Weight for Height

This parameter indicates the state of acute nutrition or wasting. The results of the different surveys reveal that this is not a public health problem in Egypt. Starting with the National Nutrition Survey, 0,6% of the children were found wasted (Wt/Ht <80% standard or acute undernutrition). 3,1% were overweight and obese (Wt/Ht > 120% standard). However the curves for the total sample of Egyptian children as well as the universes reexamined in 1980 were closely similar to those of NCHS/CDC reference population (Figure 4A and B). Prevalence of wasting is highest in the 6–11 and 12–23 months age group. Prevalence of overweight children is highest in the 36–47 months age group. There is a tendency for higher prevalence of overweight among girls than boys in all age groups. However in the *Nutrition Status Survey II*, (AID 1980) preschool children were thinner than in the 1978 survey. The prevalence of acute undernutrition was greater in Upper Egypt in almost all ages than in 1978 due to the difference in the season of data collection.

Moreover the results of HES of the HPE (1984) are significantly worse. Preschoolers with severe and moderate degrees of acute undernutrition constitute 4.6% and 3.0% respectively. The differences between those rates and the rates prevailing in the earlier ARE Nutritional Status Survey (AID, 1978) (2.3% total: 0.6% severe and 1.7% moderate) may be due to differences in measuring techniques or due to personal errors of the many data collectors of the HPE. However the proportion of overweight children is 13%, while that in the ARE Nutritional Status Survey is 3.1% which shows a trend of overnutrition or excessive intake, another form of malnutrition. In both surveys proportion of females in malnutrition is more than males.

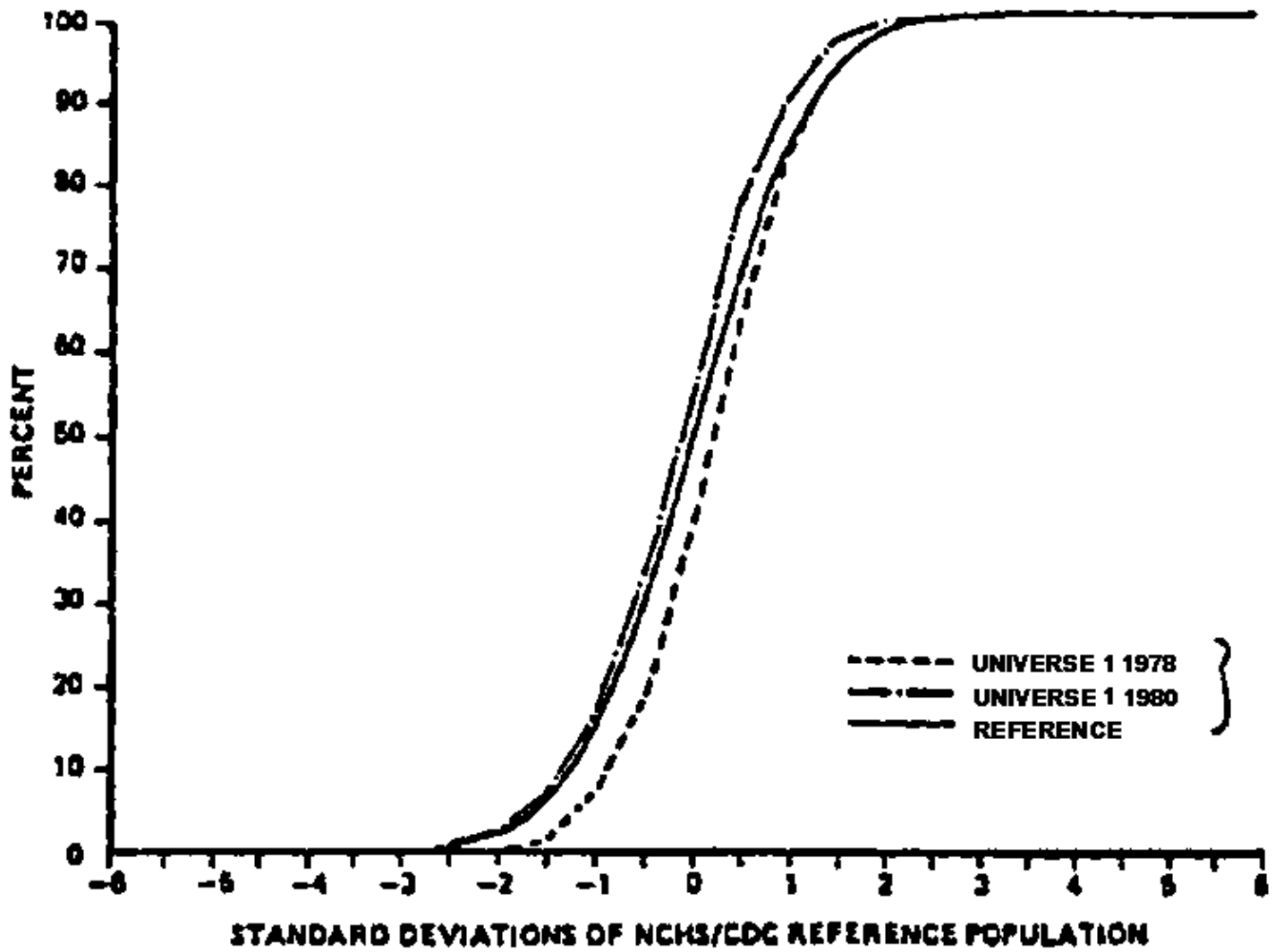


Figure 4A. Cumulative Distribution of Survey Children by Weight-for-Height Standard Deviations - Universe 1, 1978 and 1980, Egypt

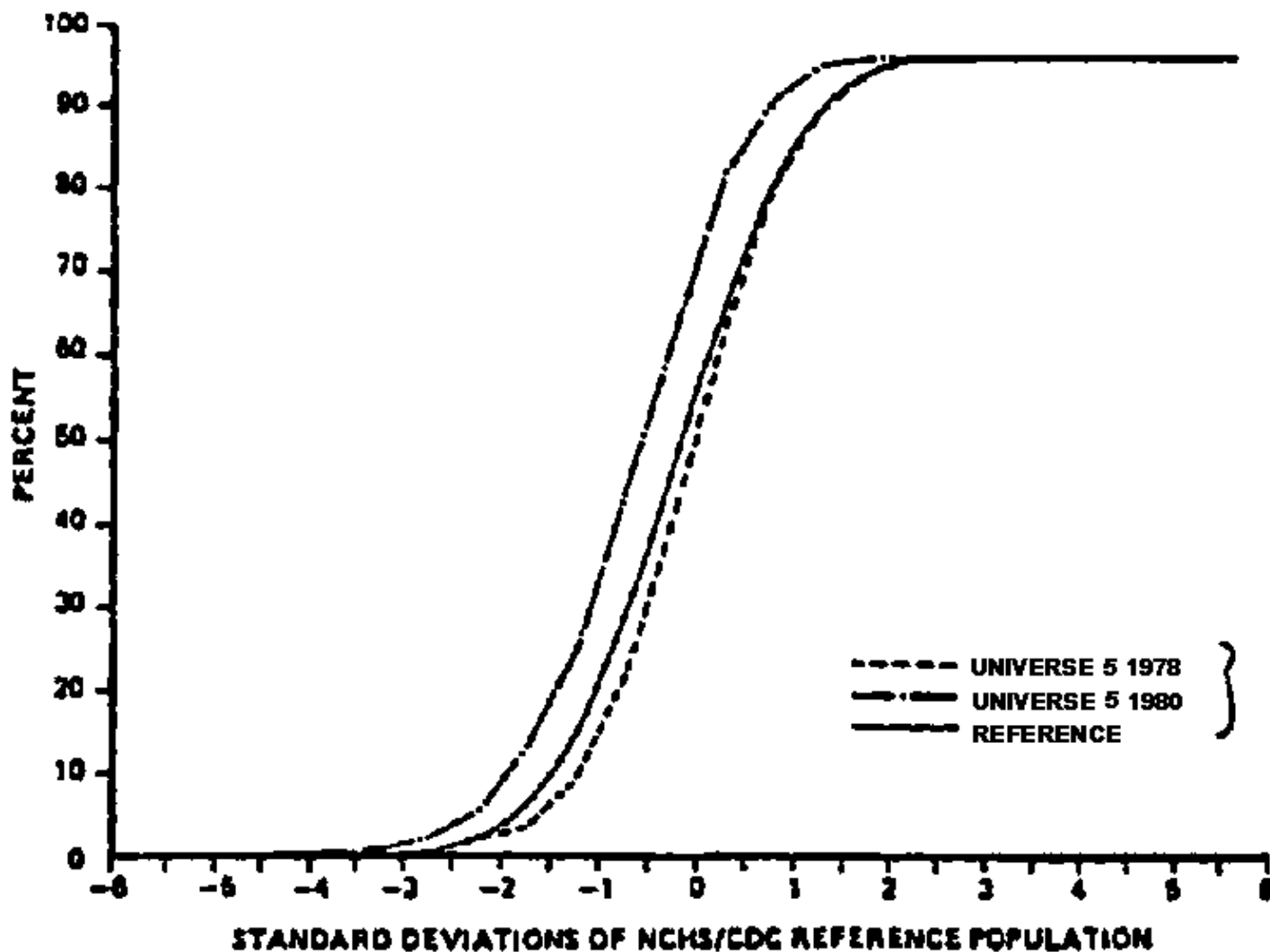


Figure 4B. Cumulative Distribution of Survey Children by Weight-for-Height Standard Deviations - Universe 5, 1978 and 1980, Egypt

Moreover the 1986 (Follow up Nutrition Survey) revealed a high prevalence of acute undernutrition (7%) (Table 3 App.). This is usually linked with infection or higher morbidity rate and can be explained by the differences in the season, in which each survey took place.

Finally, the Demographic and Health Survey (DHS, 1988) (Sayed et al., 1989) indicates that the proportion of children in the wasted category who are 2 SD or more below the reference median is 1.1%, somewhat less than the international reference population. While this indicator distinguishes those who are acutely undernourished it does not identify those who are already stunted and consequently have weight which is proportional to their stunted height This explains the low rate of wasting as opposed to stunting.

Height for Age

This parameter indicates a state of chronic undernutrition. Results of the different surveys show that chronic undernutrition indicated by stunting is one of the main nutritional problems in Egypt. Starting with the first National Nutrition Survey results in 1978. 21.2% of the children were stunted (chronic undernutrition) ranging from 10.6% to 27.5% among the different areas. The peak prevalence of stunting occurs in the 12-35 months age groups. The prevalence of stunting is generally higher in rural than in urban areas.

However, the mean height for age percent of median values of surveyed children was greater in the Nutrition Status Survey II in 1980 in both universes (AID, 1980). (Figure 5A and B). The prevalence of stunting (chronic undernutrition) for all age groups was lower in 1980 than in 1978. In both surveys stunting was significantly more common in Upper than in Lower Egypt. The predominant increase in stunting prevalence occurred in the 3 age groups 12-47 months.

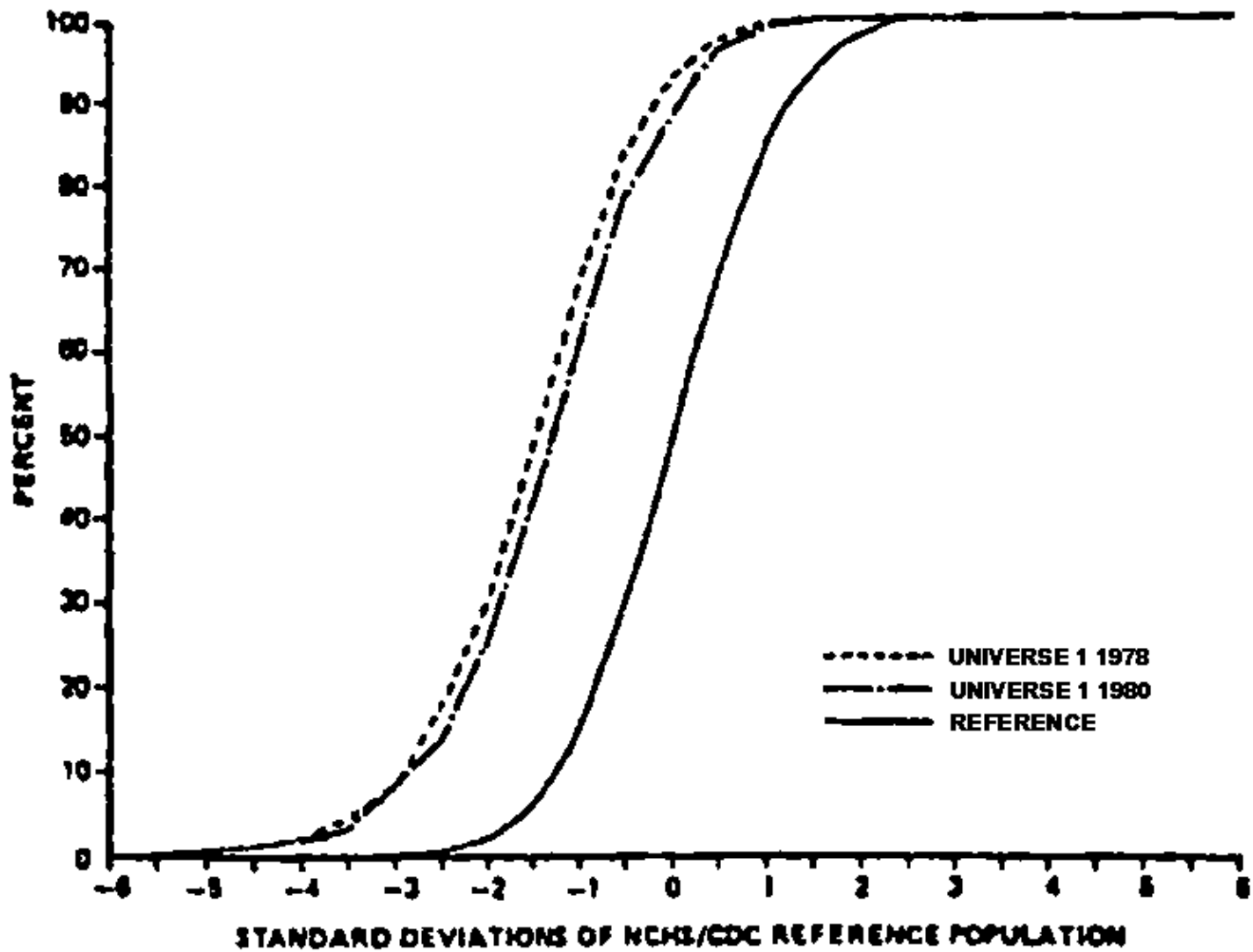


Figure 5A. Cumulative Distribution of Survey Children by Height-for-Age Standard Deviations – Universe 1, 1978 and 1980, Egypt

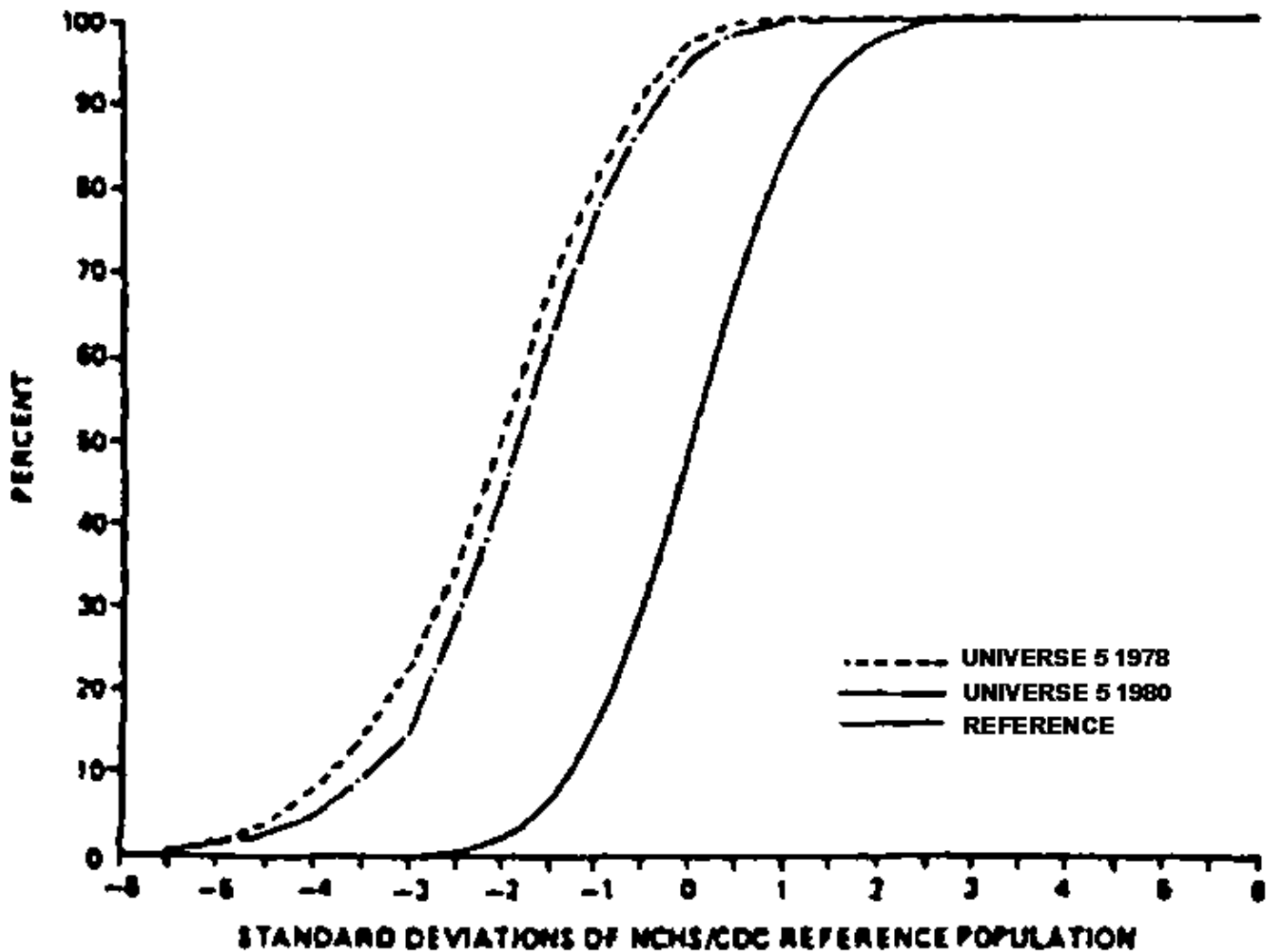


Figure 5B. Cumulative Distribution of Survey Children by Height-for-Age Standard Deviations – Universe 5, 1978 and 1980, Egypt

In 1984 preschool age children with severe and moderate degrees of chronic undernutrition (< 90) constitute 42.6% of total sample in the HES (HPE 1984). It is hard to believe that chronic undernutrition has doubled during such a short period, it is rather due to differences in height measuring techniques and the use of many data collectors. Meanwhile, although there is a tendency to a lower prevalence of chronic undernutrition in the Follow up Nutrition Survey (1986), (24.1%) as compared with that of the same sites in 1978, (26.5%). Yet both figures were higher than that of the total representative sample of 1978, (21.2%) (Table 3 App.).

Finally the DHS 1988 showed that among the children surveyed, 31% fall 2 or more SD below reference NCHS/CDC population median. These are considered moderately or severely stunted. Rural children show more signs of chronic undernutrition (35%) than urban children (26%). It is more common among children of rural Upper Egypt than those of rural Lower Egypt indicating *socio-economic differences between Lower and Upper Egypt*. Figure (6).

Weight for Age (Gomez Classification)

Using Gomez classification of malnutrition in relation to the NCHS/CDC reference population, the highest prevalence of combined second and third degree undernutrition in the National Nutrition Survey (1978) were found in rural areas of Egypt followed by the less advantaged population of Cairo and Giza. This might reflect the high population density in these governorates and the relatively low environmental conditions among the urban poor.

Only 0.5% showed second degree undernutrition. The prevalence of third degree malnutrition is highest in the 6–11 months age group. The highest prevalence of combined second and third degree malnutrition is found in the 12–23 months age group.

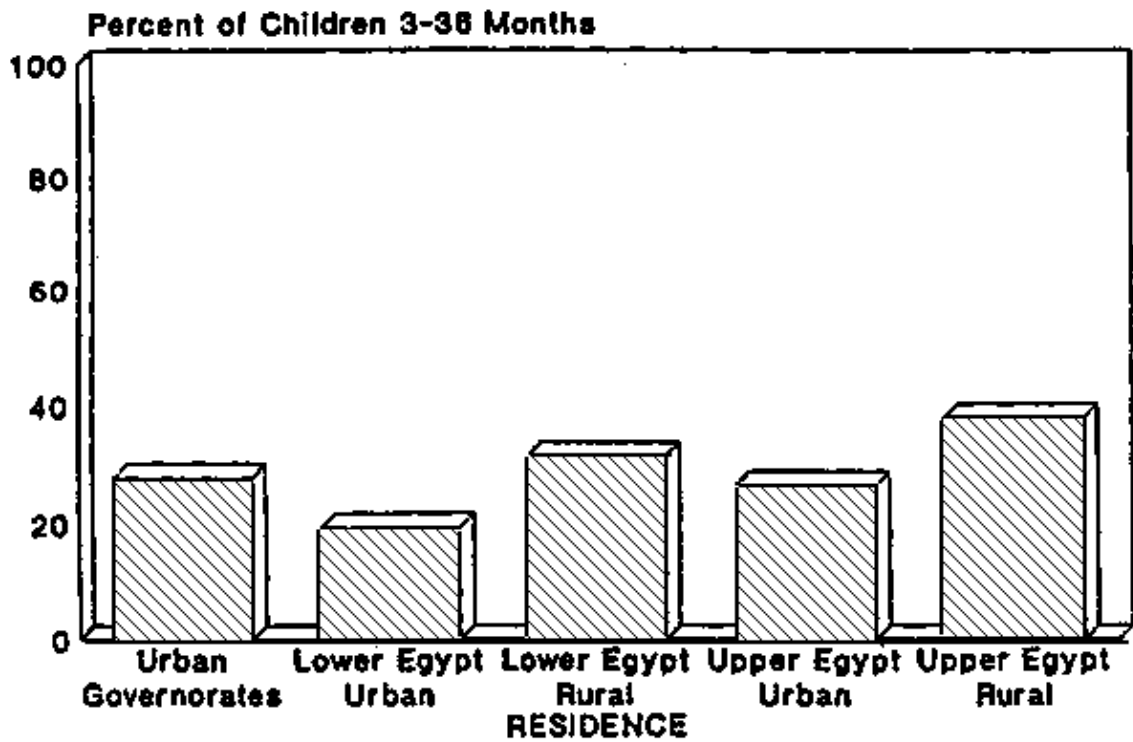


Figure 6. Percent Stunted by Place of Residence

Egypt DHS 1988

However the prevalence of combined second and third degree Gomez classes of undernutrition is greater in summer 1980 than in winter 1978 for both Upper and Lower Egypt as indicated in the Nutrition Status Survey II 1980. The prevalence of both Gomez classes is greater in Upper than in Lower Egypt for each year. Within each universe the greatest increases occurred in the age groups 6–11 and 12–23 months (Table 4 App. and Figure 7A and B).

The DHS data show that among children surveyed 13% are 2 SD or more below the reference median, nearly six times the proportion in the reference population. This proportion is greater among children 12–23 months and those born less than 3 years after an older sibling, twins or triplets and children, who had diarrhea in the 7 days before the interview, than among other children.

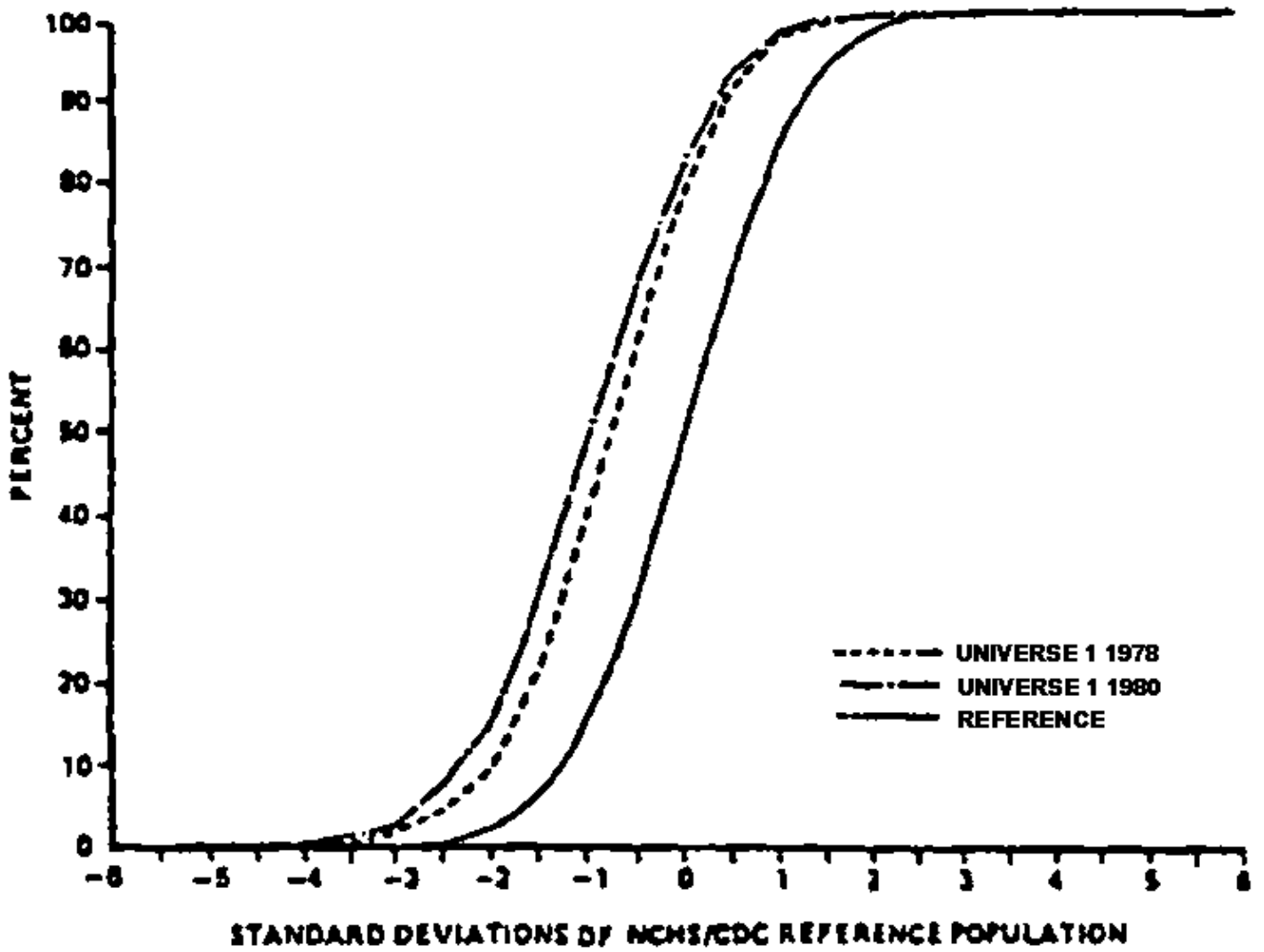


Figure 7A. Cumulative Distribution of Survey Children by Weight-for-Age Standard Deviations - Universe 1, 1978 and 1980, Egypt

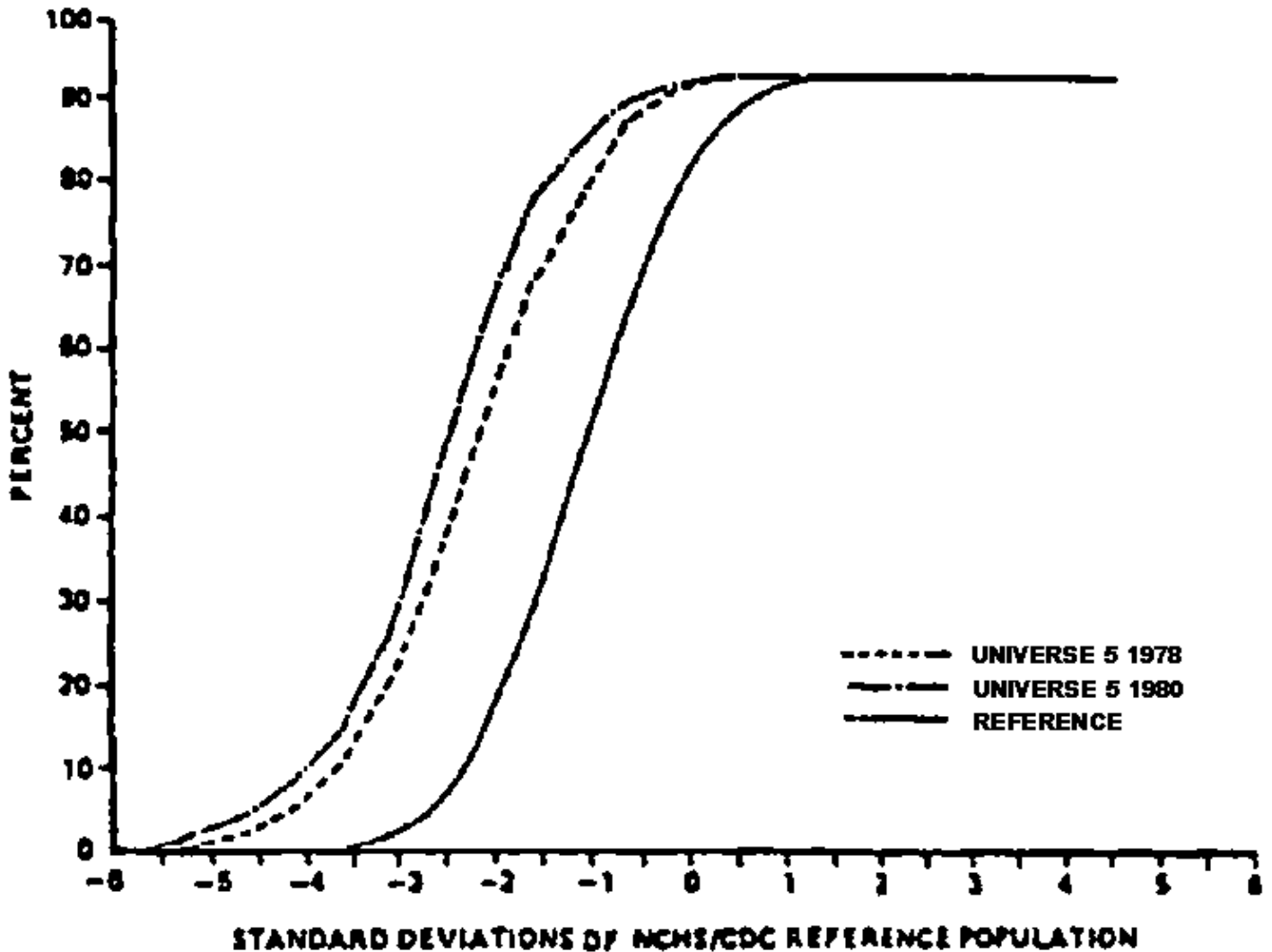


Figure 7B. Cumulative Distribution of Survey Children by Weight-for-Age Standard Deviations - Universe 5, 1978 and 1980, Egypt

The Waterlow Cross Classification of Height for Age and Weight for Height (Waterlow Rutishavser 1974)

Data of ARE/NS 1978 show that only 0.3% of children are in the critical category of combined wasting and stunting. Low prevalence of wasting indicates that wasting of preschool children in the 6-71 months age group of Egypt is not a public health problem.

However, 3.1% of Egyptian preschoolers are overweight as defined by weight for height greater than 120% of reference median. This prevalence is similar to that seen in NCHS/CDC reference population (Table 4 App.). *Overweight in presence of stunting* suggests that adequate quantities of food are available at present but may not have been in the past, or that the nutrient quality of food may have been inadequate. Stunting results from recurrent qualitative and/or quantitative dietary inadequacy. In Egypt available data suggest that Egyptian infants are borne with normal birth weights. As they grow the long term effects of inadequate nutrition becomes cumulative and more prominent. Stunting becomes substantially less among preschool age children elder than 35 months. This suggests either a capability for considerable catch-up growth in height or the possibility of higher mortality among stunted children prior to 36 months of age.

Meanwhile, the Nutrition Status Survey II in summer 1980 showed that the prevalence of wasting increased in both Upper and Lower Egypt with the predominant increase occurring in the age groups 6-11 and 12-23 months. The prevalence of stunting decreased between 1978 and 1980 with statistically significant decreases in Upper Egypt. However the prevalence of stunting and wasting increased in both universes and occurred primarily in the younger age groups.

The HES of the HPE data show that the prevalence of wasting and stunting at the same time is maximum during the first year of life. Chronic undernutrition is highest during the second year of life and decreases

gradually as the children grow older. The DHS in 1988 showed that less than 1% of children age 3–36 months are both stunted and wasted. They fall 2 SD or more below the reference median on both Ht/age and Wt/Ht. However 31% of all children are stunted but not wasted.

Comparative Analysis of ARE Nutrition Survey (1978) with the DHS (1988)

During the fact that the different surveys were not on a comparable basis, Garcia M. analyzed the raw data of the ARE Nutrition Survey (Aid, 1978) and the (DHS, 1988) using Z-scores and NCHS standards. The analysis revealed the following results in the Tables 2–9.

There is a general improvement in the weight for age indicator in 1988 in comparison to 1978 especially in urban Lower and Upper Egypt. Upper rural Egypt is still lagging behind reflecting its deteriorating socio-economic conditions. The age category 12–23 months witnessed a significant improvement in its nutritional status. This is the age category that was mainly influenced by the diarrhea project

Mean weight and height in 1988 in comparison to 1978 shows an improvement in the age categories 12–23 months and 24–36 months and a decline in it for the age category 6–11 months. However the mean Z scores weight for age and height for age is showing a remarkable improvement in 1988 if compared with the results of 1978 for all age groups.

Changes in stunting conditions in preschoolers indicate an improvement in 1988, if compared with 1978, with rural Upper Egypt lagging behind. The same observation can be mentioned for the changes in underweight children by Gender. However the latter indicator has significantly improved for the age group 12–23 months for both sexes, especially for girls. Thus, *the results of the comparison show an improvement in acute and chronic malnutrition in 1988 if compared with 1978.* It is important to note that the results of the Arab Maternal and Child Health Survey (1990) were different. The survey included 11074 households. The total number of children whose nutritional status was examined was 3922. Using the NCHS/CDS/WHO international reference population, percent of children under five years who fall below – 2SDs from the reference population is 30%. This ratio reached 26.2%, 35.3% and 34.1% for the age groups 6–11, 12–23 and 24–25 months. Moreover the survey showed that the proportion of the Egyptian children in the wasted category is 3.4%. This ratio reached 6.9%, 4.1% and 1.6% for the age categories 6–11, 12–23 and 24–35 months (Monem, A., 1992) (Table 9a). At time of writing this report, the raw data of this survey could not be obtained for further comparative analysis. This is why we will mainly rely on the analysis of the DHS with 1978 Nutrition Survey (Garcia M.).

Table (2)

Changes in Underweight Children 6–36 Months in Egypt: 1978 VS. 1988

Area	Children Below –2 S.D. Z-Scores Weight for age			
	1978		1988	
	N	Percent	N	Percent
Lower Egypt				
Urban	537	10.8	199	5.5
Rural	2262	21.6	552	14.9
Upper Egypt				
Urban	437	21.5	218	13.7
Rural	1227	25.5	474	21.3
Urban Governorates	979	17.4	452	7.7
All Egypt (including urban Governorates)	5442	20.6	1895	13.7

SOURCES: Nutrition Institute/CDC Survey 1978. Egypt and Atlanta, Georgia, DHS Survey 1988, Egypt National Population Council/DHS IRD. Cairo and Columbia, MD

Table (3)

Underweight Children (6–36 Months) by Age Group; Egypt: 1978 VS. 1988

Age Group	1978		1988	
	N	Percent	N	Percent
6–11 Months	1029	17.0	526	12.6
12–23 Months	2182	27.5	700	16.8
24–36 Months	2231	15.6	669	10.4
All	5442	20.6	1895	13.3

SOURCE: Nutrition Institute/CDC Survey 1978. Egypt and Atlanta, Georgia. DHS Survey 1988, Egypt national Population Council/DHS IRD. Cairo and Columbia, MD.

Table (4)

Mean Height and Weight; Egypt: 1978 VS. 1988

Age Group	Mean Height (in CM)				Mean Weight (in Kg)			
	1978 ²		1988		1978 ²		1988	
6–11 months	67.5	(3.7)	65.9	(5.3)	7.8	(1.2)	7.4	(1.5)
12–23 months	74.9	(4.8)	76.1	(5.5)	9.5	(1.5)	9.9	(1.6)
24–36 months	83.9	(5.1)	85.5	(5.7)	12.1	(1.7)	12.3	(1.7)

SOURCES: Nutrition Institute/CDC Survey 1978. Egypt and Atlanta, Georgia. DHS Survey 1988, Egypt national Population Council/DHS IRD. Cairo and Columbia, MD.

Note:

(1) SD for figures in parentheses.

(2) For 1978, data up to 71 months of age were collected, but not shown here.

Table (5)

Mean Z Scores Weight for Age by Age Groups; Egypt, 1978 VS. 1988

Age Group	Mean Z Scores Weight for Age			
	1978 ²		1988	
6–11 months	-0.94	(1.26)	-0.55	(1.37)
12–23 months	-1.33	(1.14)	-0.94	(1.23)
24–36 months	-0.89	(1.09)	-0.69	(1.11)
All	-1.08	(1.07)	-0.74	(1.24)

SOURCES: Nutrition Institute/CDC Survey 1978. Egypt and Atlanta, Georgia. DHS Survey 1988, Egypt national Population Council/DHS IRD. Cairo and Columbia, MD.

Note:

- (1) SD for figures in parentheses.
- (2) For 1978, data up to 71 months of age were collected but not shown here.

Table (6)

Mean Z Scores Height for Age by Age Groups; Egypt, 1978 VS. 1988

Age Group	Mean Z Scores Height for Age			
	1978 ²		1988	
6–11 months	-1.25	(1.26)	-0.96	(1.60)
12–23 months	-1.92	(1.27)	-1.50	(1.57)
24–36 months	-1.76	(1.27)	-1.20	(1.54)
All	-1.73	(1.21)	-1.24	(1.59)

SOURCES: Nutrition Institute/CDC Survey 1978. Egypt and Atlanta, Georgia. DHS Survey 1988, Egypt national Population Council/DHS IRD. Cairo and Columbia, MD.

Note:

- (1) SD for figures in parentheses.
- (2) For 1978, data up to 71 months of age were collected but not shown here.

Table (7)

Changes in Stunting in Children (6–36 months); Egypt, 1978 VS. 1988

Area	Children Below -2 S.D. Z-Scores Height for age			
	1978		1988	
	N	Percent	N	Percent
Lower Egypt				
Urban	537	21.8	199	17.6
Rural	2242	42.9	540	28.7
Upper Egypt				
Urban	434	36.9	217	24.9
Rural	1211	46.9	459	37.0
Urban Governorates	972	36.4	445	24.7
All Egypt (including urban Governorates)	5396	40.0	1860	28.2

SOURCES: Nutrition Institute/CDC Survey 1978. Egypt and Atlanta, Georgia. DHS Survey 1988, Egypt national Population Council/DHS IRD. Cairo and Columbia, MD.

Table (8)**Changes in Underweight Children (6–36 Months) by Gender; Egypt 1978 VS. 1988**

Area	Children Below –2 S.D. Z–Scores Weight for age			
	1978		1988	
	Boys	Girls	Boys	Girls
	(percent)			
Lower Egypt				
Urban	11.5	10.0	3.2	7.5
Rural	19.3	23.9	14.2	15.6
Upper Egypt				
Urban	19.1	23.7	17.1	10.5
Rural	24.6	26.6	22.0	20.5
Urban Governorates	16.4	18.3	8.4	6.9
All Egypt (including urban Governorates)	19.2	22.1	14.0	13.3

SOURCES: Nutrition Institute/CDC Survey 1978. Egypt and Atlanta, Georgia. DHS Survey 1988, Egypt national Population Council/DHS IRD. Cairo and Columbia, MD.

Table (9)**Changes in Underweight Children (6–36 Months) by Age by Gender; Egypt 1978 VS. 1988**

Age Group	Children Below –2 S.D. Z–Scores Weight for age			
	1978		1988	
	Boys	Girls	Boys	Girls
	(percent)			
3–11 months	17.6	16.4	13.7	12.1
12–23 months	26.4	28.6	18.0	14.6
24–36 months	13.1	18.3	10.1	12.2
All (3–36)	19.2	22.1	14.0	13.3

SOURCES: Nutrition Institute/CDC Survey 1978. Egypt and Atlanta, Georgia, DHS Survey 1988, Egypt National Population Council/DHS IRD. Cairo and Columbia, MD

Weights and Heights of School Age (Cairo School Children)

The first study was undertaken in 1962 by Abdou and Mahfouz (1967a and 1968a) on a 2.5% sample consisting of 8930 school children (4370 boys and 4560 girls) of 252 classes from 64 primary, preparatory and secondary schools to represent 7–19 years in Cairo. Baldwin Wood standard tables (USP) were used to compute percent standard weight A follow up study was carried out in 1975 by Aly et al (1980) to evaluate the nutritional status of Cairo school children 13 years after the survey reported by Abdou and Mahfouz (1967 and

1968). The sample included 3419 school children of whom 1820 were girls and 1599 boys from primary, preparatory and secondary school to represent children of the school aged 6–20 years. IOWA standard were used to interpret the results.

Comparison between the state of growth of Cairo school children in 1962 and 1975 survey (Table 6 App.), shows that Cairo school children tended to be heavier and taller in 1975. The distribution of the children according to percent standard weight for height shows that normal boys constitute 59% and normal girls constitute 51%. Despite the fact that the picture improved during the 13 years between the two surveys, overweight and obesity became more prominent in the 1975 survey than in the survey 1962, as overweight and obese girls constitute 32% while boys 25%.

Meanwhile, Moussa (1989) reported on the growth pattern from the data obtained during HES of the HPE (1984). The sample included 3119 school boys and 2885 school age girls a total of 6004 school age children aged 6–18 years.

The mean weight of school boys lie just below the WHO reference mean from 6–8 years then deviates down from 11–18 years to lie almost, midway between the reference mean and 2SD below it. The mean weights of school girls is close to the reference mean at age 6 years, then deviates till age 11 when it is almost 1SD below the standard mean, then growth improves and the gap narrows till it reaches its minimum at age 16 years and continues below the reference mean till age 18 years. This shows that weight of girls are better than those of boys in the 6–18 age period (Figure 8A and B). On the other hand the curve representing mean height whether for boys or for girls is located below the reference mean and nearer to –2SD. Boys show somewhat more relaxation in linear growth than girls indicating chronic undernutrition (Figure 9A and B).

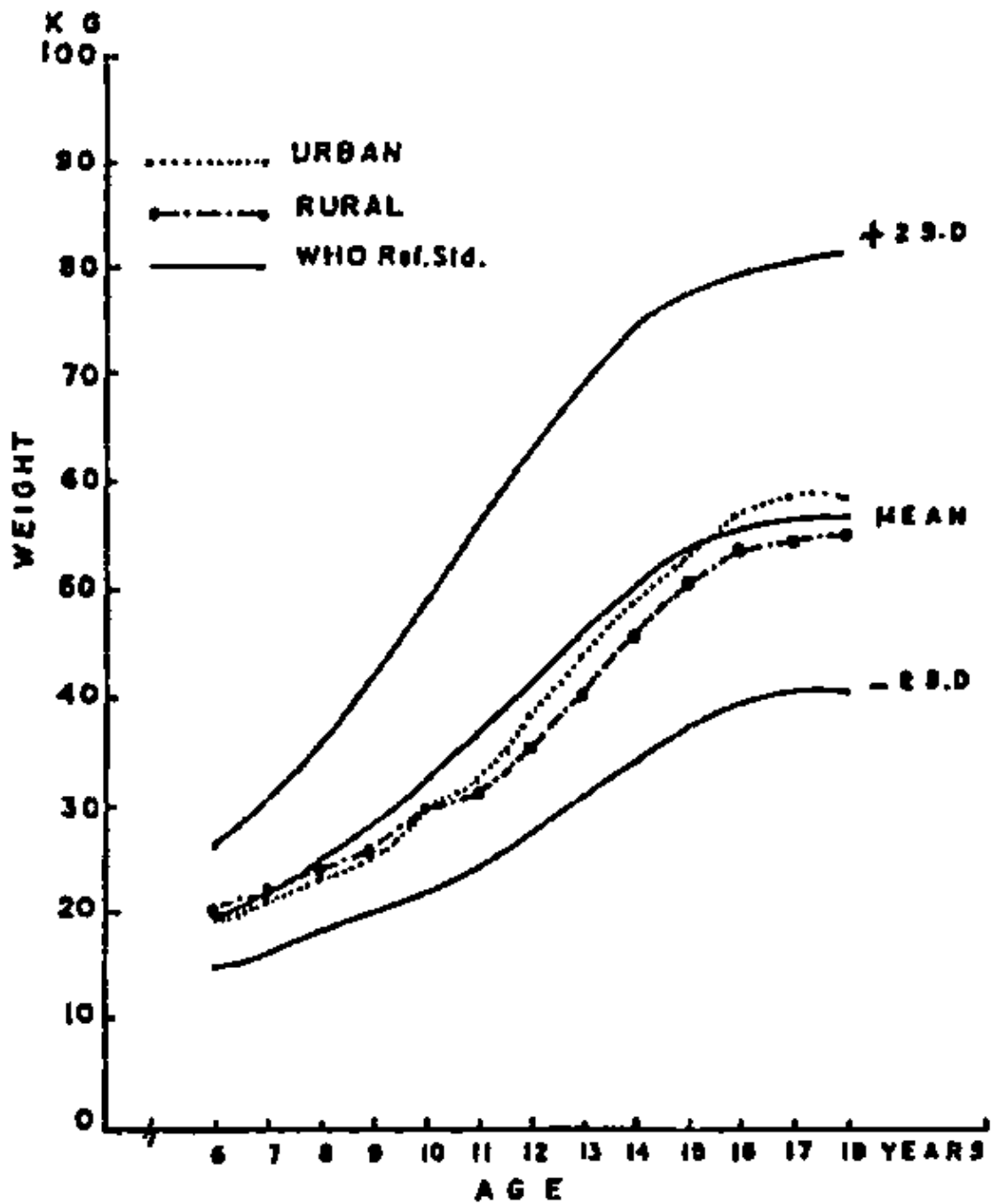


Figure 8A. WEIGHT BY AGE OF GIRLS (6-18 YEARS) IN URBAN AND RURAL AREAS COMPARED WITH WHO REFERENCE STANDARDS.

