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9. ABSTRACT

This paper is part of the Syncrisis series, which consists of country profiles describing and analyzing health conditions in particular countries and the impact of those conditions on the countries' socioeconomic development. Among the topics discussed are the general setting, demographics, causes of death and illness, health sector infrastructure, curative resources, and prevention. Almost 70% of Jordan's population is comprised of children under 15 and women of reproductive age. Gastroenteric and respiratory infections, preventable infectious diseases of childhood and conditions associated with childbirth exact heavy mortality and morbidity tolls from these population groups. Health care is delivered through an uncoordinated multiplicity of providers. Development of a technical capacity in health planning is essential to progress in this area. Water is one of Jordan's scarcest resources. Eighty percent of the country is steppe and desert and water distribution systems in the populated parts of the country are inadequate. Improved standards of living over the past few decades have improved the general nutritional status of children. However, 20% of children admitted to public hospitals recently were suffering from malnutrition. Contributory factors include early weaning to unhygienic cow's milk; prolonged breast feeding with little or no supplementation; lack of health and nutrition knowledge; unsafe water sources; and poor sanitation facilities. The Government does not have a focal point for nutrition concerns at this time. The initial access points to health care for the poor majority are the 82 urban and 250 rural clinics. There is a tremendous potential for the effecting of improvements in the country's health status at this level of the health care system. Activities might include simple curative services, health education, simple case-finding, maternal and child health out-

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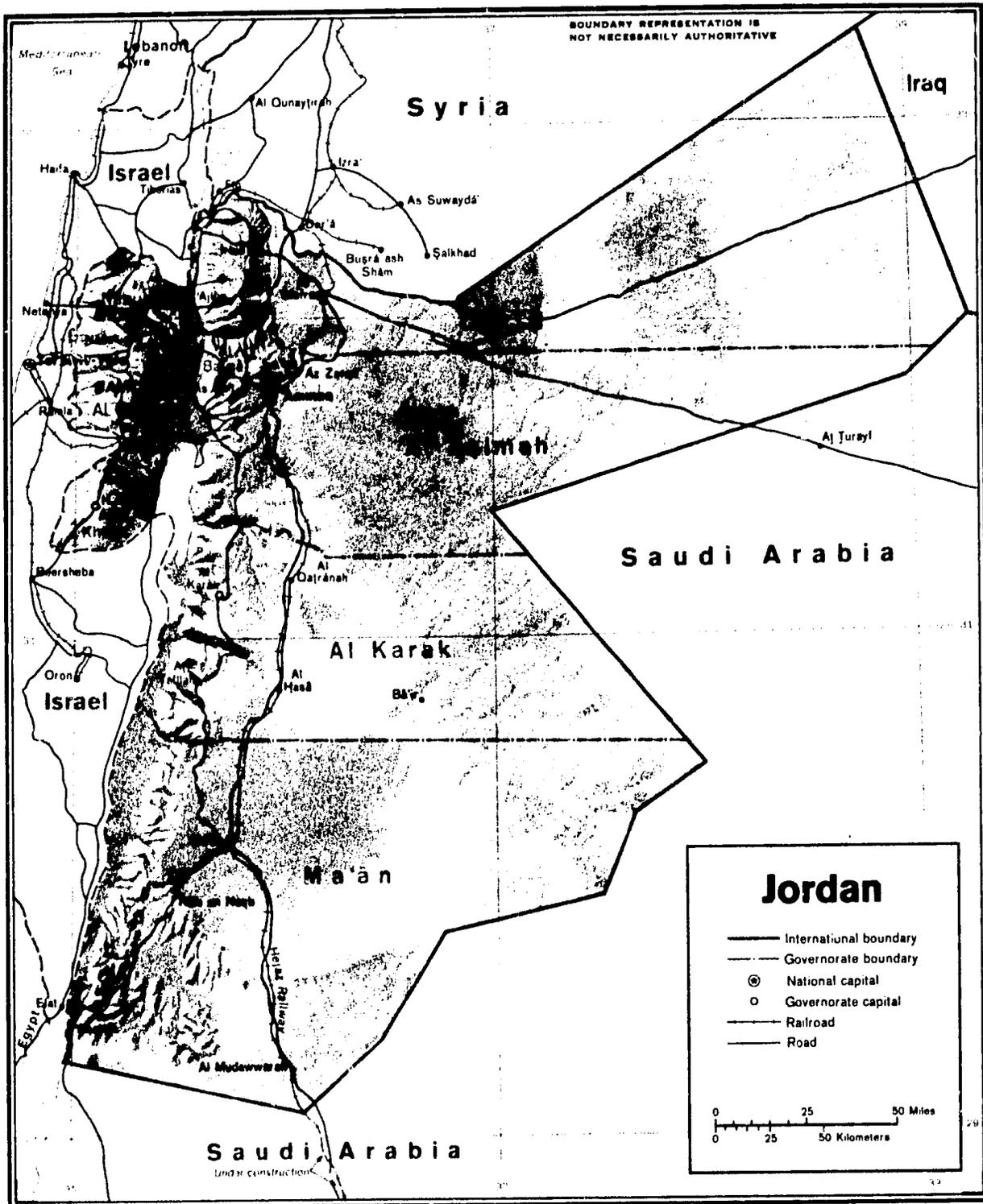
reach, environmental sanitation work and vital statistics reporting.

PN-AAF-006

SYNCRISIS:
THE DYNAMICS OF HEALTH

*An Analytic Series on the Interactions
of Health and Socioeconomic Development*

**XXI: THE HASHEMITE
KINGDOM OF JORDAN**



SYNCRISIS

THE DYNAMICS OF HEALTH

**An Analytic Series on the Interactions
of Health and Socioeconomic Development**

XXI: The Hashemite Kingdom of Jordan

**John F. Gullivan, M.P.A.
Division of Program Analysis
Office of International Health
U.S. Public Health Service**

May 1977

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PREFACE

This document was prepared within the Division of Program Analysis of the Office of International Health, Public Health Service, U.S. Department of Health, Education and Welfare, at the request and with the support of the U.S. Agency for International Development (AID). It is part of the Syncrisis series, which consists of country profiles describing and analyzing health conditions in particular countries and the impact of those conditions on the countries' socioeconomic development.

The primary purpose of these studies is to provide a concise and up-to-date introduction to the health situation in a country, for use by AID and throughout the international health community. The studies do not necessarily reflect United States government policy, and do not include recommendations for specific programmatic actions by AID. They do provide a background against which further analysis and health program development may occur.

Additionally, Syncrisis studies are intended to provide the specialist in comprehensive health planning with a preliminary document and an indication of the sources of information available for health planning in the country. For the specialist in a specific aspect of health care, the studies are intended to provide insight into the relationship of the subsystem with which that specialist is concerned, to the comprehensive health system and the larger society. For each of these professionals, Syncrisis studies are intended as a point of departure from which their professional skills can be applied to develop activities that will benefit the country.

In addition to the principal target audience, which will probably include a few dozen persons for a specific country, it is believed that Syncrisis studies are useful to others. For this reason, the studies are published and made available for sale to the public. Some consideration is given in the preparation of the documents to their possible use in health science education in the subject country, in international health education, and by scholars concerned with more general aspects of the country or with closely related sectors.

The development of the Jordan Syncrisis benefited greatly from an investigation of Jordan's health sector conducted by a team of consultants to the Westinghouse Health Systems firm, under contract to AID, in late 1976. This effort took place under tight time constraints and was designed to meet a highly specific set of needs. The various documents developed in the course of this investigation, however, and its final report, were a kind of source not usually available to Syncrisis authors. An opportunity to participate in the final stage of the work in Jordan also provided the author with a valuable vantage point. I cite as sources throughout the text those team members upon whose findings I have most heavily leaned.

I am grateful to Dr. Sami Khouri of the University of Jordan, to Franz Herder of AID/Jordan, and to Emily Leonard of AID/Washington for their frequent assistance in the course of this study.

My thanks are also due to Bob Emrey, Scott Loomis, Julie Weissman and Steve Lucas, staff in the Office of International Health, whose comments on a draft led to what I think are some major improvements; and to Laurie Solow, who typed the whole thing.

John F. Gallivan
May 1977

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SUMMARY POINTS

1. Almost seventy percent of Jordan's population is comprised of children under fifteen and women of reproductive age. Gastro-enteric and respiratory infections, preventable infectious diseases of childhood and conditions associated with childbirth exact heavy mortality and morbidity tolls from these population groups. The Kingdom's health care systems are, however, more oriented toward the disease patterns of the developed countries, where many Jordanian physicians have received their medical training. Health sector investment patterns thus tend to dictate a dominant role for hospital-level care of acute illness episodes, in responding to problems for which preventive efforts and curative work at an earlier point in the delivery system would be more effective.
2. In a country with a relatively small population, where the bulk of the people are clustered in a quarter of the land area, health care is delivered through an uncoordinated multiplicity of providers. An interministerial coordinating body has been formed, with the intent of effecting a more efficient use of health care resources. Development of a technical capacity in health planning, now largely lacking, is essential to progress in this area. Improvement will require the active cooperation of the military medical service, private practitioners, and the United Nations Palestine refugee program.
3. Jordan's demographic crunch will ease very slowly. The annual population increase is now running in excess of three per cent. As long as large numbers of infants do not survive (current infant mortality is 90 to 100 per 1,000 live births), Jordanian parents will continue to want to have many children, in the hope that some of them will acquire enough wealth to support the parents when they are too old to support themselves. Family planning information is available on a private basis in Jordan, but the Government has not yet adopted a policy on this subject.
4. Water is one of Jordan's scarcest resources. Eighty percent of the country is steppe and desert, where water is minimally available. Water distribution systems in the populated parts of the country are inadequate, despite intensive efforts on the part of the various agencies responsible for water supply. These agencies' activities consist almost totally of planning, development, operation and maintenance of water supply systems. While the Ministry of Health is legally responsible for controlling the bacteriological quality of the water in these systems, it has not had at its disposal the human or financial resources with which to perform this function adequately.
5. Improving standards of living in Jordan over the past few decades have been accompanied by a general improvement in the nutritional status of children. A recent examination of public hospital admission records, however, did indicate that twenty percent of children admitted were actually suffering from malnutrition, even though more readily identifiable accompanying conditions tended to be recorded. Contributory factors are thought to

include early weaning to unhygienic cow's milk; prolonged breast feeding with little or no supplementation; lack of health and nutrition knowledge on the part of mothers; unsafe water sources; and poor sanitation facilities. The Government does not have a focal point for nutrition concerns, which might foster a shared view, among the several relevant public and private agencies, of the actual dynamics of the country's nutrition problems. Without such a policy consensus, the remaining "hard core" of malnutrition in Jordan is likely to be affected very slowly by further socioeconomic advances.