Source: HPE-HES (Moussa, 1989)

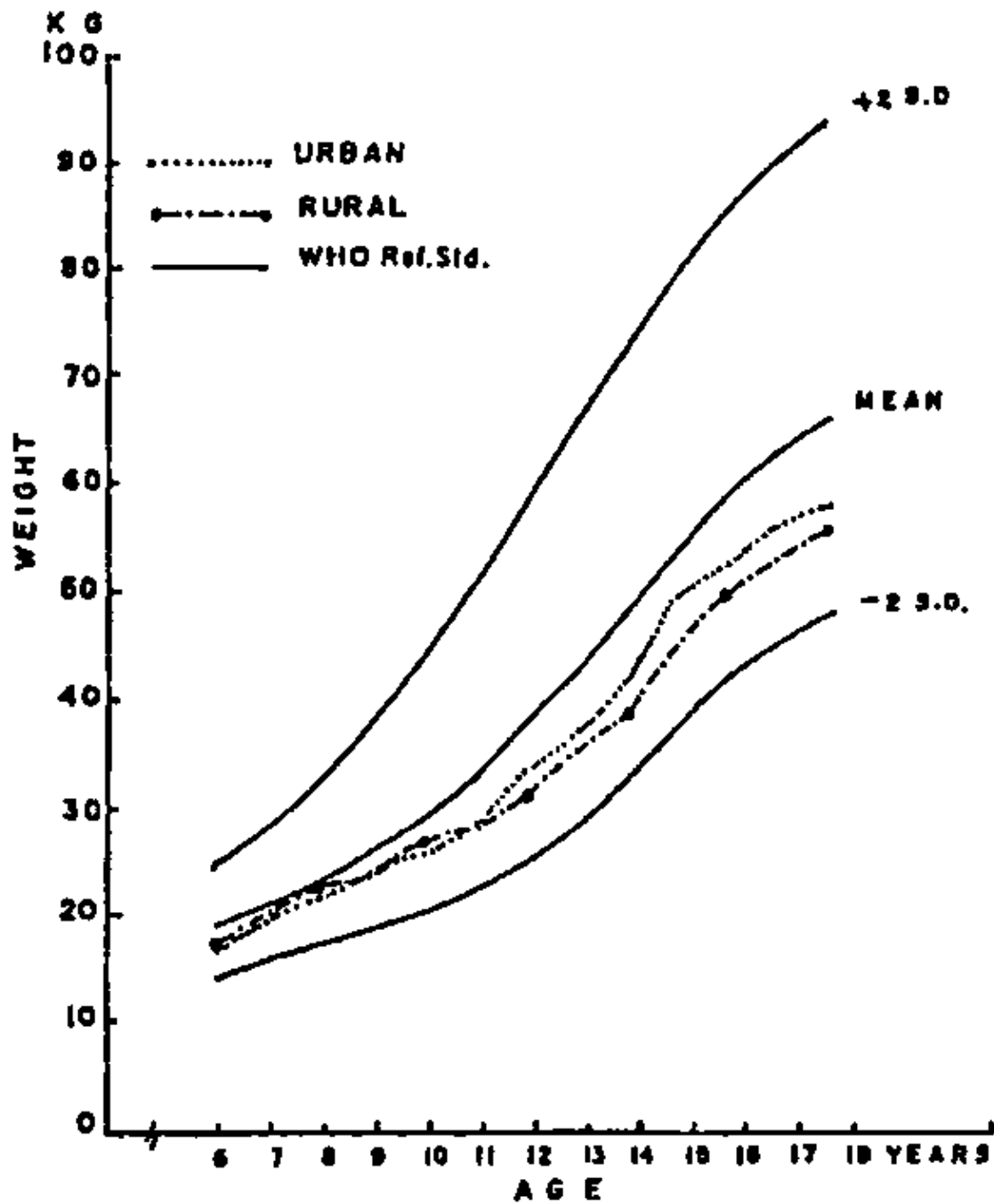


Figure 8B. WEIGHT BY AGE OF BOYS (6-18 YEARS) IN URBAN AND RURAL AREAS COMPARED WITH WHO REFERENCE STANDARDS.

Source: HPE-HES (Moussa, 1989)

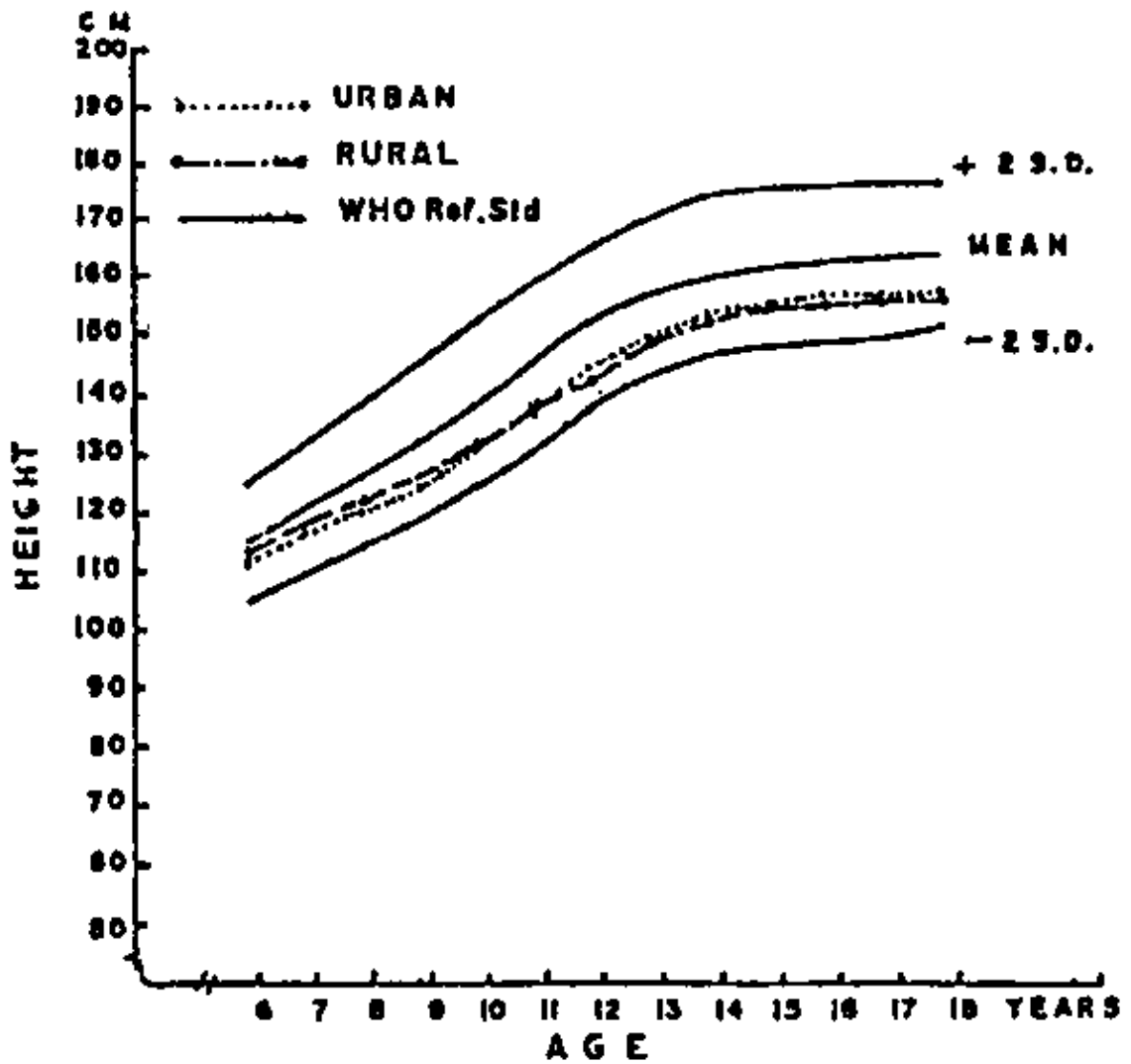


Figure 9A. HEIGHT BY AGE OF GIRLS (6-18 YEARS) IN URBAN AND RURAL AREAS COMPARED WITH WHO REFERENCE STANDARDS.

Source: HPE-HES (Moussa, 1989)

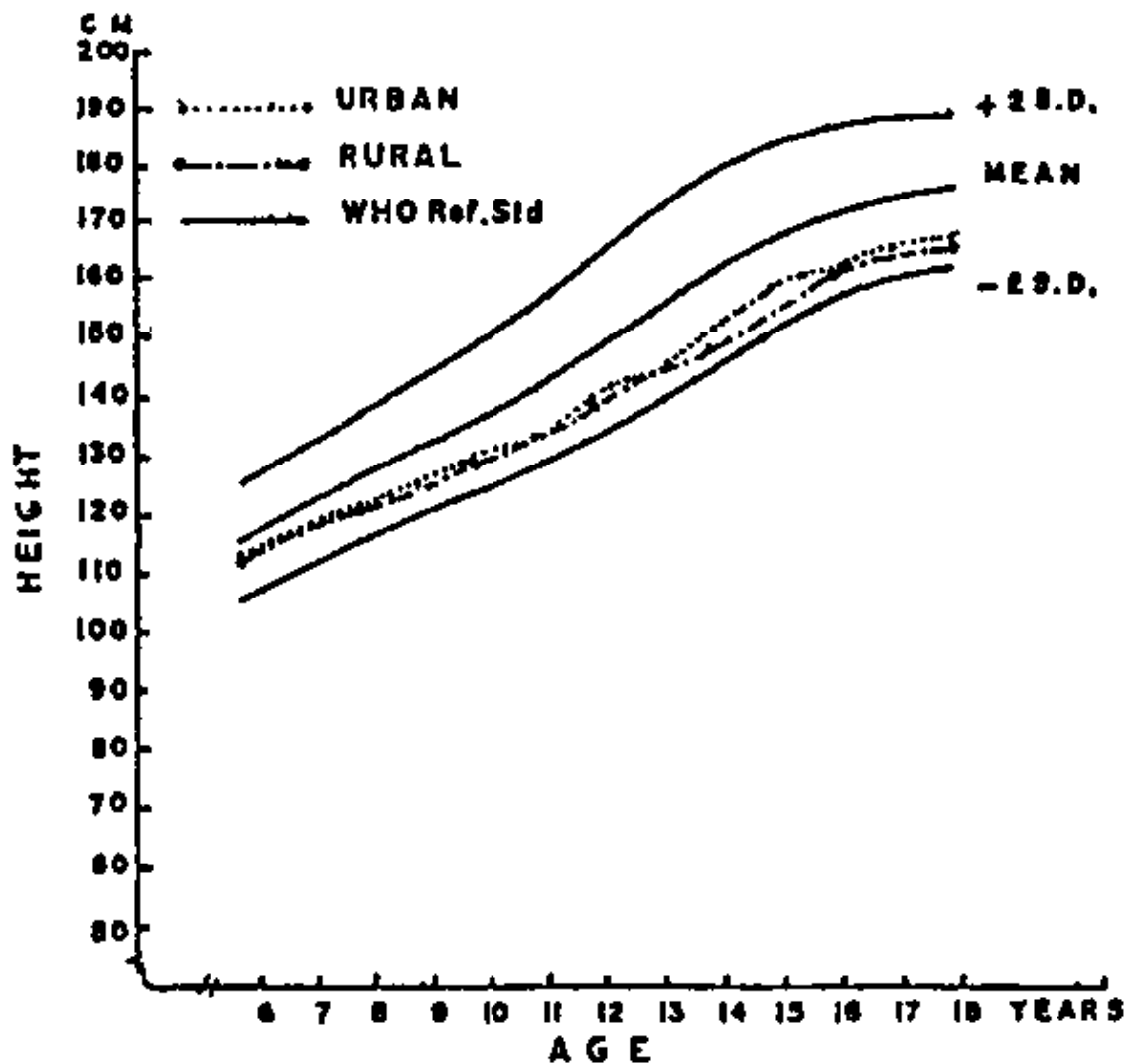


Figure 9B. HEIGHT BY AGE OF BOYS (6-18 YEARS) IN URBAN AND RURAL AREAS COMPARED WITH WHO REFERENCE STANDARDS.

Source: HPE-HES (Moussa, 1989)

Table (10A)

Body Weights of Adults (20-70+Y) Measured During HES by Age, Area and Sex (Means and 2 Standard Deviations)

AGE (YEARS)		URBAN		RURAL		TOTAL	
		MALES	FEMALES	MALES	FEMALES	MALES	FEMALES
20 -	Mean	66.7	62.8	64.3	55.1	65.2	59.8
	2SD	23.4	24.1	18.9	19.1	20.8	21.8
30 -	Mean	73.3	70.8	66.6	60.6	69.1	64.3
	2SD	26.9	28.0	22.1	24.3	24.9	27.5
40 -	Mean	73.6	72.3	66.3	63.6	69.0	66.5
	2SD	29.5	29.0	24.6	29.0	27.5	30.1
50 -	Mean	71.3	71.3	64.9	62.9	67.0	65.3
	2SD	30.7	31.8	24.2	30.1	27.2	31.5

60 –	Mean	69.1	65.6	62.5	57.8	64.3	59.6
	2SD	28.3	32.6	24.2	26.5	26.1	28.8
70 +	Mean	66.8	58.7	62.5	54.7	62.8	55.5
	2SD	24.6	26.4	24.2	25.4	22.3	25.8

SOURCE: Moussa (1989)

Table (10B)

Body Heights of Adults (20–70+Y) Measured During HES by Age, Area and Sex (Means and 2 Standard Deviations)

AGE (YEARS)		URBAN		RURAL		TOTAL	
		MALES	FEMALES	MALES	FEMALES	MALES	FEMALES
20 –	Mean	169.5	155.7	168.3	156.0	168.7	155.9
	2SD	13.5	11.7	13.2	11.9	13.2	11.5
30 –	Mean	168.1	156.0	167.1	155.5	167.5	155.7
	2SD	12.2	11.6	13.1	11.5	12.7	11.3
40 –	Mean	166.5	154.3	166.2	154.9	166.3	154.7
	2SD	11.0	10.5	12.8	11.3	12.1	10.9
50 –	Mean	165.9	153.7	165.4	153.7	165.5	153.7
	2SD	11.2	11.5	13.5	11.8	12.8	11.7
60 –	Mean	165.5	151.1	163.9	153.0	164.4	152.5
	2SD	11.5	12.6	11.8	12.3	11.8	12.5
70 +	Mean	162.3	149.8	162.7	151.7	162.6	151.3
	2SD	13.7	9.9	12.7	12.3	13.0	11.9

SOURCE: Moussa (1989)

Weights and Heights of Adults (20 Years and Over)

During the HES of the HPE, 7867 adult persons were measured for weights and heights, 3515 males, 435 females, 266 from urban areas and 5211 from rural areas (Moussa, 1989). The mean shows a tendency to overweight and obesity in urban areas in the age period 30 to less than 60 years for both males and females.

Mean height shows that younger adults are taller than elder ones which may denote improvement of linear growth of recent generations of males and possibly females in both urban and rural areas (Table 10A and B).

Low Birth Weight Rates: Intrauterine Growth Retardation (LBW)

Table 11 presents the incidence of LBW in Egypt in some studies over the seventies and eighties.

Table (11)

INCIDENCE OF LBW AS REPORTED IN SOME STUDIES

Study	No. of Newborns	

		% LBW
(El Abassy et al, 1972)		13
Bolac (Galal et al, 1981)	650	13
Behera (Galal et al, 1988)	253	12.2
Adolescent mothers (El Agroudy 1989)	107	23.8

It is important to determine the reasons for this problem. In 1972, El Abassy stated that maternal nutritional deficiencies are anticipated to be major contributing factors to the poor growth of the babies in (El Abassy et al, 1972). Calorie intake of mothers was considerably low (1540 ± 281 Cals/day) compared to that of the recommended dietary. (RDA) for pregnancy is (2200 Cal/day). Protein intake is also lower (44.3 ± 11.1 gm/day) than RDA (65 gm/day). The protein consumed by the mothers is generally of plant sources. Anemia is a major problem among these mothers. From 30% to 50% of them showed hemoglobin level below 11 gm/100 ml blood and hematocrit below 33% throughout pregnancy. Food intake was 9.8 ± 2.7 mg/day lower than that recommended for pregnancy by RDA (18 mg/day). Most of it is from plant sources, mainly bread.

In 1981, Galal, et al., stated that anemia, low caloric and low calcium intakes were major reasons for LBW. However, El Agroudy (1989) showed that maternal age at conception is a critical factor which determines the pregnancy outcome. Higher incidence of birth defects was among younger ages. *Thus one may conclude that dietary intakes are not the single determinant for LBW but also a family planning program may play a role.*

Anemia (Iron Status)

Anemia Prevalence Among Preschool Age Children

The results of the ARE National Nutrition Survey (AID, 1978) showed that anemia is most prevalent in rural population especially in Upper Rural Egypt and decreased with increasing urbanization and population size. Meanwhile, in the lower socio-economic sub-samples of Cairo and Alexandria, anemia is more prevalent *This is because urbanization in Egypt is connected with the expansion of urban poverty* (Shorter, 1989).

The distribution of anemia prevalence by age showed that the highest anemia prevalence and lowest mean blood hemoglobin concentration are seen in the 12–23 month age group. Meanwhile, stunting is nearly twice as common among anemic than non-anemic children. The prevalence of anemia among stunted children is higher than among normal children.

It is generally thought that a relative deficiency of absorbable dietary iron is the primary cause of anemia in preschool age, which is an important problem throughout Egypt. The fact that anemia is most prevalent during the second year of life, suggests that the iron availability to the child during weaning and the period of transition to the household diet is particularly inadequate.

During the ARE Nutrition Status Survey II (AID, 1980) the prevalence of anemia has not significantly changed in each of the two universes between 1978 and 1980 (Table 12).

Table (12)

Mean Hemoglobin (gm/100 ml) Value and Prevalence of Anemia in Preschool Children by Age Group and Universe: Egypt, 1978 and 1980 (NCHS/CDC Reference)

Universe 1

Age (Months)	Mean Hemoglobin (S.D.)		Percent Anemic		Total No. Examined	
	1978	1980	1978	1980	1978	1980
6–23	10.5 (1.5)	10.7 (1.5)	65%	56%	54	72

24–71	11.8	(1.4)	11.5	(1.4)	25%	27%	122	104
Total	11.4	(1.5)	11.2	(1.5)	37%	39%	176	176

Universe 5

Age (Months)	Mean Hemoglobin (S.D.)		Percent Anemic		Total No. Examined			
	1978	1980	1978	1980	1978	1980		
6–23	10.0	(1.4)	10.1	(1.5)	74%	66%	65	53
24–71	11.1	(1.4)	11.1	(1.5)	43%	41%	144	122
Total	11.7	(1.5)	10.8	(1.5)	54%	49%	179	175

Anemia Prevalence Among Schoolers

Table 13 summarizes the mean hemoglobin values and percent anaemics of boys and girls examined in the various surveys.

Table (13)

Mean Hemoglobin Concentrations and Percent Anemics in various Surveys by Sex (School Age Children)

SURVEY	Mean Hb Concentration		% Anemic		
	Boys	Girls	Boys	Girls	
Cairo School Children 1962 (Abdou et. al. 1967c)	12.7	12.5	13	11	
Follow-up of Cairo School Children, 1975 (Said et. al. 1980)	11.6	11.4	39	45	
Asyut 1962 (Abdou et. al. 1967b)	11.1	10.9	41	52	
Aswan 1962 (Abdou et. al. 1967b)	11.4	11.0	53	56	
Aswan 1971 (Said & Abdou, 1978)	12.2	12.6	30	21	
Beheira 1965–66 (Abdu et. al. 1968b)	6–12Y	11.2	11.2	52	48
	12–18Y	11.6	11.4	40	45
HES – HPE (Moussa, 1988)	6–12Y	–	–	44.7	45.2

During the follow up study of Cairo school children mean-hemoglobin concentration was estimated as 11.6 gm% for boys and 11.4 gm% for girls. Compared to the corresponding values estimated during the previous 1962 survey of Cairo school children (Abdou et al 1967 and 1968) they are lower. The lowering in blood hemoglobin concentration of Cairo children during the 1975 survey than that of 1962 was interpreted on the basis of increased prices of animal food sources of iron (Said et al., 1980).

Moreover, Moussa (1988) reported about the prevalence of anemia among schoolers examined during the Health Examination Survey (HES) of the Health Profile of Egypt (HPE). She adopted the WHO (1968) cut-off level that a child 6–12 years of age is considered anemic if the blood hemoglobin concentration is less than 12 gm/100 ml. The results obtained are presented in Table 13. Among the total sample of 3203 schoolers 6–12 years of age 45% were considered anemic in 1984. Anemia is most common among school age children considered obese, then among those suffering from 3rd degree undernutrition.

Hemoglobin Status of Mothers

Hemoglobin data on mothers of survey children examined during the ARE National Nutrition Survey (AID, 1978) is not representative of Egyptian women since only those with at least one child 6–71 months of age

were included in the survey.

Anemia among surveyed mothers of different physiological status is given in Table 14. Non pregnant women have the lowest anemia prevalence compared with pregnant or lactating women. They also have the highest mean hemoglobin value 13.1gm/100ml. An anemia problem of major proportions exists among lactating mothers in Egypt.

Table (14)

Mean Hemoglobin Values and Prevalence of Anemia Among Survey Mothers of Differing Physiological Status: Egypt, 1978

Physiological Status	Mean Hemoglobin (\pm SD) gms/100ml	Percent Anemic	Total No. Examined
Non-pregnant	13.1 (1.6)	17.0%	402
Lactating	12.8 (1.6)	25.3%	823
Pregnant	11.8 (1.5)	22.1%	253
Total	12.7 (1.7)	22.4%	1478

SOURCE: N.I/CDC, 1978

The distribution of hemoglobin values among mothers of surveyed children during the ARE Nutrition Status Survey II (AID, 1980) has remained essentially unchanged from that in 1978 survey and relatively high in rural upper Egypt.

Iron inadequacy of the diet is maximum among mothers, almost two thirds of mothers consume iron not enough to satisfy 90% of the specified RDA (WHO, 1974 and 1989).

Almost one third of preschoolers get less than 90% of their RDA of iron. Less than 5% of fathers and almost 10% of schoolers get diets inadequate in iron. The discrepancy between proportion of individuals who are anemic and those who get inadequate iron intake is due to the various factors which influence bioavailability of iron including proportion of bean iron, vitamin (content of the diet, parasitic infestations and health status of the individual).

Over Nutrition

Overweight and Obesity in Preschoolers

Overweight and obesity in preschoolers as reported in the different surveys are presented in Table 15. It is shown how overweight increased almost four times in a five year period. It is important to note that the anthropometric data of the ARE National Nutrition Survey (AID, 1978) revealed that 3.1% of the sample preschool age children are overweight with body weights for height 120% and more of reference population median. Children in the age group 36–47 months showed the maximum prevalence of overweight (6.1%). After 10 years the DHS (Sayed et al., 1989) indicated that children with 1 to 1.9 standard deviations more than the median weight for height of the NCHS/CDC/WHO reference population constitute 13.9% of the sample children. When weight for age is used those with 1 to 1.9 SD or more constitute 4.9% and those with 2 or more SD constitute 1.1%.

Table (15)

Percent Overweight and Obese Preschool Age Children ad Reported by Various Surveys

Survey	Number Examined	Weight/height 120 + Reference Population Median	Weight/Age	
			110%	120%

			%	%	%
ARE National Nutrition Survey (AID, 1978)					
	Sample	8016	3.1		
	Special group	1883	4.8		
Cairo University–MIT 78 (El–Logy et. al., 1980)		2278	13.8		
National Food Consumption Study (Nutri. Inst. Aly et. al., 1981)					
	Sample	624		17.8	
	Cairo	83		20.5	
HES – HPE (Moussa, 1988)					
	Sample	3482	13.0	7.6	6.6
	Cairo	295	18.0	9.5	8.8
DHS 88 (Sayed, 1989)		1907			
	1 – 1.99 SD		13.9	4.9	
	2 + SD		3.1	1.1	

Overweight and Obesity in Schoolers and Adults

A summary of overweight and obesity among preschool children is given in Table 16. It is shown how overweight and obesity prevalence was almost the same in 1975 in comparison to 1962 for girls and slightly less for boys. However in 1982 obesity increased significantly for boys and girls. In 1987 obesity prevalence was the same for girls and somehow less for boys.

Moreover, parents were weighted during the National Food Consumption study of Egypt (Nutr. Inst., 1981). Overweight and obesity (110% + of standard weight) was 14.5% among fathers, while it was 63.1% i.e. four times as much among mothers (Nutr. Inst., 1981). The highest prevalence of overweight and obesity was among Cairo mothers 90.7% followed by Alexandria mothers, 77.7% (urban governorates). It was lowest among Sohag mothers, 39.5% (Upper Egypt).

Other Problems

Prevalence of Iodine Deficiency Disorder IDD (Goiter)

In the early sixties it was reported that I.D.D was prevalent in more than 50% of the population in the New–Valley (a desert oases). Females suffered more than males, especially in the age group 11–16 years. The prevalence was lower than 10% below the age of 6 years.

Table (16)

Overweight and Obesity Among School Children in the Different Surveys

Survey	Boys	Girls
	<u>Overweight</u>	
Abdou and Mahfouz (1967a & 1968a) (1962 Survey)	% Standard weight for age 110–119	
	7%	11%
	<u>Obesity</u>	
	% Standard weight for age 120% and more	
	6%	9%
	<u>Overweight and Obesity</u>	
	13%	20%
	<u>Overweight</u>	
Aly et al (1980) 1975 Survey	4.9%	9.2%
	<u>Obesity</u>	
	5.8%	11.4%
	<u>Overweight and Obesity</u>	
	10.7%	20.6%
	<u>Obesity</u>	
Sarhan (1982)	% Standard for weight height more than 120%	
	14.4%	23.6%
	<u>Obesity</u>	
Habib (1987)	13.8%	23.2%

In 1991, studying the prevalence rate of I.D.D. among schoolers, it was reported that the overall prevalence rate was 6.7%. Females suffered more than males (8.6% and 4.6% respectively). The highest prevalence rate of I.D.D. was observed in the New–Valley (38%) followed by Souhag governorate (14.8%), while the lowest prevalence rate was noticed in Menoufia, a Lower Egypt governorate (0.3%). No significant difference was observed between urban and rural schoolers 6.1% and 6.9% respectively.

Iodized salt was distributed in the late sixties in the New–Valley, which showed a remarkable improvement in the rate of I.D.D. However, this was not continued. Recently, a fertilized pie with iodine salts is distributed to school children in the New–Valley. Prevalence of Goiter in the different surveys are presented in Table 17.

Vitamin A Deficiency

No clinical deficiency sign of Vitamin A deficiency was observed in surveys conducted in Egypt. Yet the high prevalence of PEM (22%) in preschool age can point to deficiency of Vitamin A as there is a remarkable relation between Vitamin A deficiency and growth. So a sub–clinical Vitamin A deficiency may be the rule in Egypt.

Table (17)

Table 2.40: Summary Table Showing the Prevalence of Simple Goitre Given by Various Surveys According to Sex and Age Groups

Survey		Thyroid Enlargement		Total Examined
		Grade 1 %	Grade 2 %	
New Valley Oases, 1959 (Abdou, 1965)				
0 – 6 Y	Males	7	–	29
	Females	10	4	28
6 – 16 Y	Males	48	16	841
	Females	70	20	532
More than 16 Y	Males	35	12	252
	Females	55	29	78
Cairo School Children, 1962 (Abdou et. al., 1967a)				
	Boys	1.4	0.3	1657
	Girls	15.9	1.9	1219
Follow-up Survey, 1975 (Said et. al., 1980)				
	Boys	6.8	0.4	1612
	Girls	10.6	2.7	1848
Aswan, 1971 (Said, Abdou, 1978)				
Students	Males	2.5	0.4	2234
	Females	10.9	2.4	1227
Families	Males	7.0	0.3	341
	Females	11.2	0.7	295
	Workers	13.2	0.0	152
	Pregnants	47.7	26.2	65
	Lactating	65.6	26.8	67

Rickets

Rickets is a metabolic disorder of bone mineralization and is due to vitamin D deficiency in diets of infants and children, who are kept indoors for protection. However the ARE National Nutrition Survey (AID, 1978) indicated that the prevalence of Vitamin D deficiency signs is quite low in the preschool age population. Sample children with no signs of Vitamin D deficiency constitute 93.5% those with any one sign were 0.5%, with any two signs were 1.2% and those with any three or more signs were 0.2%.

Riboflavin Deficiency

Prevalence of riboflavin deficiency in Egypt is presented in Table 18.

Table (18)

Table 2.42: Prevalence Rates (%) of Riboflavin Deficiency Signs in Various Age Groups as Reported in Various Surveys

Survey		Number Examined	Cheilosis	Ang. Stomatitis	Ang. Scars
<u>Preschool Age:</u>					
ARE National Nut. Survey 78 (AID, 1978)		9794	–	2.9	–
ARE Nutrition Status Survey II 80 (AID, 1980)		1783	–	6.8	–
Aswan >1 (Said & Abdou, 1978)	Males	185	21.6	32.6	11.2
	Females	132	22.9	37.4	
<u>School Age:</u>					
Cairo School Children, 1962 (Abdou et. al., 1967a)	Boys	1657	16.3	9.2	–
	Girls	1219	15.6	3.8	–
Follow-up Survey, 1975 (Said et. al., 1980)	Boys	1612	7.7	26.1	8.7
	Girls	1848	3.5	9.7	3.6
Aswan, 1971 (Said, Abdou, 1978)	Boys	2266	36.4	39.0	24.5
	Girls	1266	28.2	34.5	28.6
<u>Adults:</u>					
Aswan, 1971 (Said, Abdou, 1978)	Males	276	18.5	24.6	15.6
	Females	296	36.6	14.3	53.6

Functional Consequences of Malnutrition

The functional consequences of nutritional problems was studied by the CRSP (1984) and the Anemia and Human Function Survey. It has been shown that infants start life similar to the NCHS/WHO standards, but a lag in growth occurs by the third or fourth months of life. Stunting is established during the first years. Although the growth rate is normal after 12 months and fits with shorter segment of American children, adults were shorter than they should have been.

Numerous associations are between body size and measures human functional capacity and performance. Bigger children scored better, smaller children were more prone to illness, diarrheal episodes and respiratory infections were more likely to progress in seventy in children who were small and with low energy intake (Table 7 App.). Larger children were more socially active and produced more vocalization. Positive correlations were found between energy and protein intake and some social and behavioural parameters (Table 8 and 9 App.).

Malnutrition Infection Complex

Diarrhea

Diarrhea is among the leading causes of infant and child deaths in Egypt. About 25% of the deaths in this age group each year are linked to diarrhoea.

The first nationwide survey during which diarrheal disease as well as use and knowledge of the caretakers about Oral Rehydration Therapy (ORT) was the ARE National Nutrition Survey (AID, 1978) and ARE Nutrition

Status Survey II (AID, 1980).

In 1978 the prevalence of diarrhea in Upper and Lower Egypt (universes 1 and 5) was essentially the same, 9% and 11%. In the ARE Nutrition Status Survey II, during summer (AID, 1980) diarrhea prevalence increased substantially in both universes to 16% and 17%. It was greatest in the 2 age groups 6–11, 12–23 months.

In 1980, the prevalence of acute undernutrition was higher in children with diarrhea. This increase was found predominantly in the 6–35 month age group. Moreover, the mean weight for age values are significantly lower in both universes for children with diarrhea in both universes of 1980 survey, while they were not different for children with and without diarrhea in the 1978 survey. It is interesting that history of recent diarrhea was significantly associated with acute undernutrition in 1980 but not in 1978. The 1980 survey children may have suffered prolonged or more frequent bouts of diarrhea that could not be verified by available survey data. Also children surveyed in 1980 were more likely to be acutely undernourished than of 1978 regardless of a history of diarrhea. In each of the 2 universes surveyed, more children without diarrheal history were acutely undernourished in the 1980 survey than in 1978.

The field work of the Egyptian Demographic and Health Survey (EDHS) (Sayed et al. 1989) took place during winter, when diarrhea occurs less frequently and the 24 hours and 7–day prevalence rates are expected to be low. The recall since Ramadan 5–7 months, to include summer, a peak period for diarrhea is subject to recall issues by the mother. The results show a decline in the rate of prevalence of diarrhea if compared with 1980 and 1978. Overall, 7% of children under age 5 years were reported to have an episode of diarrhea, during the 24 hours before the interview, 16% during the 7 day period before interview and 40% since Ramadan. For all 3 time periods, children under age 2 are twice as likely to have had an episode of diarrhea than elder children.

Acute Respiratory Infections

After the intensified efforts of the National Control of Diarrheal Disease Program "NCDDP", CAPMAS statistics show that after 1985, acute respiratory infections "ARI" have been recorded as main cause of mortality in the less than 5 years aged children.

Data about this type of infection which is more prevalent during the cold winter season were included in the DHS, 1988 (Sayed et al., 1989).

Overall 43% of children under age 5 years were reported to have a cough during the month before the survey and in nearly 1/2 the cases mothers reported the child had difficult breathing. Children 6–23 months were somewhat more likely to have had cough than younger and elder children. Prevalence of cough with difficult breathing peaks among children 6–11 months. Urban children are more likely to have cough than rural children. The proportion increases with mother's education.

Diet Related Chronic Non Communicable Diseases

Diabetes Mellitus

One of the long term complications of diabetes is accelerated atherosclerosis or cardiovascular disease.

Other long term complications include hypertension, blindness, kidney problems, peripheral nerve and peripheral circulation troubles, an increased risk of congenital malformation in infants born to diabetic mothers and premature death. During the HIS of the HPE (1984), the awareness rate for self-reported diabetes mellitus is 13.2/1000 persons interviewed. There is more awareness of diabetes in urban areas (22/1000) than in rural areas (6.5/1000). The male/female ratio is 0.8. The study of Rihan and Lehstein (1971), showed that success in the control of diabetes depends on the cooperation of the patient in following the prescribed diet, rather than supplying him with drugs. This emphasizes the need for a special nutrition and health education program especially for diabetes of low socio-economic standards.

Cardio Vascular Diseases

During the HES of the HPE, the awareness rate for self-reported hypertension and heart disease were 15.8 and 10.7/1000 persons interviewed respectively. The male female ratios were 0.4 and 0.7 respectively.

It was also found that there are about 5.6 million hypertensives among the Egyptian population. A prevalence rate of 47.4/1000 for diastolic hypertension gives an estimate of 2.4 millions suffering from diastolic

hypertension. Hypertension prevalence was found to increase by age and it is mainly a problem of late adulthood and old age. Systolic hypertension is more among urban residents. Growing urbanization in Egypt and its subsequent stress and changes in environment and food intake and habits as well as smoking are major risk factors.

Cancer

Descriptive statistics of the National Cancer Institute in Egypt confirm the following:

1. the high frequency of bladder cancer;
2. followed by breast cancer, the most common neoplasm in females;
3. malignancy of lymphatic and hemopoietic system, together with malignancy of digestive organs, ranks next;
4. low frequency of color affection and relatively high frequency of rectal cancer;
5. cancer of the buccal cavity and pharynx;
6. breast cancer could be related to starchy diet and overweight.

Moreover, Vitamin A deficiency might play a role in the relatively high frequency of squamous cell carcinoma. Bilharzial patients showed significantly low level of Vitamin A and B carotene compared with normal subjects. The Egyptian diet can be protective against certain digestive cancer, possibly due to a high fiber content and rich Vitamin C.

Some more details derived from the CRSP study which was conducted from 1984 to 1985 in a rural community. Target groups were fathers, mothers, schoolers and preschoolers. Almost 20–30% of the four targets satisfy their vitamin ARDA. However, overt Vitamin A deficiency is not a public health problem in Egypt Although proportion of retinol and B carotenes was considered in comparison of vitamin A intake with RDA, yet other factors may play a role in this relation which needs an in–depth study (Moussa et al., under publication).

III. BASIC SOCIO–ECONOMIC CHARACTERISTICS OF EGYPT

Main Political Trends in Egypt

The importance of studying the Egyptian political trends in our report is to investigate how political changes can influence firstly the pattern of development and secondly the role of the state in the economy. Egypt shifted in its development efforts from adopting an independent model in the central planned era to a dependent strategy in the open–door era. Meanwhile the role of the state as the main provider of social services has been significantly affected by changing from socialism to liberalization.

The Central Planned Era (1960–1973) is characterized by a significant wave of nationalization of banks, insurance companies and industrial enterprises which occurred in June and July 1961. The Egyptian charter stated that economic development in Egypt must be based on socialism (UAR, The Charter, 1961).

Land reform, rent control legislation and taxation measures would help to prevent the exploitation aspects of private ownership. In addition, two main elements emerged from the political changes towards socialism, that are important to our study:

An Extensive System of Cost and Price Controls

Objectives of this system were income distribution. In the industrial public sector, prices were usually calculated on a cost plus basis. What is important, is the implications of the pricing policy *on the agricultural sector*, as will be mentioned in this report.

A Welfare Oriented Social Policy – is manifested in the health and education sector, as well as in the employment policy and social sector policies. The objectives of this policy is again to improve the distribution of incomes and to increase the health and education levels (El Gretly et al., 1977). The basic rights of the citizens comprise free medical care and education, employment, minimum wages and insurance benefits in old age and sickness. Main political goal of this period was to achieve an independent development model that relies mainly on the mobilization of national resources (Amin, G., 1968).

The Open-door Policy Era

The political objectives in the Sadat era were found responsible for the changes in many socio-economic policies. Main political changes can be summarized in:

- the improvement in the diplomatic and economic relations with the west and especially with the USA;
- the restoration of the Egyptian occupied territories since 1967 by negotiations (after the war of 1973) (Moustafa, N. et al., 1990).

This approach necessitated two major steps, one at the international level and the other at the national level. At the international level a peaceful settlement with Israel was signed which cost Egypt its diplomatic relations with the other Arab countries. However American aid had to replace Arab help (Handousa, H., 1982). American aid in general and American *wheat* in specific was regarded as the most important weapon for the maintenance of the peace process. Meanwhile it is one of the most important nutrient ingredients. It was regarded as the main factor that led to a dependent type of development in Egypt. Meanwhile at the national level there was the announcement of the October Paper (President Sadat, 1974). The main contention in the October Paper is the Open Door Policy which aimed to:

- encourage the private sector and foreign investment as well as Arab investment;
- limit the predominant role of the public sector.

However, in spite of the open door policy, Egypt was still keeping its socialist system providing the growing population with mass programs of health and education. Price subsidies and employment guarantee policies were also maintained over the seventies in spite of several economic distortions at the macro level.

Mubarak Era

This era was characterized in its first stage with a continuity policy for the peaceful settlement policy. However Egypt could restore its position in the Arab World and could also normalize its relations with USSR, improve its economic relations with the East and intensify its political position in Africa. The most important change during Mubarak's era *was the move to liberalization in the management of the economy* (Waterbury, J. 1980). Political analysts argue that the increase in the reliance on external resources since 1981/82 moved the centre of economic decision in Egypt to the foreign powers. The international institutions (IMF) and some foreign powers were experiencing a growing role in the allocation of resources in Egypt especially in the eighties and till present time. All changes in the economic policy since 1985 were initiated by the IMF, World Bank and the Aid Institution like privatization, subsidies cancellation, emphasizing agriculture sector, encouraging foreign investment, freeing external trade (Moustafa, N., 1990).

Finally, the role of the state as the main provider of health and educational services was put under question in recent days. This means that the two main policy elements of cost and price controls and the welfare oriented policies were directly affected by the changes in the political environment in Egypt.

Demographic Characteristics

Demographic aspects such as population rate of growth, natural increase, population distribution by sex and by location, as well as population density are all factors that may explain some differences in the health and nutrition status of the participants in any society. Total population in Egypt reached 50,455 million inhabitants in the last census (1986) and are estimated by 57 million inhabitants in 1991. With the annual rate of increase of 2,8% population are projected to reach 74,700 million by the year 2000.

Figure 10 indicates a declining trend in the population rate of growth for 1960 to reach 1.9% on average over the period 1966–76. However, since 1976 an upward trend in it is remarkable to reach 2.8% in 1986 (El Deib, 1991). This indicates the importance of health services and food intake for the growing size of population in the last two decades.

Components of Population Growth

Egyptian mortality rates may be compared with those of other North African countries, however they are above those of East Asia and most Latin America. The CDR declined from 30 per thousand over the second world war to reach 8,7 per thousand in 1986 (Figure 11).



Figure 10. The National Rates of Growth of Egypt During the Period 1897 – 1986.

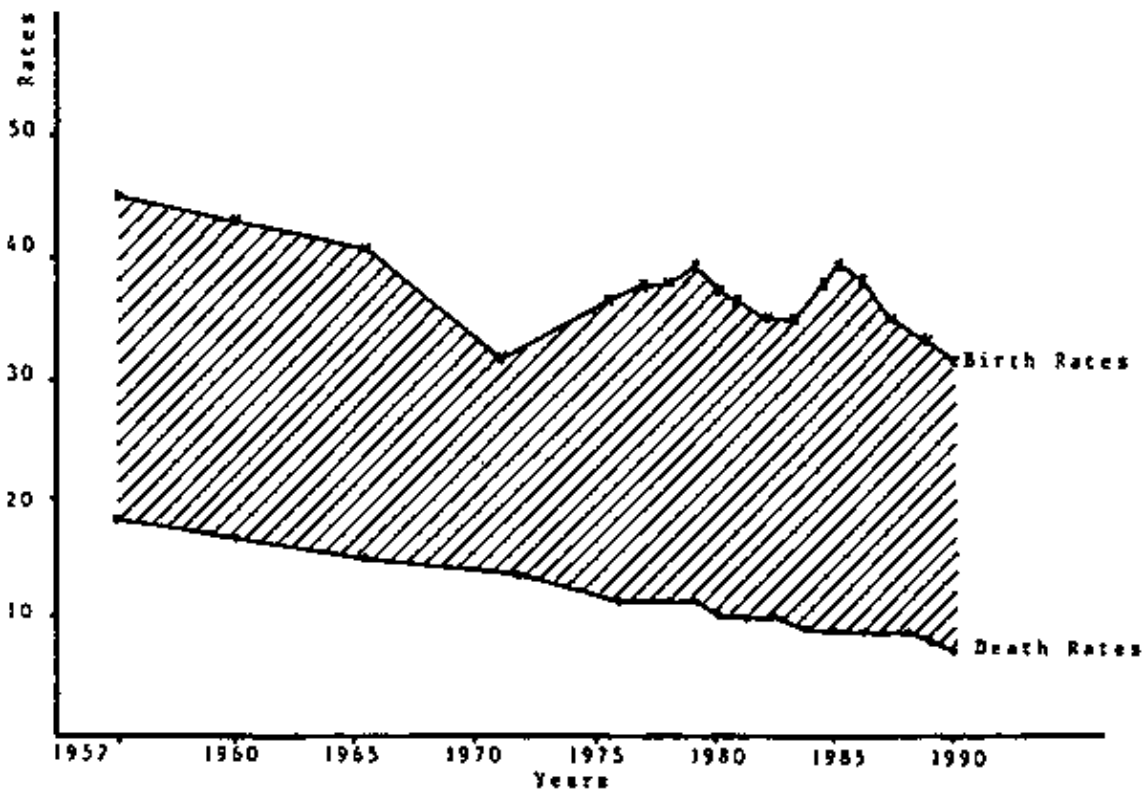


Figure 11. The Rate of Natural Increase of Egypt during the Period 1952 – 1990.