6. The initial access points to health care for the poor majority of Jordan's population are the Kingdom's 82 urban and 250 rural clinics. The full-time staff in these clinics are (usually male) assistant nurses, to whom minimal serious responsibilities are delegated. And yet there is tremendous potential at this level of the health care system for the effecting of improvements in the country's health status through such activities as simple curative services, health education, especially in hygiene and nutrition, simple case-finding, maternal and child health outreach, environmental sanitation work and vital statistics reporting. The current assistant nurse cadre could be upgraded or a new auxiliary cadre could be created; whatever alternative is followed, the need to extend the work of physicians and nurses, through the recognition of an important new component of the health care team, is clear.
7. There are only half as many registered nurses in Jordan as there are practicing physicians. Active recruitment programs designed to attract students to the country's several nursing schools, continue to encounter the traditional unacceptability in Muslim societies of females attending to physical needs of males who are not members of their own families. Changes in this attitudinal structure cannot be expected to be rapid.
8. Ministries of Health in developing countries are usually weakly managed organizations with minimal prestige and bargaining power among their countries' socioeconomic planning communities. Jordan's has been no exception. But the Ministry of Health (MOH), with greatly improved organizational arrangements and management capability, could play a critical role in the country's development process. Effective MOH efforts towards the reduction of infant mortality, for example, could lead to a fertility rate reduction and thus to a more favorable dependency ratio among the population, as well to a lower bite out of the national budget for social services expenditures.
9. Jordan's contiguity with Israel is the overwhelming fact of the Kingdom's geopolitical life. The East, West and oil-rich Arab states continue to pour resources into the development and maintenance of Jordan's military capability. A genuine Middle East settlement could permit the diversion of some of these aid flows to health concerns, and would certainly lead to an increase in the \$10 per person per year now available for public expenditures on the health sector.

BASIC COUNTRY DATA (East Bank)

Population	2 million	Crude Death Rate	14.7/1,000 persons
Population Density	23 persons/sq. kilometer	Crude Birth Rate	45-50/1,000 persons
Percent 0-15 yrs. old	50.3%	Infant Mortality	90-100/1,000 live births
Annual Population Growth Rate	3.2%	Maternal Mortality	13.5/1,000 obstetrical hospitalizations
Gross National Product	U.S. \$1.2 billion	Average Life Expectancy	53 years
Gross National Product, per capita	U.S. \$600	Domestic water consumption, per day, per capita	20-40 liters
Annual public sector health expenditure, per capita	U.S. \$10.84	Percent of children ages 1-4 with moderate/severe protein-calorie malnutrition	20%
Population Distribution	70% urban 30% rural	Population per physician	1,803
Percent Literate	60%	Population per nurse	3,230
Percent Unemployed	< 1%	Population per hospital bed	599
Currency Equivalent	1 Jordanian Dinar = \$3.20		

CHAPTER ONE

SETTING

Geography and Climate

The Hashemite Kingdom of Jordan covers about 95,000 square kilometers in the upper northwest of the Arabian peninsula; this territory lies between latitudes 29° and 33°N., and is roughly bisected by the 37° meridian.

Topographically, the area divides into a region of hills, valleys and gorges along its western boundaries, and a flat desert plateau to the east. The western highlands range in height from 600 to 1000 meters above sea level. They are cut by a deep rift valley, which lies at an average of 300 meters below sea level, and is the lowest land surface on the earth.

The highlands to the east of the rift are cut by 12 perennial streams and many valleys. They are minimally forested, and are marked by outcroppings of limestone, sandstone and other rocks.

The rift valley, through which the Jordan River flows to the Dead Sea, is about 105 kilometers long and from 5 to 25 kilometers wide. The river winds for a total length of about 350 kilometers. Its lower reaches are strongly saline.

The eastern desert consists of broad expanses of sand and dunes, sloping, on the whole, gently eastward. The landforms are those associated with arid areas.

The country is landlocked, except for about twenty-five kilometers of coastline on the Gulf of Aqaba in its southwest corner.

5,650 square kilometers of the area lie to the west of the Jordan River, and this territory is known as the "West Bank." Although generally similar in topography to the highlands on the eastern side, higher quality soils and more rainfall allow a more viable agricultural situation. The West Bank has been under Israeli military occupation since 1967.

Jordan's climate differs somewhat among the highlands, the Valley and the desert, but all three areas are generally affected by a rainy season from November to March and very dry weather for the rest of the year.

Generally speaking, the further inland a part of the country lies, the greater are its seasonal contrasts in temperature and the less its rainfall level.

The eastern highlands receive an average of 400 millimeters of rain per year, although in some sections the level can reach 600. The mean summer temperature in the highlands is about 17° C., with a maximum August daytime temperature of 33° C. The winter mean maximum is about 15° C., with an absolute minimum of about 7° C. The result is a dry variation on the Mediterranean form of climate.

The Jordan Valley, for the most part, lies in the lee of the West Bank escarpment, and consequently receives only about 200 millimeters of rain per year. Average summer temperature in the Valley hovers around 40° C., and winter temperatures hit 14° C. at an absolute minimum. The pattern thus resembles those of tropical countries.

The eastern desert's annual rainfall figure is less than 50 millimeters. Mean summer temperature in the desert is about 20° C., with a maximum August figure of 36° C. The winter mean minimum temperature is 14° C. The desert climate is thus similar to that in the surrounding Syrian and Arabian deserts.

Natural Resources, Transportation and Communication

Eighty percent of the area of Jordan is steppe and desert. This territory has not been found to contain any exploitable natural resource endowment.

Important phosphate reserves have been found in the Wadi al Hasa area, ninety miles south of Amman, and at Rusayfah, between Amman and Zarka. These reserves have been estimated to total over 300 million tons, and it is possible that they may turn out to be very much larger.

Some deposits of copper, manganese and highgrade iron ore have been found, but none of these findings have as yet resulted in any nationally significant commercial operations.

No petroleum has been discovered in Jordan, despite extensive exploration.

From a health standpoint, the most important aspect of Jordan's natural resource situation is a scarcity of water. Dependence is largely on rainfall to meet requirements for domestic as well as agricultural and industrial uses. There were severe water shortages in 1975, especially for domestic supply, in the rapidly growing Amman metropolitan area, because of operational problems in the water supply systems, and because available water sources and areas of highest demand are not geographically congruent. Per capita water consumption in Amman in 1972 was 39.4 liters per capita per day, as opposed to figures of 104 for Damascus, and 126 for Istanbul.

Transportation facilities do not appear to deter access to health services for the bulk of Jordan's population. The relatively small size of the area where most of the people live has enabled the creation of a road network which reaches most communities throughout the country. There are 5,000 kilometers of primary, paved roads, 1,400 kilometers of secondary roads, and 34,122 registered Jordanian vehicles.

The Jordan railway runs from the port of Aqaba in the south along 508 kilometers through Amman to the Syrian border, with railway connections from that point to the Levant ports of Latakia and Beirut.

There are airfields at Mafrag, Zarqa, Amman and Aqaba, with international connections available at Amman through several foreign airlines and the Jordan

national airline.

Jordan's communication network also appears adequate to the task of disseminating health information. In 1974 there was one radio for every two persons in the country, one television receiver for every thirty-two persons, and one telephone for every ninety persons. Three daily newspapers are published in Amman, as well as seven weekly newspapers.

The Culture

More than 90% of Jordanians are Arab Muslims, members of the orthodox Sunni branch of Islam.

There are also small numbers of Shi'ite Muslims; Christians of Arab, Greek and Armenian extraction; and Circassians and Chechens, non-Arab Muslims brought from the Caucasus by Ottoman regimes in the mid-nineteenth century.

The Arab-Islamic cultural tradition is the major force for social cohesion in Jordan. Scholars have judged that members of societies reflecting this tradition tend to attach great value to behavior they deem to be brave, egalitarian, protective of the weak, or hospitable. The Arab-Islamic societies are also reported to be characterized by a deep concern for honor, and for the avoidance of dishonor; these concepts attach primarily to the immediate family, but also to larger social groups, such as a tribe, a country or the larger Arab nation. Most of these guiding principles of social behavior were articulated by the Prophet Muhammad in the Koran, but some scholars view the tradition as also having some roots in pre-Islamic Arabian societies.

Within this overall cultural framework in Jordan, two main sub-groups of people may be distinguished: those whose ancestry had been historically established in the area east of the Jordan that was known as Transjordan from 1922 to 1950, and those who themselves, or whose ancestry, have roots in the Palestinian areas west of the River.

The Political Milieu

Jordan's political life is rooted in a religious reverence among much of the population for the lineage of Hashem, a kinsman and companion of the Prophet Muhammed. The descendents of Hashem were the traditional custodians of the Islamic holy places in the Hejaz region of the Arabian Peninsula. The Hashemite Sharif Hussein, with his sons, the Amirs Abdullah, Faisal and Ali entered into an alliance with the British during World War I that contributed to military successes against the Ottomans in the Northern Hejaz, Palestine and Syria.