Birth rates in Egypt fluctuated with a declining trend in the last decades. Crude birth rates declined from over 40 per thousand in the mid 1960s to 34.5 per thousand in 1972, slowly they rose to over 39.8 per thousand in 1985, then they decreased again to 32.2 per thousand in 1990. One of the reasons for this decline is the increase in the age of marriage (16 for females and 18 for males). Moreover a decline in the number of marriages occurred as a reflection of increased urbanization, rising education levels (especially among females), the difficulties in finding lodgings especially in urban areas and the decline in infant mortality rates. However, the economic factor plays a crucial role in increasing fertility levels in rural areas in Egypt as children have important jobs on the farm.

Expectation of life at birth rose from 39 years in 1952 to over 60 years in the early 1990s (El Deib, 1991).

Population Distribution in Egypt

The geographical distribution of Egyptian population clearly shows considerable population redistribution movements between rural and urban regions, resulting in high rates of urbanization and concentration of the national population in primate cities. Proportionally urban population increased from 17.3% in 1907 to 43.8% in 1986 and rural population decreased from 82.8% to 56.1% of the total population over the same period. The urban/rural ratio (R/U) has jumped from 0.208 in 1907 to 0.783 in 1986 (Table 10 App.).

The Egyptian urban population is mainly concentrated in the cities of Cairo and Alexandria as shown in Table 11 App. According to the 1986 census, these governorates absorb 42.3% of the total urban population. The greatest urban agglomeration is in the Cairo Planning Region (Cairo, Giza and Kalyoubia) which absorbs 43.8% of the total urban population in 1986. The implications of such a concentration is a high population density in Cairo governorate (928258 vs 14771,6 on average in the 1986 census). Buildings and housings densities provide solid indicators of population concentration in Cairo and in Cairo Planning Region as a whole. The concentration of buildings/km² and housing/km² is higher in Cairo than the average figure as shown in Table 11 App. (1909 vs 1733,2 and 8095 or 3661,5 respectively).

Crowding and overall high density is reflected on the *health status of the population*. Despite the fact that the socio-economic indicators are relatively better in Cairo governorate, infant mortality rates are higher in Cairo than the national average (Table 2 App.).

Development Strategy and Policies

Development from Above Strategy

Based on the World Bank classifications, Egypt is a lower middle income country. Its estimated GNP per capita in 1989 was US \$ 640. In general Egypt followed a pattern of "Development from Above", a strategy that emphasized growth in few sectors (industry and in few geographical regions – Cairo and Alexandria) assuming that it will experience a trickle down in the development efforts to the whole economy (Mursa R. et al., 1981). The implications of the "Development from Above" strategy in Egypt can be summarized as follows:

a) The economic policies involved protection for the urbanized modern sector of the economy at the expense of urban and rural poor. The adoption of import substitution policies included protective tariffs and import controls for highly capital intensive sectors, which are potentially subsidizing the wealthy modern urban sector at the expense of other traditional sectors. Moreover, "Development from Above" policies in the industrial sector led to increasing capital intensity. The average share of the industrial worker in fixed assets increased from LE 100 in 1970 to LE 518.8 in 1982 (Nassar, H., 1989). This explains the low labour absorptive capacity in the Egyptian industrial sector and the limited employment opportunities.

b) The neglect of the agricultural sector was another characteristics of the Egyptian economic policies in the sixties and seventies. The share of the agricultural sector in investment declined from 22,5% over the period 1959/60–1965/66 to 16,8% over the period 1966/67–1973 and to 7,3% over the period 1974–1980/82 (El Shura, 1985) (Figure 12). The decline in the relative contribution of the agriculture sector was accompanied with a relative deterioration in the incomes of the rural workers in comparison to the urban workers. Per capita income in the rural areas was 45.2% percent of per capita income in urban areas in 1975 and declined to 32.9% in 1982. These ratios are lower for the peasants category (the majority of the population in rural areas). Real per capita income for peasants was 37.1% of per capita income in urban areas in 1975 and declined in 1982 to 22.5%. The growing capital intensive farming as a characteristic of "Development from Above" affected the labour absorptive capacity of the agriculture sector, which declined from 52.8% over the period 1959/60–65/66 to 34.4% over the period 1986/87–1991/1992 (Table 12 App.).

c) In addition to the "urban" and "high capital intensity" bias portrayed in the development strategy in Egypt a marked regional disparity exists. Cairo and Alexandria absorb the majority of the investment funds in the different development plans. 37.5% of the investment in the 1987/88–91/92 five year plan is allotted to Cairo and Alexandria (ARE, Second Five Year Plan, 1987/88–1991/92).

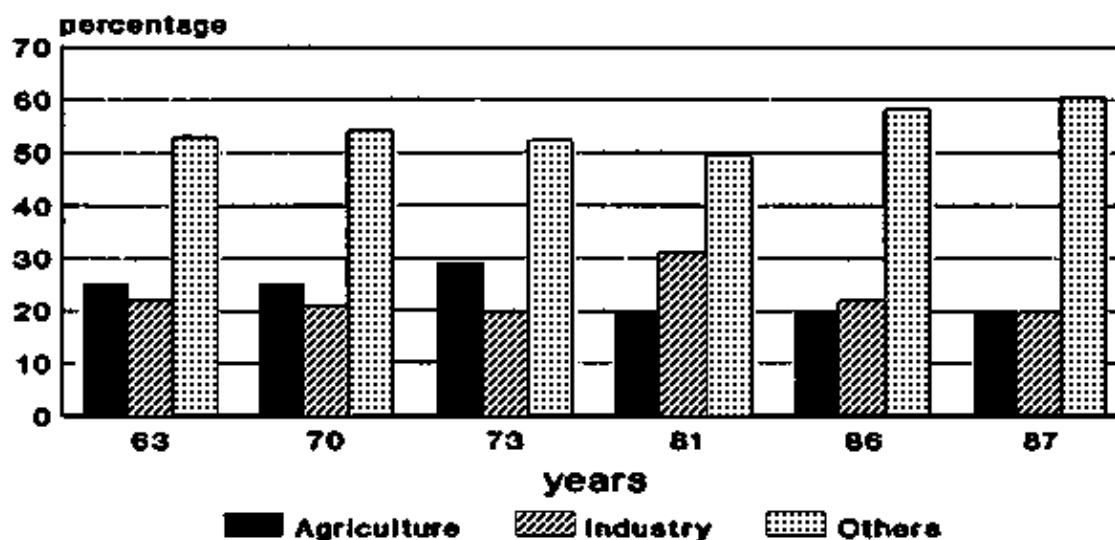


Figure 12. STRUCTURE OF GDP – Egypt

in million Pounds

Meanwhile many areas in Lower Egypt and Rural Egypt are still deprived from sufficient investment to induce socio-economic development.

The implications of the development strategy adopted in Egypt on health and nutrition can be summarized as follows:

- Rural/Urban differences as well as inter-governorate differences in socio-economic living standard are indicated in Table 2 App. PQL1 in urban governorates reached 77.8 on average and declined to 47.9 in lower Egypt and to 30.1 in upper Egypt. These differences clarify the regional differences in health and nutrition in Egypt as previously indicated.
- Relative low labour absorption capacity in the modern industrial sector and a declining labour absorptive capacity in the agricultural sector influencing one of the basic determinants on health and nutrition: *income creation*.

Structural Adjustment and Reform

Deterioration in the Economic Situation and Foreign Debt

After eight years of marked improvement in the external resource position in Egypt over the period 1974–1980/81, Egypt entered a critical period since the beginning of the eighties. Foreign receipts from oil, tourism, Suez Canal and workers' remittances grew significantly since 1974 enabling the economy to grow at an annual rate of over 9% between 1974 and 1980/81 (Figure 13). However the strong external Egyptian position weakened sharply since summer 1981, when the oil related sources of foreign exchange started to decline. The resource gap increased to 11% of GDP in 1985 (Table 13 App.) due to the deterioration in the terms of trade and exports revenues after the second oil price decline in 1985 (Figure 13). Egypt was faced with significant difficulties in covering its debt service obligations and a negative net resource transfer. As seen from Table 14 App., Egyptian foreign external debt stock increased to over US\$ 40 billion in 1989 and according to the latest estimates it reached US\$ 46 billion (American Embassy Report, 1991). Egypt was placed among the most heavily indebted countries in the world in terms of the absolute size of external debt and amongst the five countries with the highest debt to GDP ratio (World Bank, 1988). Figures 14 A, B, C, D show the percent change in debt outstanding and disbursed as well as debt ratio, growth of debt and debt service ratios. Sectoral growth indicates a stagnation in the agriculture output since 1980/81 and a declining labour absorptive capacity. Production of some important crops, rice, cotton, sugarcane as well as wheat were below the average level at the beginning of the eighties. Concerning the industrial sector, it witnessed a declining trend in its growth rate from 7.4% on average in the period 1973–1981/82 on average to 5% in 1984/85. The tight foreign resource situation disaffected the performance of the industrial sector. It affected mainly the capacity utilization in the public enterprises causing a serious financial constraint. Another reason for the decline in the industrial value added is the shortage of industrial imports due to the deterioration in the balance of payment over the eighties. Thus, the Egyptian government prepared in the summer of 1986 a macro economic reform program, which was the base for the 1987/88–1991/92 second development plan and the standby agreement with the IMF in May 1987 (Nassar, H. 1990).

Since 1987 major reform changes in the prices and subsidy system occurred, that were strengthened and accelerated since 1989. Figure 15 reveals the broad areas of the economic policy reform measures aiming to reduce the budget deficit and balance of payment deficit and to enhance structural adjustment (Nassar, H., 1991).

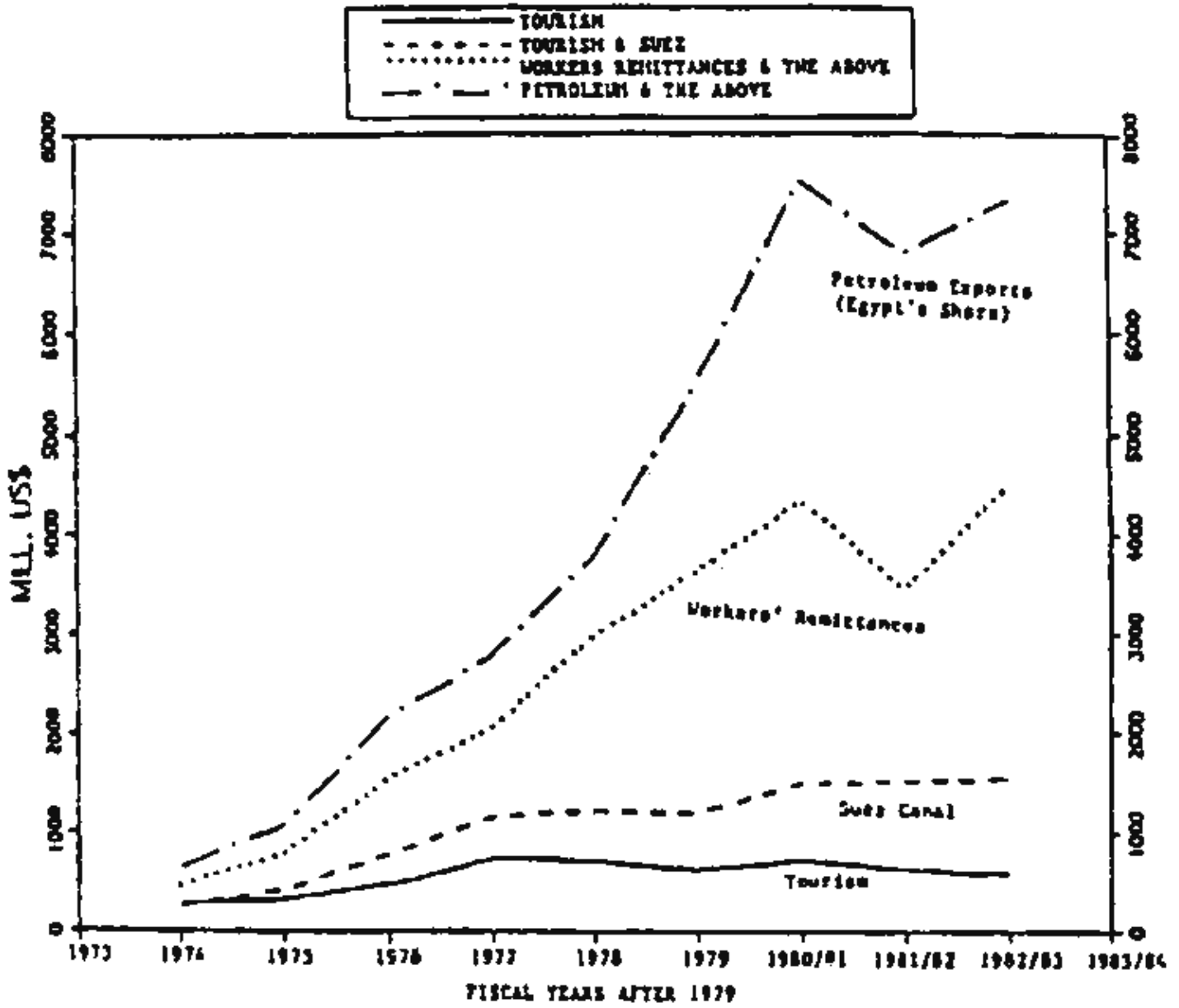
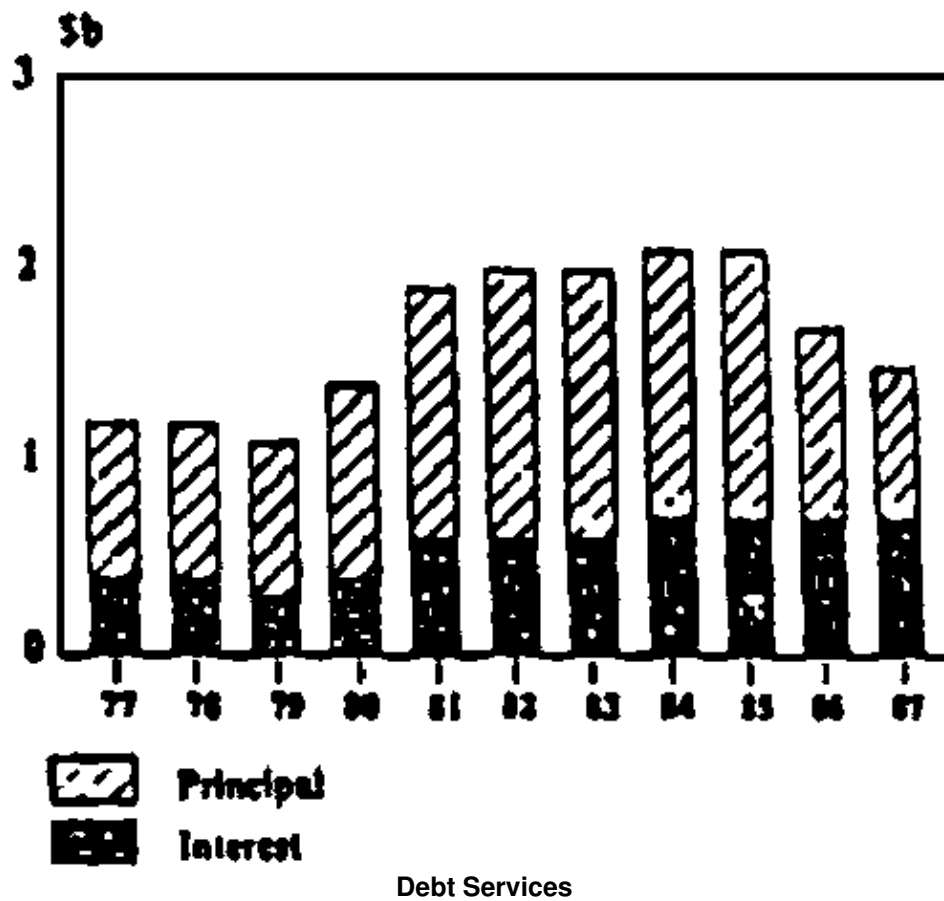
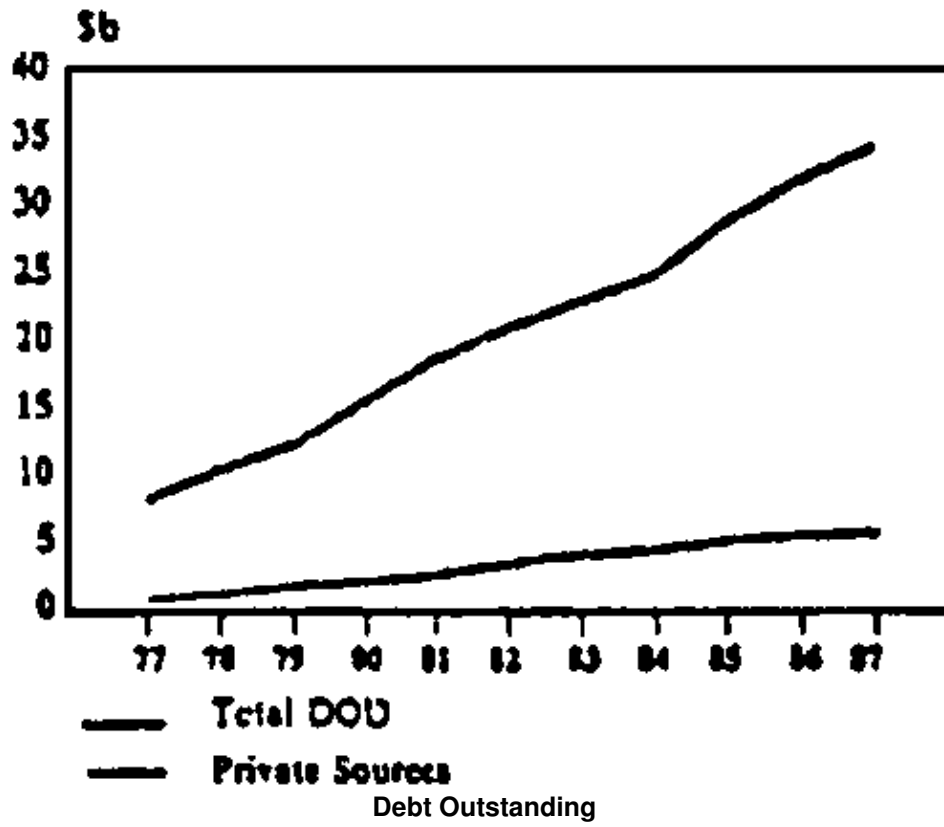
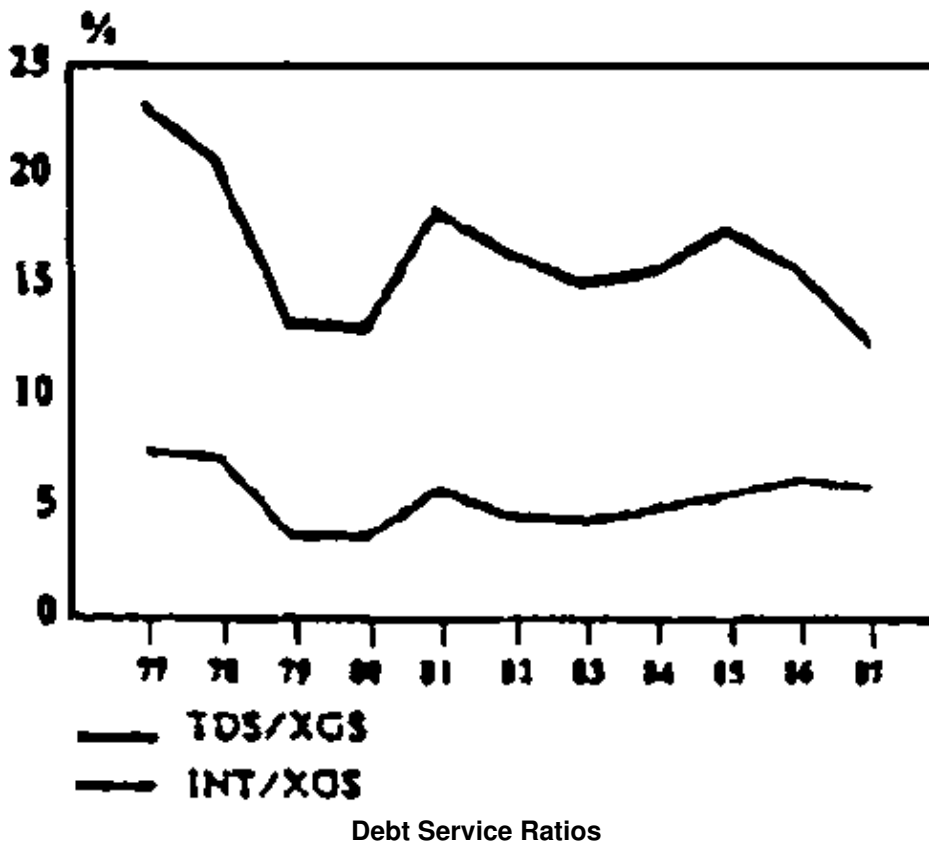
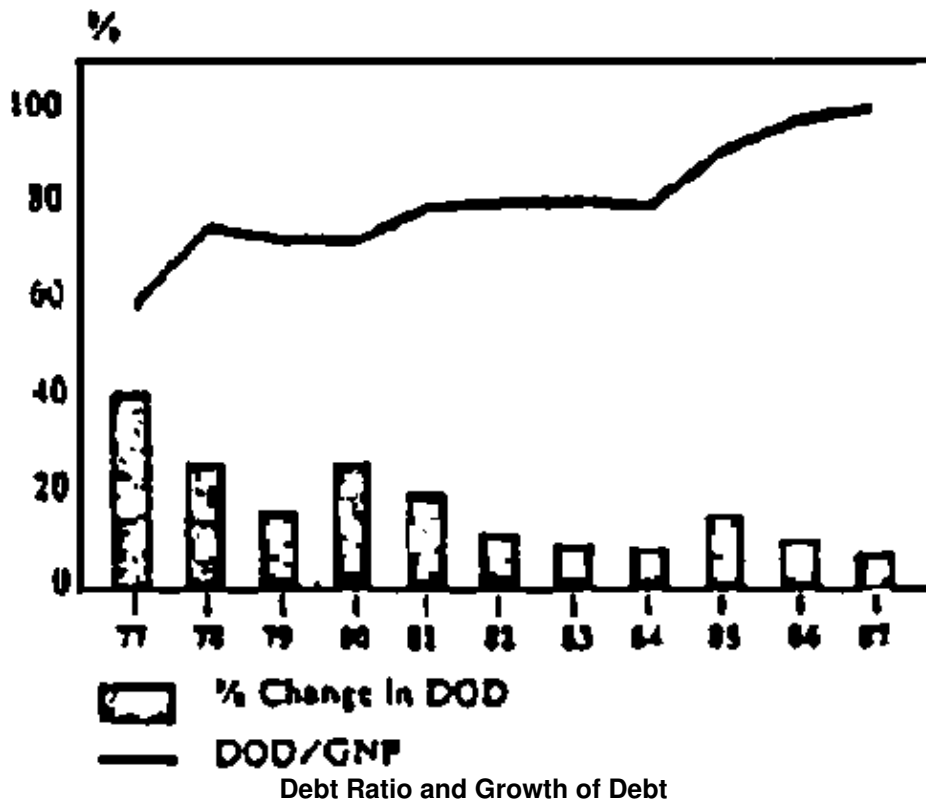


Figure 13. SELECTED REVENUE EARNINGS: EGYPT

Figure 14. PUBLIC LONG-TERM DEBT INDICATORS





SOURCE: World Debt Tables, 1989

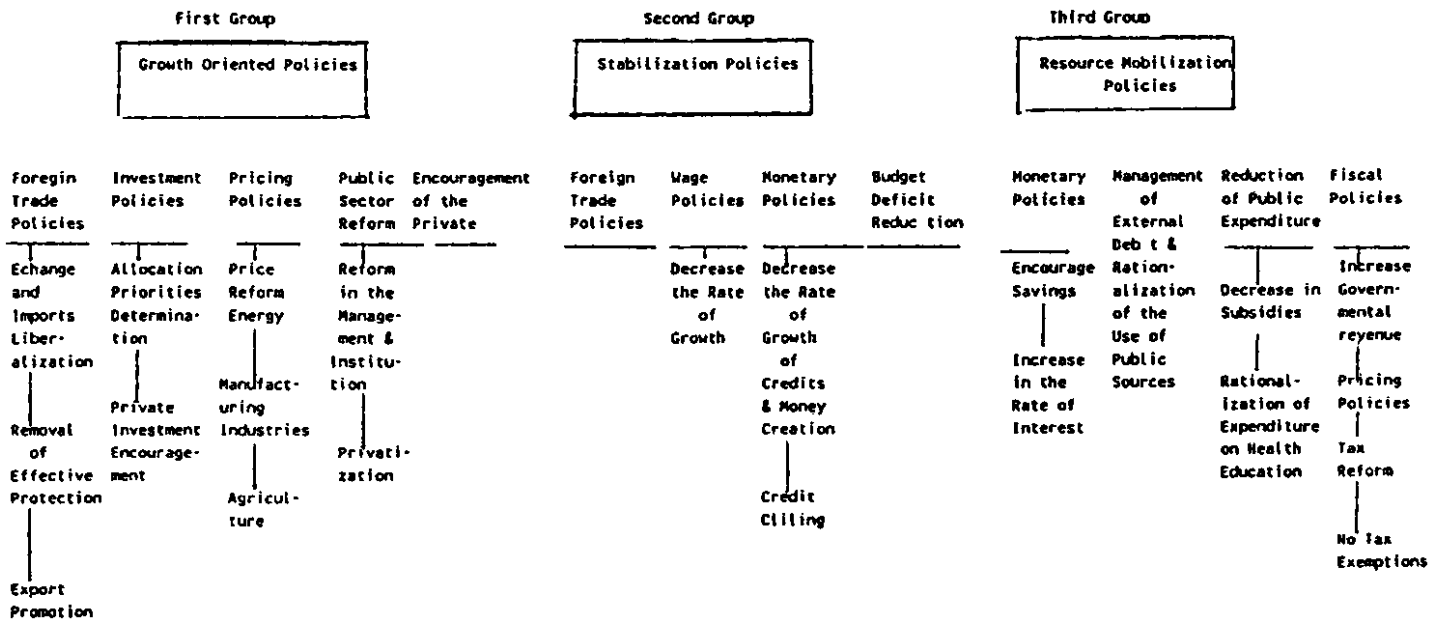


Figure 15. MAIN AREAS OF THE REFORM PROGRAM IN EGYPT 1989-1992

IV. DETERMINANTS OF HEALTH AND NUTRITION STATUS IN EGYPT

(...)

Section One: Dietary Practices

(...)

Supply of Food: (Household Food Security)

(...)

Government Policies in Egyptian Agriculture

(...)

Agricultural Policy Instruments

(...) consistently taxed. Wheat producers were protected in the early 1970s when wheat prices were particularly low. Maize and sugarcane production for which no price control was in effect during the period, has been taxed in most years as result of import policy.

Investment Allocation Pattern in Agriculture

The sectoral development in Table 12 App. and Figure 12 shows that economic growth in Egypt is distributed in an uneven pace among the different sectors. Since 1952 the agricultural sector was a slow growing sector with average growth rates of about 2% over the first half of the seventies after 3.5% on average in the period

1955/56–60/61. The share of investment allocated to agriculture declined sharply in the second half of the sixties and in the seventies to reach about 8% in 1973, after a sharp increase in it in the first half of the sixties (20%), while building the Aswan high Dam. The relatively low investment share allotted to the agriculture sector in Egypt shown in Table 12 App., reflects the *Development from Above Strategy* mentioned in Part two of this report.

Impact of the Agricultural Policy and Investment Allocation Pattern on the Nutrition Status of Egyptians

To investigate the impact of the agricultural policies over the 1970s and 1980s on the nutrition status firstly we have to discuss their impact on the production of foodstuffs and secondly their effect on food self sufficiency and food supply. Production and supply of food are direct determinants of the nutrition status beside other factors.

Impact of the Agricultural Policy on the Production Trends in the Agricultural Sector

Total cultivated area in Egypt has been increasing slowly during the last two decades from 5.8 million feddan in 1971/72 to an estimated area of 6.09 million feddan in 1987/88. With the high rate of growth of Egyptian population, per capita share in crop area declined from 0,36 in 1966 to 0,22 in 1986. The most significant changes have been the decline in the crop areas of the fixed priced crops such as cotton, maize, rice and sugarcane in 1988, if compared with the period 1974–80. The drop in output was due to yield and area decreases and reflected rapid rise in costs of production in relation to permanent prices. Meanwhile an upsurge in the crop areas of free priced crops like vegetables, fruits and berseem occurred over the same period. Overall agricultural growth in 1980–86 declined to 1.9% in 1980–86 after 2.5% in 1965–80 and was lower than the estimated population growth at 2.8 percent (Fletcher, 1989). From being a net exporter of agricultural products in the early 1970, the country now faces an annual net deficit in its agricultural trade balance. Agricultural exports, which were the major foreign exchange earnings sector before 1974 was placed by the oil in 1974 and declined from 40% in 1974–79 to 20% in 1980–86 (Figure 16). Moreover, agricultural imports, (mainly wheat and flour) at current prices have increased threefold from 1974–79 to 1980–86, consequently the agricultural trade balance, which showed a surplus until the early seventies, indicated a deficit of L.E 94.3 million over the period 1974–79 and L.E 355 million during the second and third periods (Table 19). With growing income per capita, increasing income elasticities and rising population size, growing imbalances occur between domestic supply and demand for food and agricultural products. The structure of the Egyptian economy was thus characterized by the large but declining share of agricultural from 18.7% of GDP in 1967–73 to 14.3% in 1980–86. Moreover the agricultural output has stagnated since 1980/81.

Furthermore, the Egyptian government's exchange rate and trade policies that encouraged imports that is wheat led to a relative decline in agricultural exports (Figure 16). This decline was also a result of a significant drop in the country's self sufficiency ratios in food (Dethier, 1987). Moreover taxing agriculture with price and subsidy instruments created black markets for inputs, diverting subsidized inputs to profitable crops.

Table (19)

AGRICULTURE AND TRADE SECTOR SHARES MILLIONS L.E

PERIOD	1967–73	1974–79	1980–86
AGRICULTURE SHARE OF GDP	18.7	18.4	14.3
TOTAL IMPORTS	377.4	1900.0	6267.7
AGRICULTURE IMPORTS	86.8	388.5	1113.5
AGRICULTURE SHARE OF TOTAL IMPORTS	23.0	20.4	17.7
TOTAL EXPORTS	318.2	729.0	2296.5
AGRICULTURE EXPORTS	211.3	294.2	455.0
AGRICULTURE SHARE OF TOTAL EXPORTS	66.4	40.4	19.8

TOTAL TRADE DEFICIT	-59.2	-117.1	-3971.2
AGRICULTURE TRADE DEFICIT	+124.5	-94.3	-355.0

SOURCES: ARAB REPUBLIC OF EGYPT NATIONAL PLANNING INSTITUTE. RESEARCH PAPER NO. 45, CAIRO: NPI, 1989. P50

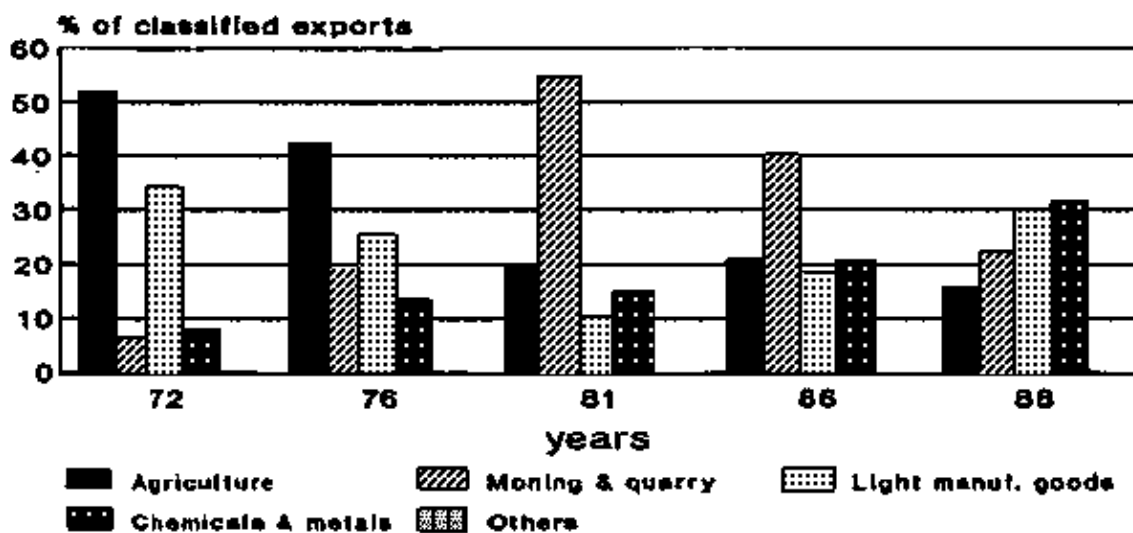


Figure 16. STRUCTURE OF EXPORTS - Egypt

in percentages

By protecting certain sectors (livestock and berseem) and taxing others (cotton and rice), government intervention created in-efficiencies in the allocation of scarce resources. The estimated aggregate gains and losses of producers in agricultural commodity markets during 1965-80 due to misallocation of scarce resources ranged between L.E. 500 million and L.E. 1000 million for most of the period (Von Braun and de June, 1983).

The Impact of the Trends in the Agricultural Production on Food Self Sufficiency and Food Supply

One should distinguish in Egypt between food self sufficiency and supply of food in Egypt.

With respect to food self sufficiency, the end result of the production trends in crop and yields area was a serious deterioration in the country's ability to feed itself. Self sufficiency ratio for important food items for 1987 in Table 20 shows that production was less than a quarter of consumption for wheat and less than a third for vegetable oil, lentils and less than two thirds for maize and chicken. 1989/90 figures show some improvement for wheat, maize and lentils and a deterioration for the rest.

Table (20)

Self-sufficiency Ratios for Key foods, 1987.

	Domestic Production	Imports ('000 tons)	Consumption ('000 tons)	Production as % of consumption
Wheat	1.929	6.857	8.786	22
Maize	3.900	2.028	5.928	66
Rice	1.330	-	1.330	100
Beans	282	-	282	100
Lentils	14	15	29	48
Sugar				

Veg Oil	161	474	635	34
Chicken	110	65	175	63
Beef	396	131	527	75

Source: The Economist Intelligence unit, Egypt country profile 1988–89. London, 1988 pp 21–22.

Thus, food imports (food aid) became a major level for securing availability of domestic food supply. As can be seen from Tables 17 and 18 App., cereal imports as a percentage of total supply have increased at unprecedented rates between 1970 and 1988 from 44% to 69% for wheat and from 3% to 23% for maize.

Furthermore, food aid's share in total wheat imports has increased from 0% in 1970 to 49% in 1978. But by 1988 this share declined to 21%. The importance of food aid in food self sufficiency is revealed in Table 20. Imports accounted for more than three fourth of wheat, two thirds of vegetable oil and almost one half of sugar consumed. The one third of maize that was imported was for animal feed. In addition meat imports (beef and chicken) were also important.

Moreover as far as food supply is concerned, the food availability in Egypt is comparable to levels of developed countries and far exceeds the average availability for developing countries (Average percaput food supply – 6/Day: Developed: 3050, Developing: 2150 and Egypt 3196) (Galal and Amine, 1984). Figure 17 shows calorie supply per capita in Egypt during the period 1961–1988. Food availability in Egypt increased steadily from 2402 over the period 1969–71 to 3196 in 1986–88.

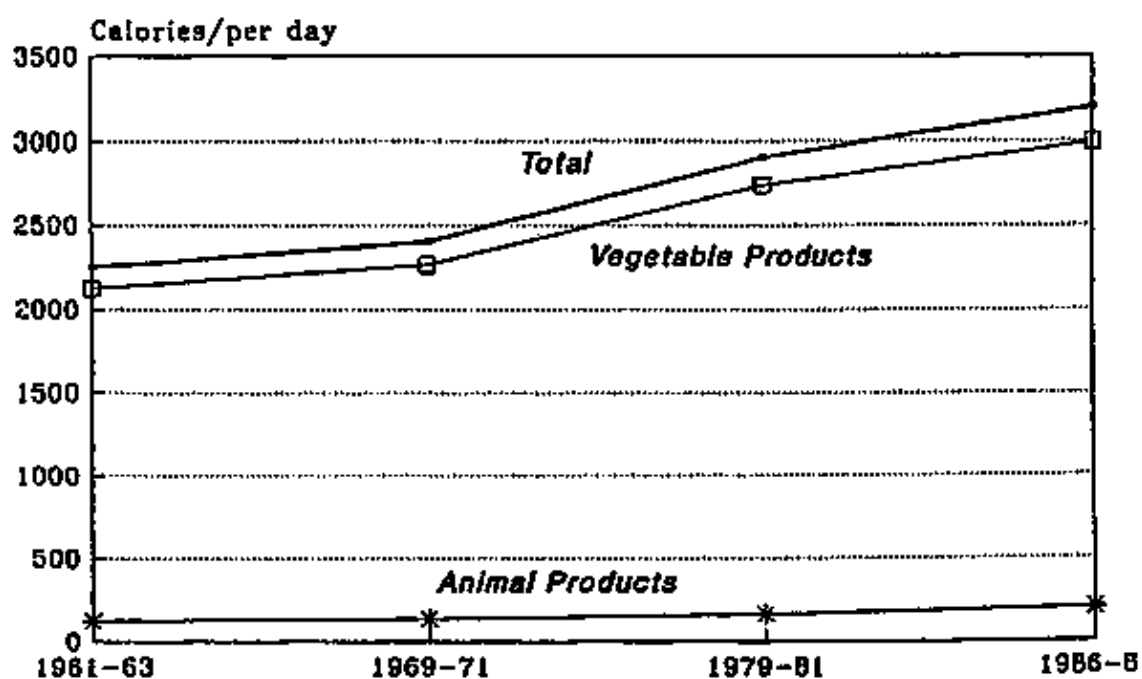


Figure 17. Calorie Supply Per Capita – Egypt (1961–1988)

Source: FAO Food Production Yearbook, 1989

Table (21)

TREND OF DIETARY PATTERN IN EGYPT OVER 20 YEARS PERIOD

ITEMS Related to Diseases of Affluence	Available	
	Per Individual	Per Day
	1965	1985
Selected Food Items		

Meat (GM)	31.8	49.9
Fish (GM)	12.0	14.8
Milk (GM)	87.1	128.7
Sugar (GM)	46.6	101.4
<u>Selected Nutrients</u>		
Energy (KCAL)	2400	3313
Protein (GM)	64.6	81.1
% Derived from Animal Food Sources	14.0	18.0
Animal Fat (GM)	5.5	10.1

Developed from: Egypt food balance sheets (Ministry of Agriculture, 1989)

Trends of dietary pattern in Egypt in the last twenty years in Table 21 are based on the assumption that the food balance sheets (FBS) are very similar to food intake pattern as shown in Figure 1 App.

Table 21 shows that meat and milk have increased almost by 50% while sugar has increased more than twice. Animal fat almost doubled. This total energy has almost increased by 50%. There is also an increase in the animal protein and animal fat. Food availability was indicated quantitatively by dietary energy supply (DES) and qualitatively by protein and fat at plant and animal origins.

DES presented as percaput total calories per day ranged from 3660 Kcal during 1969 to 3501 Kcal in 1986 (Table 19 App.). There was a rise of 231 Kcal percaput per day from 1969–1970. The level of DES continued almost at the same level till 1974 when there was a rise of 252 Kcal during 1975 and a further rise in 1981 and 1985 and a drop in 1986. Figures of total protein almost followed DES as a big proportion (> 50%) is supplied by bread. Percaput protein supply per day ranged from 74.6 gm in 1969 to 106.7 gm in 1981 and slightly dropped to 90.6 gm in 1986. Supply of animal protein followed a different route. It remained almost steady from 1969 to 1977 ranging from 10.6 to 12.5 gm/day. There was a slight rise in 1978, a drop in 1979 then a rise of 25% in 1980 which continued with minimum fluctuations till 1986 to reach 14 gm/caput/day. Animal protein supply is governed by subsidized meat, poultry, fish and eggs distributed through government cooperative stores. Total fat remained stable for 5 years from 1969–1973 around 48 gm/caput/day with increase of 6 gm in 1974 then a sharp rise of 8 gm/day in 1975 to reach 61.3 gm/caput per day. It remained at that level till 1985 when there was a sharp rise which continued to 1986. Total fat increased from 48.8 gm/caput/day in 1969 to 78.2 gm in 1986 with more than 60% rise. However, animal fat increased from 12.3 gm/caput/day to 18.7 gm in the same period with a rise less than 155 which attributes the rise mainly to vegetable oil imports. To conclude:

- There is a general increasing trend in the food availability in Egypt in the seventies after 1973, if compared with the eighties. Since 1981 ups and downs fluctuations occurred in the DES, animal and plant protein as well as animal and plant fat.
- This might be explained by the significant increase in food imports over the seventies as a result of the increase in foreign exchange over the period. The fluctuations in the food availability in Egypt over the eighties reflect the deterioration in food self sufficiency and a tight resource situation that led to a decline in the rate of growth of food imports.

However, in spite of the decline in food self sufficiency in Egypt, food supply increased in 1988 if compared with 1970. This was at the expense of the foreign exchange situation in Egypt. Meanwhile the home produced food played also an important role in food supply, especially in rural areas. In an in–depth longitudinal study for 12 successive months, flow of food in 150 HHs indicated that 4.8% are home produced (Moussa et al, under publication). Moreover 65.8% for cereal products, 23.3% for dairy products and 19.7% for vegetables are home processed (Aly et al., 1981 and Moussa, 1987).

The Contribution of Selected Food Groups to Dietary Energy Supply "DES"

It is important to examine the impact of the changes in food supply on the DES. Cereals are the main contributors to DES in Egypt as evident from the series of Food Balance Sheets from 1969–1986 (Table 22). Cereals supply increased from 61.6% to 79.5% of DES during this period. The highest value was in 1978 (79.5%), the lowest was in 1986 (61.6%). Cereals in Egypt are mainly wheat, which is the main staple, rice and com. Cereals also are the main contributors to protein supply in Egypt.

Table (22)

Contribution of different food groups to Dietary Energy Supply Trends in 18 years Period "FBS".

Contributing food groups	THE YEAR															
	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
<u>Vegetables products:</u>																
Cereals	64.5	72.2	69.9	68.4	69.9	71.8	71	69.2	70	79.5	69.8	70	70.8	68.9	69.2	72.7
Legumes	5.4	4.5	4.3	5.3	5	4.1	4.1	4.4	4.1	4	3.7	3.7	3.6	3.7	3.4	3.5
Sugar and Sweets	6.7	6.6	7.5	8.1	7.7	6.7	6.5	7.3	7.2	9.3	7.5	7.6	7.5	7.5	7.8	7.4
Vegetables	2.9	2.4	2.7	2.4	2.3	2.2	2.3	2.3	2.3	2.6	2.5	2.7	2.2	2.2	2.4	2.3
Fruits	3.2	2.6	3	3.2	3.1	3	2.8	2.9	2.9	2.9	2.9	3.1	2.7	3.0	3.1	3.0
Oil	6.7	5.5	6	6.6	6	6.5	8	7.5	7.6	9.3	7.3	5.9	6.7	7.3	7.2	5.2
<u>Animal products:</u>																
Heat	1.4	1.3	1.4	1.3	1.2	1.1	1.1	1.2	1.2	1.3	1.1	1.2	1.3	1.3	1.4	1.3
Poultry	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.3	0.5	0.4
Fish	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.6
Eggs	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Milk and milk products	4.6	4.2	4.3	4.2	4.1	3.8	3.6	4.4	4	5	4.4	4.8	4.4	4.1	4.5	3.3
Fats	4.2	3.4	3.9	3.8	3.7	3.4	3.3	3.8	3.7	4.2	3.7	4.1	3.8	3.8	4.0	3.6
% contribution of total animal products to "DES"	11.0	9.5	10.4	10.1	9.8	9.1	8.7	10.1	9.7	11.4	10.0	11.1	10.5	10.1	11.0	9.5

Developed from: Serial Food Balance Sheets of Egypt (Ministry of Agriculture, 1991).

Legumes, mainly lentils and fava beans, which are popular substitutes of animal protein sources in Egypt do not supply more than 5.4% of DES (1969). During this period there is a gradual drop to reach 3.6% in 1986. The drop in supply was accompanied by a rise of prices to the consumers.

Sugar and sweets contribution to DES was in the range of 6–8% during the period 1969–1985 with a sharp rise in 1986 to reach 11.6%, which means almost 80% increase above the value at 1969. Since DES is increasing during this period so absolute values of sugar and sweets are also increasing with a jump in 1986. Vegetables and fruits are minor contributors with a rise in fruit supply in 1986.

Vegetable oil supplied around 6–7% of DES during this period with a rise in 1978 and 1986. From the animal products meat, poultry, fish and eggs manifested almost steady supply during this period. However, milk and its products together with animal fat had a drop in supply which started 1984 and continued. The percentage contribution of total animal products to DES ranged from 8.9% to 11.4% with minor fluctuations and a drop since 1984.

Thus, one may conclude, that imports are highly contributing to the Dietary Energy Supply in Egypt, which is depending mainly on cereals. This may be interpreted as an indirect impact of the agricultural policy in Egypt.

The rise in fruit supply in DES in 1986 may be associated with the upsurge in the crop areas of free priced crops like fruits.

Egyptian Rationing and Food Subsidy

Objectives of the Rationing and Food Subsidy Program

It is difficult to discuss food supply in Egypt without examining the trend in the Egyptian ration and food subsidy. This program is related to the goal of food security and equity in income distribution, which was emphasized since the sixties. The subsidy and ration system has also a *direct nutritional concern*. For example, the stress on animal protein may partly reflect the viewpoint on nutrition.

Other objectives of the Egyptian rationing/subsidy program are:

1. To isolate the domestic economy from international shocks and short-term domestic shortfalls. Price stability for basic food commodities was of major concern to Egyptian government policy makers.
2. The subsidy system also is related to the goal of food security. Egypt is facing a widening food gap between demand and domestic supply due to the increase in the rate of growth of population and real per capita income. Aggregate food self sufficiency were declining since 1980s for wheat, rice, coarse grains, sugar, cooking oil, and meat, including poultry.

Thus food security aims to reduce or eliminate imports of selected commodities (for example sugar and oil) and to improve the agricultural balance of trade by using the comparative advantage of cotton to pay for necessary food imports.

Principal Commodities Subsidized

The food subsidy system in Egypt is one of the most extensive in the world. In 1989 approximately 93% of the population receives some form of ration card, with the major portion of the people receiving the full ration (green card: 47,085,001) and 1,416,013 receiving the partial subsidy (red card) (Kennedy, E., 1989). By the early 1980s, three types of products were subsidized or rationed (Alderman et al., 1982).

Wheat flour and bread were sold at a fixed price, uniform throughout the country in unlimited quantities. Sugar, tea, cooking oil, rice, beans and lentils were sold at subsidized prices and were rationed in fixed monthly quotas, which vary according to governorates and to the rural or urban location of household. Monthly quotas were less assured for beans and lentils. Additional quantities were available at higher prices in cooperatives and government stores. Finally meat poultry and fish (frozen) were also subsidized, but in limited quantities. Some subsidized items were used as inputs for the food processing sector flour (to bakeries), oil (e.g. for margarine), and imported yellow maize (for poultry feed and other industrial processes).

Types of Subsidies

There are many types of subsidies in Egypt; direct and indirect; explicit and implicit; producer and consumer subsidies et. Direct subsidies refer to those subsidies for which specific allocations are made in the budget. These subsidies are awarded to certain public sector organizations in order to enable them to sell certain goods or services to consumers or producers at price usually lower than procurement prices (Carr, D., 1990).

Economic Costs of Food Subsidy

The overall magnitude of the subsidy burden is presented in Table 23. After rising steeply from L.E. 108 million in 1973 to 621 million in 1975 to a peak of L.E. 2909 million in 1985/86, the explicit budgetary outlays for subsidies declined. But even in 1988/89, at L.E. 1813 million they still constituted about 11.1% of total government expenditure. This is due to two factors: The reduction in their absolute magnitude as well as the expansion in the budgetary outlays.

Food subsidies during the 1970s represented an extremely sizable share of various subsidy types. Food subsidies relative to government expenditure decreased from about 97% in 1973 to 66% in 1980/81, to almost 47% in 1989 and from 98% to total subsidy in 1973 to 5% in 1988.

Funds allocated for wheat and flour subsidies are the most significant among food subsidies. It was at its lowest level (LE 79 million) in 1973, and it did attain its maximum exhibiting a downward trend since 1985, while attaining a level of L.E. 199 million in 1989. Table (20 App.) shows the allotments for major subsidized commodities in Egypt.

It is clear that funds allocated for sugar and edible oil have increased, and at the same time wheat and flour subsidies declined.

Example of implicitly subsidized goods include petroleum products, electricity, raw cotton, etc. The importation of subsidized goods using an exchange rate that is below open market rate is another example of implicit subsidization.

In 1986/87 the value to Egyptian consumers of all implicit subsidies provided by the government of Egypt by its not using the market exchange rate for the imports of wheat, flour, vegetable oil, or economic process for electricity, fuels, cotton, lint, and public sector industrial commodities was about L.E 8.5 billion, or 18 percent of GDP. The implicit subsidy burden was estimated to have risen to L.E 13.5 billion by FY 1988/89 (Carr, D., 1990).

Table (23)

Total, Food and Wheat Subsidies for the period 1973–1988/89 (L.E Millions)

Year	Govern Expendit	Total Subsidy		Food Subsidy		Wheat and Flour subsidy		
		LE million	% of Gov. Ex	LE million	% of Tot. sub	LE million	% of Tot. sub.	% of Food sub.
1973	1177	108	9	105	98	79	73	74
1974	1432	419	29	317	75	221	53	69
1975	2297	621	27	320	51	162	26	50
1976	2526	427	17	297	69	178	41	60
1977	2673	464	17	310	66	149	31	48
1980/81	5478	2572	31	1690	66	901	35	53
1981/82	8149	2909	22	1779	61	807	28	45
1982/83	8437	2054	16	1337	65	758	37	57
1983/84	9331	1986	13	1209	61	862	43	71
1984/85	10752	2007	10	1121	56	615	31	55
1985/86	11522	2909	17	1928	66	449	15	23
1986/87	10448	1746	10	1034	59	390	22	38
1987/88	13661	1650	6	837	51	236	14	28
1988/89	16283	1813	5	857	47	199	11	23

Sources:

1. El-Kholei "Objectives and Implications of Egyptian Food policies" Table (9, 10)
2. IFPRI Report 34 Table (1)

Agricultural Policy Reforms 1986–1988

The reform in the agricultural sector in 1986 is one of the main programs that will indirectly influence the nutrition status of Egypt.

The long-term goals set for these reforms were:

- remove government farm price controls;
- remove government crop area controls;
- remove government crop procurement quotas;
- remove government constraints on private sector processing and marketing of farm products and inputs;
- eliminate subsidies in farm inputs.

In June 1988, price controls, area and production quotas, and marketing restrictions on wheat, broad beans, sesame, onions, lentils, and ground nuts had been eliminated; control of private and public sector farm product processing and marketing firms were removed; the cotton procurement price increased with a stated intent to move cotton prices toward world cotton price levels; the price of cottonseed cake increased; restrictions on importing and marketing of red meat had been eliminated or reduced; restrictions on livestock feed imports were removed, a schedule established in 1986 for gradually eliminating livestock feed subsidies was maintained. The 1986 reduction of subsidy levels on farm inputs, including credit, was maintained; public ownership of newly reclaimed land was prohibited with all such land reclaimed during 1985–87 allotted to private individuals and companies.

By late 1988, an ambitious program of agricultural policy reform was in process. Only cotton, sugarcane and rice remained under price, production, and marketing controls and steps were implemented to reduce input subsidies.

Major Agricultural Policy Reform Objectives in the Period 1990–1993

Agricultural policy reform objectives for the period (1990–1993) are:

1. to raise the procurement price of cotton to two thirds of its export value by 1992;
2. eliminate one half of cotton pest control subsidy by 1992;
3. eliminate compulsory, low-price delivery quotas of rice by 1992;
4. eliminate restrictions on private milling, transport and marketing of rice;
5. eliminate PBDAC exchange rate subsidy;
6. eliminate budget subsidies for all nitrogen and phosphate by (1993);
7. eliminate livestock feed subsidies by 1992;
8. divest PBDAC responsibilities for importing and retail marketing of corn and other animal feed;

9. limit farm credit subsidies;
10. encourage privatization in seed marketing system;
11. deregulation for cooperatives (Ministry of Agriculture, ARE, 1991).

By the end of August, 1991, one can see that the Egyptian agricultural sector has made good progress toward achieving most of the objectives reported above. For example, Egyptian rice producers are no longer required to deliver any portion of their production to the government. Furthermore, the Ministry of Supply has announced the elimination of restrictions on private milling, transport, and marketing of rice.

Expected Impact of Agricultural Policy Reform on Agricultural Production

Expected impact of agricultural policy reform should be studied on both aspects: production, as well as incomes and consumption. As long as this part of the study is mainly concerned with the production and supply side we will discuss the effects on incomes prices and consumption in the following section.

McCarl, Quance, and Khedr (1989) presented a model of the Egyptian Agricultural Sector (EASM) to estimate the impact of a total decontrol of the Egyptian agricultural sector. The model shows that under free market conditions cotton begins to regain its dominance in Egyptian agriculture with a 17% increase in long staple cotton area and a 369% increase in cotton exports to 443,000 metric tons compared to 120,000 metric tons under the base case scenario.

The long season berseem area decreased to 9% relative to the base case. Rice production increases almost 17% in response to higher prices, while wheat production decreases almost 6% due to lower prices. Both citrus and vegetable production decline moderately as they become less profitable relative to higher priced cotton and rice.

With the increase in cotton exports, the agricultural trade balance shifts from a deficit of 727 million LE in 1986 base case to a surplus of 52099 million LE under the free market scenario.

The Egyptian farmers would not produce sugarcane, horse beans and lentils under the free market scenario.

Finally, under the free market the total current value of farm output would be higher. Producers surplus increases very large (46%) at the expense of consumers surplus compared to the base case. This, indirectly, will affect the demand on food, as will be indicated in the coming section.

Demand on Food and Health Services

As known in economic literature, the determinants of demand on food and health services are: incomes, prices of food, preferences of the individuals and the prices of complementary and supplementary goods and services. In this respect several policies and programs in Egypt were relevant, such as the growth oriented policies, sectoral development policies, employment policies, wage trends, the pricing policy as well as the ration and subsidy system. No doubt that the macro economic policy reform is one of the most important policies affecting directly the trends in incomes, wages and prices and indirectly the demand on food.

Incomes

Incomes are highly significant in explaining observed family calorie and protein deficits. In the study of Alderman and Braun 1984 high income elasticities for calories in Egypt were indicated (about 0.2 overall and about 0.4 for the poorest quartile). Moreover, rural urban differences exist. An increase of LE 5 in monthly per capita income will reduce the probability of a calorie deficit by 0.01 (mean = 0.17) in urban areas, whereas an increase of LE 1,5 would achieve the same reduction in rural areas. Income elasticity estimates for the different population groups are estimated in Tables 21 and 22 App. The demand for most food commodities are expected to increase with income. Income elasticities were found highest for fish, meat, chicken, fish, eggs, fruit and milk. Income elasticity is negative in urban areas for balady flour and bread and virtually zero in

rural areas for balady bread, indicating that balady bread and flour are inferior goods (Alderman and Braun, 1984).

Due to data limitations we will discuss only the trends in real wages and the incidence of poverty and income distribution in Egypt. Two main policies were found relevant in this respect, overall growth policies and employment policies.

Overall Growth Policies

Overall growth policies may influence the health and nutrition status of the population implicitly by determining: the level of GDP growth rates and GDP per capita growth rates, which will affect directly and indirectly the trends in wages and income levels: basic determinants of the demand on food. In addition, income distribution and poverty incidence are relevant subjects.

Meanwhile, it is difficult to study the overall growth rates in Egypt over the 1970s and 1980s, if we do not divide this period into four periods, as follows: 1970/1973, 1974–1980/81, 1981/82–1984/85 and 1985/86–1991/1992. Each period is characterized by different policies and socio-economic events. The period 1970–73 is usually included under the inter-war period 1967–1973 (Handousa, H., 1987). Annual growth rates of GDP were small in the years 1972 and 1973 (Table 24). The economy during the war period could not sustain the pace of high economic performance during the central planned period 1960–1965 (Table 12 App.). Meanwhile it is important to note that the rate of growth of per capita income dropped to less than 1% over the period 1966–73 with a negative rate in it in 1972. The share of gross investment in GDP declined sharply after 1965/66 from a ratio of 18.1% in 1965/66 to 13% in 1970/71 and 13.1% in 1973. Sectoral GDP growth rates witnessed a remarkable decline. Over the period 1974–1980/81, Egypt experienced a period of unexpected growth. The annual growth rate in Egypt was 9% on average. The reasons of growth was not an improved domestic productive efficiency but the very rapid growth of external resources from oil, Suez Canal tourism revenues and remittances (Figure 13). This significant overall growth was reflected on the investment ratio to GDP which rose from 23% in 1974 to 30% in 1980/81. The period after 1981/82 in general contrasts sharply with the period 1974–81/82. Egypt's economic situation began to deteriorate in 1980/81 reflecting a sharp decrease in the growth of external resources. However, a relatively high overall growth rate of 5% to 6% on average could be achieved through expansionary monetary and financial policies. The period 1986/87 till present may be distinguished as a separate era in which the Egyptian economy witnessed major changes in the macro economic policies. The Egyptian government could not maintain the high growth rates through expansionary economic policies, which resulted in increasing balance of payments deficits and increasing debt service obligations as a result of foreign borrowing. This was reflected on the declining trend in GDP and investment growth rates, government consumption and import growth rates. The Egyptian government, since 1986, undertook different measures to reduce the budget deficit and initiated a reform program, which was discussed in part II of this report (Nassar, H., 1990).

Nevertheless, overall growth rates affected the trends in per capita income in real terms as well as the incidence of poverty and the trends in real wages.

Per capita income

Per capita income grew by 7% a year in real terms between 1973 and 1982. However the decrease in the rate of growth of GDP to 2,5% in 1986/87 with a rate of population increase between 2,5% and 2,8% led to a negative rate of growth in GDP since the mid eighties. As indicated in Figure 18 GNP per capita increased from \$280 in 1976 to \$ 720 in 1984 and then it decline to \$610 in 1985. After a significant increase in it to \$760 in 1986 and on going declining trends occurred in it in 1987 and 1988.

Meanwhile, in spite of the overall growth over the seventies incidence of poverty in Egypt was not eliminated. In spite of methodological and data limitations in the estimation of poverty line, Table 25 can be used as an approximate measure of the overall incidence of poverty. In 1982 poor households represented between 22 and 30 of the total number of households (World Bank, Poverty Alleviation, 1990). Depending on Korayam K's estimate, proportion of poor households in 1984 has reached 33,7% and 34% in rural and urban areas, respectively. It is noteworthy to mention that in accordance to this estimate the poverty line refers to that level of income that is sufficient to ensure a minimum nutritional and basic consumption level of the individual at the official prices. Thus, the increase in the prices of food was clearly reflected on the rise in the proportion of poor households. Using market prices for food 51.1% of urban households and 47,3% of rural households were found under the poverty line (Korayam, K. 1987).

Table (24)

RATE OF ANNUAL INCREASE AND INDEX NUMBER OF EMPLOYMENT INVESTMENT AND PRODUCTION (IN FIXED PRICES OF 1960)

ECONOMIC SECTORS YEAR		TOTAL	AGRICULTURE & IRRIGATION		MANUFACTURING & MINING		TOTAL PRODUCTIVE SECTOR		SERVICE SECTORS	
			R(%)	X	R(%)	X	R(%)	X	R(%)	X
59/60-65/66	L	126,6	3	119,5	5,8	139,9	3,8	125,3	4	128,8
BASE YEAR	I		18,9	249,1	12,6	182,4	20,3	263,4	6,7	137,6
59/60	P		3,7	-	8,5	163,3	7,4	150,3	6,7	148,6
66/67-73	L	114,9	1	106,4	4,8	132,6	1,7	110,6	2,3	121,1
BASE YEAR	I		(-13,5)	60,1	2,7	110,2	-2,4	83,9	10,9	168,6
66/67	P		1,6	-	4,9	131	4,8	132,5	7,4	144,1
74-80/61	L	122,7	-	99,9	3,4	122,4	1,8	111,6	3,5	141,5
BASE YEAR	I		22	319,3	21,9	321,8	24,6	366,3	38,7	354,7
1974	P		3	-	7,9	158,8	7,5	235,9	15,6	218,4
82/83-86/87	L	114,1					2,2	111,1	3,6	118,1
IN FIXED PRICES OF 81/82 & BASE	I	120	16,1	180,6	2,0	107,5	3,6	115	4,5	125
YEAR 82/83	P	137,8	2,5	118,1	8,5	150,4	6,5	136,7	13,9	139,3
87/88-91/99	L									
IN FIXED PRICES OF 86/88 & BASE	I									
YEAR 87/88	P	123,9	3,7	115,8	7	132,9	5,7	124,8	10,2	122,6

L: Labour, I: Investment, P: GDP

Calculated From:

Shura Council, Investment Policies
Second Five Year Plan for Economic & Social Development, May 1987

R: Rate of Growth (%)

X: Index Number.

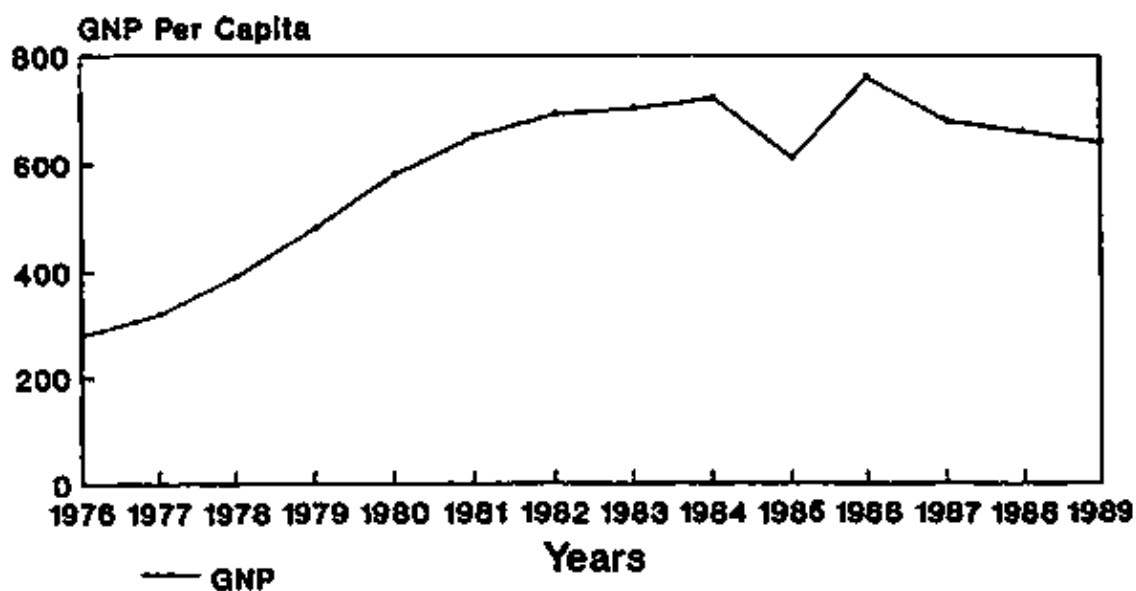


Figure 18. GNP Per Capita (1976–1989)

Source: World Development Reports

Table (25)

Incidence of Poverty in Egypt

	Proportion of Poor Households (%)	Number of Poor Households (000)
1958/59		
Rural	35	1161
Urban	30	597
1974/75		
Rural	44	1833
Urban	34.5	1076
1981/82		
Rural	24.2–29.7	1023–1240
Urban	22.5–30.4	756–1196
1984		
Rural	33.7–47.2	1476.1–2067.4
Urban	34–51.1	1444.7–2171.2

SOURCE: World Bank, Poverty Alleviation and Adjustment in Egypt, Volume II, June, 6, 1990

KORAYAM, K. The Impact of Economic Adjustment Policies on the Vulnerable Families and Children in Egypt, A Report Prepared for The Third World Forum, Middle East Office and the United Nations Children's Fund (UNICEF) Egypt, 1987.

The incidence of poverty decreased slightly between 1975 and 1982 and increased in 1984. However its level did not decline than that prevailing in the fifties in urban areas, with some improvements in the rural areas. Meanwhile the international comparisons show that Egypt was ranked among 44 developing countries from highest to lowest poverty incidence as 7th for urban poverty and 6th for rural poverty.

Data on income distribution

Data on income distribution show that the degree of inequality declined between 1974 and 1982 after a rise in it over the period 1964–1974. However it was found that a significant improvement occurred in it in the last decade, if compared with the fifties. Out of 44 developing countries, inequality was measured by the ratio between the share of income of the richest quartile over the share of the poorest quartile, Egypt's position was the 14th (World Bank, Poverty Alleviation, 1990). In addition, the 1981/82 household budget survey shows that the richest 20% of households in rural and urban areas receive 44% on 40% respectively of total income, while the poorest 20% have only 6% and 7.5%, respectively.

The implications of poverty incidence distribution of incomes on health and nutrition

The implications of poverty incidence distribution of incomes on health and nutrition is a maldistribution in food. Despite the fact that per capita daily calorie supply increased from 2,400 in 1973 to 3,300 in 1982, data on per capita consumption reveal that the consumption of the poorest 10% of the urban and rural population, represents 26% and 23% respectively, of the expenditures for the average urban and rural population while the richest 10% of urban and rural population consume about 255% and 227%, of the national average respectively (World Bank, Poverty Alleviation, 1990).

Meanwhile, while per capita calorie was 2843 and protein intake per capita was 96 grams in 1981, which represents 103% and 117% of energy and protein requirement, approximately 35% of the population consumes less than 2000 calories per capita. Inadequate consumption is worse in rural areas (38.5%) than in urban areas (33.1%) (Galal and Amine, 1984).

Wage trends reflect clearly the trends in the overall growth rates and employment policies in Egypt. Since 1961 the Egyptian government maintained an administered wage system and a guaranteed employment scheme to graduates of secondary and post secondary schools as a consequence of the socialist transformation. The employment policies for military conscripts and the government employment guarantee policies made the public sector in Egypt the largest employer, accounting for nearly one third of the nation's total employment. These policies could also depress the rate of unemployment over the sixties and seventies to 2.7% in 1960, 1.15% in 1966. However with the tightness in the labour absorption capacity in the productive sector, this rate increased to 7.76% in 1976 and to 14.7% in 1986 (Nassar, H. 1989).

With respect to the trend in real wages, Table 23 App. and Figure 19 reveal differences in the rate of growth of real wages in the seventies, if compared with the eighties. The strength of the economy in the 1970s was reflected on the real wages. Real wages rose as the economy expanded, reaching a peak in the mid 1980. With the deterioration in the macro economic variables at the beginning of the eighties, they drifted downward afterwards (World Bank, 1990). The period 1973 till 1979 witnessed a construction and a general economic boom as previously mentioned resulting in an increase in the wages in the private construction and service sector. Meanwhile mechanization, migration and urbanization contributed to the increase in the real wages in the agricultural sector. Wages in the public manufacturing sector show a slight increase in 1979 if compared with 1973.

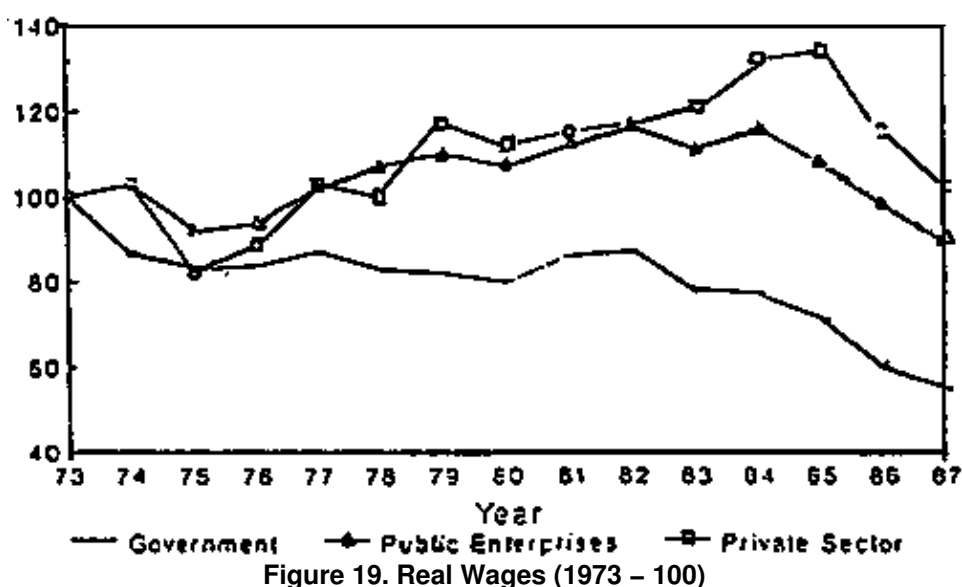
The deterioration in the macro economic variables after 1980s was reflected on the trends in wages in general. Since 1981, the economy began to weaken and the government could no longer afford the cost of over-staffing. A declining trend can be seen in the movement of real wages for the public service sector. Due to a rising wage bill and the struggle of the government to maintain full employment the wage bill was divided among a growing labour force. So real wages declined in the government and public manufacturing sector in the eighties if compared with the seventies. This increased the risk of labour market related poverty for workers in the government and the public enterprises.

The private sector in the agriculture, construction manufacturing service sector and the public construction sector showed an increase in the real wage in 1987 if compared with 1973, but a general decline occurred in it with the tight resource situation at the macro level beginning in the years 1983, 1984 and 1985 as seen from Table 23 and Figure 19.

Effects of Adjustment Policy on Incomes

From our point of view incomes and wages will be affected by the adjustment policies in Egypt and the reform at the macro level, which finally will affect the demand on food and health services as well. This may be investigated by studying the income effects of the agricultural policy reform for rural and urban households and the effects of the adjustment policies on the employment opportunities and thus the rate of growth in

wages.



Source: World Bank, Poverty Alleviation and Adjustment in Egypt, Main Report, 1991

Income Effects of the Reform in the Agricultural Policy

In an attempt to estimate the likely impact of agricultural policy reform one can make use of the results of the extensive study of Dethier (1989). In this study, income effect of price intervention for rural and urban households are estimated.

In rural areas five household categories were analyzed: (1) landless households; (2) land holding households, farm size (0 to 1) feddans; (3) land holding households farm size (1–3) feddans; (4) land holding households, farm size (3–5) feddans; (5) land holding households, greater than 5 feddans.

All the results are presented in terms of the percentage change from the actual level of real incomes as shown in Table 26.

Data in Table 26 show that real income of landless households was higher than what it would have been if there had been no direct government price intervention. For landless rural households, exchange rate and trade have accentuated the welfare gains, or dampened the losses injured through direct price intervention. The negative impact on farm incomes of price policy was significant because of high world prices for traded agricultural products. Significant differences in welfare losses may be found among farms of different sizes. These differences are attributable to differences in cropping pattern as seen in Table 27.

Income Effects for Urban Households

Real incomes of urban households are affected by agricultural price intervention in the short run through a change in their consumer price index.

Table (26)

Effect of agricultural pricing policies on the real income of landless households.

Period Average	Direct Effect	Total Effect
1973 – 79	16.4%	27.9%
1980 – 85	13.7%	31.0%

SOURCE: Dethier (1989) P. 137.

NOTE: A value of say 10% indicates that, with interventions on prices of cotton, rice, wheat, maize, and sugarcane, real incomes are 10% higher than what they would have been, if prices had been at their border price equivalent with the exchange rate measured at official (direct effect) or at equilibrium (total effects).

Table (27)

Effect of Agricultural Pricing Policies on Real Incomes of Farm Households

Farm Size	Direct Effect				Short Run Average	Total Effect Effect on Income				
	0-1	1-3	3-5	>5		0-1	1-3	3-5	>5	Ave
1973-79	-25.7%	-38.3%	-45.4%	-46.5%	-40.4%	-50%	-59.6%	-60.9%	-60.9%	-53.45%
1980-85	-10.1%	-22.7%	-29.7%	-30.6%	-24.7%	-28%	-41%	-50%	-52.8%	-44.25

SOURCE: Dethier (1989) P. 141

It was indicated that urban households have benefited greatly from price interventions. Real urban incomes have been higher throughout the period than they would have been if there had been no direct government intervention on prices (Table 28) (Dethier, 1985).

Low-income urban households have benefitted more from government price policy than have high-income households. The welfare gains are a function of the share of food items in the consumer budget. The share of wheat products (flour, and bread) alone is 13 percent for poor households, but only 4 percent for rich households. This explains to a large extent why low-income groups stand to lose relatively more than high income groups in case of removing price controls and other forms of government intervention in agriculture.

The results in Table 29 indicate that in the aggregate, consumption levels of cereals would have been lower, and sugar higher, if direct and indirect price intervention had been removed. Negative numbers imply that consumption would be lower if total intervention was removed and positive numbers indicate that consumption would be higher. Adding substitution effects to the computations would also modify the results, but probably not by much (Dethier, 1985).

It should be noted that the elasticities used for wheat and maize are high. Using the LES estimates of Von Braun and de Haen (1983) that is, -0.13 for both wheat and maize—would yield much smaller aggregate consumption effects but still the negative effects hold true. Lastly but not least, the results show that the ration system has a significant effect on income. This income transfer reduces the relative inequality of income by giving higher proportion shares to the poor. Thus, elimination or reduction of food subsidies and rationing system will hurt the poor segment of the population. The IFPRI and the Institute of Planning household survey conducted in 1981/82 revealed that urban residents obtain an annual transfer of L.E 17 per capita from subsidized wheat products, while rural residents obtain more than LE 12 directly from government channels and an additional LE 5 or 6 through the open market channels.

The relation of income and calorie deficiencies reported in Alderman and Braun, as well as the moderately high income elasticities for calories in Egypt (about 0.2 overall and about 0.4 for the poorest quartile) are evidence that the calorie deficit population would increase if the current income transfers and price subsidies were removed.

With Respect to Employment Opportunities as one of the determinants of income levels and its rates of growth, one may argue that they will be directly affected by the reform policies, especially in the public and government sector. The effects can be summarized as follows:

- Employment guarantee policies in the public economic enterprises since 1981 created a tight formal labour market.

- A net decline in the size of labour force in the industrial public sector, in the years 1982/83 and 1984/85 was noted. This trend is assumed to be prevailing in the late eighties with the application of reform policies (Nassar, H., 1989).
- A general decline in the rate of growth of employment in the public industrial sector from 3,6% on average for the period 1966/67-1974 to (-0,6%) over the period 1982/83-1984/85 was detected (Nassar, H., 1991).
- A general decline occurred in the rate of growth of employment in the government sector from 16.8% on average over the period 1982/83-1984/85 to 7,9% on average over the period 1985/86 - 1986/87. This declining trend will not be compensated by the encouragement of the industrial private industrial sector through the privatization wave, due to the relatively high capital labour ratio in this sector and its low labour absorptive capacity (545 in 1981/82 base year 1970/71 in comparison to 224.1 for the whole industry) (Nassar H., 1989). The same consideration may be applied on the investment and joint ventures in Egypt (Nassar H., 1991).
- An increase in the unemployment rate in the eighties when compared with the seventies was found (Figure 20).
- A significant decrease in the rate of growth of the wages for employees in the government sector was remarkable from 11,7% on average in the period 1982/83-1984/85 to -7,2% in 1985 in -5,3% in 1986/87 (El Shura Council, 1987). This trend associated with the increase in prices must affect the demand on food and the nutritional status.
- The above mentioned implications are applicable on the employees in the formal sector. Its implications on the employees in the informal sector depends on the different interrelations between the formal and informal sector which needs a survey study of both markets. (Nassar H., 1991).

Prices of Food and the Egyptian Ration System and Subsidies

Prices of food in Egypt is difficult to discuss, if we do not take into consideration the changes in the ration and food subsidy system, which was presented previously.

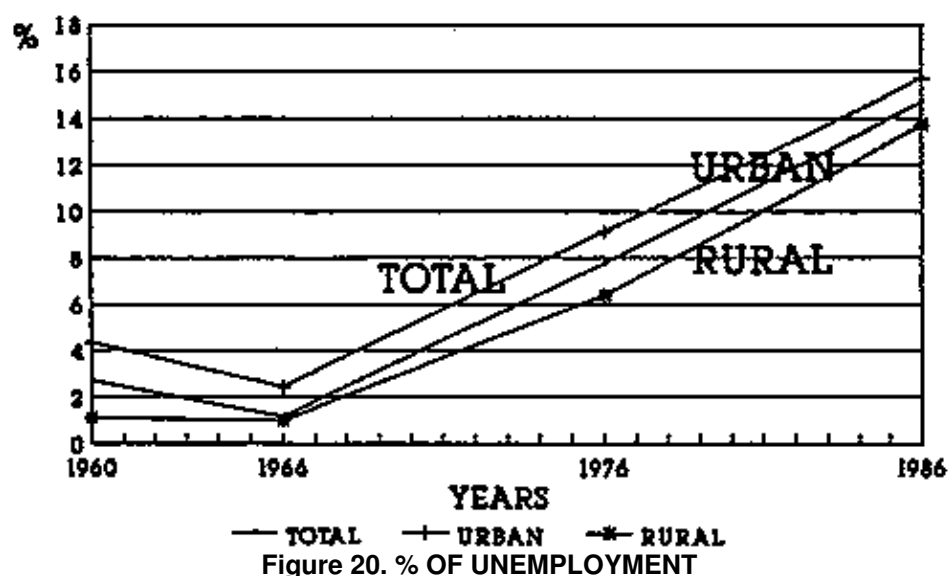


Table (28)

Effect of Agricultural Pricing Policies on the Real Income of urban households.

Period	Direct effect	Total effect

Average						
	Low income	Middle income	High income	Low income	Middle income	High income
1973–79	37.9%	32.0%	14.5%	71%	60.2%	32.6%
1980–85	53.2%	45.7%	20.5%	114.6%	99.5%	57%

Source: Dethier (1989).

Table (29)

Effects of Total Price Intervention on Consumption (Period Averages, Percentage Change of Actual Average Consumption)

Period	Rice	Wheat	Maize	Sugar
1973–79	-9.7	-18.99	-7.68	0.11
1980–85	-8.69	-20.7	-12.72	1.23

SOURCE: Dethier 1989

Reform in the Subsidy and Ration System

In an attempt to reduce the cost of the ration/food subsidy program in Egypt the government adopted some measures. The cost containment measures have involved three components: raising ration/subsidy prices, reducing the number of items included and reducing the quantities subsidized.

Table 24 App. presents recent data on the changes in the prices of rationed subsidized and open market commodities. The cost of the 1989/1990 ration program is approximately half that of the 1984/85 program (Kennedy, 1989).

It is important to note that the balady bread price increased by 150% during 1989. As well, the size of the loaf was reduced from 160 gm to 130 gm, which means an increase in the effective price per calorie purchased by the households from 0.003 piasters to 0.00% piasters.

The mix of subsidized foods has also changed, maize, beans and lentils are no longer provided at subsidized prices and the amount of government budget allocated to other food items has decreased.

The Impact of the Changes in the Ration System and Food Subsidy System on the Expenses of a Balanced Diet

An estimate of the least expenses of a balanced diet for the average Egyptian family i.e. the cost of the minimum food basket, was conducted by Egypt Nutrition Institute using the price list of food commodities in 1981 (Korayem, 1987). This was reevaluated using the price list of 1984 and 1989 (Hussein 1989). It was concluded that the least expenses on food of the Egyptian family was raised to a level between 425% for the urban and 391% for the rural family from 1981/82 to 1989. This rise in food cost is considered too high as compared to the increase in wages.

The Potential Effects of the Changes in the Ration/Subsidy and the Increase in the Prices of Food

According to (Alderman and Van Braun, 1984), average subsidies per capita per year amounted to L.E 29.6 in urban areas, and to L.E 19.7 in rural areas having access to rationed goods has provided households with significant income transfers not only from ration system but also from other government controlled food channels. Most households (93 percent) have a ration card and (95 percent) of households have regular access to the four rationed goods (rice, sugar, tea, and oil).

The price elasticities in Tables 25 and 26 App indicate that consumers of rice and sugar are not particularly responsive to price changes. Hence, reduction of the subsidies on these items will decrease both government outlay and consumer real income but will have only a small effect on total demand. On the other hand, the

larger price elasticities for balady flour indicate that consumers reduce their consumption of it when its price rises.

Price elasticity estimates discussed above would support the view that recent increases in food prices might have per capita cut-backs in the quantities of many food items consumed by households, especially in the lowest income category of households who are already spending 75 percent of their, income on food. Also some recent evidence (CRS, 1989), suggested that the majority of households have been decreasing their food consumption in response to these food price increases.

Effects of the Changes in the Consumer Ration/Subsidy System as well as the Government's Agricultural Policy

It is expected that all consumers both rural and urban will be negatively affected by the elimination or reduction of subsidies and the increase in prices.

In the rural areas, live small farmers (less than 1 feddan and landless) will be negatively affected, since they are purchasers of food. Any increases in income due to the new agricultural policy will be out-weighted by food price increases. Large farmers should not be hurt as some of the proposed changes in agricultural pricing policies will benefit them. Increases in price paid to producers for cotton, rice, sugarcane during the next few years with the removal of farm input subsidies will have a positive net effect on large farmers (Table 30). However, it is important to note that large farmers (> 5 feddans) constitute only 6.5% of all households (Ministry of Agriculture).

Impact of the Increase in Prices on the Nutrition Status of Egyptians

To predict any impact of the increase in prices on the nutrition status of Egyptians one must examine the contribution of the food security scheme to the nutrition status of Egyptians. This is clearly depicted in the results of the study of Alderman and Van Braun (1984), Following results are of major importance:

- The ration system contributes with 19% and 15% sources of calories for the lower income categories in urban and rural areas, respectively.
- Flour and bread (the major subsidized items) represent 49% and 42% of the calorie intake sources for the lower income categories in urban and rural areas, respectively.
- The lower income categories in urban and rural areas have a calorie intake (2343 and 2798) far below the average for the highest income category (3174 and 3149) in urban and rural areas respectively.

Table (30)

Food Security Winners and Losers from changes in consumer and Agricultural Producer Policies.

	Rural Areas	Urban Areas
Landless laborer	-	
Small farmer (< 1 feddan)	-	
Medium farmer (1 – 5 feddan)	0 or weakly (-)	
Large farmers (> 5 feddan)	+	
Lowest Quartile		-
Second Quartile		weakly (-)
Third Quartile		0
Fourth Quartile		0

Thus one may conclude that the increase in the prices of food will sharply disaffect the nutrition status of the poor categories by firstly reducing their real incomes and secondly by increasing the prices of the major sources of calorie intake for the poor (flour and bread).

The result is rather dangerous if we take into consideration that poor families are spending 63% and 48% of their budget on food.

Behaviour of Families as result of Rising Food Prices; (Current Consumption (Food) vs Future Consumption (Health))

Households, as experiences in many other countries have shown, are expected to attempt to counter the effects of the increase in prices. One such coping mechanism is substitution among food items in the diet towards cheaper calories (Andersen, 1988). One should note that the adaptation is not possible for the lowest income urban household since they are already spending about 75 percent of their income on food.

In addition a study was conducted by the Nutrition Institute on 100 households from each of Cairo, Assyut and Beheira governorates to discuss the behaviour of families as result of rising food prices (Hussein, 1989).

The study revealed:

- The rise in income does not cope with the rise in food cost.
- Families resorted to reduction in food and non food items.
- As well as consumption of less expensive foods to substitute more expensive ones took place without considering the nutritive value, both quantity and quality of the diet was compromised.
- All members of the family were affected by reductions in quantity and quality of the diet
- The higher the level of education within the HH, the higher was the sum of expenditure on food.
- Within the group with the least per capita income; 25% of labourers stopped consuming meat completely while 50% of farmers stopped getting vegetables for cooking. More than 80% of families in this quartile reduced the amount of meat irrespective of the kind of occupation.

From our point of view the most important implication of all previous changes on the behaviour of the households is the substitution of current consumption at the expense of future consumption (human investment such as demand on health services for the children). The increase in the living expenses in Egypt as indicated through the trend in price indices in Table 27 App. will lead to a rise in the marginal cost curve of human investment (demand on health services). Meanwhile the decrease in the incomes of the household will lead to a decrease in the marginal benefit curve of human investment (demand on health services) from Q_1 to Q_2 in Figure 21 (Sirageldin et al., 1990).

Food Consumption and Intake

The end result of the different policies and programs influencing demand and supply of food is the pattern of food consumption and intake.

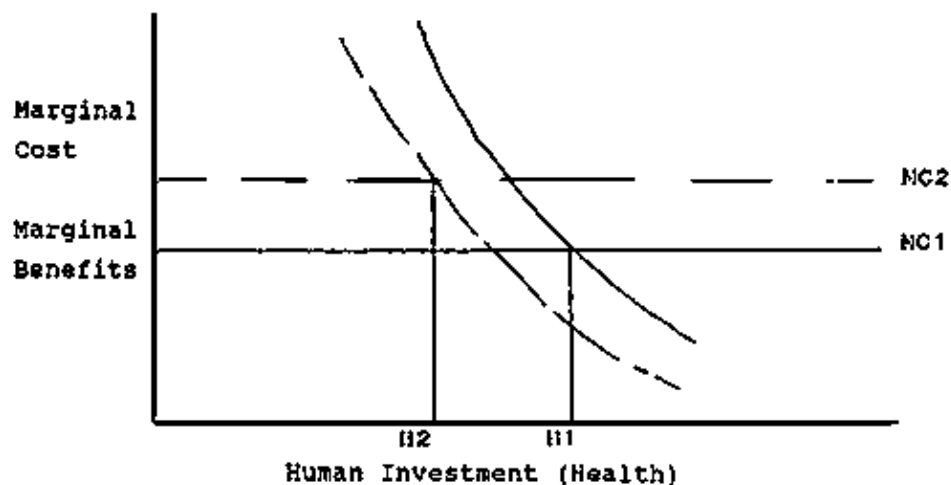


Figure 21

Data on food consumption and intake can only be obtained through food consumption surveys. In this respect 3 national surveys will be referred to as well as 2 valuable longitudinal studies (Aly et al., 1981; Moussa, 1987; Abdou and Moussa, 1975; Galal et al., 1987). Summary information about these 4 studies is presented in Table 28 App.

Dietary Pattern and Habits

In a national study by the Ministry of Health (MOH), Health Profile of Egypt (HPE), (Health Interview Survey "HIS", 1978–1984), the following dietary pattern was stated (Moussa, 1987): (Figure 22).

- The group of starchy foods and cereals (mainly bread and rice) is consumed by more than 99 of all categories of population. Both were highly subsidized by the state and are subject to one or several price increases.
- In rural areas higher percentage of population consume dairy products, fresh vegetables and tea while all other food groups are consumed by higher percentage of population in urban areas; particularly meat, poultry or fish group and fruits (fish is least consumed within the group). Thus urban residents receive a higher proportion of subsidized meat, poultry and fish.
- The difference in quality of diet was minimal by age and sex.
- Change of quality of diet with occupation implies also changes with socio-economic status. It was shown that starchy food and cereals and drinking tea was highest consumed by farmers and labourers. With the higher scale of occupations; scientists and professionals there is higher consumption of better quality or more expensive foods as eggs, meat, poultry or fish as well as fruits.
- Energy food supply contribute with more than 60% of energy intake of pregnant and lactating females and reached 80% during spring at the expense of tissue building and protective foods. However tissue building foods contribute with about a quarter in all seasons and give lower shares in spring (Moussa, 1988).
- On the other hand, a distinct feature of the toddler diet is the high ratio of vegetable to animal sources of energy (89.7%). This vegetarian nature of toddlers diet may explain the poor digestibility and low bioavailability of protein as revealed by a nitrogen balance study. Apparent protein digestibility was 55 ± 13 and apparent net protein utilization was 24 ± 14 (Moussa et al., 1988).