After World War I, a complex cluster of alliances and enmities interacted in the determination of a new political make-up of the former Ottoman holdings at the eastern end of the Mediterranean. The British and the French had entered

into the secret Sykes-Picot agreement, establishing zones of influence in the area. Contradictorily, a public Anglo-French declaration had supported sovereign independence for the freed Arab territories. The British government had also issued the Balfour Declaration, expressing its positive attitude towards "a national home for the Jewish People" in Palestine. And the Hashemite regime of the Hejaz was being hard-pressed by the expansionist activities of the Wahabi Amirate of Abdul-Aziz ibn Saud, based in Riyadh, in the center of the peninsula.

As one sub-set of the myriad of activities engaged in at this time by these and other forces, the Amir Abdullah, in the hope of disloughing the French from Damascus, was able to win the political allegiance of many of the townspeople and tribes of the East Bank. Establishing a base in Amman, he filled a political vacuum which the British, to whom the area was being mandated as part of its larger Palestine mandate by the League of Nations, had barely begun to deal with. His action was formalized in 1922 when England recognized the "Amirate of Transjordan" as a separate section of its Mandate, to be administered by the Amir with British guidance and budgetary support.

The subsequent two decades saw careful efforts by the new polity to curtail centuries old inter-tribal raiding practices and to begin a modernization process. As of 1929, there were 4 hospitals, with 92 beds, serving a population somewhat larger than 300,000, more than half of whom were still nomadic or semi-nomadic.

In 1946, England recognized as sovereign the Hashemite Kingdom of Transjordan.

From the mid-thirties on, the regime in Amman had begun to become continuously more involved in issues relating to the Palestine situation. Given the country's strategic significance on the eastern side of the Jordan, it could and can not avoid such involvement. In the 1948 Arab-Israeli fighting, the Jordan army proved to be the only Arab force that could hold its own against Israeli forces, and the armistice found it in control of the old city portions of Jerusalem, and of two large areas extending westward into the hill country of Samaria to the north of Jerusalem, and of Judea to the south. This area was subsequently annexed by Jordan, and is commonly referred to as "the West Bank." With the annexation of the West Bank, the country's population tripled.

The Arab residents of the West Bank brought to their new country a heritage significantly diverse from that of the "East Bankers," whose links to a traditional tribal society of pastoral warriors were still close. The Palestinians reflected a historic experience more open to external influences coming across the Mediterranean - they tended to be more socially adaptable, to have had more schooling, and to have a keener political consciousness than the Transjordanians.

Tensions associated with this diversity dominated the political scene in Jordan from the 1948 annexation up to the 1967 occupation of the West Bank by Israel in the June war of that year, and continued to do so on through the civil war of 1970 and 1971 between the government and various militant Palestinian groups. The Amir Abdullah was assassinated in July 1951 by an adherent of a Palestinian group. In 1953, his grandson, the present King, came into power, and the first decade of his reign was marked by continual crisis, constant threats to

his regime's authority, and several attempted coups. Occupation of the West Bank by Israel in 1967 sent a new wave of refugees into the East Bank, and left villages on the eastern side of the Jordan Valley vulnerable to Israeli reprisals for continuing Palestinian guerrilla operations. Finally, in a series of military clashes in 1970 and 1971, government troops loyal to the King defeated the guerrillas and closed their bases. A period of internal stability has ensued.

There was no fighting along the Jordan River during the October 1973 conflict. Jordan's participation was limited to the sending of a brigade to Syria, where it was engaged briefly in combat.

Jordan appeared to be relinquishing claim to the West Bank in 1974, by concurring in a resolution approved at a Rabat "Arab summit" meeting declaring that the Palestinian Liberation Organization should act as the sole representative of the Arab people of the West Bank.

In mid-1975, Jordan and Syria began an effort toward closer cooperation in many areas. A standing joint committee headed by the prime ministers of the two nations was engaged in such projects as the elimination of customs duties on trade, a uniform educational program in the primary grades, a direct-dial telephone system, and a unified electrical system. Observers also projected the possibility of a loose political bond, allowing both states their internal sovereignty but also permitting a unified voice in external affairs.

In March 1977, the Palestinian Liberation Organization agreed to attend any Middle East peace conference as a part of Jordan's delegation, thereby signalling some reduction of tensions between the Palestinians and the Government of Jordan.

The Economy

Jordan's economy has shown a remarkable ability to grow and a strong resilience to adversity in the period since the end of World War II. Prior to the 1948 war, the Kingdom was a country of primitive agriculture, extensive nomadism and minimal industry. In 1976, a billion dollar GNP was being generated. The economy was booming, the government was beginning to implement a sophisticated economic strategy of generating a substantial export surplus from a (non-oil) mineral-based industrial sector, and the Kingdom was also attempting to become a key distribution center for imports to the oil-rich regions of the Arabian Peninsula. Local investor and business confidence was reported to be high, and 70 foreign firms - 24 of them American - had established bases of operation in Amman.

In the decade prior to the June 1967 war, growth was recorded at an annual level of slightly over 10% - in the face of a 1955 World Bank projection of an attainable 4% level. The West Bank had been accounting for 35 to 40% of the country's output, however, and its loss in 1967 changed Jordan's economic as well as physical face. In 1968, Israeli shelling of the Jordan Valley drove over 100,000 inhabitants out of that most agriculturally significant area of the country. The civil war of 1970-71 again severely affected economic activity.

And yet per capita income in 1976 - about U.S.\$600 - was only slightly less than what it had been in 1966. Given the events of the decade, Jordan's maintenance of its standard of living reflects careful implementation of a remarkably effective set of economic policies. The 1976 Budget anticipates that 40% of recurring expenditures will be financed by foreign budget support - principally from the U.S., Saudi Arabia and Kuwait.

Unlike many less developed countries, Jordan's agricultural sector is small - comprising 10.3% of output in 1975, and utilizing 23% of the labor force. The country's agricultural potential is modest, lacking as it does abundant rainfall and large areas of fertile land. The Jordan Valley area is a large and important food producing resource, where the recent introduction of plastic greenhouse technology is reported to be revolutionizing vegetable production.

A feasibility study is underway on a proposed Maqarin dam and power station on the Yarmuk River, which forms Jordan's northwestern boundary with Syria. Estimates are that such a facility could provide sufficient irrigation water to bring 15,000 additional hectares into production in the Jordan Valley. But, overall agricultural self-sufficiency is not viewed as a feasible prospect in Jordan in the near future.

Jordan's planners are rather looking to industrial growth and the generation of a substantial export surplus in industry as their principal means for achieving overall economic self-sufficiency. Two million tons of phosphate were extracted for export in 1975, and a 5.4 million ton level is projected for 1980. Increased fertilizer and cement output and expansion of a large oil refinery at Zarqa are also seen as key steps in the attainment of the country's economic objectives. About 30% of the investment envisaged in the plan is committed to these heavy industries, most of which are government-controlled. Medium and small scale industry is left exclusively to private sector investment, but concessionary financing and technical assistance are to be available through an Industrial Development Bank. Exports by private Jordanian firms of pharmaceuticals, detergents, insecticides, cigarettes and wet batteries to neighboring Arab countries have been increasing rapidly.

The services sector of Jordan's economy employs more than 60% of the labor force. The agricultural and industrial sectors employ the remainder in roughly equal proportions. There is a large public service sub-sector, employing 110,000 persons in the government's various civilian and military activities. Unemployment has been reduced to virtually zero as many mid-level management, technical and skilled personnel have been attracted to Saudi Arabia and the Gulf countries by salaries and wages that are multiples of those offered in Jordan. As many as 5,000 working age males are thought to have so emigrated in 1975. Precise information on the loss of health professionals was not available.

While nearly 71 percent of the labor force is employed in Amman Governorate, this figure represents a 15 percent decrease from 1970, when fully 85 percent of the labor force was in Amman. This reduction of labor force concentration in Amman stands in contrast to the increased concentration of the general population in the capital.

Estimates of labor outflow to other countries are crude but overall are estimated to be in the range of 30 percent of labor supply, particularly in the

occupational categories requiring university training, and in the technical and sub-professional occupations requiring two years of post-secondary training.

Inflation became a serious problem in the mid-70s. The Amman cost of living index registered 20% annual increases in 1974 and 1975. A level of 15% for 1976 is estimated.

Thought to be basic factors underlying the inflation were high levels of remittances from Jordanians employed outside the country, inflows of foreign currency in the form of donor loans and grants for development projects, and the presence of numerous Lebanese investors seeking refuge from the civil war in their country. The cessation of hostilities in Lebanon and the consequent departure from Amman of the Lebanese was reported in early 1977 to have had a calming effect on the Jordanian economy. High demand for skilled labor continued to exist however, with the implementation of many of the projects emanating from the Five-Year Plan.

The Educational System

Unlike earlier generations of Jordanian children, the youth of the 1970's find attendance at school a common experience.

Subsidized compulsory education for all children through fourteen years of age is a priority Government policy in Jordan. This policy has been supported by a steady increase in expenditures, numbers of schools and class units, numbers of teachers, and, correspondingly, in enrollments.

Ninety-two percent of Jordan's children in the 6-11 age cohort were reported in 1976 to be enrolled in school, as were 63% of the 12-14 age cohort, 31% of the 15-17 age cohort, and 27% of the 18-22 age cohort. A 7.1% annual increase in student enrollment was recorded during the first four academic years of the 1970's. As of 1974, there were 2,062 primary schools, 182 secondary schools and 16 institutions of higher education in Jordan.

Enrollment of male students has consistently exceeded enrollment of females during the seventies, but the gap seems to be closing. In the 1970-71 academic year, there were 1,422 male students enrolled for every 1,000 female students; by the 1973-74 academic year, the ratio was 1,298 to 1,000.