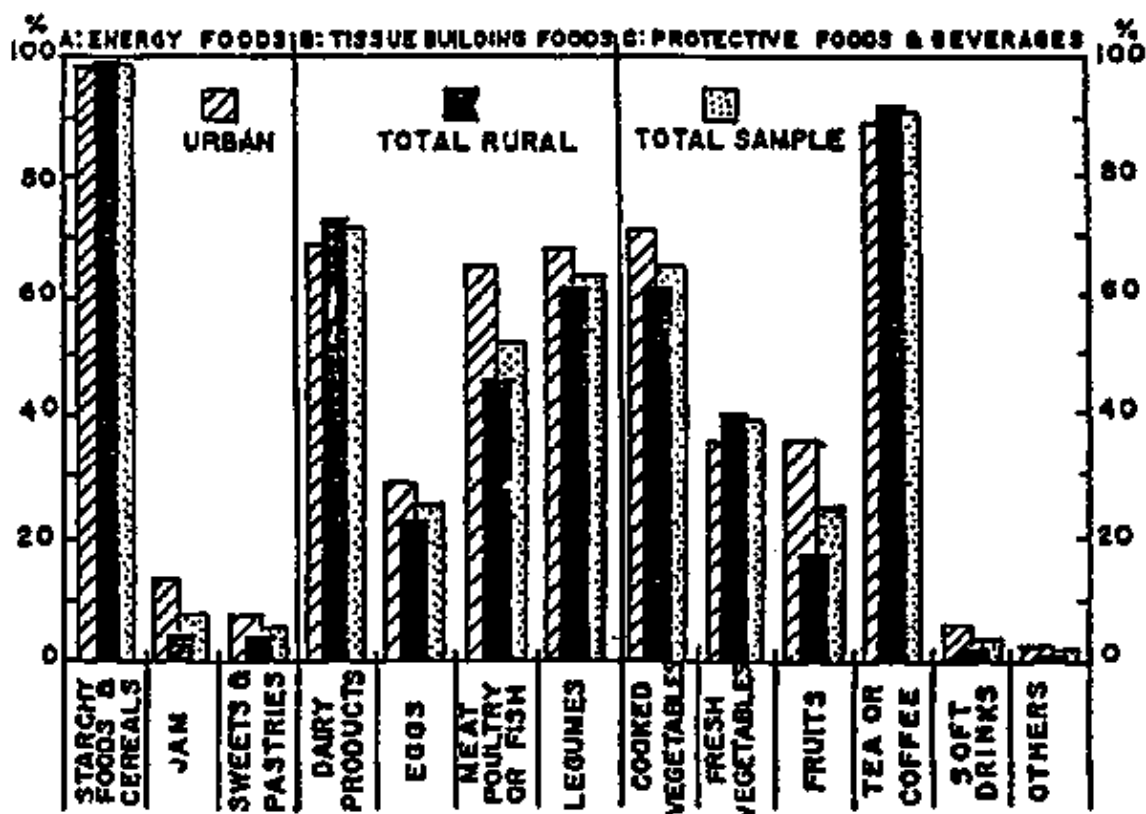


Figure 22. PERCENTAGE OF POPULATION CONSUMING DIFFERENT FOOD ITEMS IN A 24-HOUR PERIOD IN DIFFERENT AREAS

Source: Health Profile of Egypt, Dietary Habits (Moussa, 1987)

Moreover the National Food Consumption study (NFCS) conducted on 6300 HHS during 1981 (Aly et al., 1981) as well as HPE – HIS (Moussa, 1987) revealed certain dietary habits differences between urban and rural which can be summarized as follows:

- Type of bread consumed differs in urban and rural areas. In urban areas 93.3% of HHS consume wheat bread while the corresponding figure in rural areas is 67.1%.
- Type of sweets consumed still differ in urban and rural areas. Urban HHS consume more jam and rural HHS consume more molasses. Molasses mixed with tehineh (sesame butter) is a popular dish and of high nutritive value.
- More urban than rural HHS consume frozen meat (25.3% and 3.6%), canned meat (15.8% and 1.4%) and frozen fish (33.9% and 21.6%), respectively. As previously mentioned the subsidized items from this food is more available in the urban areas. These differences reflect rural/urban differences in socio-economic status as well. The question that is raised now is what is the impact of the previous pattern of consumption on nutrient intake.
- Finally, it was noted that percaput intake of subsidized animal foods per day constitute 10%, 11%, 20% and 2% for meat, poultry, fish and eggs, respectively. The share of urban residents in the subsidized food was almost seven times for meat (frozen) nine times for poultry (frozen), five times for fish (frozen) and 5 times for eggs (Table 29 App.) (Aly et al., 1981). This means that subsidized animal food was inframarginal which is not the case for bread and flour.

Adequacy of Egyptian Diet

Quantitative adequacy is indicated by the capability of the diet to satisfy energy needs of the individual presented by percent of the recommended dietary allowances of energy "% RDA". Qualitative adequacy can be measured by the capability of the diet to satisfy protein and other nutrient RDA of the individual.

From the NFCS (Aly et al., 1981), it is shown that 63.7% of fathers and 67.0% of mothers get 100% or more of

their RDA of energy, while 78.4% of fathers and 81.8% of mothers get 100% or more of RDA of protein. It was noted that inadequacy is more in energy than protein which applied also to dependent family members 2–18 years old. A larger proportion of fathers are deficient in energy and protein than mothers with energy deficiency more prominent. Energy and protein deficiency is more prevalent in urban than rural areas. Those who got 100% or more of their energy RDA were 57.4% of fathers and 63.0% of mothers in urban areas, while the respective figures in rural areas were 72.1% and 74.9%. Regarding protein adequacy; 76.2% of fathers and 81.9% of mothers in urban areas got 100% or more of their RDA while the corresponding figures in rural areas were 81.4% and 81.7%.

Some more detailed information was derived from the CRSP which was conducted in 1984/1985 in a rural community (Moussa et al., under publication). Results are means of four seasons. Quantitative adequacy of the diet, indicated by % RDA of energy > 90; covered almost 40% of the four targets; father, mother, schooler and preschooler. Severe energy inadequacy of the diet indicated by, < 60% RDA was least among mothers. Minor and moderate energy inadequacy of the diet (% RDA 60 – < 90) was prevalent among almost 40% of the targets. Over-intake of energy (> 110% RDA) ranged from 10.4% for schoolers to 16.1% for fathers, 18.7% for mothers and 21.7% for preschoolers.

Protein inadequacy of the diet is much less than energy inadequacy except in preschoolers (18 – 30 months) of whom 45% have % RDA of protein less than 90. This may be explained by surplus consumption of bread (protein source) by the other 3 targets. Due to diversified sources of protein and resulting essential amino acid supplementation, there is no protein quality problem in the Egyptian diet. Iron inadequacy of the diet is maximum among mothers, almost two thirds of mothers consume iron not enough to satisfy 90% of the specified RDA (WHO, 1974 and 1989). Almost one third of preschoolers get less than 90% of their RDA of iron. Less than 5% of fathers and almost 10% of schoolers get diets inadequate in iron. Almost 20–30% of the four targets satisfy their Vitamin A RDA. However, Vitamin A deficiency is not a public health problem in Egypt. Meanwhile only 30–35% of the four targets satisfy more than 90% of their RDA of riboflavin.

Contribution of Some Selected Food Groups to Total Percaput Energy and Protein Intake Per Day

Cereals are the main contributors of energy (61.2%) as well as protein (54.9%) intake per day in Egypt. Cereals together with legumes supplying about 65% of total energy and 62% of total protein intake per day can provide an ample amount of dietary fibers which is desirable for prevention of diet related non communicable diseases. However, energy derived from sweets and sugar (empty calories) is almost double the cut-off point recommended by WHO for prevention of diet related chronic non communicable diseases; 21.4% against 10% (WHO, 1990). All animal products provide 8.2% of total energy intake and 27.7% of total protein intake. Although contribution of animal protein to total is much higher than 20 years before when it used to be less than 10%, yet this level is still much lower than developed countries.

Nutrient Intake and Variation with Different Factors

The nutritive value of the average percaput daily diet as computed by different methods in Egypt is shown in Table 31. Dietary history during a month and 24 hours recall give data of food consumption while Food Balance Sheet and Ministry of Supplies estimates give figures of food availability.

Energy intake per capita per day is around 3000 Kcal which is comparable with developed countries. Total protein is around 90 gm per day which more than average requirement. However, the figures for animal protein intake per day are almost double as computed by consumption studies when compared with availability figures. The difference is most probably due to home produced poultry and dairy products. Actual figures for animal protein consumption are much higher than 20 years before. Increased consumption of animal protein sources refers also to increased consumption of saturated fat with increased risk of cardiovascular disease "C.V.D".

Variation in Energy and Protein Intake with Geographic Area

Clearly indicates the urban/rural socio-economic differences as represented in the "Strategy of Development from Above". Energy intake is almost near 3000 Kcal and is slightly higher in rural sector than urban. However, animal protein is much higher in urban than rural sector; 29.2 and 19.6 gm respectively Table 32.

Food consumption both from the quantitative and qualitative point of view varies in different governorates representing Upper and Lower Egypt as well as metropolitan areas of different socio-economic status, which

was previously discussed. Upper Egypt (Sohag) had 23.7% of its HHs at the lowest level of percaput energy intake per day (less than 1500 Kcal). Alexandria a metropolitan had the least proportion of HHs at this low level (9.8%). At the highest level of percaput energy intake (more than 3000 Kcal per day), Alexandria got the highest proportion of HHs (42.6%). Still Sohag has the lowest proportion of HHs (18.7%) at this level. Around 50% –60% of HHs of all governorates in the sample had percaput energy intake within 1500–3000 Kcal per day.

Regarding the level of animal protein intake, Sohag (Upper Egypt) had the highest proportion of HHs (56.3%) at the lowest level (less than 10 gm per day). At the other end of the spectrum, Cairo a metropolitan had the greatest proportion of HHs (54.2%) at the highest level of animal protein intake; 30 gm per day and more. Almost 20–35% of HHs of all governorates had intermediate level of animal protein intake; 10–30 gm per day. Animal protein is a sensitive indicator of the quality of diet on which depend bioavailability of iron and other micronutrients (NFCS, Aly et al., 1981).

Variation With Physiological Status

In the CRSP study pregnant females were followed up monthly from fourth month of pregnancy till delivery then lactating mothers were followed up for 6 months (Galal et al., 1987, Abdel Ghany, 1986).

Moreover, about 50% of lactating mothers got energy not satisfying the recommended dietary allowances "RDA". A minority, about 12%, got less than 80% of RDA of protein. All lactating mothers got less than 60% of their RDA of calcium. Almost 90% got less than 60% of their iron RDA.

Variation with Income

In the National Food Consumption Study (NFCS) (Aly et al., 1981), as in many other surveys, a positive relation was observed between income and both quantity and quality of the diet as seen from Figure 23 and 24.

Table (31)

NUTRITIVE VALUE OF THE AVERAGE PERCAPUT DAILY DIET AS COMPUTED BY DIFFERENT METHODS IN EGYPT

Method	Energy (KCAL)	Protein (GM)	
		Total	Animal
Dietary History During a Month	3306	107.6	26.7
24–Hour Recall and Sample Weighing	2922	86.1	23.3
Food Balance Sheet	3341	91.5	12.5
Ministry of Supplies	3906	102.0	13.6

SOURCE: National food consumption study, N.I., (Aly et. al, 1981)

Table (32)

Nutrient Percaput Intake Perday in Egypt (Household Food consumption in 24 Hours)

	Energy KCAL	Protein (GM)	
		Total	Animal
Total Urban	2742	87.7	29.2
Total Rural	2985	84.1	19.6
Total Sample	2843	86.2	25.1

SOURCE: National food consumption study (NFCS), Egypt. N.I.. (Aly, et. al., 1981).

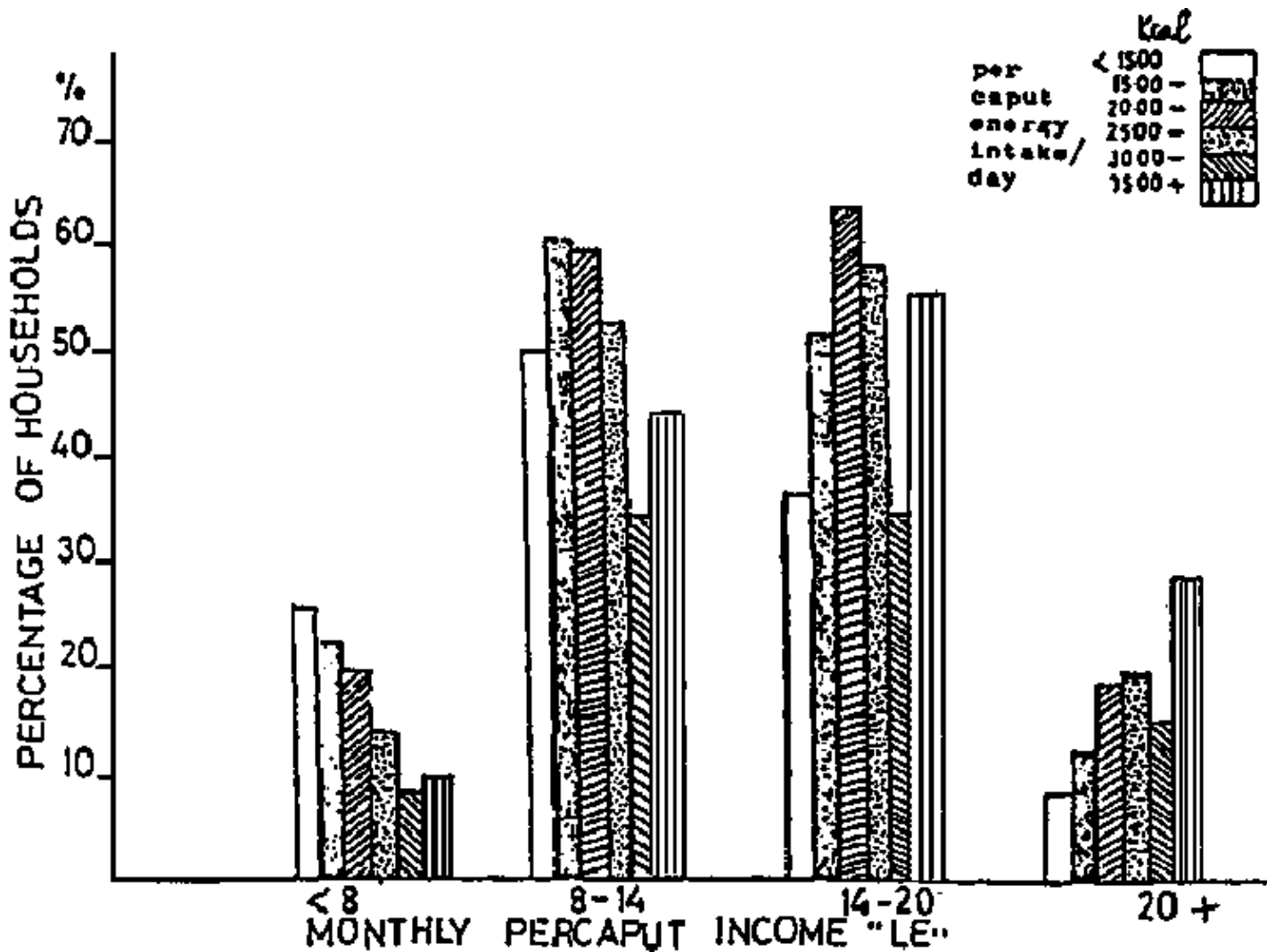


Figure 23. Percentage Distribution of Households by Income and Energy Intake

Developed from: NFCS of Egypt, N.I.. (Aly et. al., 1981).

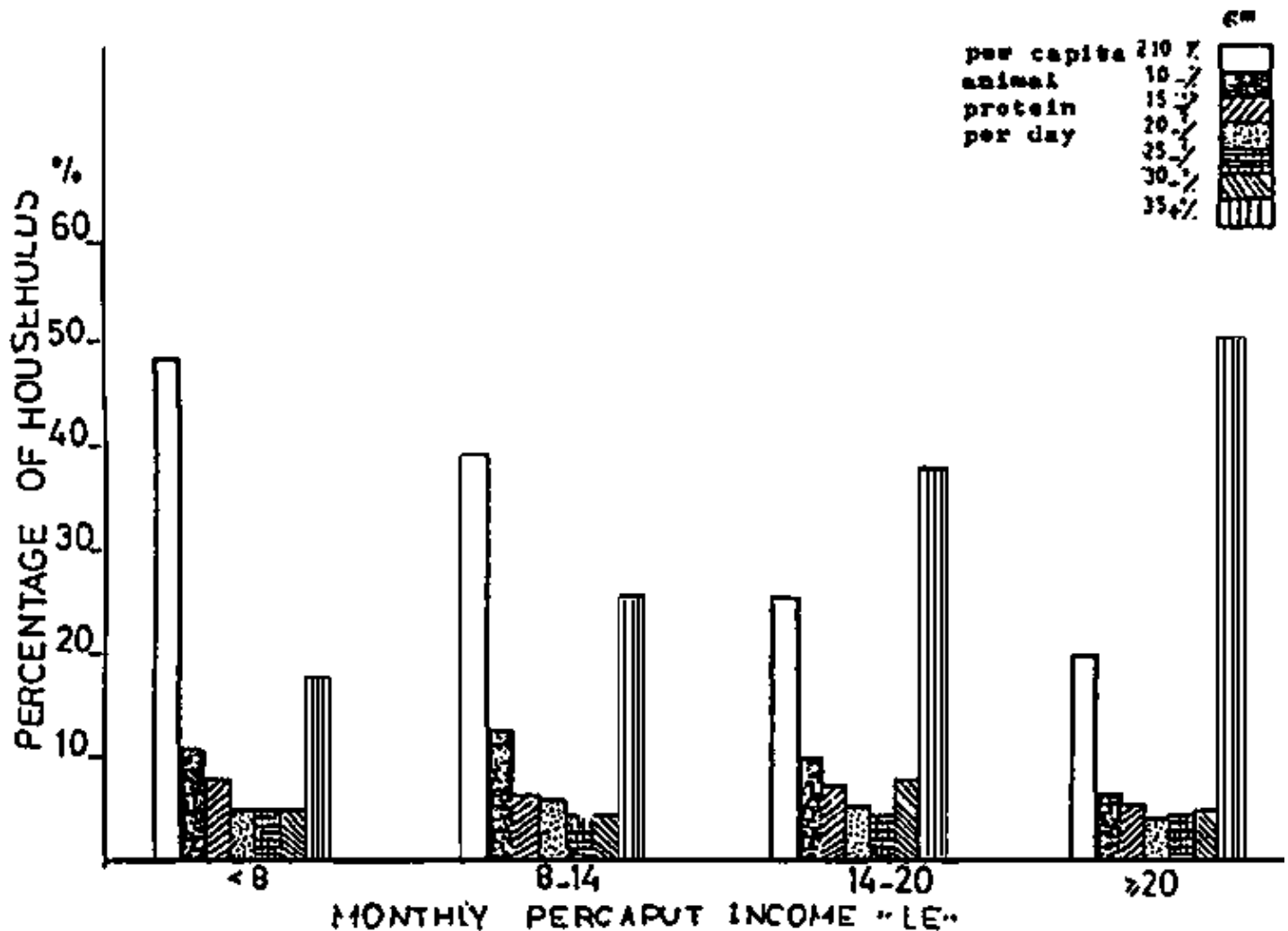


Figure 24. Percentage Distribution of Households by Income and Animal Protein Intake

Thus, the high incidence of poverty in Egypt, the tight labour market and the high rate of unemployment clarify the low level of the quantity and quality of the diet for a significant group of the population.

Variation with Education

With lower levels of education of the family head, there is also lowered quantity and quality of the diet in the NFCS (Aly et al., 1981). In households with illiterate fathers 22% have percaput energy intake below 1500 Kcal per day and 43.7% have percaput animal protein intake below 11 gm. However with university graduate fathers these percents are 7.8% and 9.8% respectively. The relation is also valid with mothers education. This, associated with the level of illiteracy for men (37.8%) and women (61.8%) clarifies the inadequacy of the Egyptian diet for a significant population size.

Variation with Family Size

With smaller family size the percaput intake of both energy and animal protein is higher than percaput intake in larger families (Aly et al., 1981). Figures 25 & 26 are developed from the NFCS and clearly illustrate this fact. The national figure for the average household family size was 5 in 1976 and 4.9 in 1986. This finding calls for extra efforts in the areas of family planning.

Infection in Egypt

Infection is one of the determinants of nutrition and health status of Egyptians. Diseases affecting the Egyptian population are:

Parasitic Diseases

The relation of parasites and malnutrition was studied in the Health Profile of Egypt "HPE" Health Examination Survey "HES" (Moussa, 1988a). In general there is a positive relationship between parasites and malnutrition. Urinary bilharziasis was highest among the group of third degree undernutrition. This may point to the effect of ecology and quality of life on both the prevalence of parasites and nutritional status. Ancylostoma is still of highest prevalence in the group of third degree undernutrition. Ascariasis was highest among the group affected by obesity, which points to more exposure to infection with more consumption of food. Amebiasis was of lowest prevalence among the group of normal weight for age.

However, the general trend in Egypt is that parasite load is getting lower in the last decade, particularly ancylostomiasis and bilharziasis.

Gastro Intestinal Diseases

Although the incidence of intestinal diseases is on the decline still infection exists all over Egypt. Diarrheal diseases present one of the most important health problems in Egypt. Lack of potable water, insufficient refrigeration, lack of sanitary control of slaughter houses, presence of flies and improper disposal of wastes and refuse keep the incidence of these diseases very high.

However, Figure 3 indicates an on going declining trend in the mortality rates through diarrhea in the eighties, if compared with the seventies.

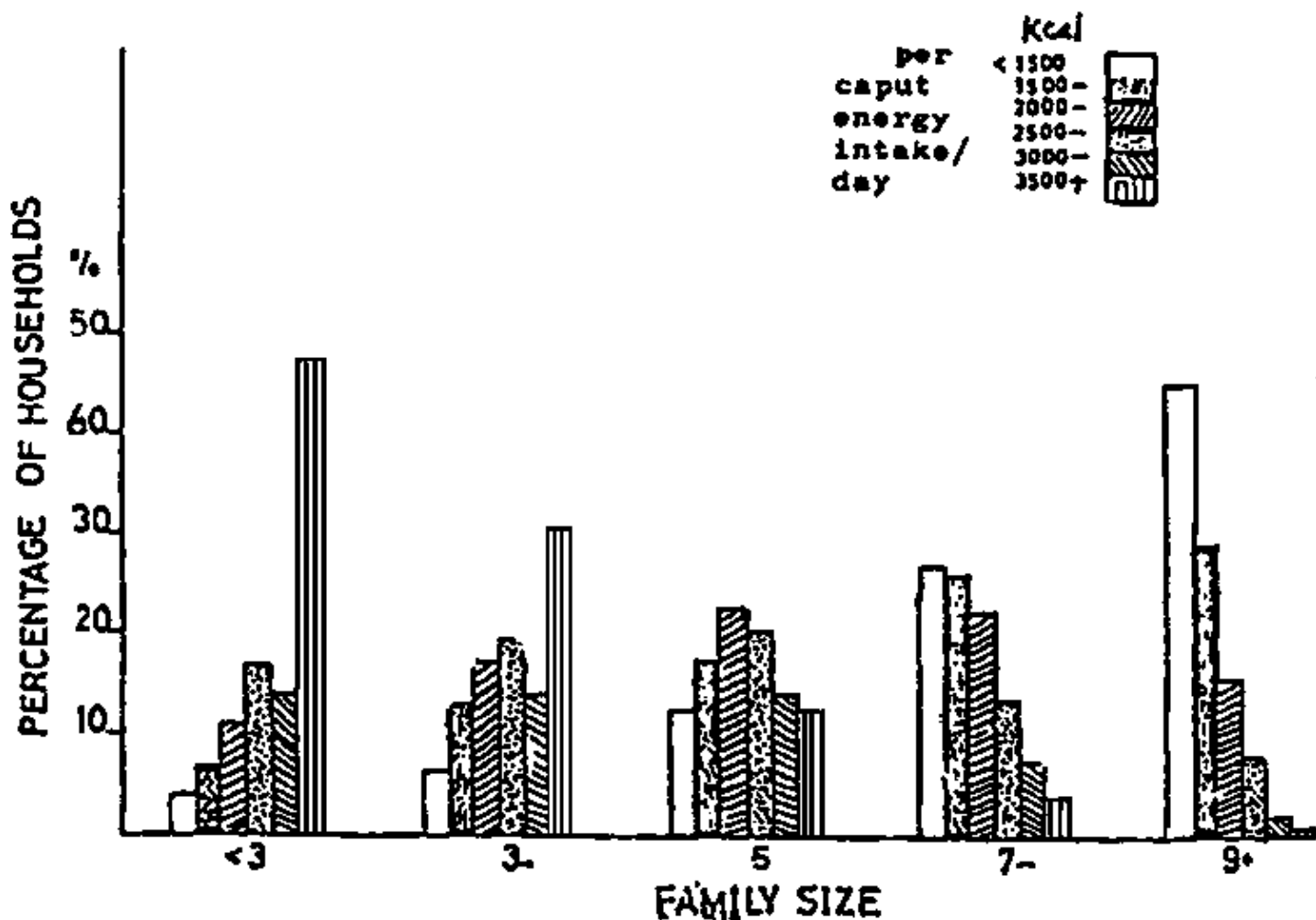


Figure 25. Percentage Distribution of Households by Family Size and Energy Intake

Developed from: NFCS, N.I., Egypt (Aly et. al., 1981)

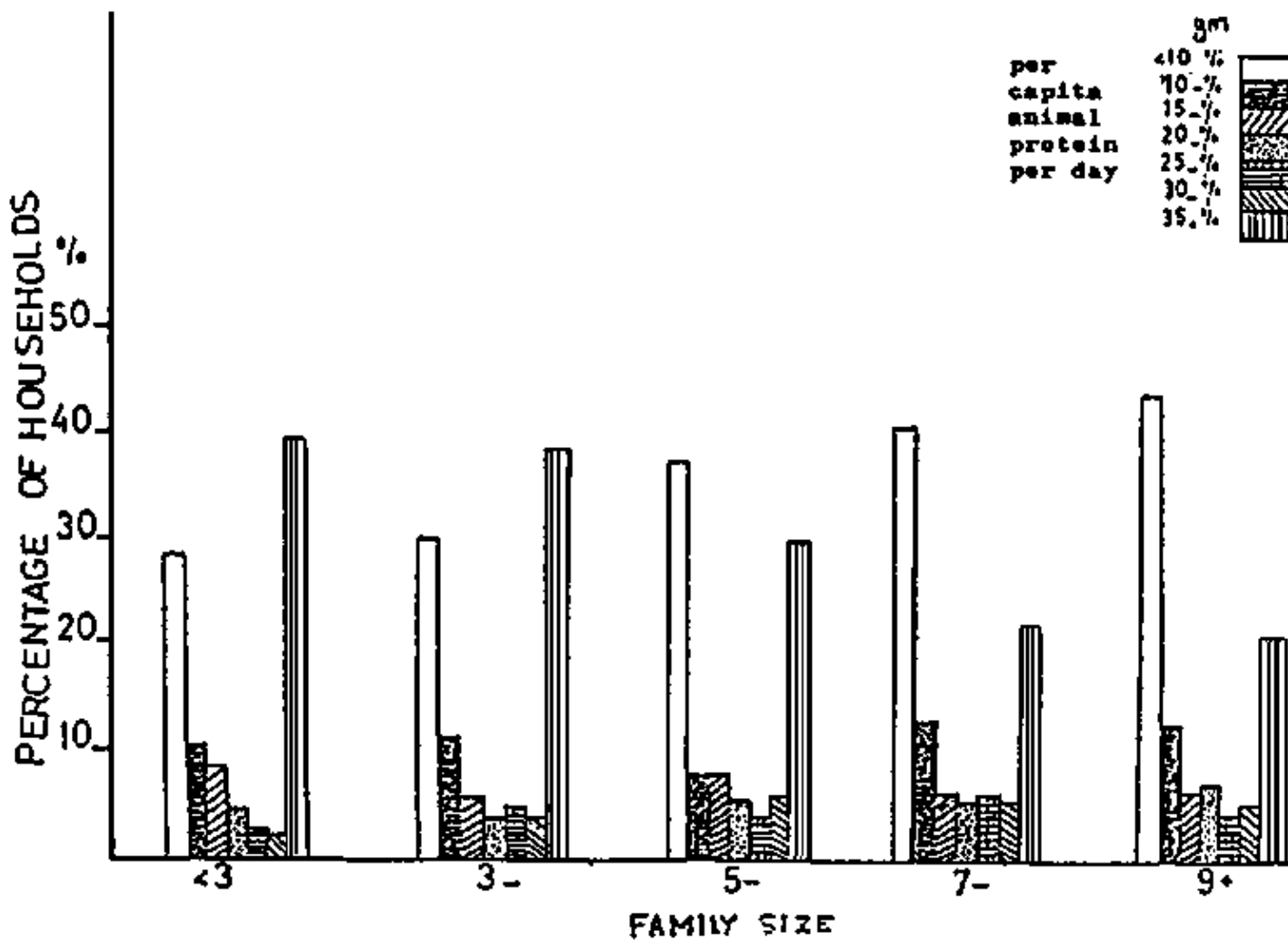


Figure 26. Percentage Distribution of Households by Family Size and Animal Protein Intake

Developed from: NFCS, N.I., Egypt, (Aly et. al., 1981).

Diseases of Infancy and Childhood

Beside infantile diarrhea, there are other diseases, such as measles, mumps, whooping cough, chicken pox and german measles, which occur with moderate incidence but frequently in epidemic forms. Official registration data show a declining trend in all these diseases, though there are some under-reporting. Other diseases that have declined lately in occurrence and are subject to control campaigns are typhoid, malaria, trachoma, tuberculosis. In spite of serious effort and better care at the maternal and child health centres and units, trachoma is still prevailing in relatively high rates in rural areas.

Acute respiratory diseases such as pneumonia and bronchitis were reported to be major causes of death in Egypt.

Other diseases that are subject to increasing control by Ministry of Health (MOH) is cholera, leprosy, hepatitis and tetanus. Rate of prevalence of leprosy is estimated by 4.1 per thousand and is relatively high in Upper Egypt. Poor sanitary conditions, overcrowding and inadequate nutrition is responsible for maintaining tuberculosis still a serious problem especially among the underprivileged groups. Unsafe water supplies especially in rural areas and urban slums lead to increasing infections by typhoid, paratyphoid and infective hepatitis. Anemia is widespread among school children. Table 33 reveals a declining trend in the incidence rate of several diseases.

Table (33)

Incidence Rate of Some Disease in Egypt (per 100,000 inh.)

Disease		1980	1988	1989
Diphtheria		0.8		0.2
Pertussis		0.1		0.01
<u>Tetanus</u>	(Ages Unspecified)	10.8		10.1
	Neonatal (per 100,000)		315	187.6
Poliomyelitis		0.8		0.3
Measles		2.0		7.8
TB		3.9		2.8
Bilharziasis		19.7 (1983)		15.8

SOURCE: WHO, EMRO and Department of Health Information and Statistics, MOH Egypt, 1991.

Two main categories of diseases are growing in importance in Egypt, although there are no sufficient data about their rate of prevalence:

Chronic diseases such as rheumatic heart disease, coronary heart disease and cancer are serious diseases leading to death.

Environmental diseases grew in importance and the government since 1969 initiated new controls on industrial pollution especially in the control of waste water effluents from municipal sewers and industrial plants and in the control of solid waste disposal.

As all other variables, infection is influenced by different policies and programs, such as the health policies, the economic and political policies, government expenditure, government borrowing, cost recovery programs in the health sector, as well as health and environment interventions.

Health System in Egypt

Health policies in Egypt over the seventies and eighties were influenced by the political and economic situation. As a constitutional responsibility of the government all citizens in Egypt are assured to have a comprehensive health care through the national health care system provided to them for a nominal registration per contact. The Egyptian government attempts to meet her responsibility towards the health of the people by operating a national health care system which comprises three main sectors, the government sector, the public sector and the private sector. Figure 27 represents the health services in Egypt. The Ministry of Health (MOH) is the main provider of health services in Egypt and is the only provider of health services in rural areas as well as the only institution responsible for the provision of preventive health care in Egypt. 63.5% of all hospital beds in Egypt in 1989 are MOH hospitals. If we add to this percent the teaching hospitals' beds, the ratio will increase to 70.01% (MOH, 1989). The MOH system is relevant to the government structure. Health care in Egypt is provided at three levels the central (national) governorate and the village level (Figure 28). Throughout the whole system there are no referral requirements, the individual can request health care at any government facility he chooses.

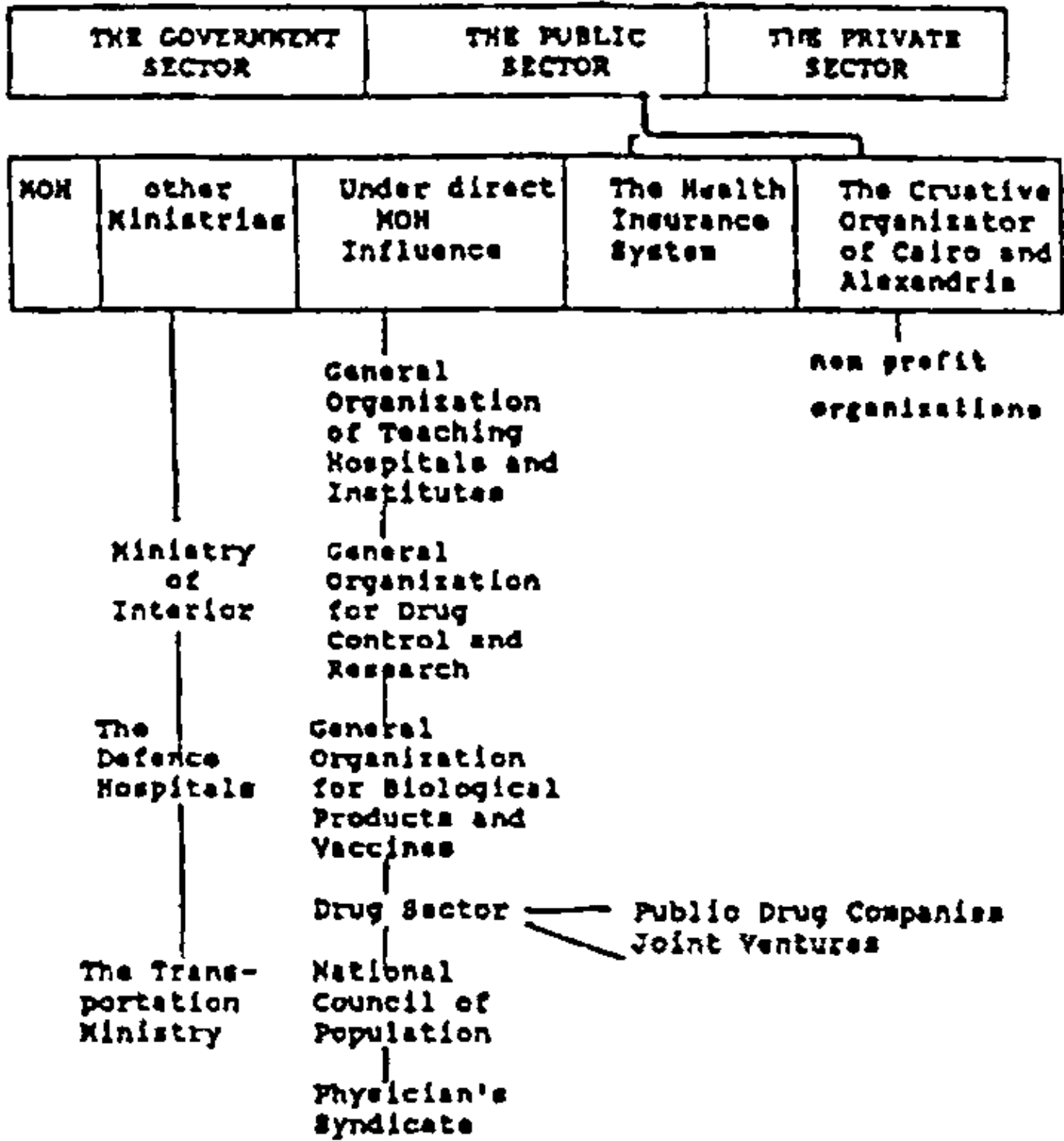


Figure 27. Health Services in Egypt

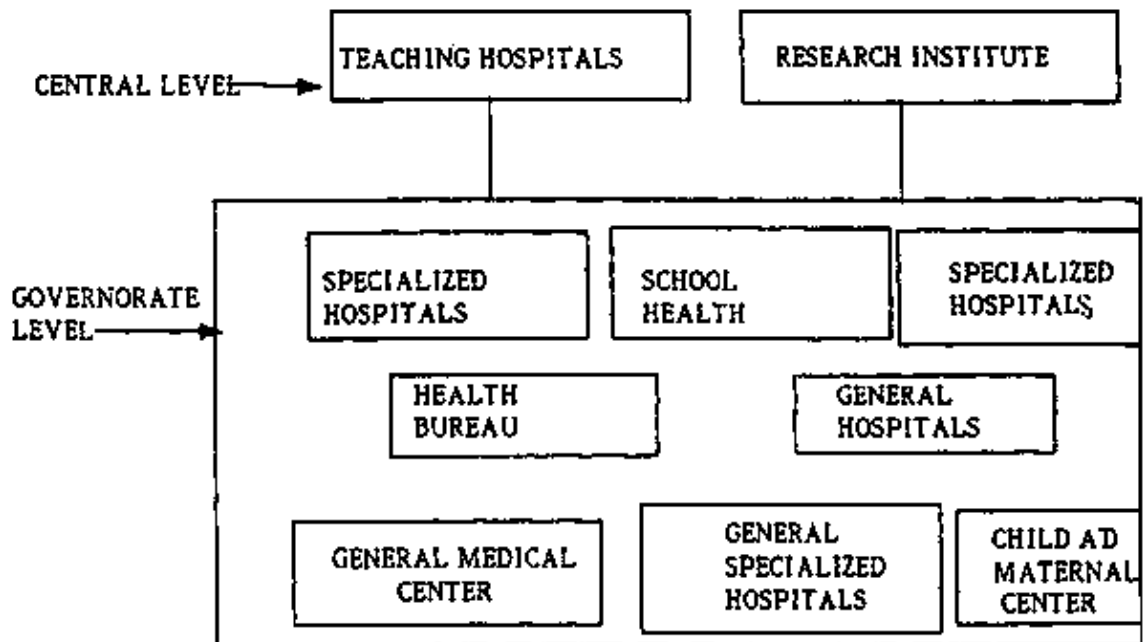


Figure 28a. M.O.H Services

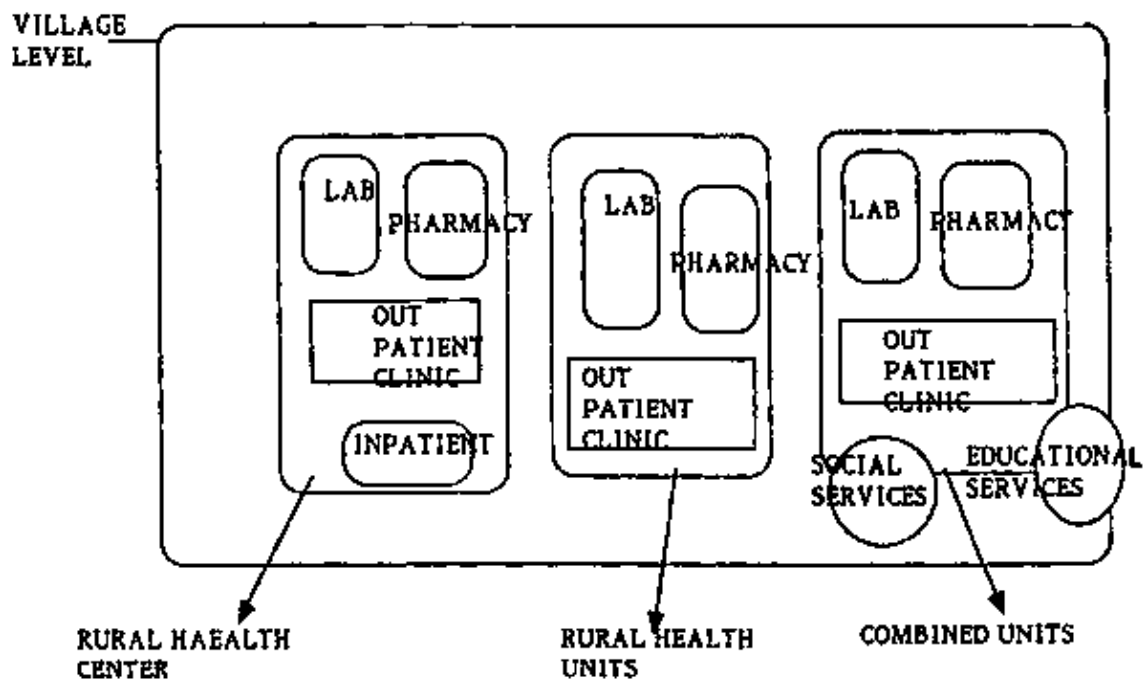


Figure 28b. Village Hospitals

It is important to note that the spread of free health services in the sixties in Egypt was one of the goals of the political regime in Egypt, as shown in part two. The changes in the health policies in Egypt over the seventies and eighties had several implications on the health priorities in Egypt and implicitly affected the health status of Egyptians.

Health Policies and Priorities in the Seventies and Eighties

In the sixties and seventies high priority was given to the accomplishments of large scale projects. The early sixties witnessed a large campaign to construct new general hospitals, chest diseases hospitals, the Institute of Nutrition and other institutes. In the mid seventies a reconstruction effort was initiated to renovate all public hospitals.

Thus, the Egyptian health system was mainly considered curative oriented and physician oriented, despite the fact that the major health problems in Egypt are mainly endemic and amenable to protection rather than to curative action. This fact was responsible for the relatively low progress in the eradication of many communicable diseases, such as diarrhea before the mid-eighties.

Moreover, the primary health care approach in Egyptian health plans and policies before the eighties took a comprehensive approach (mass programs) to establish widespread centers and units all over the country offering basic health care. Only in the mid eighties the MOH changed its policy and chose a selective approach towards major health problems by emphasizing selective programs affecting target groups, such as diarrhea and immunization campaigns. From our point of view the latter change in health policies had a positive effect on the health status of targeted population, as seen from infant mortality rates.

In addition health planning in Egypt in the sixties and seventies has been based on a rough measure using projected population growth for estimating the size and number of buildings to be constructed. This kind of planning does not deal with such possibilities as changes in the organization and delivery of health care. In addition the population might be changing by the composition of its age structure and sex ratio. Children till the age of five have a much higher incidence of illness. This is why the change in the health priorities since the mid-eighties towards targeted programs favouring infants and children had several positive impacts.

Due to the curative oriented system and the relatively high capital intensity, imbalances between resources and needs emerged, which resulted in an increase in population exceeding the increase in physical resources, so that neither coverage nor utilization could be achieved. This is manifested in the trends of health expenditure, bed/population ratios in the eighties if compared with the sixties and seventies.

Another factor which may explain the relatively low health levels in upper Egypt and especially rural upper Egypt is the geographical inequality in the distribution of health services (Table 33). This is again a result of relatively limited resources and the expansion of mass programs in the sixties and seventies to achieve a coverage goal. The public health system in the sixties and seventies in Egypt is a low quality and poorly targeted program, designed to provide curative medicine for urban areas rather than simple preventive care for target groups and areas such as Upper rural Egypt.

Since the mid eighties health policies in Egypt witnessed major changes shifting from emphasizing free services for all the population to support the approach of introducing charges in the governmental curative health care facilities. This led to the adoption of two main programs.

Social Health Insurance (Badran, A., 1989) was extended to cover all populations and the number of facilities available for beneficiaries was increased.

The enhancement of a cost recovery program. The goal of this program is to achieve self sufficiency in fifty MOH profitable operation of 90% of project supported private medical practices, increase availability of pre paid health financing schemes such as insurance and health maintenance organizations, improve cost effective services available for 2,5 million users of the Health Insurance Organization and the Curative Care Organization (USAID, 1988). At this stage, it is important to note that the rationalization of public expenditure reflects both: the changes in the economic and political environment towards liberalization and privatization since the mid eighties – as well as the tight resource situation and the relatively high budget deficits and trade balance deficits, as indicated from Tables 13 and 14. Thus a sharp decline in the total expenditure as percent of GDP occurred since 1983/84 which was also reflected on the expenditure in the health sector. Moreover the growing external debt burden and the significant resource gap that was previously discussed necessitated the attempt to depress public expenditure and the search for cost containment projects in the public health sector.

Effects of the Changes in the Health Policies Over the Seventies and Eighties on the Health Sector

Imbalances between Declining Fiscal Measures and Growing Health Care Needs and Costs

Due to the limited size of resources health expenditure as a ratio of total public budget declined from 8% in 1970/71 to 2% in 1984/85 as indicated in fig 29. This declining trend is apparent also in the ratio of health expenditure to GDP which declined from 1.3% in 1970 to 1% in 1988/89 (Figure 30).

However per capita health expenditure on health services declined in real terms in the period after 1980/86 compared with the increase in this indicator in the seventies. Table 34 reveals a significant difference between health expenditure per capita in real terms and in monetary terms.

Concerning physical and human inputs there is a general decline in the beds/population ratios in the eighties, in comparison to the ratio prevailing in the seventies as indicated from Table 35.

However, the distribution of health manpower/population does not show the same trend. The data of health manpower show the substantial investment in health manpower training programs undertaken by the Egyptian government during the past three decades. They also reflect the acceleration of graduate students enrollment in medicine schools. Despite the obvious increase in health manpower/population, Egypt is still deficient in some areas of health manpower with respect to quantity of personnel as well as quality especially for health assistants. The distribution of physicians and nurses among various activities of MOH reveals the low number of doctors and nurses in school health, maternal and child health and preventive services. Doctors and nurses, in all rural health services, where 56% of the population live, represent 20% of all physicians and 26% of total number of nurses in MOH. There is a slight increase in the coverage rate of rural population by rural health units in the eighties, however the targeted ratio was not achieved (1:5000).