Jordan's educational ladder consists of four parts: primary, preparatory, secondary, and postsecondary. Grades one through nine are compulsory for all, within the limits of the government's ability to provide facilities. Entrance from the compulsory cycle to the more specialized secondary cycles is controlled by state-administered standardized written examination, as is passage from secondary to postsecondary programs.

The primary curriculum stresses basic literacy skills. Subjects taught include reading and writing in Arabic; religion; arithmetic; civics and history, with emphasis on the history of the Arabs and the concept of the Arab nation; geography, with emphasis on the Arab countries; science; music; physical

education; and drawing for male students and embroidery for females. In the fifth grade English is added to the curriculum.

The majority of the students proceed to the preparatory cycle, which includes seventh, eighth, and ninth grades. During these years work on academic subjects continues and vocational education begins on a limited basis. Each school is required to provide at least one course in a vocational subject for each grade. To the academic courses offered in the primary grades, the preparatory curriculum adds geometry, algebra, and social studies.

Secondary education is somewhat selective in enrollment and quite specialized in purpose. Both academic (general) and vocational careers of study exist; the former is designed to prepare students for university-level studies and the latter to train middle-level technical personnel for the work force. Within the academic curriculum, students further specialize in scientific or literary studies.

Educational systems in Moslem countries have been criticized for a tendency to confine their curricula to literary subjects which fail to provide students with the managerial, technical and manual skills needed in industrial economies. Jordan in the mid-seventies seemed to be grappling with this issue. For every 100 students enrolled in the Arts Faculty of the University of Jordan in 1974, there were 96 students enrolled in the Faculty of Economics and Commerce, and 87 students enrolled in the Faculty of Science. Nearly 20% of secondary school students in 1976 were reported to be receiving vocational training, and an effort was underway to increase this figure to 30% by 1980.

Table 1 shows school enrollments for 1974-1975. Percentages of enrollments for 1970-1971 are also shown for comparison. The relative increase in proportionate enrollment at each level over this time period is also presented.

Table 1: SCHOOL ENROLLMENT

Number and Percent of School Age Population at Each Educational Level, by Sex, for 1974-75, and Relative Increase in Total Enrollments Between 1970-71 and 1974-75

<u>Level</u>	<u>Primary</u> <u>(Grades 1-6)</u>	<u>Preparatory</u> <u>(Grades 7,8,9)</u>	<u>Secondary</u> <u>(Grades 10,11,12)</u>	<u>Post</u> <u>Secondary</u>
<u>Males</u>				
Number enrolled	183,053	63,151	33,524	13,404
Percent ^a	100	88	54	14
<u>Females</u>				
Number enrolled	153,813	48,223	22,665	6,850
Percent ^a	92	72	38	7
<u>Total Male & Female</u>				
Number enrolled	336,866	111,374	56,189	20,254
Percent ^a in 1974-75	96	80	46	11
Percent ^a in 1970-71	90	65	35	3(est)
<u>Relative Increase</u> <u>In Proportionate</u> <u>Enrollment (Percent)^b</u>				
	7	23	31	267

Source: Statistical Educational Yearbook, 1970-71, as analyzed by Sharon Stanton Russell.

^a Number of children enrolled expressed as percentage of all children (by sex) in the appropriate age groups.

^b Proportionate Relative increase takes into account and adjusts for population growth.

CHAPTER TWO

DEMOGRAPHICS

The development of reliable demographic information has been a most difficult task for the Government of Jordan. The influx of massive numbers of Palestinian refugees, the displacement of civilian settlements, troop movements and other disruption of wartime have been frequent occurrences during the Kingdom's three decades of independence. The prospect of more lucrative employment in other countries has also been a stimulus for large-scale movements of Jordanians, out of the country to pursue such opportunities, and then back in after substantial savings are accumulated. It is estimated that 100,000 Jordanians have been living outside the country in recent years. According to the 1974 Statistical Yearbook, departures of Jordan nationals from the country exceeded arrivals by 35,480 in 1974.

National censuses were conducted in 1953 and in 1961. The 1961 census has had to serve as the main source for all population estimations since that time. A census was planned for 1970, but the effort was cancelled. A new census is planned for 1977.

The government has issued 25 editions of an official Statistical Yearbook. The Department of Statistics, the agency responsible for compiling the information in the Yearbooks, is aware of the softness of much of the data. The registered death rate for 1974, for example, would result in a death rate of 3.5 per 1,000 persons, a literally unbelievable figure. But the 1974 yearbook explicitly states that its vital statistics "must not be used for demographic purposes."

Population Size and Growth

One estimate of the population of the East Bank in mid-1976 was 1,899,355 people.¹ This figure attempts to reflect refugees and displaced persons from the occupied territories, but estimates of the actual numbers of such persons are reported to be subject to margins of error on the order of 25% because of duplicative registration, underreporting of deaths, and high levels of mobility among them. The actual population probably exceeds 2 million.

The 1948 population of the East Bank is estimated to have been approximately 500,000 people. Another 900,000 people were added over the 1948-50 period with the annexation of the West Bank and the influx of refugees from the territory that became Israel. The country thus almost tripled the size of its population

¹ Department of Statistics, "Agricultural Quick Count," April-May 1975. Unpublished.

at that time.

Table 2 presents population trend data beginning in 1953 and projecting through 1985.

Table 2: POPULATION TRENDS FOR EAST AND WEST BANKS, 1953-1975
(In Thousands, Includes Refugees and Displaced Persons)

<u>Year</u>	<u>East Bank</u>	<u>West Bank</u>	<u>Total</u>
1985	2,697	N/A	N/A
1980	2,273	N/A	N/A
1976	2,014	N/A	N/A
1975	1,949	N/A	N/A
1974	1,890	770	2,660
1973	1,831	746	2,577
1972	1,774	723	2,497
1971	1,723	694	2,417
1970	1,668	680	2,348
1969	1,600	650	2,250
1968	1,126	1,007	2,133
1967	1,074	977	2,051
1966	1,059	947	2,006
1961	901	805	1,706
1953	587	742	1,329

Sources: 1953-1974: Department of Statistics, Statistical Yearbook, 1974.
 1975-1976: Department of Statistics, Unpublished data.
 1980-1985: Population Council, Unpublished data.
 Table Design by Frank Godley.

The estimates since 1961 are based on the following annual growth rate assumptions:

1961-69	3.1%
1970-74	3.2%
1975-79	3.3%
1980-84	3.4%
1985-2000	3.5%

At the current rate of 3.3 percent, the population would double in 21 years - sooner if the higher projected rates are actually realized. The projected 1980 and 1985 populations shown in Table 2 are based on a Population Council projection model and assume slight declines in fertility and mortality, no net migration, and annual growth rates of 3.4 percent. This means an addition of about 70-100 thousand persons per year to the population of the East Bank between 1975 and 1985.

Major shifts in population between Banks are also evident in Table 2. In 1953, the West Bank claimed the majority of the population. By the 1961 census, the East Bank had a slight majority and the imbalance was further swelled by migration to the East Bank of persons displaced by the June 1967 war. The fraction of Jordan's population in the East Bank increased from 53 percent in 1961 to 71 percent in 1975.

Distribution

In round numbers, 90% of the East Bank population inhabits 25% of the country's total land area - the highlands and valleys between the western border and, on the east, the Hijaz railway line.

Historically, this area was more heavily settled than the steppe and desert to its east because of the availability of a water supply for agricultural purposes. With the recent drive to industrialize and the overall increase in population, however, the concentration of the population has become even more pronounced.

At the center of this population concentration is the explosively urbanizing Amman/Zarka metropolitan area. A mid-1975 government estimate put 51% of Jordan's population in this area. In addition to the familiar rural to urban migration pattern found throughout the less developed world, there also is at work in the case of Amman its attraction as an employment center to landless Palestinian refugees.

The scope of Amman's urbanization is almost unbelievable: in 1921, there were about 5,000 inhabitants in the area; the 1947 figure was 30,000; the estimate for 1975 was 958,000.

To the north, the city of Irbid is another important population center, with 6.7% of the country's total population as of mid-75.

There were also, as of mid '75, 26 smaller towns in Jordan with populations ranging between 5 and 24 thousand. These are primarily communities of traders and processors which have grown up around outdoor markets, or through expansion of villages which have begun to perform commercial functions. 16% of Jordan's population is estimated to reside in such towns.

The remaining 26.3% of the population resides in population centers of less than 5,000 people. Most of these are sedentary agriculturalists in villages. A small fraction of the total population - 3% by a 1971 government estimate - are pastoral nomads.

Table 3 identifies Jordan's population centers, and displays the extent to which the Kingdom has been urbanized.

**Table 3: DISTRIBUTION OF POPULATION
BY GOVERNORATE AND MAJOR TOWN
(April and May 1975)**

<u>Governorate/Towns</u>	<u>Number</u>	<u>Population Percent of Total</u>
Amman		
Amman	652,000	34.3
Zarqa	244,700	12.9
Ruseifa	38,200	2.0
Madaba	27,300	1.4
Wadi Esir	14,616	0.8
Suweileh	13,466	0.7
Sahab	8,709	0.5
Population Centers Under 5,000	92,364	4.9
<u>Subtotals</u>	<u>1,091,355</u>	<u>57.5</u>

Irbid		
Irbid and Barqa	128,000	6.7
Ramtha	24,016	1.3
Husun and Husun		
Refugee Camp	15,788	0.8
Mafrak	15,081	0.8
Suf and Suf Refugee Camp	14,100	0.7
Ghaza Refugee Camp	9,844	0.5
Jarash	9,843	0.5
Shona Shamalya	7,487	0.4
Noremah	7,189	0.4
Kureiyima	7,117	0.4
Masharieh	6,920	0.4
Kufrinja	6,494	0.3
Anjara	5,612	0.3
Wadi el Yabis	5,119	0.3
El Turra	5,057	0.3
Mazar Shamalya	5,029	0.3
Population Centers under 5,000	258,609	13.6
<u>Subtotals</u>	<u>531,305</u>	<u>28.0</u>

Balqa		
Salt	26,800	1.4
Abu Nuseir and Balqa Refugee Camp	44,014	2.3
Deir Alla	6,168	0.3
Population Centers Under 5,000	73,713	3.9
<u>Subtotals</u>	<u>124,260</u>	<u>6.5</u>

Karak		
Karak	11,871	0.6
Tafila	11,016	0.3
Ghor Safi	5,754	0.3
Population Centers Under 5,000	73,713	3.9
<u>Subtotals</u>	<u>102,354</u>	<u>5.4</u>

Ma'an		
Aqaba	15,886	0.8
Ma'an	11,997	1.2
Population Centers Under 5,000	22,198	1.2
<u>Subtotals</u>	<u>50,081</u>	<u>2.6</u>

<u>TOTAL</u>	<u>1,899,355</u>	<u>100.0</u>

Source: Department of Statistics, Agricultural Quick Count,
April and May 1975.

Density

Population density in the East Bank is a low 23 persons per square kilometer. This figure is deceptive, however, because the 80% of the territory to the east of the Hijaz railway line is sparsely inhabited.

Density in the settled East Bank is 103 persons per square kilometer. But even this figure obscures the concentration in the Amman/Zarqa metropolitan area, where the ratio of persons to cultivated square kilometer is 337/1. The comparable ratio for the provincial capital of Ma'an in the south is 35/1.

Age Structure

Jordan's Statistical Yearbooks have continued to display a "population pyramid" indicating that about 45% of the country's population was under age 15 at the time of the 1961 census. A study undertaken by the Jordan Army in 1974, however, indicated that the below-15 level had risen to 50.3% at that time (as compared with a 25.9% figure for the United States.) The age structure reflected by this study was:

<u>Age range</u>	<u>Numbers of People (000's)</u>	<u>% of the Population</u>
0-4	390	20.8
5-9	312	16.6
10-14	243	12.9
15-19	193	10.3
20-24	142	7.6
25-29	113	6.0
30-34	98	5.0
35-39	87	4.6
40-44	74	3.9
45-49	59	3.1
50-54	42	2.2
55-59	35	1.9
60-64	37	2.0
65 & over	52	2.8

Sex Ratio

Information on the sex ratio of Jordan's population consistently indicates the presence of a majority of males. The 1961 census recorded the presence of 109 males for every 100 females in the population, and subsequent official estimates of the population have maintained this ratio.

The Army study referred to above produced a 103.8 to 100 male to female ratio, with males exceeding females in every age bracket except those between 20 and 39 years of age.

Such results do not seem plausible in a country where adult male emigration for employment purposes is commonplace. They would seem to reflect a strong tendency to underreport females.

Table 5 displays the estimated age-sex composition of the East Bank in 1961 and 1975, and a Population Council projection of the 1985 situation, assuming the continuation of current trends.

Fertility

The crude birth rate in Jordan is estimated to be in the range of 45-50 births per 1,000 population per year.

Marriage ages of women provide a beginning of an explanation for such high fertility. A national fertility sample survey conducted in 1972 under international auspices showed that twenty-eight percent of women have been married by age 19, and sixty-nine percent by age 24. Table 4 provides a complete break-down of the marital status distribution by age of East Bank women.

Table 4: PERCENT DISTRIBUTION OF WOMEN AGES 15 TO 49 YEARS, BY MARITAL STATUS (1972, East Bank)

<u>Age</u>	<u>Single</u>	<u>Married</u>	<u>Widowed</u>	<u>Divorced or Separated</u>
All women,				
15 to 49 years	25.2	70.6	2.4	1.8
15 to 19 years	71.0	28.3	0.1	0.7
20 to 24 years	28.7	67.8	1.3	2.1
25 to 29 years	7.0	89.4	1.3	2.3
30 to 34 years	3.7	90.5	3.3	2.5
35 to 39 years	2.9	92.2	3.2	1.7
40 to 44 years	1.9	90.8	5.5	1.8
45 to 49 years	4.9	81.1	11.3	2.7

Source: Rizk, Hanna, "National Fertility Sample Survey For Jordan, 1972: The Study and Some Findings," United Nations Economic and Social Office in Beirut, Population Bulletin No. 5, July 1973. The base of the percentage is the number of women of known marital status in each group. Percentages may not add to 100 due to rounding.

Table 5: AGE-SEX COMPOSITION: EAST BANK, 1961, 1975, and 1985

<u>Age-Sex</u>	<u>1961</u>		<u>1975</u>		<u>1985</u>	
	<u>Number</u>	<u>Percent of total</u>	<u>Number</u>	<u>Percent of total</u>	<u>Number</u>	<u>Percent of total</u>
Under 5 Years						
Male	87,862	9.8	212,728	11.0	256,000	9.5
Female	85,140	9.4	199,432	10.5	242,000	9.0
<u>Subtotals</u>	<u>173,002</u>	<u>19.2</u>	<u>412,160</u>	<u>21.7</u>	<u>498,000</u>	<u>18.5</u>
5-14 Years						
Male	124,017	13.8	292,501	15.4	391,700	14.5
Female	117,799	13.0	267,809	14.1	367,000	13.6
<u>Subtotals</u>	<u>241,816</u>	<u>26.8</u>	<u>560,310</u>	<u>29.5</u>	<u>758,700</u>	<u>28.1</u>
15-24 Years						
Male	89,805	10.0	159,546	8.4	245,100	9.1
Female	81,252	9.0	163,345	8.6	251,600	9.3
<u>Subtotals</u>	<u>171,057</u>	<u>19.0</u>	<u>322,891</u>	<u>17.0</u>	<u>496,700</u>	<u>18.4</u>
25-44 Years						
Male	104,190	11.6	176,640	9.3	314,400	11.7
Female	99,524	11.0	199,432	10.5	295,200	10.9
<u>Subtotals</u>	<u>203,714</u>	<u>22.6</u>	<u>376,072</u>	<u>19.8</u>	<u>609,600</u>	<u>22.6</u>
45-64 Years						
Male	40,820	4.5	91,169	4.8	128,900	4.8
Female	41,987	4.7	81,672	4.3	117,100	4.3
<u>Subtotals</u>	<u>82,807</u>	<u>9.2</u>	<u>172,841</u>	<u>9.1</u>	<u>246,000</u>	<u>9.1</u>
65 and over						
Male	14,384	1.6	32,289	1.7	43,200	7.6
Female	13,996	1.6	22,792	1.2	45,100	1.7
<u>Subtotals</u>	<u>28,380</u>	<u>3.2</u>	<u>55,081</u>	<u>2.9</u>	<u>88,300</u>	<u>3.3</u>
All ages						
	461,078	51.2	964,873	50.8	1,379,300	51.1
	439,698	48.8	934,482	49.2	1,318,100	48.9
<u>Subtotals</u>	<u>900,776</u>	<u>100.0</u>	<u>1,899,355</u>	<u>100</u>	<u>2,697,400</u>	<u>100.0</u>

Sources: 1961 Jordanian Census; Department of Statistics, Multipurpose Household Survey, 1974 and 1975; Department of Statistics, Agricultural Quick Count, April and May, 1975; Population Council Projections, as analyzed by Frank Godley.

The same fertility study concluded that child bearing in Jordan tends to be spread out over a women's entire reproductive age span rather than limited to a selected segment of it, and that the average number of live births per women was slightly over 7, with 39% of wives bearing 10 children.

Table 6 shows, among its other data on birth order of Jordanian children, that more than half the children born are at least the mother's fifth baby, and that 18% of the births in the sample were to mothers at least 40 years old.

Table 6: Distribution of Births, by Order

<u>Age of Mother</u>	<u>Number of Mothers in Sample</u>	<u>BIRTH ORDER (Percent)</u>					
		<u>1-2</u>	<u>3-4</u>	<u>5-6</u>	<u>7-8</u>	<u>9-10</u>	<u>10+</u>
15-19	508	96	4	-	-	-	-
20-24	936	555	36	8	1	-	-
25-29	1104	17	35	34	12	1	-
30-34	953	7	18	32	30	10	3
35-39	771	5	9	18	30	24	13
40-49	971	7	6	13	22	28	25
All ages	5214	27	20	20	17	11	7

Source: Ibid.

The Washington-based Population Reference Bureau classifies countries as either "indifferent", "tolerant", or "supportive" with regard to population policies and family planning. Jordan falls into the "tolerant" category - which is to say that, while it lacks both explicit policy to slow population growth and also government-administered programs implementing such policy, it appears to favor some slowing of growth rates and tolerates private family planning activity.

Jordan's 1976-1980 national economic plan does cite a need for "the adoption of a clear policy regarding family planning which aims at raising the social, economic, and health conditions of citizens, and enabling all families to determine the ideal number of their members within the framework of acquainting them with the implications and effects of population growth and with the possibilities and methods of family planning." As of early 1977, however, no policy-level steps had been taken.

Ten private family planning clinics are being operated in the country by the Jordan Family Planning and Protection Association. This affiliate of the International Planned Parenthood Association received \$300,000 during 1973-75 from the parent organization to support information campaigns, the operation of

clinics and house-to-house visits by social workers. The United Nations Fund for Population Activities, the Pathfinder Fund, the Swedish International Development Agency, the World Council of Churches and CARE have all also provided assistance to Jordan's private family planning effort.