Maldistribution of Health Services

Table 36 chronicles the distribution of health units as well as health personnel, beds by governorates. Disparities among urban lower and upper Egypt is clear as well as between upper and lower Egypt.

This reflects the Strategy of Development from Above and public policy design as indicated by the PQL1 in Table 3. All the previous indicators may explain the differences in health and nutrition standards by regions.

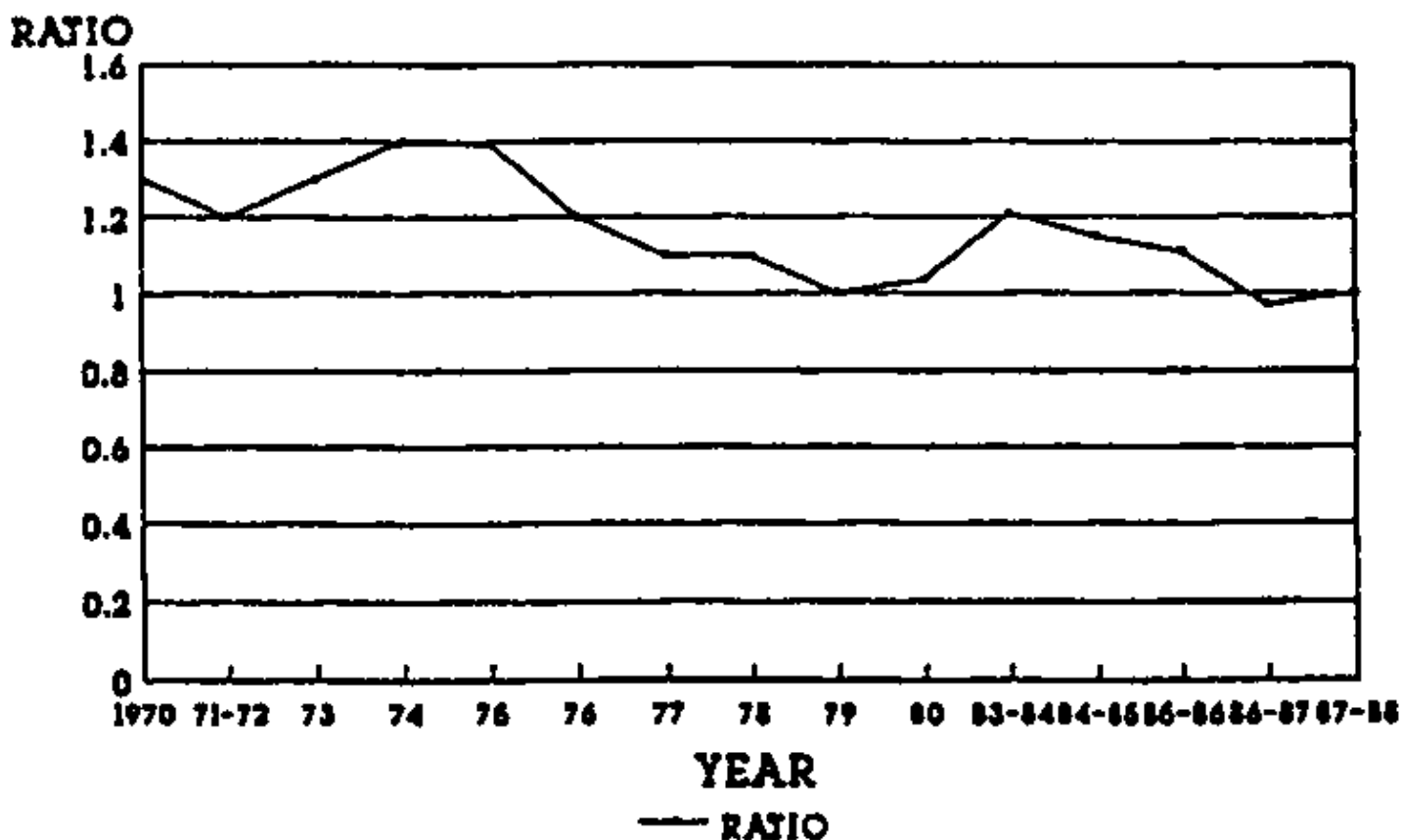


Figure 29. M.O.H BUDGET TO GDP

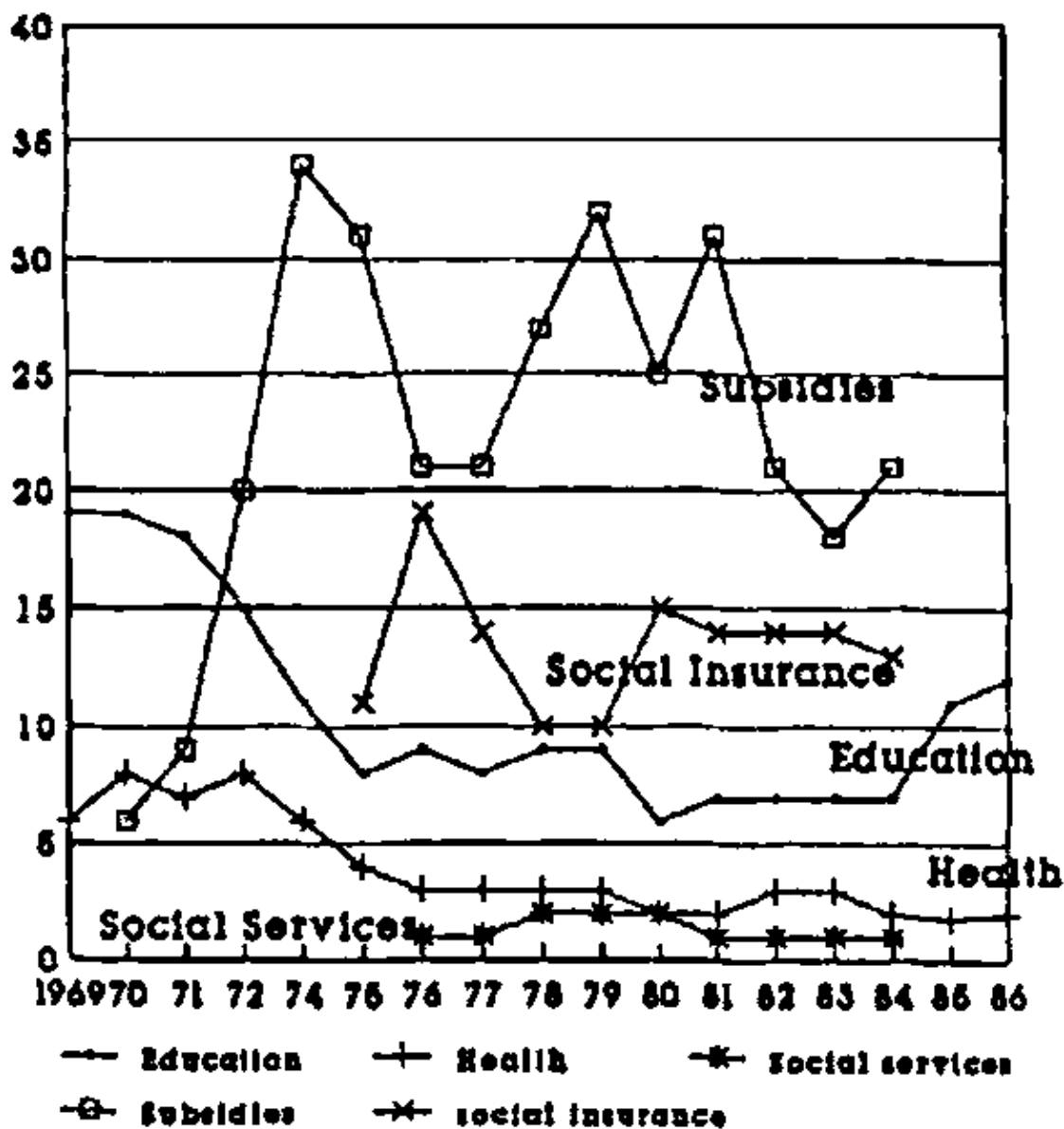


Figure 30. EXPENDITURE AS % OF THE BUDGET

Table (34)

MOH BUDGET AND HEALTH EXPENDITURE PER CAPITA IN FIXED PRICES (000)

YEAR	MOH BUDGET IN CURRENT PRICES	MOH BUDGET IN FIXED PRICES	POPULATION	PER CAPITA HEALTH EXP. IN CURRENT PRICES	PER CAPITA HEALTH EXP. IN FIXED PRICES	RATE OF ANNUAL INCREASE OF HEALTH EXP. IN FIXED PRICES	RATE OF ANNUAL INCREASE OF HEALTH EXP. PER CAPITA IN FIXED PRICE
1975	67723	157851	37016	1,83	426		
1976	87909	174583	38198	2,3	4,57	10,6	7,27
1977	95092	169504	39183	2,43	4,33	-2,9	-5,25
1978	117417	182610	40192	2,92	4,54	-7,7	4,81
1979	131191	173533	41230	3,26	4,21	-4,9	-7,3

1980	179462	203471	42289	4,24	4,81	17,3	14,3
83/84	331102	278237	45886	7,22	6,06		
84/85	374477	290067	47000	7,97	6,17	4,3	1,8
85/86	402576	208384	48575	8,28	5,52	-10,5	-10,5
86/87	427252	237098	49012	8,47	4,84	-11,7	-12,3
87/88	477284	220719	50355	9,47	4,38	-9,5	-9,5

Calculated from MOH, The Golden Book of the MOH, 1936 – 1986

SOURCE: The Index numbers from the Publications of the Central Agency for Public Mobilization and Statistics.

Table (35)

Human and Material Resources

	1970	1980	1986
Beds/1000 inh			
MOH	1.57	1.43	1.29
National	2.14	2	2.00
Physician/1000	5.7	11.8	17.3
Nurses/1000	4.9	7.6	14.7
Pharmacist/1000	1.82	4.34	
Rural Health Unit/Per.	10782		10143

SOURCE: MOH, Department for Information

Table (36)

Geographical Distribution of Health Services

Region	Bed/10000 inh		Health Expenditure	Physician/100000	Nurse/100000
Indicator	MOH	National	1987/88	1985	1985
Urban Gov.	1,9	2,9	17,596	8,108	7,42
Lower Egypt Gov.	1,3	1,6	11,22	5,25	3,29
Upper Egypt Gov.	1,17	1,45	9,11	5,25	2,8

SOURCE: Calculated from MOH, Department for Status Information, 1990

Low Basic Health Levels

Despite the fact of a significant increase in the primary health indicators as indicated in Table 37 basic health services are still low (Badran. A. 1988).

Table (37)

Primary Health Care Indicators

Indicator	Ratio %	(Year)	Ratio %	(Year)
<u>% Infants Fully Immunized</u>				
– DPT (3 doses)	89	(1981)	86,4	(1990)
– Polio (3 doses)	69	(1981)	87	(1990)
– Measles	66	(1981)	86	(1990)
– BCG	78	(1981)	87.8	(1990)
<u>% of Pregnant Women Given Tetanus Toxoid (2 doses)</u>	10	(1981)	49	(1988)
<u>% of Pop. Receiving Health Care by Trained Period</u>				
– Pregnant Women Total	40	(1982)	52	(1988)
– Urban/Rural	44/37	(1982)	68/42	(1988)
<u>% of Pregnant Women Delivered by Trained Personnel</u>				
– Total	21	(1978)	35	(1988)
– Urban/Rural	47/5	(1978)	56/19	(1988)
In Institutions:				
– Total	11	(1978)	24	(1988)
– Urban/Rural	22/2	(1978)	40/11	(1988)

SOURCE: WHO/EMRO and Department of Statistics and Information, MOH, Egypt, 1991.

Poor quality of care, as measured by inaccurate diagnosis and unfruitful treatment was perceived as a problem of health facility users. Physicians try to shift patients to their private practice. A recent comprehensive evaluation of rural health services in 1987 found that 30.7% of all pregnant women received ante-natal care. 22.4% of all deliveries were performed in the rural units. The stated reasons for community under utilization of health units (2%) in rural areas was due to drug shortage; physician attitude; inaccurate diagnosis; unfruitful treatment; inadequate waiting area (Nagaty et. al., 1986). On the contrary tertiary level hospitals have acquired the public's confidence, while government secondary hospitals operate on a tight budget.

Low Incentive System

Low pay and incentive system lead to the following results:

- unfilled capacities in training nursing schools, low average quality in some categories of health assistants, short working lives for nurses and a definite shortage of nurses relative to physicians;
- low pay in government services, coupled with high rates of earnings available in private practice affects incentives for high performance in government services;
- Lack of management, supervision and discipline make the public system unable to redress the low job performance of government health workers stemming from poor training, lack of complementary supplies and low pay.

Main Health Interventions

From our point of view health interventions are recently basic components of the national health delivery system. Main health interventions are stated below:

National Control of Diarrheal Disease Program "NCDDP"

Control of diarrheal diseases has long been a concern of the Egyptian MOH. One major step was taken in 1978 when the MOH began to distribute ORS to its health units. Another step was taken in 1982 with the establishment of NCDDP which began pilot activities in Alexandria Governorate in 1983 and has began full national activities in March 1984. The National Diarrheal Disease Control Program officially started in September 1981, with collaborative funding from Egyptian Government and US-AID. The program continued for 10 years to be institutionalized from first of October 1991 as one department of Ministry of Health "MOH" carrying out the same activities as NCDDP.

The Specific Objectives of the Program Were

- to reduce mortality, due to diarrhea, of children less than five years of age by 25% in a five years period;
- to raise proportion of mothers oriented about oral rehydration therapy "ORT" to 90% and perception of correct use of oral rehydration solution "ORS" to 75%;
- to ensure treatment of at least 50% of acute diarrhea cases in the MOH units through ORT.

Major Achievements of NCDDP

- Impact on Knowledge, Attitude and Practice "KAP" of Mothers Regarding Diarrhea Management was evident
- Through targeted field studies it was found that percentage of mothers who used ORS in treatment of diarrhea was 17% during 1980, 37% during 1983 and reached 79% during 1990.
- Percentage of mothers who stopped breast-feeding during diarrheal episode was 58% during 1980, 41% during 1983, and reached 5% during 1989. This is expected to be of major impact on improvement of nutritional status of children less than two years of age.
- Percentage of mothers who can mix ORS correctly was only 12% during 1983, while during 1988 it reached 88% (NCDDP, 1991 and Nagaty, 1988).

Impact on Cases of Severe Dehydration Among Children

In the pediatric hospital of Azhar University in Cairo there was 71% reduction of cases of acute dehydration from 1984 to 1990. In Al Shatby pediatric hospital of Alexandria University hospital reduction reached 75% from 1983 to 1990.

Impact on Infant and 1–4 Year Child Mortality Due to Diarrhea

From year 1984 to 1989 there was a tremendous reduction in infant and 1–4 year child mortality in general and due to diarrhea in particular where reductions reached 65.4% for infants and 72.9% for children Figure 3. Since 1985 acute respiratory infections "ARI" has become the main health problem. Reductions in mortalities due to diarrhea are expected to be associated with improvement in nutritional and health status of infants and preschool age children.

Child Survival Project (CSP)

The MOH started the (CSP) in 1986 and is on going for at least 9 years. A national goal of universal child immunization (UCI) by July 23, 1987, was adopted. This was the first component of the CSP. A national survey carried out in November 1987 by WHO, UNICEF & MOH showed that Egypt has reached its 80% target in all antigens except BCG (tuberculosis) and measles. Comparing the coverage rates from 1984 survey, there was a considerable rise in coverage even in BCG & measles.

A tetanus toxoid campaign during November and December 1988 was designed targeting 1 million 3–9 month pregnant women. Those who received the second dose were 82%. The campaign was successful due to the ability of television to diffuse such messages. Another successful national campaign for tetanus toxoid was carried out during November and December 1989, again targeting 1 million pregnant women. Both campaigns raised awareness as well as coverage.

During 1990 Egypt vaccination coverage survey was conducted. The results showed that the fully immunized children were 76.4%, partially immunized 21.0% & non-immunized were 2.6%.

The 1990 survey provided for the first time measurement of those children who according to the dates on their vaccination cards, received the necessary doses of vaccine before their first birthday. Those figures are: BCG 86.1%, OPV3 83.8%, DPT3 83.3%, Measles 78.4%.

Acute Respiratory Infection (ARI) Control and Prevention

This project is the second component of the Child Survival Project.

Its objectives are:

1. To reduce infant and child (under 5 years) mortality due to acute respiratory infections by 20% through early detection and proper management of acute respiratory infections.
2. Prevention of acute respiratory infections among children.

Still, it is difficult to evaluate the results.

Child Spacing: (3rd component of the Child Survival Project)

Objectives:

1. reduction of maternal and child mortality;
2. reduction of maternal morbidity;
3. promotion of MCH services;
4. raising health awareness among women for practicing child spacing.

Nutrition Component

Its objectives is to deliver nutrition services routinely at all PHC units all over the country to the target groups, by appropriately trained personnel as part of the institutionalized integrated program. By the end of the project span, prevalence rates of different forms of malnutrition should be reduced at least by 50% e.g. PEM & iron deficiency anemia.

Human Resources Development and Training

Beside nutrition training of the health team included in many projects of MOH, the Nutrition Institute "N.I", in collaboration with WHO conducts short training courses on different vital components of nutrition in PHC. The trainees include different levels of MOH personnel central, governorate and peripheral levels as well as different qualifications; physicians, dictations and nurses.

Other Health Projects with Nutrition Implication

Family planning activities have been intensified during the 1980s. Educated and working mothers are the sector who benefitted most. Reducing family size as well as child spacing are expected to have positive effect on nutritional status of both mothers and children.

Strengthening Rural Health Services as well as Development of Urban Health Delivery System Projects with combined funding for Egyptian government and USAID were implemented during the early 1980s. Both projects included upgrading of PHC units including supply of weighing scales and growth charts for growth monitoring. In the Development of Urban Health Delivery System Project training kitchens were also established in model health centres in Cairo and Alexandria. Both projects activities included nutrition training of the health teams with resulting improvement in the nutrition component of the PHC system.

The Urban Delivery System Development Project established a Centre for Social and Preventive Medicine "CSPM" which is located in the premises of Pediatric hospital of Cairo University and operated by the Pediatric Department, Faculty of Medicine. CSPM has started its activities in the late 1980s with a well established nutrition component. It is a model training centre for the different specialties of the health team.

Finally, there is a public awareness of the importance of nutritional and health problems which was indicated in the First National Workshop on Food and Nutrition Surveillance that was held in May 1990.

Family Health History (Caring Capacity)

Family health history is considered as one of the basic determinants of health and nutrition status. In this concept several factors play a role such as: caring capacity, child spacing, women's role, nutrition related interventions. Different programs and policies are relevant in this category like educational policies, family planning policies, nutrition intervention programs and health education.

Tradition

In general women in Egypt have equal rights with men in the educational field and employment rights. Moreover Islamic women (the greatest share of women population) have dependent financial and property states. As woman in Islam can keep her family name after marriage, she can be a guardian over minors and can bring legal suit without the approval of her husband. However, all previous factors did not change the traditional image of women in Egypt, who are in a low subordinate status especially in rural areas, in comparison to men. This is because of the following factors (Sayed, 1988):

- the husband's power in divorce and in custody over the children;
- the unequal female inheritance and testimony in comparison to men;
- the mistranslation of many of the legal rights of islamic women.

The previous factors may explain the inequality in intra-familial food distribution.

Intra familial food distribution

Intra-familial food distribution was studied in an Egyptian village during the four seasons, Ramadan fast, feast, and Bayrum (Moussa et al., under publication).

The mean of the seven occasions of the target food intake (n = 1478) showed that the father gets 32.0%, the mother 28.8%, the schooler 23.6% and preschooler 15.6% of total energy consumed by the four targets. These ratios are almost matching with ratios of reference recommended dietary allowance "RDA" for energy (WHO/FAO/UNU, 1985). Protein and other micronutrients were all correlating with energy. However with iron, the situation was different. The father got 32.9% of total iron intake of the four targets while according to RDA for iron (WHO, 1974 and WHO, 1989) he should have got only 15.4%. With the mother, the reverse was true. She got 29.1% of the intake of the four targets while according to her RDA, adapted for local bioavailability of iron, she should have got 48.8%. This discrepancy may be attributed to the documented fact that the father in the Egyptian rural setting is privileged with the high quality expensive nutritious food items available in the HH.

Caring Capacity

The concept of caring capacity is an essential element of good nutrition and health. Malnutrition frequently occurs despite a household having access to appropriate sanitation and health services. While adequate income, greater food availability and expanded health services are necessary for improved nutrition, these will not likely to be sufficient to lead to such improvements unless households are able to capitalize on them. In

addition to an enhanced caring capacity at the household level, nutrition improvements for disadvantaged and vulnerable groups may also depend on societies capacity and willingness to assist them.

Caring capacity may be reflected at two levels: the quality of the individual and family care within the household and the degree of national commitment at the community level.

Within the Household

Providing individual care within the household is an important aspect of human behaviour, and the level of care given is based on household resources and the attitudes of those who control these resources. The household heads and primary – care providers also require capacity, in terms of time, knowledge, energy and motivation, to ensure the equitable well being of all and to put their knowledge into practice (FAO/WHO, 1990).

The knowledge attitude and practice of household members particularly of the household head and the primary care provider, largely determines the nutritional status of the household. This may be explained by the educational status of women.

Education Policies in Egypt and Female Educational Level

After 1952, the Egyptian government encouraged the education system to make it accessible to all social classes of the population (Kandil, A., 1989). There is an impressive expansion of the educational system especially that there is a compulsory education law that requires the children to attend elementary and preparatory level. Attendance of school, if only for a relatively short period has become the usual experience of Egyptian children. Number of children in primary education increased by an annual rate of 5.1%. Secondary education enrollment increased by 9.1% on average and higher education enrollment increased by 7.1% over the same period. Despite of all efforts, total enrollment ratio is still low. 10% – 20% the primary school age population remain still out of school. Total enrollment ratio is relatively low for female rather than male. Moreover there is a high drop and repetition between 10% and 15%. Those who drop out in the primary education are still illiterate or can hardly read and write. They are coming from the poorest socio–economic groups. Proportion of girls in primary education increased from 38% in 1972/73 to just 44.1% in 1985/86 (World Bank, 1990). Illiteracy rates of women is still found relatively high. 61.3% of women are illiterate and about two quarters can just read and write as indicated in the last census (Figure 31).

Female illiteracy was found related to poverty. Incidence of poverty is relatively high in rural upper Egypt, where female illiteracy is also high (86.7% vs 22.3% in Greater Cairo, 26,7% in Alexandria 31.4% in total urban and 84.2% in total rural areas) (CAPMAS, 1990).

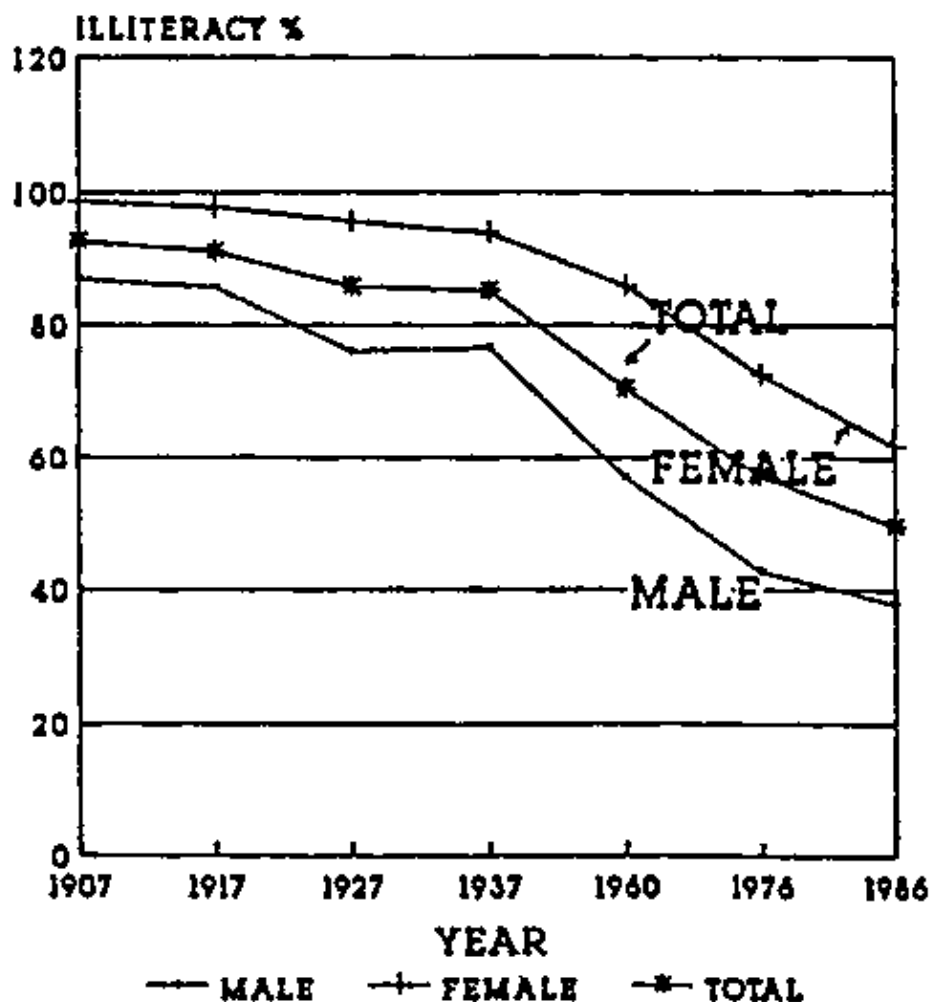


Figure 31. Illiteracy In Egypt

Implications of the Educational Status of Women on Infant Mortality and Use of Health Services

Much malnutrition is attributable to inadequate understanding of the body's food needs. This was proven by the results of Table 38. Though food is available at the household but child did not get his RDA (Moussa et al., 1988-b, Moussa 1990).

Table (38)

Quantitative and Qualitative of Child Diet in Comparison to Family Diet

	No.	% of RDA of Child to that of his Family			
		Both are < 100%	Both are > 100%	Child < 100% Family > 100%	Child > 100% Family < 100%
Energy	214	53.8	8.4	26.6	11.2
Protein	214	31.8	10.3	43.9	14.9

SOURCE: National Food Consumption Study, Nutrition Institute N.I. Ministry of Health MOH. Egypt, 1981.

Studies have found maternal education level independent of household income, to be positively related to better nutrition status of children and to lower infant mortality. The DHS 1988 (Sayed et al., 1989) presented substantial differences in the level of infant and childhood mortality with education. Under five mortality is highest for mothers with no education (161 deaths per 1000 births) and with a higher level of education of

mothers it declines to 49 deaths per 1000 births among children of mothers who completed secondary school (Table 30 App.).

Maternal education usually is connected with greater use of health services, lower fertility and more child centered care giving behaviours. In the low income sample of mostly uneducated mothers only around one tenth of mothers gave extra care to the child more than the rest of HH members. With increasing education, women have more power within the family to allocate resources on food and other expenditure for their children's health and welfare (Sayed et al., 1989).

Child Care Giving Practices and Educational Level

Child care was studied in a rural community within the comprehensive study on Food Intake and Human Functions (Noor et al., 1991). The study was based on a longitudinal assessment of child care-giving practices of 158 mothers over a period of one year. Time sampling and behavioural observation methods were employed to obtain data on eleven specific child care-giving activities performed by the mother. These categories of activities were: attending to illness, breast-feeding, clothing care, feeding holding/carrying, playing/entertainment, practicing personal hygiene, preparing food, serving food, socializing, supervising/instructing/mediating (Figure 32). The children concerned were toddlers from 18–30 months. Results revealed mothers spent 23.3% of their time holding or carrying toddlers. 15.5% of their time supervising/instructing/mediating, and 11.0% in preparing food for toddlers. Mothers who spent more time in fostering child's safety were from the higher socio-economic status group; their toddlers had better personal hygiene scores and there were fewer children in the households. These mothers also consumed more food considered to be of good quality such as animal source food. Time spent by mothers in attending to illness correlated negatively with household sanitation and the mothers years of formal education. This possibly reflected the greater morbidity burden of the toddlers of these mothers. Education of mothers was associated positively with the time they devoted to child care-giving.

Other Implications of the Educational Status of Women

Moreover the mother's educational attainment is positively related to the immunization coverage rates. The proportion fully immunized varied from around 25% among children whose mothers have never attended school to 54% among children whose mothers have a secondary education (DHS 1988. Sayed et al., 1989).

In addition, proportion of children having diarrhea in the last seven days, who were not given any treatment and did not benefit from medical advice was 36.9% for children of mothers with no education and 26.3% for children with mothers who have completed secondary and higher education.

Rural/Urban Differences in Caring Capacity

Rural/urban differences in socio-economic development indicators are reflected on the caring capacity. The behaviour of mothers towards seeking medical advice for treatment of diarrhea and respiration infection reveals wide differences between urban and rural Egypt. In general one third of the sample children who suffered of diarrhea in the last seven days were not given any treatment and mothers did not ask for medical advice in spite of available health services. That proportion was highest in rural areas especially of upper Egypt (40.5%) and lowest with mothers working for cash (28.1%). Moreover urban/rural residence are more closely associated with the likelihood that a child will be immunized. In rural areas only 20% of children 12–23 months with a birth record have received the complete primary course of immunization compared with more than 50% in urban areas, whereas it reaches 9% only in rural upper Egypt and 62% in the urban governorates (DHS, Sayed, et al. 1989) (Figure 33). Moreover, Figure 34 shows rural urban differences in infant mortality.

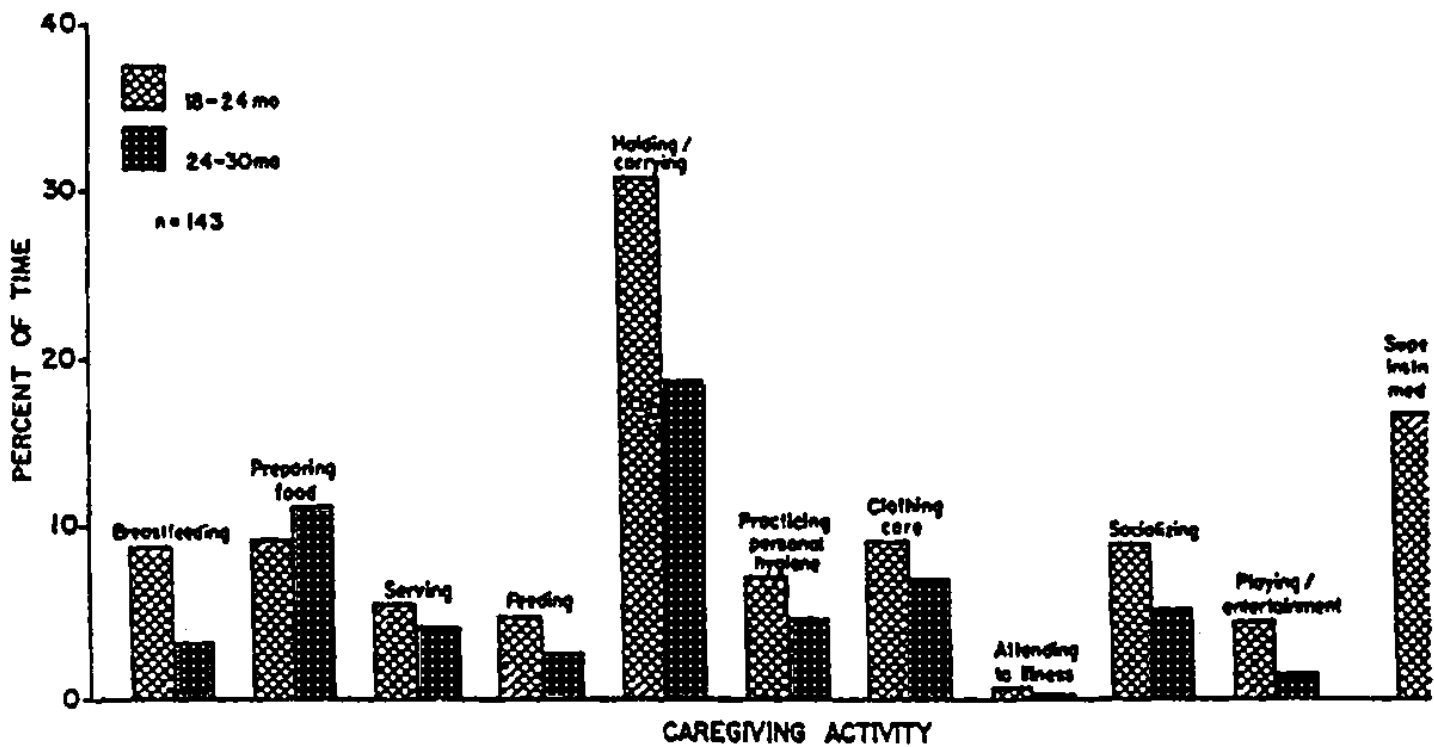


Figure 32

Employment Status and Caring Capacity

The sub-model of women in the labour information system project (Za'louk, M. 1990) indicates that the majority of female workers are in the category of non paid household workers (60%). This category reaches 73.7% of all female workers. 80% of the females in this work status are illiterate. This might be explained by the conservative behaviour of women in Egypt and the shortage in employment opportunities in the formal sector. The survey also show a bias against female with respect to the paid work. Only 26.4% of the employed female population were in this category (66.7% in urban areas vs. 12% in rural areas). It was interesting in this survey to know that 84.5% of the males and 77.8% of the females believed that women with younger children should not work. Also 87.6% of the males and 82.7% of the females believed that women should not work, if her income is not needed by family. This belief, coupled with the increasing tightness in the formal labour market and the increase in the rate of unemployment in the eighties will affect the creation of productive employment for women. Agriculture is the economic activity number one for females (67%), next comes the service sector and the third economic sector is manufacturing.

Differences in the work status of mothers are also reflected on the percent of children 12-23 months reported as having received full coverage with immunization ranges between 88.5% for children of mothers working for cash and 74.4% for children of working mothers not paid in cash. The same pattern of differences is prevailing among the children of 12-23 months, having a birth record seen by the interviewer (60.7% for children of mothers working for cash and 55.3% for children of working mothers not paid in cash) (DHS, 1988, Sayed et al., 1989).

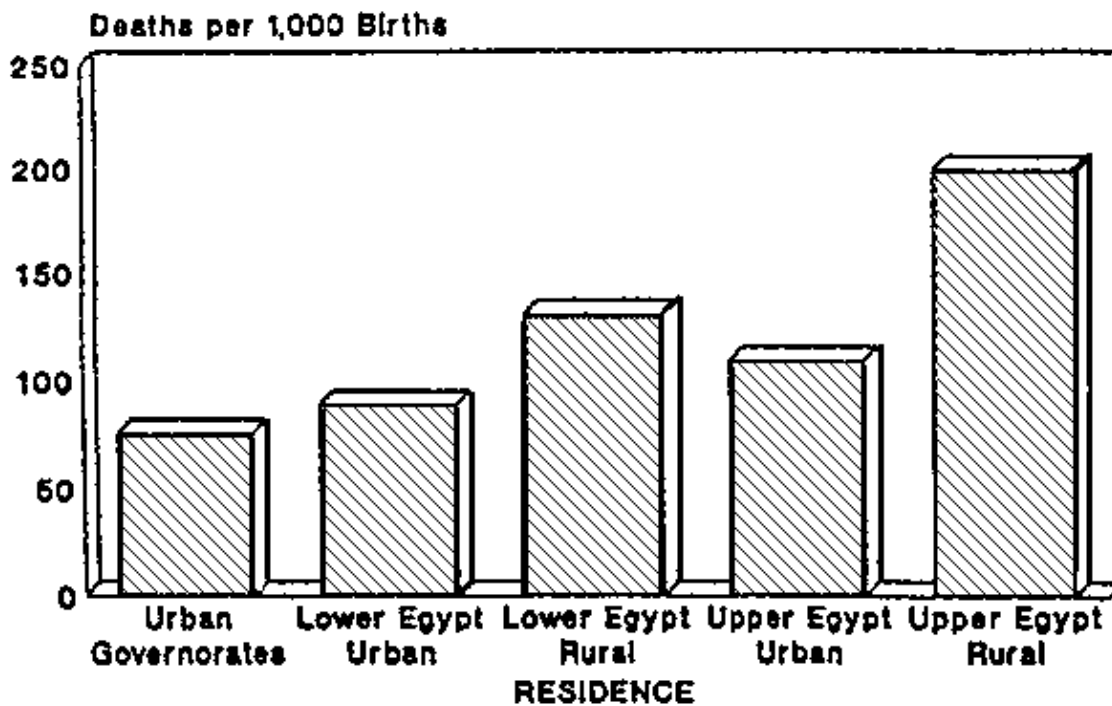


Figure 33. Under Five Mortality by Place of Residence

Egypt DHS 1988

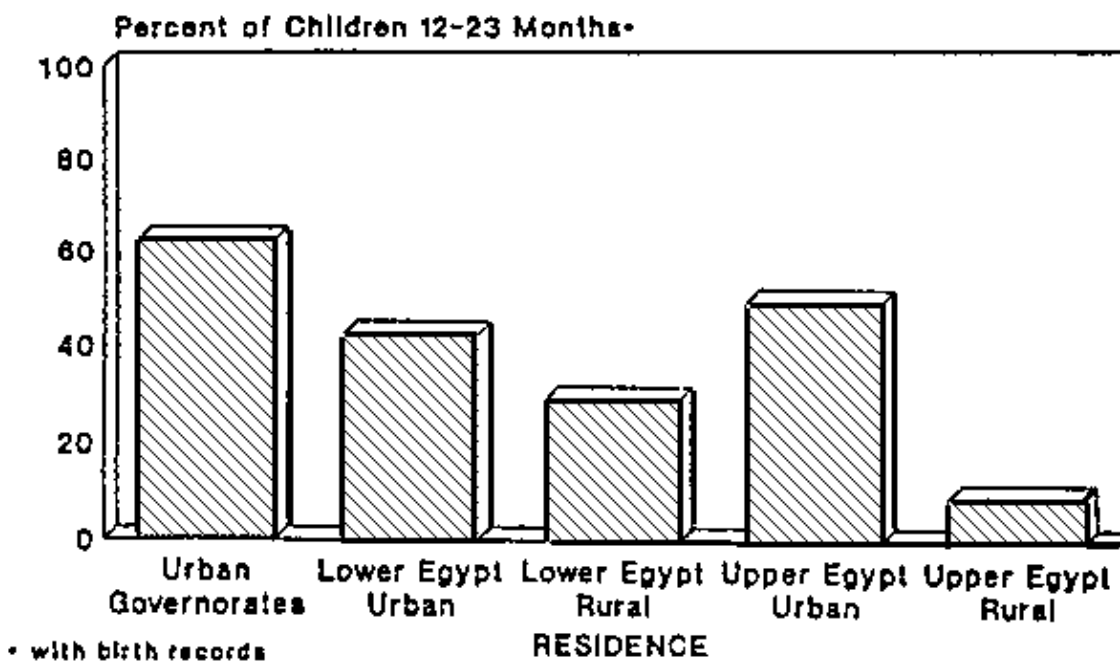


Figure 34. Percent Fully Immunized by Place of Residence

Egypt DHS 1988

Caring Capacity Within the Society

In any community, there will be people who are unable to adequately take care of themselves. These may include displaced persons, isolated elderly orphans and the disabled. Ensuring the nutritional well being of these groups requires adequate support and assistance from the local communities, local and national governorates, civil and religious groups and NGOs. To some extent this is taken care in Egypt through the Ministry of Health, Ministry of Social Affairs, NGOs and religious groups. Within the law of 79 in 1955 retired people may have some price exemptions in transportation and are included in the health insurance. Subsidies

and credits for retired people can be obtained through Nasser Bank and some special aid is occasionally distributed. Some houses for elderly people have been established in recent years, however still there is shortage in such services and in special health clinics for the elderly (National Centre for Social and Criminological Research, 1985).

Direct transfer payments are made by the government in Egypt, through the Ministry of Social Affairs and by NGOs. Moreover, the Ministry has another scheme called Productive Families Program. This program is an employment income generating program for poor families. Several assumptions indicated the national coverage of the poorest groups through government payments assistance schemes is about 1:5 persons (World Bank, 1990).

It is important to note that the social assistance scheme is small in total funds. The total average payment is LE 57 per annum in 1988/89, which is less than an adequate subsistence payment. As payments are very low, there is still a discrepancy in the numbers between those who apply for support and the vulnerable groups. NGOs in Egypt have a long history. They are philanthropic in nature rather than developmental and are regulated by the government under law No 32/1964. The financial affairs of NGOs are subject to government regulation. The government gives approx. LE 6 million per annum on the operational grants given to the NGOs from the Ministry of Social Affairs. With scarce information it was indicated that total expenditure of NGO were eight times the subvention from the government It has been estimated that the government and NGOs are together providing about LE 60 million nationally. This amount should be increased four fold to provide an income satisfying basic needs for one adult.

Environment

Environmental sanitation and health behaviour of care takers are important contributing factors to the incidence of infections.

In Egypt percentage of population covered by safe water supply was 100 in urban and 49 in rural areas during 1982. These proportions were changed to 95 and 75 in 1985 then improved to 100 and 90 in 1987 respectively.

Percentage of population covered by adequate sanitary facilities (sewage disposal mainly) was 95 in urban areas and 42 in rural areas during 1982, deteriorated to 77 and 7 respectively in 1985 and improved to 100 and 65 during 1987 (WHO/EMRO, 1991) (Table 39).

If we know that the morbidity load in Egypt particularly in preschool children is indicated mainly by diarrhea and respiratory infections the previous environmental indicators are still low in rural areas. This ratio is misleading if we take into consideration the low percentage of households with purified water in Egypt as indicated in Table 2 App.

Table (39)

% of Population with Safe Water Supply and Adequate Sanitary Facilities

Year	% Population with Safe Water Supply			% Population with Adequate Sanitary Facilities		
	Urban	Rural	Total	Urban	Rural	Total
1982	100	49	75	95	42	69
1985	95	75	84	77	7	37
1987	100	90	95	100	65	80

SOURCE: WHO/EMRO, 1991

Infant and Child Feeding

Status of breast Feeding

There are several studies which have been conducted in Egypt to tackle this subject. However, we will be only concerned with national studies on representative sample of Egypt. Data are drawn from ARE Nutritional Status Survey (N.I./CDC/AID, 1978) of which feeding and weaning practices were studied for 4282 children less than 3 years. Another study on feeding and weaning practices of infants and children less than two years was conducted by Egypt Nutrition Institute "N.I." in collaboration with WHO during 1981. The study included six governorates; Cairo and Alexandria as well as two governorates from each of upper and lower Egypt; at least 250 children from each governorate were studied. The DHS, 1988 (Sayed et al.) included breast feeding information on 5174 child less than 3 years of age.

There are important differences in feeding practices of children under 2 years of age between rural and urban populations and between general urban population and the less privileged populations of Cairo, Giza and Alexandria Children in rural areas are exclusively breast fed longer and completely weaned at a later age than the general population of urban children. The pattern of feeding in early childhood in the less privileged urban areas is closer to the rural pattern than the general urban pattern. These differences suggest that among rural and less privileged urban mothers, traditional patterns remain influential or that the availability of weaning foods, either actual or in terms of cost, is less.

Results of the three studies are rather similar. More than two thirds of infants at one year of age are still breast fed and 30% approaching their second year of age continue to be breast fed. Breast feeding more than two years is uncommon, less than 10%.

Trends in breast-feeding show a decreasing awareness of this phenomenon in Egypt. In 1984 (Sayed et al., 1984) the mean duration of months of breast-feeding was 18.8 and declined to 17.3 in 1988 (Sayed et al., 1988). Moreover the mean duration of months of breast-fed children for mothers with no education was 22.8. This figure declined also for those with some primary education from 18.5 to 15.8.

Figures 35 A & B derived from EDHS, 1988 show pattern of breast feeding and weaning among children by geographic areas and educational level. Duration of breast-feeding was longer for women in rural areas and those with lower educational attainment This might be explained with the relatively higher engagement of women of higher education and in urban areas with outgoing work period.

Weaning foods

Under normal circumstances breast milk provides all energy and nutrients needed by the infant for the first four to six months of life. Afterwards, additional food must be introduced so that the infant gradually and progressively adapts to the full adult diet. Due to several biologic and environmental factors, the weaning period is one of the most critical periods in child's life particularly in developing countries.