Household size in Jordan tends to be large. A multi-purpose household survey², conducted in early 1974 and focusing on a sample of 125,261 persons - about 6.6% of the national population-established the following profile:

<u>Number of Persons in Household</u>	<u>Percentage of Total Households Surveyed</u>	<u>Percentage Among "Rural" Households Surveyed</u>	<u>Percentage Among "Urban" Households Surveyed</u>
10 + over	14.3	12.0	15.3
9	9.0	8.4	9.3
8	11.0	10.4	11.4
7	12.0	12.0	12.0
6	12.4	12.7	12.3
5	11.5	11.7	11.4
4	10.5	11.2	10.2
3	8.7	9.5	8.3
2	8.0	9.4	7.3
1	2.4	2.7	2.3

Somewhat surprising is the finding that urban households tend to be slightly larger than rural households. Such a finding would be a plausible indication, however, of very crowded residential conditions in the Amman/Zarka metropolitan area, and, to a lesser extent, in and near Irbid.

This Household Survey also established the existence of about an 80% dependency ratio among the sample of the population surveyed. This is not surprising in the light of the country's age structure, where 50% of the population is under 15 years of age. Female labor force participation was shown to be low, although significantly higher in Amman than in the other provinces. The labor force profile emerging from the study is as follows:

<u>Governorate</u>	<u>Male Labor Force Rate</u>	<u>Female Labor Force Rate</u>	<u>Total Labor Force Rate</u>
Amman	35.0	4.2	19.8
Irbid	34.7	3.3	19.3
Balqa	35.9	1.9	19.2
Karak	34.3	1.7	18.3
Ma'an	36.2	1.6	19.9
Jordan	35.1	3.5	19.6

² Department of Statistics, Multi-Purpose Household Survey, Jan. 1974.

The survey indicated the existence of a low 2.1 unemployment rate among the labor force in early 1974. By early 1977, this rate had been reduced to the vanishing point through the effects of Jordan's then booming economy.

CHAPTER THREE
CAUSES OF DEATH AND ILLNESS

Selected national indicators of health conditions in Jordan cluster at about the same levels as those of neighboring countries in southwest Asia. These indicators convey an impression of worse health conditions than those in the affluent industrialized countries, but of significantly better conditions than those in poorer countries of south central Asia and sub-Saharan Africa.

Table 7 presents a brief comparison of such indicators from selected countries

Table 7: SELECTED NATIONAL HEALTH STATUS INDICATORS

<u>Country</u>	<u>Death Rate per 1,000 Population 1970-75 Average</u>	<u>Infant Mortality, per 1,000 Live Births, 1975</u>	<u>Life Expectancy at birth, 1970-75 Average</u>
USA	9.4	18	71
West Germany	12.1	20	71
Syria	15.4	93	54
Jordan	14.7	99	53
Iraq	14.6	99	53
Pakistan	16.5	132	50
India	15.7	139	50
Zaire	20.5	160	44
Nigeria	22.7	180	41

Source: Population Reference Bureau, as cited in Overseas Development Council, The U.S. and World Development, Agenda for Action 1976, New York, 1976.

Tables such as Table 7 may only be used with an understanding that few less developed countries are able to compile statistical information on health conditions which is both nationally aggregated and highly reliable. Jordan is no exception. Despite the best efforts of the small staffs at the Ministry of Health and the Department of Statistics assigned to statistical information development on the health sector, available data may be used only to construct an approximate order of magnitude of the country's health situation. The numbers are the products of highly imperfect information systems. Development of a more sophisticated health information capability in Jordan awaits the allocation of significantly increased resources to this function.

Mortality

The reported mortality rate per 1,000 persons in Jordan for 1974 was 3.4. The actual mortality rate estimated by informed observers of Jordan's health sector was the 14.7 reflected in Table 7. Large-scale underreporting of deaths is a widely acknowledged situation.

The 14.7 figure represents a significant decrease in the mortality levels of the area in recent years. United Nations estimates of mortality rates for the combined East and West Banks since 1950 are as follows:

<u>Years</u>	<u>Mortality Rate per 1,000</u>
1950-54	21.0
1955-59	21.1
1960-64	18.3
1965-69	16.0

Source: United Nations Economic and Social Office, Beirut.

It is believed that this decrease in the overall mortality rate has been brought about primarily by improvements in infant mortality.

Available data on mortality in 1974 in Jordan by selected disease and age groups is presented in Table 8.

Table 8: PERCENTAGE DISTRIBUTION OF AGE-SPECIFIC CAUSES OF DEATH, 1974, JORDAN
(all figures are shown in percentages, except those in parentheses, which are actual numbers of reported deaths)

<u>Cause of Death</u>	<u>AGE</u>				
	<u>Less than 1</u>	<u>1-4</u>	<u>5-14</u>	<u>15 and over</u>	<u>All Ages</u>
Vascular Diseases	4	7	17	44	23
Neoplastic Diseases	N/A	1	7	10	5
Respiratory Diseases	28	18	10	17	20
Enteritis & Diarrhea	36	26	7	N/A	16
Accidents & Injuries	1	9	25	12	9
Perinatal Causes	15	N/A	N/A	1	6
Malnutrition, Anemias	6	4	3	1	3
Other Known Causes	15	35	30	15	19
All Known Causes	100 (1733)	100 (627)	100 (342)	100 (2333)	100 (5035)
All Reported Deaths	28 (1788)	10 (654)	6 (368)	56 (3636)	100 (6445)

Source: Statistical Yearbook, 1974, Department of Statistics, as analyzed and recompiled by A. Apostolides. Figures in parentheses are actual numbers of reported deaths.

This classification of deaths in terms of causes and age-specific incidence presents a mixed mortality picture, similar neither to that of the industrialized countries nor to that of very poor countries of the less developed world. Salient features seem to be:

- A high forty-four percent of reported deaths being of children 14 and under, with infant deaths representing 28% of the total.
- The severe toll of respiratory and enteric diseases on children 4 and under.
- The absence of parasitic or infectious diseases as major killers of adults.
- The wide distribution of vascular diseases throughout the population, possibly incriminating agents such as rheumatic disease and its cardiac complications, rather than the degenerative conditions usually accompanying heart problems in industrialized countries.
- The seriousness of the accident category (with motor vehicle accidents accounting for about half of these deaths) in the mortality picture.
- The absence of attendance at many deaths by a health professional, reflected by a lack of reporting of a cause in 22% of reported deaths.

Infant Mortality

The officially recorded infant mortality rate for Jordan in 1974 was 11 per 1,000 live births. As with the reported general mortality rate, the figure results from gross underreporting. Informed estimates put the actual figure in the range of 90 to 100 per 1,000 live births.

The major causes of recorded infant mortality in 1974 in Jordan are listed in Table 9.

Table 9: INFANT MORTALITY, BY CAUSE, 1974

	<u>Number of Recorded Infant Deaths</u>	<u>Percent of the Total (1,788)</u>
Enteritis and Other Diarrheal Diseases	616	34
Pneumonia	369	21
Perinatal Mortality	251	14
Avitaminoses and Other Nutritional Deficiencies	103	6
Heart Diseases	63	4
Measles	55	3
Meningitis	36	2
Other or Undefined Causes	295	16

Source: Statistical Yearbook, 1974.

It is at this infant age level that Jordan's health situation most becomes similar to the world's poorest countries, where it is common to find enteritis and respiratory diseases, malnutrition, and communicable diseases such as measles and meningitis as the killers of very high numbers of infants. Such conditions are thought to have been drastically curtailed in the industrialized countries through improvements in environmental sanitation and dietary intake, and through early and direct contact with basic health services, including immunizations. Stronger efforts in these areas appear to be required in Jordan.

Of concern also is the high level of mortality of children ages 5-14. Sixteen percent of reported deaths are of children in this age bracket, which is usually found to be the healthiest segment of the population. In the U.S., this age group accounts for 1.4 percent of mortality. The most frequently reported cause of death in this age group in Jordan is accidents.

Maternal mortality was reported in 1975 at a rate of 13.5 deaths per 1,000 admissions to hospitals for conditions relating to pregnancy and birth. Maternal mortality figures for the industrialized countries are considerably less than 1 death per 1,000 live births. The Jordanian figure is not strictly comparable, because it is a per-hospitalization figure and not a per-live birth figure (only complicated childbirth cases are hospitalized in Jordan). It remains, however, an indication of a serious maternal mortality situation. Jordanian women in the 15-34 age bracket maintain death rates which are 4 times higher than those of American women, while male death rates in the same age bracket are 2 times higher.

Reportable Diseases

The Ministry of Health maintains an information system for reportable diseases. The system appears to be subject to severe underreporting, but its data are indicative of some important morbidity areas. Table 10 presents selected information items for 1975.

Table 10: SELECTED REPORTABLE DISEASES, 1975

<u>Reportable Disease</u>	<u>Cases</u>	<u>Deaths</u>
Trachoma	1239	-
Measles	1116	58
Infectious Hepatitis	271	12
Typhoid Fever	228	-
Dysentery	133	-
Malaria	262	-
Staphylococcal Meningitis	182	46
Pulmonary Tuberculosis	355	65
Extrapulmonary Tuberculosis	145	16
Pertussis	129	2
Tetanus	40	34
Diphtheria	23	2

Source: Ministry of Health Annual Report, 1975.

The high incidence of trachoma is a result of the excessive dust and lack of moisture in the environment. No information on the extent of blindness resulting from the trachoma was reported, although this complication can ensue in the absence of careful management of the disease.

Measles is among the most preventable of the diseases cited in Table 10, but it remains a serious danger to Jordanian children. Measles immunization activities are negligible, reportedly because of high costs of producing the vaccine. Practice in some rural areas is not to bathe children with measles, and to keep them in a dark place wearing red clothes.

The enteric diseases cited in Table 10 - infectious hepatitis, typhoid fever, and dysentery - implicate water contamination and personal hygienic practices.

The low level of malaria reported represents a situation of control over what were, in the Jordan Valley, hyperendemic conditions as late as the end of World War II. An internationally supported malaria eradication program has been conducted in Jordan, Iraq, Lebanon and Syria since 1956, with great success.

A tuberculosis survey carried out in the early 1960's by a WHO team estimated the rate of open cases at 1 percent of the total population. More recent data on East Bank tuberculosis incidence is cited in Table 11.

Table 11: Tuberculosis Incidence, Jordan

<u>Year</u>	<u>Total Cases</u>	<u>Respiratory</u>	<u>Non-Respiratory</u>
1968	521	379	152
1969	413	275	138
1970	357	267	90
1971	459	363	96
1972	536	408	128
1973	600	459	141
1974	576	405	171
1975	469	328	141

Source: Ministry of Health Annual Report, 1975

The reported level of tuberculosis indicates that that disease is under control at present, in terms of the rate of newly discovered activities cases (1.4/000 population per year, or 500 new cases per year).

The sources of new cases are primarily semi-nomadic population groups settling on the eastern fringes of the populated portion of the country. These new cases, as well as the previously existing ones, are being actively treated

and their contacts traced and tested for vaccination or infection status. A program of BCG vaccinations and PPD testing for infection is also being pursued in most areas of the country.

Highlights of these activities are:

- PPD testing of previously nonvaccinated six-year olds showing a low rate of infection of 0.7 percent in Amman but going higher than 2 percent in specific high-risk areas such as Madaba, Mafraq, and Ma'an.
- 75 percent coverage of the population with BCG vaccinations, dropping, however, to 35 percent at the pre-school level, where susceptibility to the infecting organism is highest; and also low BCG coverage of the nomadic and semi-nomadic population groups.

The presence in Table 10 of preventible diseases such as measles, pertussis, poliomyelitis, tetanus, and diphtheria indicates a lack of effectiveness of immunization programs against these diseases.

Immunization activities do appear to be below acceptable levels. For polio and DPT vaccinations, the rates of coverage are: 1st dose: 35 percent, 2nd dose: 30 percent, 3rd dose: 28 percent, booster dose: 2 percent. This low coverage would account for much of the incidence of these preventable diseases.

Measles immunization coverage is negligible, as measles vaccine is not produced by the Jordan Vaccine Institute.

Other Morbidity Information

Hospital admissions statistics show diseases of the digestive system as the leading cause of hospitalization, accounting for 18 percent of all admissions. Other leading hospitalization causes, in descending order, are respiratory diseases, diseases of the genitourinary system, complications of pregnancy, and cardiovascular diseases. By one estimate, 27 percent of non-obstetrical admissions in 1975 may have been substantially preventible through either health education, environmental modification, nutritional improvement, chemoprophylaxis, or immunizations.

More than 4 million visits to ambulatory care facilities were logged in 1975 - more than two visits per capita per year, as opposed to a U.S. figure of 1.7 visits. The bulk of these services were provided in health centers and rural clinics, that is, outside hospital outpatient departments.

Transmission up through the health sector administration of information reflecting activity at the ambulatory care level is less than adequate in Jordan. An ad hoc survey of activity at an outpatient clinic in the town of Ajloun during a 4-day period in late 1976 produced the information presented in Table 12.

Table 12: AD HOC SURVEY OF PERCENT DISTRIBUTION OF REASONS FOR FIRST VISITS TO A GOVERNMENT OUTPATIENT CLINIC (AJLOUN TABABA, (Sample of 4 days from 1975 Logbook for Treatment Visits)

<u>Reasons for Visit</u>	<u>AGE</u>				
	<u>Less than 1</u>	<u>1-4</u>	<u>5-14</u>	<u>15 and Older</u>	<u>All Ages</u>
Infectious and Parasitic Conditions	0	2	22	1	5
Respiratory Conditions (includes sore throats)	46	60	45	29	42
Digestive Disorders	33	20	6	18	18
Injuries and Trauma	0	2	7	3	4
Other	21	16	19	49	32
TOTAL (number in sample)	<u>100</u> (52)	<u>100</u> (50)	<u>100</u> (109)	<u>100</u> (152)	<u>100</u> (354)

Sources: Patricia Day Bidinger and Aristide Apostolides.

A 1975 survey conducted by the staff of a school health program conducted among first and seventh grade children in selected sites in Jordan produced the identification of disorders displayed in Table 13.

TABLE 13: PREVALANCE (PER 1000) OF SELECTED DISORDERS FOUND ON EXAMINATION OF FIRST AND SEVENTH GRADE PUPILS, BY AREA

<u>Disorder</u>								<u>1975-76</u>
	<u>Madaba</u>	<u>Jerash</u>	<u>Salt</u>	<u>Karak</u>	<u>Ma'an</u>	<u>Mafraq</u>	<u>Tafilah</u>	<u>Total</u>
Eye Disorders	31	44	71	30	24	28	45	36
Disorders of the Digestive System	62	36	182	27	42	95	151	71
Ear, Nose and Throat Disorders	223	242	159	40	177	94	146	144
Infectious Skin Disorders	23	19	20	25	51	20	42	26
Communicable Diseases	20	54	112	10	20	35	71	38
No. of pupils examined	4949	3795	1885	6185	1393	3788	2421	24419

Source: Annual Progress Report, Division of School Health 1975-1976.

The prominent position of respiratory and digestive problems in these two surveys would implicate environmental and nutritional deficiencies, and would point to a need for stronger preventive and basic curative programs.

Nutritional Deficiencies

Several nutrition surveys and studies were carried out in Jordan in the early and mid-sixties.¹ These studies documented the existence of a number of major nutritional deficiencies. A 1972 overview of this research listed the following manifestations of what was then termed a "poor" nutritional status of Jordan's population: signs of protein-calorie malnutrition and growth retardation in infants and young children; continued low rate of growth in late childhood and adolescence; low blood concentrations of Vitamin A, low urinary excretions of thiamine and riboflavin, and the occurrence of a variety of other clinical signs of nutritional deficiency at all ages.²

It is the impression of informed observers that nutritional status, especially of preschool children, has improved significantly in the past decade. There is no recent body of data on general dietary intake available, so that it is difficult to know to what extent improvements are due to nutritive changes, as opposed to other improvements in standards of living.

Current high levels of infant and early childhood mortality rates, and existing patterns of infectious diseases for these age groups, indicate that gross malnutrition of children has not, however, been eliminated in Jordan. While frank protein deficiency appears to have decreased, caloric deficiency - marasmus - can be observed fairly readily.

The actual magnitude of clinically-manifest malnutrition is difficult to determine, as hospital admissions tend not to be recorded as malnutrition, because accompanying conditions such as gastro-enteritis and upper respiratory tract infections are more readily identified. But some government hospital admission records would indicate that 20 percent of all children admitted were suffering from malnutrition, and that, of these, 85 percent were marasmic. Other

¹ A survey was conducted by the U.S. Interdepartmental Committee on Nutrition for National Defense in 1962, and a follow-up pediatric study, conducted by an Interdepartmental Committee on Nutrition for Jordan in 1963; a 1965 study by Pharaon, et. al. on the nutriture of infants and pre-school children; a 1965 xerophthalmia study by McLaren, et. al.; and 1967 study under WHO auspices by Patwardhan and Kamel on Vitamin A deficiencies. The findings of these studies are summarized in Patwardham and Darby, The State of Nutrition in the Arab Middle East. Nashville: Vanderbilt University Press, 1972.

² Patwardham and Darby, p. 262.

observations of hospital admission records would place the malnutrition figure at closer to 30 percent, with marasmus affecting 80-90 percent of these children. Of all forms of malnutrition, among all age groups, it would appear that chronic undernutrition of infants and children in the second and third year of life accounts for the greatest proportion of all child malnutrition.

"A further marked improvement in nutritional status," according to one informed report, "would do more than any other single factor or combination of factors (except possibly the provision of safe water supplies to the vast majority of the population) to further reduce early childhood mortality in the next decade."³

In contrast to the spate of internationally supported nutrition research efforts in Jordan in the early and mid 1960's, there has been relatively little such work in the 1967-1977 decade. 1976 did see, however, a landmark effort at determining nutritional status in Jordan - a dissertation by Dr. Saad S. Hijazi entitled "Factors Influencing the Growth and Nutritional Status of Infants and Young Children in Rural Jordan."⁴

The Hijazi study presents clinical, anthropometric and hematological findings pertaining to 3,734 Jordanian infants and young children in villages around Amman. Mothers' weights were also recorded. The children were divided into "well nourished" and "malnourished" groups, and for each group a statistical examination was conducted, using more than 80 variables, covering a wide range of social, economic and environmental factors believed to be associated with malnutrition.

Among Hijazi's important findings were:

- mothers of malnourished children had low weights, were married early, and had poor knowledge of child care and feeding;
- malnourished children were likely to have been breastfed less than six months or more than twenty-four months;
- children more than fifth in birth order were more likely to be malnourished than earlier borns;
- the household size of the malnourished tended to be larger;
- malnourished children were more likely to come from closely related families;

³ Dr. Stephen Joseph.

⁴ Dr. Hijazi is a Jordanian physician now associated with the Department of Community Medicine, Medical Faculty, University of Jordan. The dissertation was sponsored by the Jordan Research Council, and was submitted as part of the author's Ph.D. program in the Department of Human Nutrition at the Faculty of Medicine of the University of London.

-- mothers of malnourished had a higher number of spontaneous abortions and stillborns.

An earlier study by Dr. Hijazi had examined 99 early childhood protein-calorie malnutrition cases admitted to the pediatrics section of an Amman hospital. The survey found that the malnourished children, 29 of whom did not survive, had been subject to early bottle-feeding, early weaning, and a starchy, low protein-content weaning diet, one of whose key items was tea. He termed these cases "a small section of the 'iceberg' of malnutrition in Jordan."