** Nature:*

The prevailing types of weaning foods in Egypt belong predominantly to five main categories; mammalian, milk and products, consumed by 69.6% of children less than 2 years as well as portion of the family diet and preparations as biscuits and other processed cereals. Only about one fifth of children in the weaning period consume a diet specially prepared daily for the child or commercially prepared weaning foods. In the age period less than six months home prepared cereals mostly wheat and rice as well as starch puddings are used. Feeding infants with water and sugar is a custom in some rural areas of Egypt. More weaning foods are gradually introduced and by the age period 18–24 months more varieties are used by a higher percentage of children to include more food groups; legumes, tubers, fats and oils, eggs, meat or chicken, vegetables and fruits. Animal products, fruits and commercially prepared weaning foods including "Supramine" are used by a proportion of children not exceeding 20% (Moussa et al., 1988a, Moussa, 1990).

** Adequacy:*

In a study on low socio-economic group of the population; by the N.I. on children less than 2 years of age, the contribution of the child diet to satisfy his recommended dietary allowances of energy and protein "% RDA", based on recommendations of WHO/FAO/UNU (1985), was compared with "% RDA" percaput in the same child family.

The study revealed that 53.8% and 31.8% of children and their families do not satisfy RDA for energy and protein respectively. This shows that energy inadequacy is even a more serious problem than protein inadequacy. This group suffering of poverty will partially benefit from nutrition education stressing how to prepare balanced recipes from cheap available resources. For 26.6% of cases, energy RDA of family is satisfied but not the child. For protein this sector reaches 43.9% of the study sample (Table 38). For this group, nutrition education will have full benefit as food is available at the household but the mother is unaware of the appropriate child needs. Those families who give more care to the child than to themselves are a minority not exceeding 14% (Moussa et al., 1988 b; Moussa, 1990).

Moreover, one of the main factors which cause inadequacy of the child diet in the weaning period is that it is mostly part of the family diet which is mostly vegetarian with high amount of dietary fibres. Also gruels, specially prepared for the child from cereals or both cereals and legumes, become bulky and of high viscosity by cooking. The mother resorts to more dilution to keep it semisolid with resulting lowering of energy and nutrient density. As revealed in some studies the majority of children less than two years of age get diets which are with less energy density and with less protein energy ratio than their families. The ratio reaches 66.5% for energy density E.D. and 65.4% for protein energy ratio P/E% (Moussa et al., 1988b, Moussa, 1990).

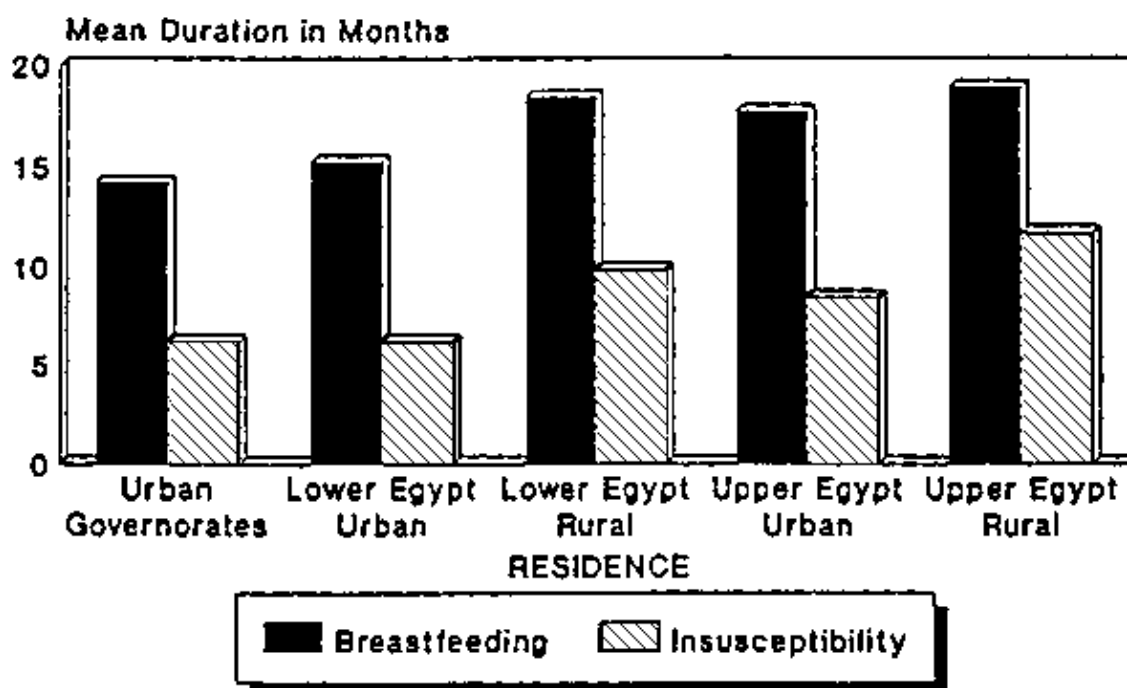


Figure 35A. Duration of Breastfeeding and Postpartum Insusceptibility by Place of Residence

Egypt DHS 1988

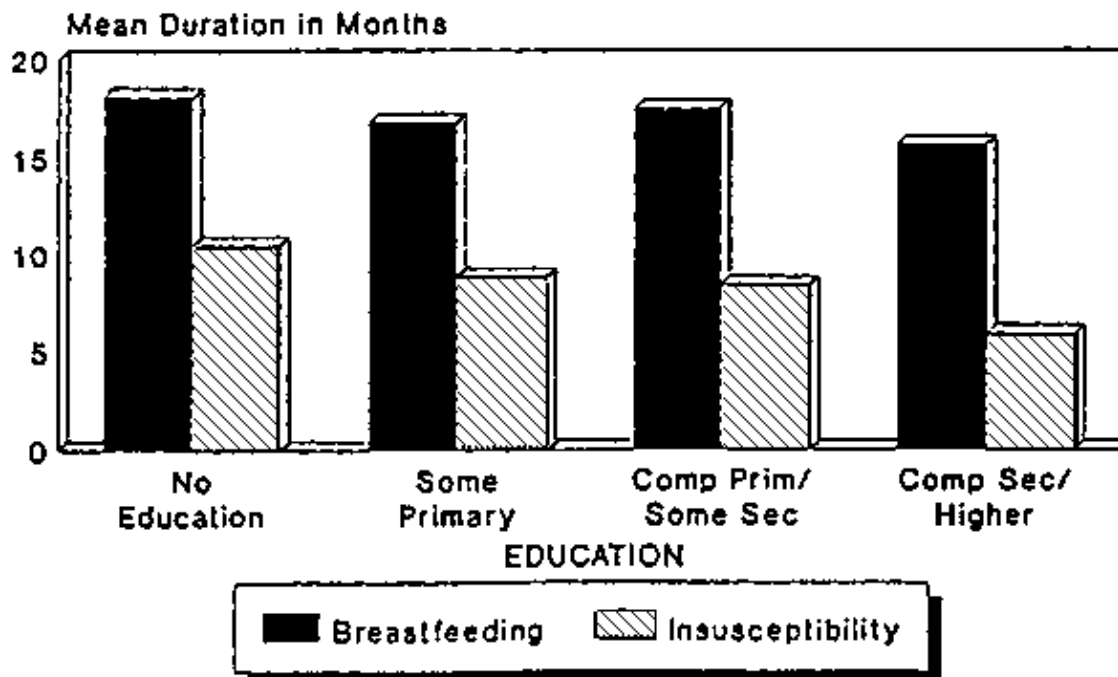


Figure 35B. Duration of Breastfeeding and Postpartum Insusceptibility by Level of Education

Egypt DHS 1988

Family Planning Policies and Child Spacing

Family planning programs and child spacing were found positively correlated with the nutrition status of children. Egypt in comparison to other countries has relatively reliable data of population size fertility and mortality levels, has a support for slowing population growth by public commitment and its institutional base is also relative well built (World Bank, 1985).

Family planning policy in Egypt changed several times since 1965 (USAID, 1986). In 1966 an executive Board of Family Planning was established with programs launched through the Ministry of Health facilities to increase the availability of family planning services. Between 1973–80 the emphasis was shifted towards the socio-economic approach to fertility reduction. In December 1980 the Population and Family Planning Board issued a comprehensive strategy statement calling for a reduction in the fertility rate to 20% i.e. a 50% reduction by the year 2000. The impact of family planning programs on fertility levels will not be discussed here. The impact of family planning programs on family health status can be indicated examining their effects on the ideal birth intervals. Birth intervals appear to have a significant influence on the health status of mothers and their children. Nawar et al., (1986) reported that spacing of birth, the avoidance of higher order births beside other factors are needed as a means of reducing infant and child mortality in Egypt It was argued that short birth intervals; particularly those less than two years was positively associated with higher rates of both morbidity and mortality among women and their children. In 1984 it was indicated that 40.5% of the Egyptian surveyed women generally prefer an interval of between one to two years between births (ECPS, 1984, Sayed et al., 1985). The mean ideal birth interval is somewhat higher among women from urban areas (37.5%) particularly in the urban governorates (39.2%) than among women in rural areas (31.8%) especially in upper Egypt (32.6%). All previous information indicate the necessity to increase the efforts to educate Egyptian women about the importance of birth intervals on child mortality especially in rural areas.

It is difficult to compare the results of 1984 with the results of DHS (1988) as the exact period of the interval was not stated in the last survey. However Figure 36 shows another indicator the desire for children. All women expressed a desire for a child and only 11.9% want to delay the birth at least two years. Among women, who have one child, almost one half of the women would like to wait two years before having another child. The wish to limit childbearing ranges between 52% among women with two children to over 80% among women with four or more children. Regional and urban differences in percent of women wanting no more children is remarkable as seen from Table 31 App.

It is believed that the differences in the nutrition and health status of mothers awareness of birth spacing and

birth intervals should be raised as one of the determinants for better health and nutrition status of mothers and children.

Nutritional and Health Interventions Affecting Family Health

Food Aid

For over 30 years assistance was provided to Egypt through International Organizations, mainly the World Food Program (WFP) and relief agencies such as KARE and the Catholic Relief Services (CRS), as well as from some countries as Holland, Finland, etc. The nature of the assistance included substantial quantities of school children particularly in rural areas as well as new settlers on land reclamation projects.

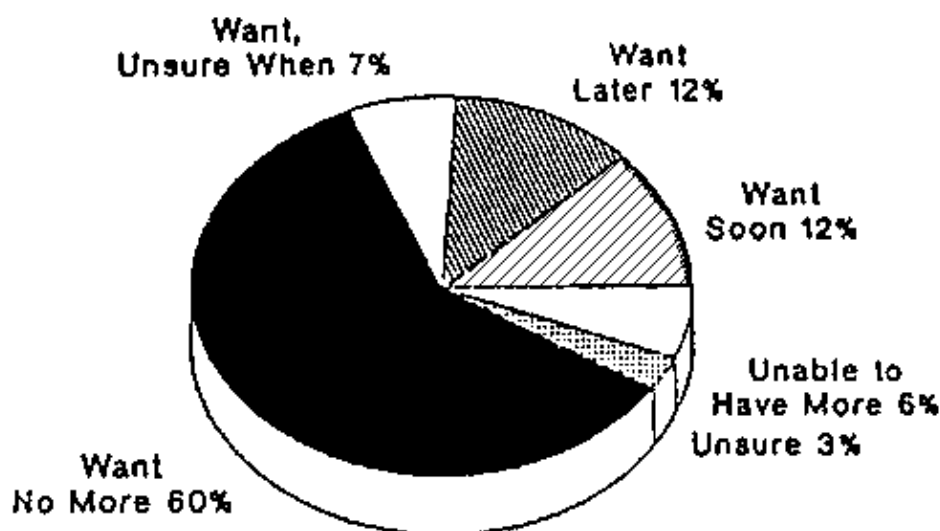


Figure 36. Desire for Children – Currently Married Women

Egypt DHS 1988

The impact of food aid on the nutritional status of beneficiaries in land reclamation projects was studied by Aly et al. (1981). Anthropometric measurements of preschoolers (Wt/A, Ht/A and wt/Ht) were used as indicators. The pre-aid group showed slightly more dietary deficiencies and clinical manifestations of such deficiencies than the post-aid group. The impact on nutritional health showed that the aid reached its target and covered the difficult and rough times for the new settlers in the newly reclaimed land.

Impact of wheat soya blend "WSB", donated by CRS to MCH centres for supplementary feeding, on nutritional status of less than 3 years children was evaluated at the Rehabilitation Unit of the Nutrition Institute of Egypt "RUNI" (Aly et al., 1976). The group fed WSB had better growth velocity than the control group fed the traditional supplements.

Currently, assistance programs are designed to eradicate dependence and promote self-reliance through socio-economic development.

Nutrition Education

Mass Media

Dissemination of nutrition and health information through radio and television programs, newspapers, magazines and books is going on since a long time. Messages are improved and became effective as evidenced by those broadcasted for control of diarrhea, feeding during diarrheal episodes, immunization campaigns, family planning, good healthful nutrition and its importance to pregnant and nursing mothers, etc. Radio and television sets are available now in almost all homes in urban and rural areas. The Nutrition Institute staff members participate in all mass media campaigns. Specialized university and faculty staff members have their own educational activities in several programs on mass media.

Nutrition Education at School: The school feeding program in Egypt

School feeding programs are intended for improvement of health and food habits through nutrition education. A complete hot cooked meal was offered free in state schools since 1942. This was substituted later on by a dry (Oslo) meal. Milk products from USA were used to improve the nutritive value of the meal since 1954–55. About 2 million children benefitted from this program which was stopped after 1 year. Since then it was maintained in a continuous or satisfactory way for reasons related to war conditions in the Middle East. It was stopped after 1967 and resumed gradually after 1971–72. Almost 3 millions benefitted from it by 1977–78. They constitute almost half the school children (Said and Aly, 1986).

Evaluation of the school lunch program in Technical Secondary Schools of ARE (Aly et al., 1976) showed that the dry meal supplies about one third of the daily nutrient requirements. The meal was beneficial to health and nutritional status of the children as evidenced by improvement in growth measurements mainly heights, weights, left mid–arm circumference and left triceps skinfold thickness as well as decline in prevalence of deficiency signs. The educational and learning capabilities of the children improved significantly. School attendance increased with better attention and behaviour during classes.

Nutrition Education at Primary Health Care (PHC) Centres and Units for Mothers

The project seeks the development and testing a practical nutrition education program that teaches mothers how to improve the nutritional status of their family members especially their children.

Phase 1 started in August 1979 by a grant agreement between the Ministry of Health (MOH) of Egypt and the Catholic Relief Services (CRS). The Nutrition Institute (NI) was assigned the responsibility of project implementation.

Phase 2 started in July 1983 to extend coverage to more health centres within governorates already served and to encompass 6 additional governorates not served in Phase 1. Phase 2 incorporated in its design some significant refinements.

Evaluation of the project showed that the project created awareness both in urban and rural communities as to the importance of nutrition in the overall health aspects. The effect of nutrition education versus supplementary feeding on the nutritional status of young children was studied by Demain (1981). The study was conducted in out patient clinic of N.I. as well as 2 MCH centres in Cairo on 498 under two years children. The results revealed that nutrition education of mothers to prepare low cost weaning food from available resources had better effect than giving donated supplements on growth of children. However both nutrition education and supplementation had better effect on nutritional status of the children than feeding on the traditional inadequate weaning foods.

Promotion of Appropriate Low Cost Weaning Foods

Lack of suitable weaning foods for low income groups is one of the important causal factors leading to child malnutrition. Consequently several weaning food mixes were developed and evaluated experimentally. Popularization of the developed weaning foods: mainly sesamena and arabena is going on through the national nutrition education program initiated by the Nutrition Institute (NI) staff all over Egypt. During nutrition education of mothers, stress is made to explain the bases for preparation of an adequate meal for the child. Quantitative adequacy is based on WHO/FAO/UNU recommended dietary allowances (RDA) of energy. Qualitative adequacy is based on the intelligent blending of food groups so that the recipe will supply high quality protein to promote growth with adequate amounts of vitamins and minerals satisfying RDA.

Also mothers are educated about what, when and how to feed their children during weaning and post–weaning periods. This is delivered within a package of integrated health and nutrition services by PHC staff in most parts of Egypt and by NI staff at the Rehabilitation Unit of the nutrition Institute (RUNI).

It was the first time in Egypt to evaluate a newly developed weaning food in a comprehensive manner starting with chemical and biological evaluation and proceeding to nitrogen balance studies with effects on growth of infants and young children. Some results are:

1. The percent standard weight for age has improved substantially in a period of 6 months.
2. Third degree undernutrition dropped from 11.3% to 0.8%, second degree from 25.2% to 13.8% and obesity disappeared after 6 months of health and nutrition care. Normal, first degree and overweight cases increased.

3. Catch-up growth is achieved with the package of health and nutrition care stressing suitable weaning foods.

Iron Supplementation

A comprehensive research program on the functioning consequences of iron deficiency included 250 families in a semi-urban area near Cairo (Bortos) by Hussein et al (1988). Anemia defined as hemoglobin concentration less than 11 gm for preschool age children and less than 12 gm for school age children occurred in 30.7% of preschool children and in 34.1% of school age children. The mean hemoglobin concentration was $11.7 \pm 1.58\%$ and 12.5 ± 1.6 gm for preschool and school age children, respectively before the intervention. Hemoglobin concentration increased to 12.9 ± 1.2 gm and 13.7 ± 1.5 gm, respectively after the provision of iron supplementation.

V. ASSESSMENT OF HEALTH AND NUTRITION STATUS IN EGYPT OVER THE 1970s AND 1980s

Main Findings of the Study

Major Trends in the Health and Nutrition Status

Positive Aspects

- The report indicates a significant improvement in the infant mortality rates as well as maternal mortality rates which declined sharply over the eighties.
- Results of the different surveys indicate that acute malnutrition is not a public health problem in Egypt. The trend analysis is rather difficult due to the differences in the season of data collection or due to differences in training or differences in data analysis techniques. However the comparative analysis of the ARE Nutrition Survey 1978 with the DHS 1988 using Z-scores and NCHS standards revealed a general improvement in acute and chronic malnutrition especially in urban Lower and Upper Egypt. Upper rural Egypt is still lagging behind reflecting its relatively low socio-economic conditions. The age category 12–23 months witnessed a significant improvement in its nutritional status. The mean Z-scores weight for age and height for age show a remarkable improvement in 1988 if compared with the results of 1978 for all age groups. Underweight children by Gender improved significantly for the age group 12–23 months especially for girls.
- Trends comparison of the state of growth of Cairo. School children shows that Cairo school children tended to be taller and heavier in 1975 in comparison with the sixties. In 1984 the growth pattern of school girls and boys showed that the weight off girls are better than boys.
- Concerning weights and heights of adults the results of the HES in 1984 show that younger adults are taller than elder ones which may denote improvement of linear growth of recent generations of males and females in both urban and rural areas.

Negative Aspects

- In spite of a significant decline in the infant mortality rates in Egypt over the last two decades, it is still high if compared with many other developing countries.
- The variation in infant and child mortality rates by place of residence, clearly indicates the pattern of development strategy. The urban governorates with the highest socio-economic development indicates have the lowest infant and child mortality rates, while Upper Egypt governorates, the less privileged governorates have the highest infant and child mortality rates.

- Maternal mortality rates as well indicated significant differences between Upper and Lower Egypt.
- The state of chronic undernutrition indicated by stunting is one of the main nutritional problems in Egypt.
- Overweight and obesity became more prominent among school children. Moreover there is a tendency to overweight and obesity in urban areas in the age group 30 to less than 60 for both sexes.
- Low birth weights seem to be a health problem in Egypt in the seventies as well as in the eighties. Maternal nutritional deficiencies are anticipated to be under the more contributing factors to the poor growth of babies. Moreover maternal age at conception was found a critical factor determining the pregnancy outcome. Higher incidence of birth defects was among younger ages. Marriage in very young ages for girls is a common situation in rural areas.
- Results of the different surveys indicate that anemia is a crucial health problem in Egypt. Anemia among preschoolers is most prevalent in rural population especially in Upper rural Egypt and decreases with increasing urbanization. The fact that anemia is more prevalent in the lower socio-economic classes of Cairo and Alexandria is because urbanization in Egypt was connected with the expansion of urban poverty.
- It is important to note that the lowering in blood hemoglobin concentration for schoolers in the seventies in comparison to the sixties was justified by the increase in the prices of animal food sources of iron. In 1984 anemia prevalence among schoolers was still at a very high rate (45%) and was most common among obese school age children.
- An anemia problem of major proportions exists among lactating mothers in Egypt, while non pregnant and non lactating women have the lowest prevalence rate of anemia.
- Anemia among mothers was found relatively high in rural Egypt.
- Moreover, the results of the different surveys indicate a growing prevalence of overweight and obesity in preschoolers in the eighties if compared with the seventies. As for schoolers, prevalence of obesity and overweight in 1982 increased significantly for boys and girls. However in 1987 obesity prevalence was the same for girls and somehow less for boys.
- Despite the fact of no clinical deficiency signs of Vitamin A deficiency observed in the different surveys in Egypt Yet the high prevalence of PEM among preschoolers can point to deficiency of Vitamin A.
- Moreover the prevalence of Vitamin D deficiency signs is quite low in the preschool age population.
- The functional consequences of malnutrition indicate positive correlations between energy and protein intake and some social and behavioural parameters. Diarrhea is among the leading causes of infant and child death in Egypt. It is believed that the decline in infant mortality rates reflect decline in the deaths of diarrhea diseases of about 40 percent and 30 percent among infants and children, respectively, over the last five years.
- After the intensified efforts of the national control of diarrhea! diseases program acute respiratory infections have been recorded as main cause of mortality in the less than 5 years age children.
- Moreover, the awareness rate for self reported hypertension and heart disease was 15.8 and 10.7/1000 persons interviewed, respectively. In addition statistics of the National Cancer Institute confirm the high frequency of bladder cancer.

Socio–Economic Characteristics

Main Political Trends Indicate

- a shift in the development policies from a socialist model in the central planned era 1960–65 and the inter-war period to an open door policy from 1973;
- a wave of liberalization and privatization that occurred since the mid–eighties.

These political changes affected the role of the state as a main provider of social services and the extensive system of cost and price controls prevailing since the sixties to achieve equity.

Demographic Characteristics indicate

- a growing population size, an increase in the expectation of life at birth and a decline in the crude death rate.
- Growing urbanization and over–concentration of population in primate cities explain the relatively higher infant mortality in the overpopulated Cairo city.

The adoption of a "Development from Above Strategy" in Egypt led to rural/urban differences in socio–economic living standards as well as in health and nutrition status and a neglect of the agricultural sector.

Due to a deterioration in the macro economic indicators in the eighties in comparison to the significant overall growth rates in the seventies, Egypt adopted a structural adjustment policy aiming to reduce the budget deficit and the balance of payment's deficit. Subsidies, food rationing and the expenditure on social services are affected by this policy.

Trends in the Determinants of Health and Nutrition Status in Egypt

Food supply in Egypt was influenced by the agricultural policy, pattern of investment allocation, food security schemes and food aid.

With respect to government policy in agriculture it was indicated that the development in the political environment affected the choice and ranking of the government objectives in agriculture.

The agricultural sector was characterized by high degree of government intervention since the sixties, subsidization of agricultural inputs and indirect taxation of agricultural main products.

Sectoral development in Egypt shows that the agricultural sector was a slow growing sector with a decrease in the investment allotted to this sector since the mid–sixties.

The impact of the agricultural policies on the production was a sharp decline in the crop areas of the fixed priced crops over the eighties in comparison to the seventies. From being a net exporter of agricultural products in the early seventies, the country now faces an annual net deficit in its agricultural trade deficit

With growing income per capita, increasing income elasticities and rising population size, growing imbalances occur between domestic supply and demand for food and agricultural products. This led to a decline in the country's self sufficiency rates in food.

However, in Egypt one should distinguish between food self sufficiency and food supply. In spite of a declining rate of food self sufficiency, food availability in Egypt is comparable to levels of developed countries and far exceeds the average availability for developing countries. Total energy, animal protein and animal fat increased over the last twenty years.

Food import (food aid) became a major level for securing the availability of domestic food supply. Food imports explain the fluctuations in the food availability in Egypt over the eighties.

Meanwhile cereals are the main contributors to Dietary Energy Supply in Egypt. Egypt is highly dependent on the outside world to achieve food self sufficiency in cereals (wheat).

Egyptian Rationing and Food Subsidy system was related to the goal of food security and equity in income distribution with nutritional concern.

However since 1985 a downward trend was obvious in food subsidies. Agricultural policy reform took place to free the prices of agricultural output and inputs.

The expected impact of reform on agriculture production and supply side is an increase in producers surplus and a shift in the agricultural trade balance from a deficit to a surplus.

Demand of Food and Consumption Pattern

Demand on food is influenced by the overall growth rates, employment guarantee policies, pricing, subsidies and rationing schemes.

In general high income elasticities for calories are prevailing in Egypt. Overall growth rates affected the trends in incomes as reflected on the trends in per capita income in real terms as well as the incidence of poverty and the trends in real wages.

The upsurge in the overall growth rates in Egypt was accompanied with an increase in real per capita income over the seventies, which stagnated since the mid eighties due to a decline in the rate of growth of GDP in the eighties.

The trend in real wages reflected the strength of the Egyptian economy over the seventies. Real wages rose as the economy expanded, reaching a peak in the mid 1989 and with the deterioration in the macro economic variables at the beginning of the eighties they drifted downwards.

Meanwhile in spite of the overall growth over the seventies incidence of poverty in Egypt was not eliminated in the mid eighties in comparison to the seventies. A decline occurred in it over the seventies till 1981. The increase in the incidence of poverty was affected by the increase in the prices of food.

Data on income distribution show that the degree of inequality declined between 1974 and 1982 after a rise in it over the period 1964–1974. The implications of poverty incidence and distribution of incomes on health and nutrition is a mal–distribution in food between the urban and rural richest category and the poorest urban and rural category.

Adjustment policies were found to be affecting the real incomes of landless household negatively. The welfare gains of the programs on farm incomes are related to the differences in crop pattern. In addition adjustment policies are expected to affect negatively the urban households especially low income urban households which indicated that the calorie deficit population would increase if the current income transfers and price subsidies were removed.

Adjustment policies and the elimination of employment guarantee schemes led to an increase in the rate of unemployment and tight labour market affecting income creation.

The decrease in the subsidized food since mid eighties led to a remarkable increase in the cost of food which was considered too high as compared to the increase in wages.

Price elasticity estimates show that the increase in food prices might have cut backs in the quantities of many food items consumed by households especially in the lowest income category of household who are already spending 75% of their income on food.

Finally, behaviour of families as a result of rising food prices in the eighties was indicated by a reduction in food and non food items and a preference for current expenditure (living expenses) at the expense of future consumption (human investment, demand on health services for their children).

The end result of demand and supply of food was reflected on the food consumption pattern, which reveals that starchy food and cereals are consumed by 99% of all categories of population. A vegetarian nature of

toddlers diet is prevailing which explains the poor digestibility and low bioavailability of protein.

Data on adequacy of food reveal that there is no protein quality problem in the Egyptian diet, apart from the weaning period. Energy and protein deficiency is more prevalent in urban than rural areas for low income categories, which may be explained by urban poverty. Cereals are the main contributors of energy as well as protein per day in Egypt. Iron inadequacy of the diet is maximum among mothers. Although contribution of animal protein to total per capita energy is much higher than 20 years before when it used to be less than 10% yet this level is still much lower than developed countries.

Variation in energy and protein intake with geographic area indicates the urban/rural socio-economic differences as represented in the strategy of Development from Above. Energy intake is slightly higher in rural sectors, while animal protein is much higher in urban than rural sectors.

About 50% of lactating mothers got energy not satisfying the recommended dietary allowances and almost 50% got less than 60% of their iron RDA.

With lower levels of education, income and higher family size the per capita intake of both energy and animal protein is relatively lower indicating that quite a significant proportion of the population receives inadequate per capita intake in Egypt as incomes are low, size of families are large and educational level is low on average.

Infection and Accessibility of Health Services

There is an on going declining trend in the mortality rates through diarrhea in the eighties if compared with the seventies. Meanwhile there is a declining trend in the incidence rate of several diseases of infancy and childhood and parasitic diseases over the eighties.

Infection and accessibility to health service as all other variables in Egypt was influenced by different policies and programs such as the health policies, the economic and political policies, government expenditure, government borrowing, cost recovery programs in the health sector as well as health and environment interventions.

In the sixties and seventies high priority was given to large scale projects in the health sector and to mass programs. In the eighties health policies emphasized health programs targeted to certain groups and problems.

Since the mid-eighties health policies in Egypt witnessed major changes shifting from free services for all the population to support the approach of introducing charges in the governmental curative health care facilities.

In spite of the increase in the accessibility rates of health services in the eighties if compared with the seventies the changes in the health policies over the seventies and eighties resulted in:

- imbalances between declining fiscal measures and growing health care needs and costs;
- mal-distribution of health services among rural and urban governorates;
- low basic health levels and low incentive system.

Health interventions in Egypt are found important components in the delivery of health services in Egypt. The impact of the National Diarrheal Disease Control Program was a tremendous reduction in infant and child mortality which is expected to be associated with improvement in nutritional and health status of infants and preschool age children. Other interventions as child survival project, acute respiratory infection, child spacing, nutrition component, human resource development and training and other programs are examples for the shift in the health policy in Egypt over the eighties to affect directly the target population instead of just the extension of mass curative programs and establishments over the sixties and seventies.

Family Health History and Caring Capacity

Several factors play a role in family health history such as tradition, caring capacity, child spacing, women's role, nutrition related interventions education policies, family planning policies, nutrition intervention programs

and health education are all relevant programs in this respect.

Traditional position of women may explain the intra-familial distribution of food in Egypt and the subordinate position of women.

Educational levels are positively related with caring capacity of mothers and with the use of health services and negatively related with infant mortality rates.

Rural/urban differences in the socio-economic development indicators are reflected on the caring capacity.

Caring capacity is found positively related with the employment status of women. Most of the Egyptian women are engaged in non paid work.

Caring capacity within the society shows some efforts in health insurance, and subsidies for elderly Person with relatively low provision of all other services.

There is an increase in the percent of population with adequate safe water supply and sanitary facilities in the eighties with significant rural urban differences.

Duration of breast-feeding varies with place of residence and educational level and is longer for women in rural areas and with no education.

A majority of children less than two years of age get diets which do not satisfy recommended dietary allowances for energy and protein, respectively.

Birth interval is still low in Egypt as only 11.9% of the women in the last DHS survey wanted to delay the birth at least two years. Birth interval period is lower in rural areas than urban areas.

Nutritional and health interventions affecting family health such as food aid, nutrition education and promotion of appropriate low cost weaning food have a positive impact on family health history.

Trend Analysis

Summary of Trends in Nutritional and Health Status Over the 1970s and 1980s (Incidence-Impact Analysis)

Main Health and Nutritional Indicators (Output Indicators)

Vital Statistics

- infant mortality rate ? a decline/positive
- 1-5 year mortality rate ? a decline/positive
- crude death rate ? a decline/positive
- life expectancy ? an increase/positive

Anthropometric measurement of Preschool Age Children

- percent underweight (below 2SD) ? a decline/positive
- mean weights and heights ? an increase/positive
- mean Z score weight for age ? a decline/positive
- mean Z score height for age ? a decline/positive

– percent stunted (below 2SD) ? a decline/positive

– percent overweight and obese ? an increase

Weights and heights of School Children

– mean weights and heights ? an increase/improvement

– obesity ? an increase

Weights and heights of Adults

– Younger adults are taller than elder ones ? improvement of linear growth of recent generation

Low Birth Weight ? a health problem in Egypt in the seventies as well as in the eighties.

Anemia ? an important health problem in the seventies and eighties especially in rural areas and among lower socio-economic categories as well as for lactating mothers in particular/negative

Obesity and Overweight ? an ongoing positive trend at the beginning of the eighties in comparison to the seventies and then a stagnation in this indicator at the end of the eighties

Iodine Deficiency Rate a decline/positive

Vitamin D Deficiency quite low in the preschool age population

Vitamin A Deficiency signs of Vitamin A deficiency in preschoolers

Functional Consequences of Malnutrition in Egypt

– Diarrhea a decline in the mortality rates through diarrhea/positive

– Acute respiratory infection main cause of mortality age children after the decline in mortality rates due to diarrhea

– Hypertension and Cancer growing health problems with urbanization/negative

Basic Socio Economic Characteristics Impact

Political Trends

a shift from a socialist ? Change in the role of the to a liberal society state as a main provider of social services ? privatization ? changes in the welfare oriented policy

• negative impact on health and nutrition

Demographic Characteristics

Population growth % ? increase • a growing need

Crude birth rate % ? increase to expand

Crude death rate % ? decrease health services & food policy

Overall density (per sq km) ? an increase/congestion problems

Average annual rate of urban populations ? and increase/sanitation problems for the urban poor

• negative impact on health & nutrition

3 – Development Strategy

Development from Above	?	Urban/Rural differences in socio-economic indicators and health and nutrition status
A remarkable overall growth rate over the seventies	?	welfare policies in employment, health and education
	?	a system of cost and price controls over the sixties and seventies
		• positive impact on health and nutrition
A deterioration in the foreign resources over the eighties	?	An increase in the budget deficit, balance of payment deficit and a high debt burden
Adjustment policies since 1986	?	a cut in subsidies
	?	a change in the ration system
	?	changes in the agricultural policy
	?	cost recovery programs
	?	inflation and unemployment
		• (negative impact on health and nutrition)

III – Determinants of Nutritional and Health Status:

1 – Dietary Practices: A Supply of Food

– food production	?	fluctuations and decline/negative
– food self sufficiency rate	?	decline/negative
– food aid	?	increase/positive
– percaput energy supply per day (Kcal)	?	increase/positive
– Percaput protein supply per day (gm)	?	increase/positive

An increase in the prices of agricultural inputs & outputs (adjustment policies) ? an increase in the producers surplus/positive

1 – Demand of Food

– Overall growth rates	?	decline in the eighties/negative
– Real GDP per capita	?	slowing down in the eighties/negative
– Poverty	?	an increase in the mid eighties/negative
– Income distribution	?	a decline/positive

- Free health services a decline/positive
- Health interventions an expansion/positive
- % of infants fully immunized an increase/positive
- % of pregnant receiving health care by trained personnel an increase/positive
- % of pregnant women delivered by trained personnel institution an increase/positive

3 – Family Health History and Caring Capacity

- Tradition mal–distribution of food in the family
- caring capacity within the household differences by socio–economic status and urban/rural residence still at a low level
- female educational rates increase/positive
- female illiteracy rate decline/positive
- caring capacity within the society ? still low

Environment:

- % of population with safe water supply an increase/positive
 - rural/urban differences
- % of population with an adequate sanitary facilities increase/positive
 - rural/urban differences

Infant and Child Feeding:

- Breast–feeding regional and socio–economic differences
- Weaning food still inadequate

Family Planning Programs

- Policies and programs expansion
- Birth interval still low

Assessment of the Main Findings

The assessment of the main findings will be studied along the following considerations:

- a. What is the relative importance of household food security, accessibility to health services and caring capacity as factors underlying the trends in nutrition and health status of Egyptians?
- b. Are nutritional and health aspects reflected in the Egyptian socio-economic programs and policies or are they regarded as a medical problem?
- c. What are the main policy recommendations for the future to improve health and nutritional status of Egyptians?

Relative Importance of the Different Components: Food Security, Accessibility to Health Services and Caring Capacity

It is rather difficult to study the main determinants of the changes in the nutrition status of the Egyptians. The general improvement in vital statistics and some anthropometric measurements hides significant health and nutrition problems such as rural urban differences in consumption rates, inadequate diet by geographic area, incomes, education and family size and disparities in health and nutritional status by region as well as socio-economic status. Thus one must distinguish between the following factors: immediate factors; basic factors; explanatory factors.

- immediate factors;
- basic factors
- explanatory factors

Immediate Factors

Immediate factors influence the ability of individuals or households directly to acquire consume and utilize adequate amounts of food (FAA/WHO, 1990). In Egypt, we believe that the household food security since the sixties is the basic determinant for changes in the health status. The ration/subsidy system in Egypt had a direct immediate positive impact on the food availability for the Egyptians on average. Meanwhile food subsidies and the ration system constituted the main source of caloric intake for the lowest income categories.

However the decrease in the food subsidies in Egypt since the mid eighties shows that other immediate factors were responsible for some improvement in the health status of the Egyptians as indicated in the improvement in infant and mortality rates. We believe that the health interventions targeted to the population at high risk is the other immediate factor responsible for the previous improvement in the health status. From over point of view the changes in the health policies over the eighties towards more targeted programs are efficient means to eliminate some health problems in Egypt, which are aspects of poverty and need a preventive oriented approach rather than a curative oriented approach. Caring capacity, as the third direct cause associated to the changes in the nutritional and health status is relatively weak in Egypt, in spite of a general improvement in the educational status of women in the last decades, still a significant proportion of women in Egypt is illiterate (almost two-thirds) and caring capacity within the society is weak.

Basic Factors

Basic factors are aspects that have an indirect impact on the health and nutritional status. Social and economic policies and programs are under this set of factors. We believe that the existence of several health and nutritional problems in Egypt is due to the deterioration in the economic indicators and its consequences. The light economic situation in Egypt and its effects on food subsidies led to several negative effects on the nutrition status of the Egyptians. A sharp increase in the prices of the main food items in Egypt led to a decline in the calorie intake for some low income categories. The high rate of prevalence of anemia in the eighties and chronic malnutrition reflects different socio-economic factors. Both problems are highly associated with

problems of poverty, poor sanitation, increase in the prices of food, low educational level, high infection rates, an increase in the unemployment rates and a decline in real wages. Even the increase in the consumption rates of food on average in the eighties hides significant health and nutritional problems such as rural/urban differences in consumption rates, inadequate diet by geographic area, incomes, educational level and family size. It is important here to distinguish between incidence rate of diseases and mortality rates. The immediate causes, such as food subsidies and health interventions may lead to decline in the mortality rates of the most important disease (diarrhea). The incidence rate is difficult to be affected only through immediate causes. Basic causes such as economic and social programs, income trends, wages, sanitation and education are all important factors contributing to the incidence rate of disease. Thus in Egypt, in spite of a relatively high accessibility of health services (immediate causes), infection rates are still relatively high. This means that immediate cause, (food security scheme, targeted health problems) provide short term solutions for the nutritional and health problems in Egypt while basic causes are playing a crucial role in the long term dimension of nutritional and health problems in Egypt.

Explanatory Factors

Trends in policies and programs are not providing the single explanation for the nutritional and health conditions in Egypt. Examples of other explanatory factors in Egypt are firstly, the flow of remittances, which influenced both income levels and income distribution, especially in the seventies.

Secondly, the role of the private as well as traditional health sector may also explain the trends in health and nutritional status of Egyptians. It is difficult to obtain data about the private health sector, however the health profile in Egypt indicated in 1981, that while the per capita health expenditure in the public health (MOH + Insurance + Curative Organization) account for LE 4,443 the private per capita health expenditure reaches LE 11,864.

In addition, 68.65 of the surveyed population in the Social Indicators Survey in 1986 visit the private physician and not the public institutions during sickness (Nassar, 1991). Thirdly, tradition and social values prevent the spread of social and health problems and eliminate further complications through solidarity and hospitality.

Finally, a national awareness and public commitment was initiated since mid 1980s supported by different national institutions to raise the welfare of Egyptian children. It led to the expansion of special efforts towards this goal in spite of the decline in the national budget outlays to social services.

All previous factors explain to some extent the reason why health and nutrition status of the population does not necessarily accompany the different economic and social trends in Egypt.

Nutritional Aspects in the Socio-economic Plans in Egypt

From our point of view, nutritional concern is of minor importance in the socio-economic plans in Egypt. Economic plans in Egypt aimed to achieve a pattern of imbalanced growth emphasizing material growth, industrialization and capital intensive technique as well as the Development from Above strategy. Even the welfare oriented policies and the food subsidy and rationing system were mainly introduced to satisfy the income distribution aspects rather than nutritional objectives. The failure in the economic policies in Egypt to give adequate attention to their implications for human welfare and nutritional consideration resulted in policies having a serious negative impact on nutritional well being, this was clear by the emphasis on industrialization at the expense of the agricultural sector and the neglect of local food crops. Thus food aid became of crucial importance in Egypt. With the deterioration in the foreign exchange situation, this policy as a last result could be also eliminated causing serious nutritional problems.

Similarly, adjustment policies adopted in Egypt in the eighties, aiming to correct imbalances between supply and demand and eliminate budget and balance of payments deficit may also lead to serious nutritional problems, particularly for the poor (a high proportion in Egypt). Their implications on the health sector through cost recovery programs must be taken into consideration and eliminated by corrective measures.

Finally, in spite of the progress in some nutritional and health indicators Egypt's rank in human development is still relatively low (Human Development Report 1990). It stands at the lowest rank of medium human development level. This position is relatively low in comparison to its institutional base in health services, family planning services, governmental institutions and interventions in health and nutrition. This is, from our point of view, a result of the consideration of nutrition and health as a medical problem rather than a basic

component in all socio–economic development plans.

Policy Recommendations (Futuristic Approach)

We believe that the theme of this study has been broad and complex, as health and nutrition problems in Egypt are presenting the combination of several inter–sectoral policies. This requires a set of policy recommendations, as follows:

Selectivity of Nutritional, Health and Socio–economic Policies

The efficiency of any public policy or program lies in its target selectivity. The target efficiency of any policy, i.e. the amount of the services, that actually reaches the target groups, depends on the discriminatory ability of the transfer mechanism and the degree of concentration of the target group. The disaggregation of public policies helps to increase the standard of the underprivileged categories of population and regions in Egypt. In Egypt awareness should be paid to issues like:

- who the target groups are (the poor and less privileged);
- how they can be reached.

It is known that the more the target groups are dispersed, the more complicated is the policy design and the greater is the cost of achieving any increase in the health and nutritional status. This is the case in Egypt due to massive internal migration waves and growing urbanization and the high dependency ratio. Thus any nutritional and health policy should take into consideration the urban and rural poor population, as well as infant and child health problems. Elderly people are also deprived from the fruits of socio–economic development and should be also given special care. Moreover public choice in nutritional and health policies must distinguish between the different categories of programs, such as:

- the low quality and poorly targeted mass programmes, like the public health system in Egypt;
- the small size high quality and well targeted programs to reach population at high risk like the diarrhea project

In this respect following programs are recommended:

- non–formal education;
- agriculture education;
- rural vocational training centres;
- expansion of nutrition and health education;
- expansion of primary education;
- expansion of food aid;
- promotion of small scale agricultural production.

Flexibility in Policy Making

Flexibility in socio–economic policies is required to eliminate any side effects of growth oriented and adjustment policies. This requires a strengthening in the capacity of identifying and predicting nutritional impact of the different socio–economic policies and programs. Moreover, it is required to introduce some compensatory measures to eliminate the mal–distribution of food and consumption and to reduce the risk of the poor who loses access to food.

Examples of compensatory measures to eliminate the side effects of growth oriented policies and adjustment policies are:

- income generating projects including non–farm activities and small scale projects for the urban and rural poor;

- the initiation of credit programs targeted to the poor and less privileged categories of population;
- dispersal of socio–economic activities among the different regions and public investment in infrastructure and small scale industries in the rural areas.

Prioritization of Policies and Interventions in Egypt

Due to the complex of nutritional and health problems in Egypt and the limited resources, prioritization in nutritional and health policies is recommended. Policies targeted to raise nutritional and health levels in rural upper Egypt should be given first priority, though still neglected. This may be also applied on the programs affecting diseases of infancy and parasites in Egypt, which proved to be efficient.

Inter–sectoral Policy Action

As health and nutrition problems in Egypt are presenting the combination of several determinants inter–sectoral policies, interventions are highly recommended. In this respect, a selective inter–sectoral policy is required to decide the currently feasible sector to start with and the most effective policy. From our point of view targeting food subsidies to the poor and increasing public awareness with nutritional problems are important areas to start with in Egypt. High levels of food self sufficiency in Egypt are not necessarily associated with household's food security for population at high risk. Food subsidies in Egypt were in favour of urban population rather than rural population and were not well targeted. Targeted food subsidies and free distribution of food to selected groups are required as first option to reduce the risk of the poor.

Community Oriented Policies

A nutritional and health policy, which is suitable for Egyptian problems must be designed in such a way, that it reaches into the homes and communities, in order to leave a significant impact on the nutrition and health status of the population at high risk. Thus in this respect policy makers should emphasize the extent to which governmental health and nutritional policy overcome urban/rural inequities.

Specific policies for certain underprivileged groups should be viewed at the community level to investigate different local mechanism to approach them directly. Community based approaches and community sharing mechanisms are advisable in Egypt especially in rural areas.

The design of any nutritional and health policy necessitates the study of the market mechanism outside the modern formal sector. The expansion in the number of jobs in the urban formal sector may increase the number of urban poor due to internal migration and increase nutritional and health problems of these categories. Thus elimination of urban/rural disparities is a main policy objective in Egypt to improve the health and nutritional level.

Finally, socio–economic policies and programs are micro level in statement and intent, but their results have to be obtained at the micro level. Thus health and nutrition consideration should be an important part of the development programs in Egypt and not a substitute for development.

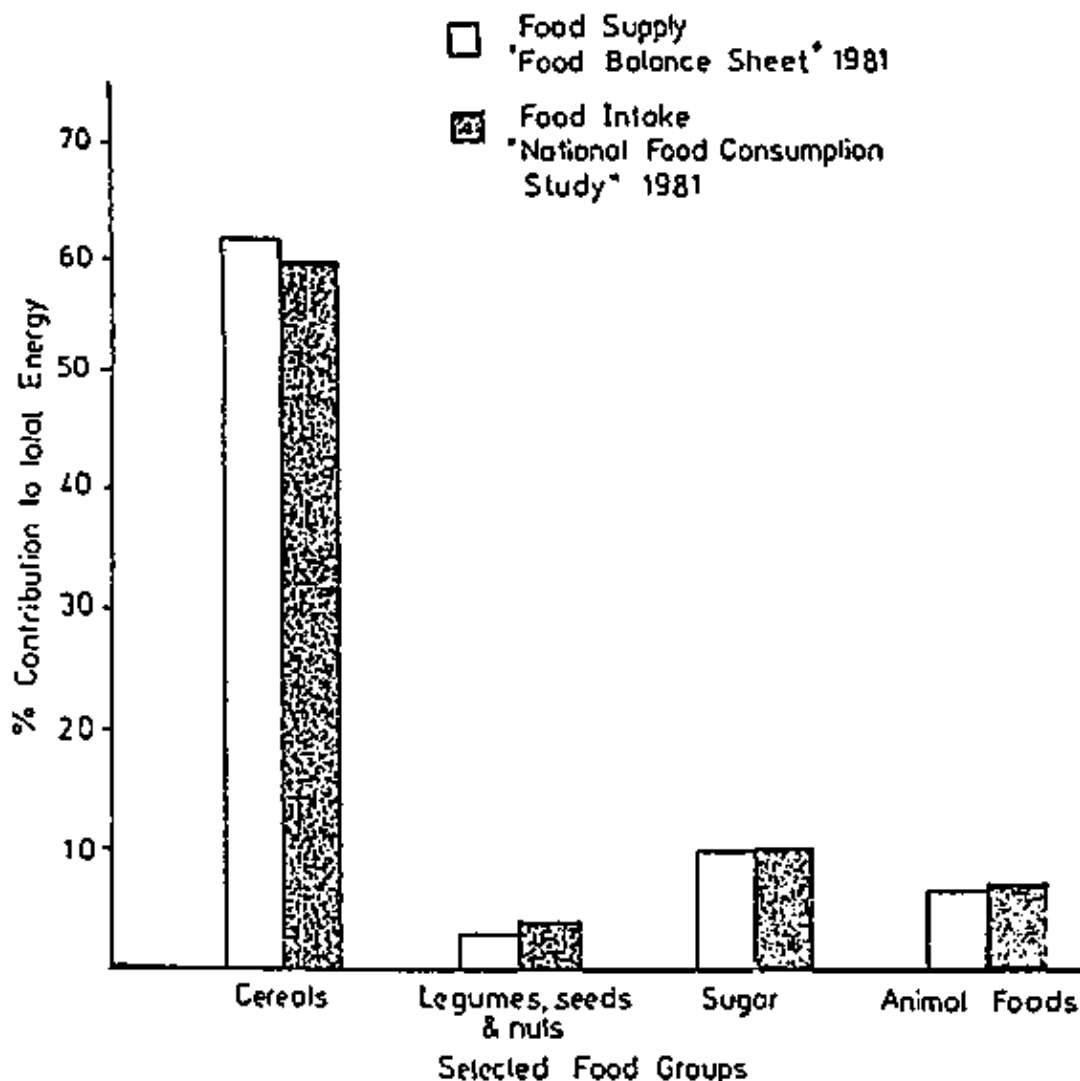


Figure 1. FOOD SUPPLY AND FOOD INTAKE OF SELECTED FOOD GROUPS IN EGYPT

Developed from: National Food Consumption Study, Egypt, Nutrition Institute (Aly et. al., 1981).

Table (1)

Trends in Infants, Neo Natal, Child and Maternal Mortality Rates in Egypt (1970–1988)

Year	IMR	Neonatal	Child	Maternal
1970	116.00	19.80	42.8	110.00
1971	116.00	18.00		
1972	116.00	17.70		
1973	98.00	16.40		
1974	101.00	16.90		
1975	89.00	15.90	32.2	73.60
1976	87.00	14.90	17.3	80.90
1977	85.00	14.80	18.0	80.40
1978	74.00	13.80	12.5	82.20
1979	76.00	12.20	16.5	77.90

1980	76.00	12.40	10.8	93.1
1981	70.00	12.20	10.9	76.90
1982	70.00	14.90	12.00	76.60
1983	64.60	12.40	9.2	74.90
1984	62.10	12.30	10.00	56.90
1985	49.00	15.10	9.2	50.00
1986	47.00	12.40	7.50	65.00
1987	45.00	10.40	7.40	65.00
1988	43.60	10.00	6.7	54.00

SOURCE:

1) IMR and Neonatal Mortality Rates: For the Years 1970–1976, Rashad H., Evaluation of Completeness of Mortality Registration in Egypt, The Population Council, 1981

For the Years 1977–1981 CAPMAS Births and Deaths Statistics, 1977–81
For the Years 1982–1988) Ministry of Health (MOH)

2) CMR: CAPMAS

3) Maternal Mortality rates: MOH & CAPMAS

Table (2)

PHYSICAL QUALITY OF LIFE INDEX 1986 (TOTAL, URBAN, RURAL)

Governorate		Infant Mortality		Illiteracy Rates		House with Purified Water		PQL1		Rank	
		%	Score	%	Score	%	Score	76	86	76	86
<u>Urban Governorate</u>											
Cairo		74	43	31	100	95	76	65	72	4	3
Alexandria		61	55.2	33	88.5	99	95	77	77	3	2
Portsaid		49	66.6	32	94	100	100	95	69	1	6
Suez		14	100	34	81	99	95	78	93	2	1
Average			264.8		363.5		366	78.8	77.8		
<u>Lower Egypt</u>											
Damietta	T	59	52	44	56	96	94	57	67	5	5
	U	39	76.2	36	69	99	95		80		3
	R	67	57	47	55	95	100		71		2
Dakahlia	T	50	61	49	44	81	71	4.5	59	7	7
	U	47	68.6	36	69	98	90		76		5
	R	51	84	53.5	41	75	73		66		3

Sharkia	T	65	45	51	39	68	51	36	45	12	10
	U	57	59	35	75	95	76		70		9
	R	67	57	56	36	59	51		48		7
Kalyoubia	T	84	25	46	51	62.5	42	28	39	13	15
	U	91	26.7	38	56	89	48		43.5		12
	R	80	34	52	79	40	25		46		9
Kafr El-Sheikh	T	45	67	60	17	86	78	38	54	10	8
	U	53	62.8	45	12.5	97	86		54		10
	R	42	100	65	17	82	82		66		4
Gharbia	T	72	38	47	49	77	65	38	51	9	9
	U	67	49.5	33	88.5	95	76		71		8
	R	75	43	55	38	66	60		47		8
Menoufia	T	89	19	48	46	63	43	23	36	15	16
	U	73	43.8	37	62.5	84	24		43		13
	R	92	14	51	47	57.5	49		37		11
Beheira	T	64	46	57	24	71	55	30	42	11	13
	U	90	24	41	37.5	91	57		39.5		16
	R	57	74	62	23	64	57.5		51.5		6
Ismailia	T	52	59	26	100	71	55	51	71	6	4
	U	52	63.8	32	94	92	62		73		7
	R	52	83	26	100	48	36		73		1
Average: <u>Lower Egypt</u>	T		45.8		47.3		61.5	38.4	47.9		
	U		52.7		62.7		68.2		68.4		
	R		60.7		48.4		59.3		49.5		
<u>Upper Egypt</u>											
Giza	T	82	27	44	56	69	52	40	45	8	11
	U	85	32.4	34	81	81	10		41		15
	R	79	36	59	30	50	38		35		12
Beni Suef	T	81	28	63	10	68	51	18	30	19	17
	U	90	27.6	45	12.5	87	38		26		19
	R	78	38	70	6	62	55		33		13
Fayoum	T	77	32	67	1	89	83	15	39	20	14
	U	84	33.3	47	1	99	95		43		14
	R	74	45	73	1	86	88		45		16
Menya	T	74	35	65	5	47	34	15	25	21	18
	U	85	32.4	39	50	86	33		38		17

	R	71	50	72	2	36	19		24		16
Assyuit	T	84	25	62	12	56	32	22	23	16	19
	U	89	28.6	39	50	83	19		32.5		18
	R	82	31	70	6	45	31.5		23		17
Sohaq	T	67	43	65	5	42	11	21	20	17	20
	U	89	28.6	45	12.5	82	14		18		20
	R	61	67	71	4	29	9.5		27		14
Qena	T	72	35	63	10	35	1	27	16	14	21
	U	105	13.3	44	19	79	1		11		21
	R	62	65.5	69	8.5	22	1		25		15
Aswan	T	107	1	46	51	85	77	21	43	13	12
	U	119	1	27	62.5	94	71		45		11
	R	100	1	52	79	78	77		52		5
Average: <u>Upper Egypt</u>	T		29.2		18.8		42.6		30.1		
	U		24.7		35.7		35.1		31.8		
	R		41.9		17.1		39.9		33		

SOURCE: Calculated from

(1) Central Agency for Public Mobilization and Statistics, Preliminary Results of 1986, Census 1987

(2) Central Agency for Public Mobilization and Statistics Birth and Death Data, Cairo 1988

Table (3)

Percent prevalence of undernutrition. (Follow-up Nutrition Survey, 1986)

	NS 1978	34 Sites	
		1978	1986
Acute Undernutrition	2.3	2.9	7.0
Chronic Undernutrition	21.2	26.5	24.1
Gomez Classification (1 st , 2 nd & 3 rd degrees)	47.0	52.0	47.0

SOURCE: The State of Egyptian Children, The Central Agency for Public Mobilization and Statistics (CAPMAS). The State of Egyptian Children, June 1988. 91.

Table (4)

Percentage Distribution of Preschool Children by Gomez Class, Age Group and Universe: Egypt, 1978 and 1980 (NCHS/CDC References)

Universe 1

Gomez Class

Age	Third Degree		Second Degree		First Degree		Normal		Total Number Examined	
	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>
6 – 11	1%	2%	8%	13%	43%	41%	48%	45%	73	127
12 – 23	0%	1%	9%	24%	45%	43%	45%	31%	201	201
24 – 35	–	–	6%	3%	36%	40%	59%	57%	179	178
36 – 47	–	–	5%	7%	35%	36%	60%	57%	164	146
48 – 59	–	–	1%	3%	27%	41%	72%	55%	142	147
60 – 71	–	–	4%	3%	36%	42%	60%	55%	121	96
Total	0%	1%	6%	10%	37%	41%	57%	49%	880	895

Universe 5

Gomez Class

Age	Third Degree		Second Degree		First Degree		Normal		Total Number Examined	
	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>
6 – 11	2%	11%	14%	31%	46%	31%	38%	26%	90	108
12 – 23	3%	6%	24%	30%	51%	47%	22%	17%	234	201
24 – 35	1%	2%	12%	15%	40%	54%	47%	29%	186	185
36 – 47	–	1%	8%	6%	36%	55%	56%	38%	167	163
48 – 59	–	–	10%	5%	39%	54%	51%	41%	114	132
60 – 71	–	–	4%	5%	37%	65%	59%	30%	101	99
Total	1%	3%	13%	16%	42%	51%	43%	30%	892	888

Table (5)

Percentage Distribution of Preschool Children by Waterlow, Age Group and Universe: Egypt. 1978 and 1980 (NCHS/CDC References)

Universe 1

Waterlow Class

Age	Normal		Wasting Only		Stunting Only		Wasting & Stunting		Total Number Examined	
	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>	<u>1978</u>	<u>1980</u>
6 – 11	93%	88%	3%	5%	4%	6%	–	1%	73	127
12 – 23	78%	68%	1%	8%	21%	21%	0%	2%	201	201
24 – 35	82%	89%	–	2%	18%	8%	–	–	179	178
36 – 47	77%	79%	–	1%	23%	19%	–	–	164	146
48 – 59	92%	90%	–	–	8%	10%	–	–	142	147

60 – 71	88%	94%	2%	1%	10%	4%	–	1%	121	96
Total	83%	83%	1%	3%	16%	13%	0%	1%	880	895
Age Adjusted	83%	83%	1%	3%**	16%	13%	0%	1%**		

Universe 5

Waterlow Class

Age (Months)	Normal		Wasting Only		Stunting Only		Wasting & Stunting		Total Number Examined	
	1978	1980	1978	1980	1978	1980	1978	1980	1978	1980
6 – 11	83%	59%	–	22%	14%	12%	2%	6%	90	108
12 – 23	56%	54%	3%	12%	36%	24%	5%	10%	234	201
24 – 35	61%	70%	–	3%	36%	22%	3%	6%	186	185
36 – 47	68%	75%	–	–	32%	23%	–	1%	167	163
48 – 59	68%	75%	–	4%	32%	21%	–	–	114	132
60 – 71	76%	73%	–	–	24%	27%	–	–	101	99
Total	66%	67%	1%	7.0%	31%	22%	2%	5%	892	888
Age Adjusted	67%	67%	1%	6%**	31%	22%**	2%	5%**		

** Significant at P < .05

Table (6)

Comparison of Mean Heights and Heights of School Boys and Girls at Certain Ages in 1962 and 1975

Years	Age School Boys		School Girls					
			Weight (Kgm)		Height (Cm)			
	1962	1975	1962	1975	1962	1975		
9	27.4	27.3	126.9	129.8	26.7	27.3	126.6	128.2
12	34.8	35.1	142.3	141.6	36.6	40.9	142.2	146.1
15	47.8	52.7	158.6	160.0	52.1	55.0	155.3	155.9
18	60.3	63.0	168.0	168.8	53.8	55.5	156.1	155.5

SOURCE: Aly et. al. (1980)

Table (7)

Characteristics of Children Whose Last Episode of Respiratory or Diarrheal Disease was Uncomplicated Versus those with Progressively Severe Illness

Status at Preceding 3 Months	Diarrheal Disease		Respiratory Infection	
	Uncomp	Comp*	Uncomp	Comp**
Average energy intake "Kcal"	1102	1045	1280	1206
Average length "cm"	79.5	77.5	80.1	80.1
Average Weight "Kg"	11.0	10.1	11.4	11.2

* Developed fever or Dehydration

** Upper respiratory illness progressed to lower respiratory illness

SOURCE: Food Intake and Human Function "CRSP" (Callaway et al, 1988)

Table (8)

Correlation Coefficients Between Mean Energy Intake and Different Child Behaviour Parameters at Different Intervals

Behaviour Parameter	Same Month	One Month	Two Months	Three Months	Four Months
(Males)					
Social Involvement	0.03	0.37	0.09	0.45	0.19
Object Involvement	0.05	0.16	0.29	0.36	0.58
Total Involvement	0.28	0.52	0.35	0.52	0.26
Child's Vocalization	0.01	0.70	0.38	0.11	0.30
Alertness	0.30	0.63	0.11	0.32	0.07
(Females)					
Social Involvement	0.34	0.13	0.55	0.7911	0.26
Object Involvement	0.10	0.02	0.50	0.69	0.05
Total Involvement	0.37	0.10	0.35	0.70	0.05
Child's Vocalization	0.26	0.08	0.03	0.11	0.39
Alertness	0.28	0.12	0.62	0.51	0.60

SOURCE: A. H. Sobhy; Ph.D. Thesis Helwan University, 1987

Table (9)

Correlation Coefficients Between Mean Total Protein Intake and Different Child Behaviour at Different Intervals

Behaviour Parameter	Same Month	One Month	Two Months	Three Months	Four Months
(Males)					

Social Involvement	0.01	0.53	0.21	0.13	0.37
Object Involvement	0.03	0.54	0.33	0.01	0.34
Total Involvement	0.21	0.66	0.12	0.07	0.14
Child's Vocalization	0.34	0.49	0.42	0.08	0.16
Alertness	0.02	0.27	0.04	0.33	0.08
(Females)					
Social Involvement	0.30	0.20	0.36	0.60	0.39
Object Involvement	0.04	0.08	0.31	0.44	0.18
Total Involvement	0.42	0.04	0.16	0.52	0.07
Child's Vocalization	0.40	0.25	0.08	0.23	0.09
Alertness	0.55	0.15	0.56	0.35	0.56

SOURCE: A. H. Sobhy; Ph.D. Thesis Helwan University, 1987

Table (10)

RURAL, URBAN POPULATION IN EGYPT IN THE 20TH CENTURY

	1907	1927	1937	1947	1960	1966	1976	1986
Total Population	11189978	14177864	15920694	18966761	2598411	29724099	36636204	48205049
Urban Population	1930137	3810428	4491693	6363257	9863703	12032743	16036403	21173436
Rural Population	9259481	10367436	11429001	12603510	14120398	17691356	20589801	27031613
Urban/Total %	17.2	26.8	28.2	33.5	37.9	40.5	43.8	43.9
Rural/Total %	82.8	73.1	71.8	66.5	62	59.5	56.2	56.1
Urban/Rural (R/U) Ratio	0.208	0.36	0.393	0.505	0.612	0.68	0.789	0.783
<u>Average Growth Rates %</u>								
Total		2.7	1.2	1.8	2.4	2.4	2.12	3.2
Urban		9.1	1.7	3.6	3.5	3.4	3.1	3.2
Rural		1.2	1.02	1.03	1.91	1.7	1.4	3.1

Source: Calculated from Central Agency Statistics and Public Mobilization, Preliminary Results of Census, 1986, May 1987.

Table (11)

Population Concentration in the Different Governorates

GOVERNORATES	IN 1986	POPULATION (1)	AREA KM2	% TO TOTAL SURFACE AREA (2)	POPULATION CONCENTRATION (1 - 2)	
						BUILDING/KM2
<u>URBAN GOVERNORATES</u>						
Cairo	6052836	12.56	214.2	0.61	11.95	1909
Alexandria	2917327	6.05	2679.36	0.89	5.16	1208
Port Said	399793	0.83	72.01	0.2	0.63	1979
Suez	326820	0.68	17840.42	0.87	-0.19	459
<u>Lower Egypt</u>						
Demetta	741264	1.54	589.2	1.67	-0.13	1527
Dakahlia	3500470	7.26	3471	9.87	-2.61	2247
Sharkia	3420119	7.1	4179.55	11.8	-4.7	1687
Kalyubia	2514244	5.22	1001.1	2.84	2.38	1211
Kafr El-Sheikh	1800129	3.73	3437.1	9.77	-6.04	1367
Gharbia	2870960	5.96	1942.2	5.53	0.43	1687
Menoufia	2227087	4.62	1532.1	4.35	0.27	1505
Beheira	3257168	6.76	10129.49	13.04	-6.28	1824
Ismailia	544427	1.13	1441.6	4.1	-2.97	2717
<u>Upper Egypt</u>						
Giza	3700054	7.68	1058.2	3.01	4.67	1708
Beni-Suef	1442981	2.99	1321.7	3.76	-0.77	1531
Fayaum	1544047	3.2	1827.2	5.19	-1.99	2544
Menya	2648043	5.49	2261.7	6.43	-0.94	2121
Asyut	2223034	4.61	1553	4.41	0.2	1611
Sohag	2455134	5.09	1547.2	4.4	0.69	2892
Qena	2252315	4.67	1850.7	5.26	-0.89	2071
Aswan	801408	1.66	678.2	1.93	-0.27	2001
Frontier Governorates	565389	1.17	853016			
Total	48205049	100	997738.4			1800.3

Source: Compiled and Computes from CAPMAS, A Preliminary Results of 1986 Census, 1987 Central Agency for Public Mobilization and Statistics, Yearbook, ARE, 1952 - 1987, June 1988.

Table (12)

SECTORAL DISTRIBUTION OF LABOUR FORCE, INVESTMENT AND GDP BY MAIN ECONOMIC SECTORS (%)

ECONOMIC SECTORS		AGRICULTURE	MANUFACTURE & MINING	PETROLEUM	ELECTRICITY	CONSTRUCTION	TOTAL COMMODITY SECTOR
YEAR							
59/60–55/66	L	52,8	10,6	–	0,2	4,0	67,6
	I	22,5	26,7	–	8,7	1,0	58,9
	P	20,8	42,8	–	0,9	4,8	69,3
66/67–1973	L	48,5	11,7	–	0,3	4,0	64,5
	I	16,8	27,7	4,3	10,4	1,2	60,3
	P	20,0	37,7	2,3	1,0	3,3	64,3
74–1980/81	L	4,3	12,3	0,2	0,5	5,0	59,3
	I	7,3	26,7	10,7	5,6	3,4	53,7
	P	18,8	29,1	8,0	0,7	6,3	62,9
81/82–82/83	L	36	12,4	0,2	0,5	5,6	54,7
	I	10,1	23,3	3,2	7,5	2,3	45,4
	P	15,8	25,2	9,4	0,7	6,2	57,5
82/83–86/87	L	33,6	12,5	0,2	0,6	5,8	52,7
	I	9,2	21,4	3,8	7,3	2,8	44,5
	P	17,4	14,4	14,5	0,7	4,7	51,6
86/87–91/92	L	34,4	15,8	0,25	0,6	4,7	55,7
	I	10,8	26,6	2,4	10,4	2,6	52,7
	P	18,1	17,9	3,2	1,3	4,6	45,1

Calculated from

- (1) Shura Council Investment Policies 1985
- (2) Second Five Year Plan for Socio–Economic Development 1987
- (3) CAPMAS Labour Survey 1984

L = Labour
I = Investment
P = GDP

Table (13)

Macro Economic Indicators

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Total GDP at Factor Cost	2663.0	2820.2	3047.5	3464.5	4197	5056	6165	7534	9021	12101	1655	20097	2324

Total Public Revenue	750	869	903	1018	1184	1524	2015.3	2755.4	3306.3	3683.8	7372.8	8230.6
Total Public Expenditure	941	1063	1236	1455	2073	3015	3280	4169	5559	7096.7	10555.2	12887.1
Public Deficit	191	194	333	437	889	1491	1264.7	1413.6	2252.7	3412.9	3182.4	4656.5
Export	433.8	447.0	452.5	519.2	890	1053	1498	1878	2130	3777	5780	5616
Imports	573.5	612.3	648.6	714.7	1616	2154	2287	2770	3626	6141	8447	8714
Resource Gap	139.7	165.3	196.1	195.5	726	1101	789	894	1496	2364	2667	3096
Public Deficit as % of GDP	7.1	6.8	10.9	12.6	21.2	29.5	29.5	22.9	24.9	28.2	19.2	23.2
Resource Gap as % of GDP	5.2	5.9	6.4	17.7	17.3	21.7	12.8	11.8	16.6	19.5	16.1	15.4

SOURCE:

Central Bank of Egypt, Cairo, ARE.
Ministry of Finance, Cairo, ARE.

NOTE:

* oct. 1986/87 Prices

** Estimated

Major Economic Aggregates	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Gross National Product (GNP)	8894	11194	13019	14211	14187	17681	21740	23508	26259	28580	31406	31763	32749	34240
Export of Goods & Services (XGS)	2629	2955	4146	4898	6004	6152	11062	10365	12035	13492	13250	11727	10906	11725
Import of Goods & Services (MGS)	4165	5471	5596	6417	7419	10156	13481	13917	14411	16556	18011	17074	14684	15303
International Reserves (RES)	705	535	567	832	1051	1795	2460	1681	1809	1699	1486	1567	1780	2156
Current Account Balance	-	-1440	-650	-1074	-1070	-1043	-2077	-3106	-1675	-2278	-3564	-4038	-2705	-2671
Primary Debt Data (US \$ million)				8795	11164	12974	19872	22572	26168	28217	30513	34796	37861	40264
1- Long Term Debt (LTD)	2960	4983	6018	8467	10703	12464	16050	19299	21669	23784	25686	29791	33040	35713
2- Short Term Debt (STD)	-	-	-	-	-	-	265	99	57	52	48	41	31	172
3- Use of IMF Credit	114	80	707	310	386	325	177	19299	21669	23784	25686	29791	33040	35613
Debt Outstanding & Disbursed (DOD)	2960	4983	6018	8467	10703	12464	16050	2019	2110	2212	2250	2281	1947	1700
Total Debt Service (TDS)				1144	1257	1120	1531							
Principal Ratios Total External Debt								217.8	217.4	209.1	230.3	296.7	347.2	343.1
EDT/XGS (%)		179.6					179.6	94.8	99.7	98.7	97.2	109.6	115.6	117.6
LTD/GNP (%)		91.4					91.4	7.5	6.9	6.0	4.9	4.6	4.7	6.3
RES/EDT (%)		12.5					12.5	1.5	1.5	1.2	1.0	1.1	1.5	2.0
RES/XGS (months)		2.2					2.2							
Public & Publicity Guaranteed Debt								183.1	176.3	171.8	189.7	247.6	294.3	294.1
DOD/XGS (%)		168.6					142.7	79.7	80.8	81.1	60	91.4	98	100.8
DOD/GNP (%)		44.5					72.6	18.5	16.6	15.2	15.8	17.7	15.9	12.7
TDS/XGS (%)		23.2					13.2	8.1	7.6	7.2	6.7	6.5	5.3	4.4
TDS/GNP (%)		6.7					6.7	6.0	4.8	4.6	5.2	5.8	6.5	6.1
LTD/GNP (%)		6.0					3.9	2.6	2.2	2.2	2.2	2.2	2.1	2.1
DOD/GNP (%)		1.6					2.0	8.9	8.5	7.3	5.9	5.5	5.5	7.4
RES/DOD (%)		10.7					15.7							

Table (14) – EGYPTIAN EXTERNAL DEBT 1974–1987 (US million)

Source: World Debt Tables 1983–1988/89

Table (15)**Government Intervention In Markets For Five Major Agricultural commodities**

Crop	Supply	Demand
Cotton	<ul style="list-style-type: none"> – Main export crop – Entirely procured (with area planning) at fixed producer prices 	<ul style="list-style-type: none"> – No rationing – Selling price by government marketing agency to cotton mills is heavily subsidized, So that consumer price of cloth is subsidized.
Wheat	<ul style="list-style-type: none"> – Main importable – Quota (average < 20%) procured at gov't price below free market price. 	<ul style="list-style-type: none"> – Wheat flour and bread are subsidized and available to all consumers without restrictions.
Rice	<ul style="list-style-type: none"> – Export crop – Paddy procured at gov't price (quota average 50%) at prices below free market price. 	<ul style="list-style-type: none"> – Milled rice subsidized and rationed with a two tire price system: basic ration, additional ration
Maize	<ul style="list-style-type: none"> – Import; animal feed and human consumption – No procurement. – No gov't. intervention – Price affected by the price of wheat. 	<ul style="list-style-type: none"> – No rationing system – subsidy for imported (yellow) maize for feed.
Sugarcane	<ul style="list-style-type: none"> – Importable – Entirely procured (through delivery contracts to mills) at predetermined prices 	<ul style="list-style-type: none"> – Processed sugar rationed and subsidized with a two–tier system: – basic ration – additional ration.

Source: Dethier I. (1989). P 48

Table (16)**Procurement prices for Cotton, Rice, Wheat and Sugarcane, 1970–1988 (L.E/Ton)**

Year	Cotton	Rice	Wheat	Sugarcane
1970	115.28	27.0	33.72	2.89
1971	115.61	27.0	33.06	3.07
1972	125.90	27.0	33.41	3.07
1973	122.69	27.0	33.77	3.72
1974	150.17	34.0	43.41	6.45
1975	161.22	40.0	48.96	6.47
1976	202.40	50.0	47.52	7.52
1977	218.92	50.0	50.06	8.42
1978	212.98	65.0	52.24	9.00
1979	297.97	65.0	65.38	9.26
1980	300.30	75.0	77.56	9.60
1981	369.44	85.0	80.00	14.90
1982	380.12	95.0	80.00	15.50

1983	413.39	110.0	93.30	18.20
1984	457.20	105.0	120.00	20.20
1985	584.20	125.0	120.00	24.20
1986	615.80	165.0	166.70	30.50
1987	723.96	200.0	200.10	34.00
1988	909.79	200.0	266.70	n.a

Source: A.R.E Ministry of Agriculture unpublished data.

Table (17)

Wheat Supply and distribution, 1970–1988 1,000 M.Ton.

Year	Production	Aid Imports	Total Imports	Total Avail.	Consumption	
					Total	Per capita
1970	1,516	0	1,233	2,829	2,257	68
1971	1,729	27	2,409	4,128	3,435	102
1972	1,616	14	2,535	4,171	3,494	101
1973	1,837	378	2,505	4,302	3,567	101
1974	1,884	59	3,399	5,263	4,451	123
1975	2,033	534	3,645	5,658	4,791	130
1976	1,960	1050	3,527	5,477	4,650	123
1977	1,697	1741	4,345	6,002	5,173	133
1978	1,933	2483	5,120	6,993	6,051	152
1979	1,856	1647	4,907	6,813	5,903	144
1980	1,796	1771	5,423	7,149	6,221	148
1981	1,938	1892	5,821	7,699	6,708	155
1982	2,017	2004	5,585	7,672	6,673	150
1983	1,996	1722	6,593	8,499	7,456	163
1984	1,815	1663	7,199	8,789	7,758	164
1985	1,872	1538	7,238	9,035	7,975	164
1986	1,929	1496	6,801	9,030	7,947	159
1987	2,722	1493	7,092	9,314	8,065	157
1988	2,839	1470	7,000	10,124	8,789	166

Source: U.S.A.I.D. 1989. "Agricultural Data Base". Cairo: USAID/AGR/ACE.

Table (18)

Maize Supply and distribution, 1970–1988 1,000 M.Ton.

Year	Production	Aid Imports	Total Imports	Total Avail.	Consumption	
					Total	Per capita
1970	2,393	0	73	2,476	1,555	47.0
1971	2,342	0	41	2,393	1,493	44.2
1972	2,417	0	94	2,516	1,564	45.3
1973	2,507	0	180	2,677	1,664	47.2
1974	2,640	0	465	3,080	1,943	53.8
1975	2,781	0	511	3,272	1,679	45.4
1976	3,047	0	644	3,686	1,947	51.4
1977	2,724	377	591	3,350	1,558	40.2
1978	3,117	489	808	3,900	1,862	46.8
1979	2,938	266	494	3,487	1,632	39.9
1980	3,231	320	988	4,179	1,801	42.7
1981	3,308	476	1,384	4,652	2,036	47.0
1982	3,347	350	1,297	4,654	2,034	45.7
1983	3,509	538	1,680	5,209	1,266	27.7
1984	3,698	345	1,723	5,461	805	17.1
1985	3,686	320	1,912	5,488	601	12.4
1986	2,808	480	2,140	4,948	471	9.4
1987	3,619	450	2,200	5,779	284	5.5
1988	4,088	280	1,240	5,468	252	4.8

Source: U.S.A.I.D. 1989.

Table (19)

Trends of Food Availability In Egypt Within 18 years Period Food Balance Sheets "FBS" 1969–1986

Per Caput/day	THE YEAR															
	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total Calories (Kcal) Dietary energy supply "DES"	2660	2891	2747	2744	2833	3142	3394	3340	3360	3052	3343	3386	3774	3562	3521	3599
Total protein (gm)	74.6	82	76.9	75.7	78.8	87.2	93.4	91.9	91.7	94.9	91.5	95.5	106.7	98.2	98.4	102.3
	10.6	10.7	10.6	10.6	10.5	10.8	11	12.5	11.9	13.3	11.5	14.5	15.5	14	15.1	13.6

- Animal																
- Plant	64	71.3	66.3	65.1	68.3	76.4	82.4	79.4	79.8	81.6	80	81	91.2	84.2	83.3	
Total fat (gm)	48.8	47.1	46.1	48	47.1	53.2	61.3	61	61.5	65.4	59.8	56	64.3	62.5	62.2	
- Animal	12.3	11	11.9	11.7	11.7	11.8	12.3	14.1	13.9	14.1	13.8	15.5	16	15.1	15.7	
- Plant	36.5	36.1	34.2	36.3	35.4	41.4	49	46.9	47.6	51.3	46	40.5	48.3	47.4	46.5	

Developed from: Serial Food Balance Sheets of Egypt (Ministry of Agriculture, 1991).

Table (20)

Allotment for major subsidized commodities selected years (Million L.E.)

Year	Wheat Flour	Corn	Edible Oil	Frozen Meat	Sugar
1973	79.0	4.4	16.8	0.0	0.0
1974	221.1	16.4	45.2	0.6	16.2
1975	162.7	29.2	72.1	0.8	19.5
1976	178.1	23.1	41.0	20.4	0.0
1977	149.1	40.6	48.4	0.0	0.0
1978/79	588.2	38.4	133.7	41.4	0.0
1982/83	758.0	199.1	89.8	114.9	133.7
1982/84	861.5	294.1	194.7	145.3	119.4
1984/85	614.7	264.0	229.3	105.8	77.7
1985/86	448.7	310.4	194.1	28.7	160.3
1989/90a	259.0	n.a	245.1	17.1	244.0

Source: for the period 1973–78/79: El-Kholei (1990); for the period 1982/83–85/86: Council of Shoura Report no (5).; for 1989/90: Kennedy, (1989).

a) 1989/90 Budget.

Table (21)

Commodity expenditure elasticities for urban areas

Commodity	1st Expenditure Quartile	Other Expenditure Quartiles
Sugar	0.136	0.205
Oil	0.076	0.097
Tea	0.105	0.126
Rice	0.364	0.132
Beans	0.089	0.140
Lentils	0.330	0.184

Fresh meat	1.581	0.665
Fresh chicken	0.680	0.313
Fresh fish	0.891	0.358
Frozen meat	0.072	-0.150
Frozen chicken	0.552	0.407
Frozen fish	0.206	-0.192
Balady bread	-0.020	-0.047
Shami bread	0.246	0.205
Balady flour	0.087	-0.065
Fino flour	0.588	0.217
Pasta	0.511	0.242
Eggs	1.368	0.537
Milk	1.574	0.670
White cheese	0.205	-0.042
Cooked beans	0.23	-0.39
Tamiya	0.49	0.30
Fruit	1.71	1.11
Vegetables	0.80	0.51

Source: Data from the household survey by the international Food Policy Research institute and the Institute of National Planning, Cairo. 1981/82 Alderman and Braun. (1984).

Table (22)

Commodity expenditure elasticities for rural areas

Commodity	1st Expenditure Quartile	Other Expenditure Quartile
Sugar	0.144	0.121
Oil	0.136	0.109
Tea	0.247	0.231
Rice	0.564	0.264
Beans	0.188	0.205
Lentils	0.249	0.200
Fresh meat	1.127	0.372
Fresh chicken	0.726	0.231
Fresh fish	0.942	0.432
Frozen fish	1.824	0.631
Balady bread	0.044	0.006
Shami bread	0.178	0.159

Balady flour	0.241	0.319
Fino flour	0.919	0.596
Open market flour	0.358	0.210
Balady and open market flour	0.323	0.320
Pasta	1.050	0.478
Eggs	1.561	0.582
Milk	0.161	0.116
White cheese	0.634	0.367
Grain wheat	1.321	0.589
Grain maize	0.802	0.558
Cooked beans	0.68	0.48
Tamiya	1.40	0.78
Fruit	1.17	0.85
Vegetables	0.85	0.58

Source: Data the household survey made by the international Food Policy Research institute and the institute of National Planning. Cairo. 1981/82 Alderman and Braun. (1984).

Table (23)

REAL WAGE TRENDS BY SECTOR (1973 – 100)

Category	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Agriculture															
Public	100	105	67	84	114	82	79	77	81	85	84	88	116	94	77
Private	100	110	130	155	173	180	200	207	239	268	288	324	328	290	240
Manufacturing															
Public	100	97	89	93	98	100	109	108	116	123	117	120	108	101	95
Private	100	111	108	116	116	134	136	136	145	153	161	179	168	149	135
Construction															
Public	100	111	100	104	109	118	139	125	120	115	130	150	134	120	110
Private	100	127	148	162	171	168	174	156	151	145	132	132	140	132	116
Services															
Public	100	117	99	89	95	118	101	96	99	100	94	96	93	82	74
Private	100	100	96	103	106	140	134	125	126	126	124	130	157	126	107
Blue Collar (all sectors)															
Public	100	101	94	97	108	104	114	113	121	127	123	128	121	108	99
Private	100	92	90	102	115	114	129	123	127	129	134	147	141	124	115

White Collar (all sectors)																
Public	100	104	88	86	91	106	97	91	92	92	88	92	84	74	66	
Private	100	92	88	87	94	98	115	108	108	108	108	115	123	103	89	
Public Enterprises	100	103	92	94	102	107	110	107	112	116	111	116	108	98	90	
Private Sector*	100	103	82	89	103	100	117	112	115	117	121	132	134	115	102	
Government	100	87	83	84	87	83	82	80	86	87	78	77	71	60	55	

Source: World Bank, Poverty Alleviation and Structural Adjustment in Egypt, 1999

* 10 workers or more

Commodity	Time Period	Prices Piastres/Kg	Index no.
Rationed Sugar	1970-1989	10	100
Sugar (Additional Quota)	1970-1974	15	100
	1975	16	107
	1976-1980	25	167
	1980-1989	30	200
Tea	1970-1987	137.5	100
	1987-1988	262.5	191
Rice	1970-1982	5.0	100
	1982-1986	15.0	300
	1986-1988	30	600
	July 1989	80	700
Wheat Flour	1970-1980	5.0	100
	1980-1985	15.0	300
	1985-1988	30.0	600
Lentils	1970	9.0	100
	1971-1980	10.0	111
	1981-1985	12.0	133
	1986-1988	1120.0	1330
	July 1989	150	1567
Beans	1970-1975	7	100
	1976-1981	10	143
	1981-1986	15	214
	1986-1988	35	499
Pava Beans	Jan 1989	80	
	Jul 1989	120	150
Bread Pt/Loaf	1970-1980	0.5	100
	1980-1989	1.0	200
	1984-1989	2	400
	1989-1991	5	1000
Macaroni Coops	Jan 1989	50	
	July 1989	60	120
Free Kar feet	Jan 1989	150	
	July 1989	180	113.3
Chicken (Frozen) Coops	Jan 1989	320	
	July 1989	360	112.5
Free Market	Jan 1989	430	
	July 1989	410	
Eggs (Pt/Egg) Coops	Jan 1989	14.0	
	July 1989	15.0	

Table (24) – Prices and Price Indices for Major Subsidized Food Commodities (1970–1989)**Table (25)****Own–price elasticities of commodities for urban areas**

Commodity	1st Expenditure Quartile	Other Expenditure Quartiles
Sugar	0	0
Oil	0	0
Tea	-0.173	-0.135
Rice	-0.144	-0.128
Beans	0	0
Lentils	0	0
Fresh meat	-2.879	-0.820
Fresh chicken	-1.583	-0.467
Fresh fish	-0.845	-0.211
Balady flour	-2.593	-2.593
Fino flour	0	0
Pasta	-0.612	-0.297
Eggs	-1.028	-0.206
Milk	-0.877	-0.431
White cheese	-0.842	0

Source: Data from household made by international Food Policy Research Institute and the Institute of National Planning. Cairo 1981/82, Alderman and Braun (1984)

Table (26)**Own–price elasticities of commodities for rural areas**

Commodity	1st Expenditure Quartile	Other Expenditure Quartile
Sugar	0	0.093
Oil	0	0.268
Tea	-1.337	0.135
Rice	0	0.362
Beans	-0.327	0.149
Lentils	-0.275	0
Fresh meat	-2.158	-0.609
Fresh chicken	-1.156	-0.269
Fresh fish	0.473	0

Balady flour	0.169	0
Fino flour	0	0
Open market flour	1.900	-1.113
Balady and open market flour	-0.498	-0.449
Pasta	-1.406	-0.220
Eggs	2.720	-0.528
Milk	0.498	-0.201
White cheese	0.922	-0.274
Grain wheat	0	0
Grain maize	0	0

Source: Data from household made by international Food Policy Research institute and the institute of National Planning. Cairo 1981/82, Alderman and Braun. (1984)

Table (27)

Consumer Price Indices (1966/67 = 100)

Item	1981/82	86/87
Food and Beverage	458,8	1145,1
Meat, Eggs and Fish	572,7	1203,6
Vegetables	493,6	927
Fruits	1101,9	3585,2
Housing	113,7	129,8
Clothing	344,8	650,6

SOURCE: Report of the Central Bank of Egypt, 1990

Table (28)

Main Reference Studies of Food Consumption & Intake Data

Study	Sample	Type & period of study	Reference
1. Dietary Factors Causing growth retardation of boys in the Egyptian village.	90 growth retarded Schoolboys 11–18 y 20 control of normal growth Rural.	Longitudinal study 1965–1966 in 4 seasons fasts and fasts. semi quantitative.	Abdou & Moussa, 1975
2. National Food consumption Study "MACS" of Egypt.	6300 HHS 35334 individual Rural and Urban HHS.	Cross Section, 1981 Semi Quantitative	Final Report Aly et al, 1981.
3. Health profile of Egypt "HPE" Health Interview Survey. "HIS". Dietary Habits "National".	203339 individual Rural and Urban	Cross section 1978 – 1984. 55174 HHs Qualitative.	Final Report Moussa, 1987.
4.			

The collaborative Research and support program on Food Intake and Human Functions. "CRSP"	312 HH In each HH, 4 target individuals; father, mother, schooler 7–9 y toddler 18–30 months. Rural	Longitudinal study for 12 consecutive months covering 4 seasons, fasts and feasts 1982 – 1987. semi Quantitative.	Final Report Galal et al, 1987.
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Table (29)

Percaput Consumption/Day of Subsidized Animal Foods

Food Item	Percaput Intake of Subsidized Foods GM/DAY	Percaput Available of Total Foods GM/DAY	Intake of Subsidized As % of the Total Available at Home	Ratio of Urban to Rural
Meat	3.26	34	10	7.1
Poultry	2.91	26	11	9.0
Fish	6.90	34	20	4.9
Eggs	0.007	0.3	2.0	50.0

Developed from: National food consumption study "NFCS", Nutrition Institute, Egypt (Aly et. al, 1981)

Table (30)

Infant and Childhood Mortality by Selected Socioeconomic Characteristics of the Mother for the Period 1978–1988, Egypt DHS, 1988

Socio-economic Characteristic	Infant Mortality (1q0) 1978–1988	Childhood Mortality (4q1) 1978–1988	Under Age 5 Mortality (5q0) 1978–1988
Education Level			
No Education	113.3	54.2	161.3
Less than Primary	88.8	36.8	122.4
Primary through Secondary	64.4	21.3	84.4
Completed Secondary/Higher	39.0	10.2	48.8
Urban–Rural Residence			
Urban	65.6	24.8	88.8
Rural	114.6	55.5	163.9
Place of Residence			
Urban Governorates	61.7	15.2	75.9
Lower Egypt	80.2	43.7	120.4
Urban	63.9	26.6	88.8
Rural	85.5	49.3	130.6
Upper Egypt	124.1	54.8	172.1

	Urban	73.2	38.7	109.1
	Rural	146.7	62.9	200.4
Total		94.3	42.1	132.4

Note: Includes events occurring in the period up to but excluding the month of interview

Source: Sayed, et al, 1989, DHS 1988.

Table (31)

Percent of Currently Married Women Who Want No More Children by Number of Living Children, According to Selected Background Characteristics, Egypt DHS, 1988

Background Characteristic	Number of Living Children(1)					Total
	None	1	2	3	4 or More	
Urban-Rural Residence						
Urban	0.9	10.9	62.0	84.2	84.6	65.2
Rural	1.0	5.2	37.4	63.9	80.9	56.1
Place of Residence						
Urban Governorates	1.9	11.5	66.7	83.8	85.1	66.0
Lower Egypt	1.0	10.0	53.4	82.6	92.2	67.8
Urban	0.0	14.6	60.8	92.4	94.9	70.4
Rural	1.3	7.6	49.2	77.2	91.3	66.7
Upper Egypt	0.4	3.7	34.2	58.1	71.2	49.0
Urban	0.0	5.3	51.4	76.2	76.4	59.0
Rural	0.6	3.0	22.1	45.8	68.4	43.5
Education Level						
No Education	0.8	6.5	39.8	67.2	79.7	59.7
Less than Primary	0.0	8.0	52.7	75.2	86.0	65.8
Primary through Secondary	0.0	4.4	57.6	79.4	87.6	63.6
Completed Secondary/Higher	2.5	11.0	63.2	89.1	90.3	53.9
Work Status						
Working for Cash	1.7	14.2	66.3	85.7	92.3	64.6
Working, Not Paid in Cash	0.0	3.6	40.0	67.7	86.5	65.4
Not Working	0.9	7.1	48.7	73.7	81.3	59.4
Interested in Work	1.3	8.0	55.7	80.0	85.7	59.4
Not Interested in Work	0.7	6.6	45.0	71.0	79.8	59.4

Total	0.9	8.0	51.8	75.2	82.5	60.5
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(1) Includes current pregnancy

Source: Sayed et. al., 1989, DHS 1988

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