Another study, focusing on the socioeconomic and cultural aspects of the same groups of children, established that they were from low income families with higher than usual sibling death rates, and that their supplementary food tended to be prepared under unhygienic conditions. Hijazi concluded that weanling diarrhea - the interaction of alimentary infection, a starchy diet and poor nutrition - was a "major cause of morbidity and mortality in Jordan," and observed that dehydrated children suffering from weanling diarrhea were "so common in the summer that present hospital facilities cannot manage them properly and efficiently." He suggested the establishment of rehydration centers to combat the problem and also perform an educational function with regard to infant feeding and diarrheal disease.⁵

Environmental Sanitation Inadequacies

The role of gastro-enteric diseases as a major killer of children in Jordan, as well as the incidence at significant levels of diseases such as infectious hepatitis, typhoid, and dysentery, are clear implications of an unsatisfactory environmental sanitation situation.

Water Supply

In 1975, water consumption in Jordan was estimated at 421 million cubic meters (MCM). This figure is expected to increase to approximately 555 by 1980 with distribution as follows:

⁵ Saad S. Hijazi, M.D., M.P.H., D.C.H. "Patterns of Protein-Energy Malnutrition in Early Childhood in Jordan, American Journal of Clinical Nutrition, 27(1974): 1254-1258, and "Social and Cultural Aspects of Hospitalized Malnourished Children in Jordan," Journal of Tropical Pediatrics and Environmental Child Health, 20(1974): 280-283.

Type of Use	1975	1980
	(MCM's)	
Domestic	40	60
Industrial	6	30
Agricultural	375	465
TOTAL	421	555

Source: Jordan Water Supply Corporation.

Available supplies of water were estimated to be 470 MCM in 1975 and are projected to reach 580 MCM by 1980. Despite this excess of supply over current demand, there were severe water shortages in 1975, especially for domestic supply, because of operational problems in water supply systems, and because available water sources and areas of highest demand are not geographically congruent.

In Amman, the estimated domestic water consumption level per capita per day for 1975 was 40 liters. For the east Jordan Valley, where basic public utilities are in early stages of development, the figure is 10 liters. For the balance of Jordan, the figure is 20 liters. By contrast, the reported consumption level per capita per day in the city of Damascus in 1975 was 163, and a 1970 WHO survey of community water supply reported a world average for developing countries as ranging between 35 and 90 liters.

Table 14 breaks out the localities of Jordan other than Amman in terms of their domestic water supply situation.

Table 14: DISTRIBUTION OF DOMESTIC WATER SUPPLY IN TOWNS AND VILLAGES ACCORDING TO GOVERNORATE

	<u>Amman</u> ^a	<u>Irbid</u>	<u>Balga</u>	<u>Karak</u>	<u>Ma'an</u>	<u>Total</u>
Villages with Dis-tribution to houses	87	178	9	78	20	372
Villages without Dis-tribution to houses	10	6	7	-	8	31
Villages with on piped water supply	131	134	49	32	45	391
Total Villages and Towns	228	318	65	110	73	794

^a Excluding Municipality of Amman

Source: National Planning Council, as analyzed by Lee R. Lunsford.

The table indicates that about half of these communities do not have piped water supply systems. Their residents obtain water for domestic purposes either by carrying it themselves from the nearest spring or well, or using donkeys to do so. It is estimated that people who obtain water in this way consume less than 10 liters per capita per day.

Within Amman, the seventeenfold population increase since 1948 has outstripped the city's water supply system's capabilities. Amman reportedly has more water tanker trucks in operation, per inhabitant, than any other city in the world.

Many studies have indicated that a much more extensive use of water for personal and household hygiene than is customary in Jordan is a necessary condition for reduction of gastro-enteric and parasitic disease levels. Availability and accessibility of water in Jordan are clearly crucial elements in an improved health situation.

Water Quality

The bacteriological quality of the low quantities of water available in Jordan is also generally unsatisfactory. By World Health Organization standards, drinking water is considered bacteriologically safe when the number of fecal coliform organisms present in a sample is less than 2.2 organisms per 100 ml. of water. When water samples are taken on a regular basis at an interval proportional to the population of the community, the community system is considered to be safe when less than 5% of the samples have less than 2.2 fecal coliforms per 100 ml.

Table 15 reflects the quality of water samples collected and analyzed by the Ministry of Health from selected population centers in Jordan during the period 1973-1975.

Table 15: Percentage of Unsafe Water Samples in Selected Population Centers, 1973-75

<u>Year</u>	<u>Community</u>							
	<u>Amman</u>	<u>Irbid</u>	<u>Karak</u>	<u>Ma'an</u>	<u>Madaba</u>	<u>Salt</u>	<u>Rusaifa</u>	<u>Zarga</u>
1973	8	39	53	34	27	31	20	24
1974	13	20	62	18	29.5	38	16	32
1975	9	17	35	13	13	40	27	21

Source: Asem Shehabi, "Bacteriological Pollution in the Drinking Water of Jordan," Ministry of Health unpublished material.

Using the 5% criterion stated previously, it is clear that none of the systems shown can be considered safe for domestic use.

The Kingdom's vulnerability to water-borne diseases was dramatically brought home to Jordanians in January 1976, when an epidemic of bacillary dysentery

affected approximately 4,300 persons in the Salt area.

Excreta Disposal

Amman and Salt are the only East Bank localities with community water-borne excreta disposal systems. The Amman system is new, and is being built in stages. Its funding is projected under the national Five-Year Plan, and is thus likely to be continually expanded. The Salt system is antiquated, but engineering studies for its renovation have been completed, as well as studies for new systems for the areas of Zarqa and Jerash.

Jordanian homes, businesses and other institutions with water carried wastes that are not connected to the Amman or Salt systems, have individual sub-surface seepage pits, or cess pools. Since both the soil (sand, gravel or fractured rock formations) and climate are conducive to this type of liquid waste disposal, there is little problem on the surface. But this type of liquid waste disposal also results in the wastes' percolating through the sand and the gravel into the communities' water supply aquifer.

Most of the population centers of Jordan are situated wholly within a single drainage basin, with the populace and their liquid waste located in the upper portion and the water and some food sources located in the lower portion. The liquid human waste receives some biological treatment and filtration in the substrata before being diluted with the rainwater contained in the water bearing aquifer, and then emerging in village springs and shallow wells, where it is used for agricultural and domestic purposes.

The residents of these communities are thus in continued proximity to disease-bearing organisms in their water supply. Children in the first year of life are especially vulnerable to such organisms, as is attested by Jordan's infant mortality rate.

Refuse Disposal

Most of the larger communities in Jordan have refuse collection, transportation and disposal systems. In all cases the systems are underequipped and undermanned, with disposal by open-burning dumps. All three steps in the process are health hazards, because of rodent and insect infestations and air and water pollution.

There is projected within the Five-Year Plan a JD 1 million investment to establish in Amman an integrated scheme for the collection, transport and disposal of garbage through more sanitary methods.

CHAPTER FOUR

HEALTH SECTOR INFRASTRUCTURE

People in Jordan receive health care from many sources:

- The Ministry of Health (MOH) operates a large network of hospitals and ambulatory care facilities, as well as a number of preventive programs.
- The Royal Medical Service (RMS) the Kingdom's military medical organization, provides services to active and retired members of the Armed Forces, their dependents, and various other civilian government employees.
- A third of Jordan's physicians are in private practice.
- The United Nations Relief and Works Agency for Palestine Refugees (UNRWA) delivers preventive and primary care in twenty out patient clinics to approximately 600,000 eligible refugees and displaced persons.
- More than half of the births in Jordan are attended by a dayah, a privately operating midwife, who uses traditionally developed practices.
- The University of Jordan Medical Faculty operates its own 400-bed teaching hospital in Amman.
- The Ministry of Education supports a program of mobile screening and treatment activities, contacting school children in the first and seventh grades in selected school districts.
- The Ministry of Religious Affairs is constructing its own 300-bed hospital in Amman.
- Various other private groups, domestic and foreign, philanthropic and commercial, operate a heterogenous set of hospitals and clinics.

This diversity of sources of health care, and a lack of cohesive interrelationships among them, are, perhaps, the most salient characteristics of Jordan's health sector. The fragmentation of the sector is seen as all the more acute a situation when one remembers that the Kingdom's population is a relatively small two million, and that the bulk of the population resides in a quarter of the land area.

Table 16 provides a quick overview of how some of the more important health care resources in Jordan are fragmented among the several sources of service provision.

Table 16: OVERVIEW OF HEALTH SECTOR RESOURCES, JORDAN, 1975

<u>Source of Health Services</u>	<u>Hospital Beds</u>	<u>% of Total</u>	<u>Ambulatory Care Facilities</u>	<u>% of Total</u>	<u>Physicians</u>	<u>% of Total</u>
Civil Government	1630	49	442	81	402	36
Military	1055	32	25	5	313	28
Private	649	19	56	10	364	33
UNRWA	-	-	20	4	30	3
TOTAL	3,334	100	543	100	1,109	100

Sources: Ministry of Health, Royal Medical Service and UNRWA.

Many weaknesses can be noted throughout the health sector as a result of its fragmentation. The following list attempts to cite what may be the more important ones:

- Health professionals' salaries differ widely from one sub-sector to another.
- Cross-referrals of patients across sub-sectors occurs haphazardly and inconsistently from one location in the Kingdom to another.
- There is no comprehensive information system on the workings of the whole health sector.
- Sector-wide health manpower planning is not occurring.
- There are no central control procedures regulating the development and location of health facilities.
- Systemic interrelationships between the health sector and other social service sectors can not be centrally directed.
- There is no central mechanism directing health sector research efforts to areas of most pressing needs.
- There is no mechanism to identify the most appropriate source of health services for participants in health insurance schemes.

The picture is, in short, one of large-scale duplication of effort and inefficient use of scarce health resources. There also is reported to exist, however, a near unanimity of professional opinion throughout the health community in Jordan that a stronger coordinative effort is necessary and that the Ministry of Health is the appropriate location for such an effort. All concerned seemed willing to cooperate with the Ministry in bringing about improvements.

The Ministry of Health

The Ministry of Health is the focal point for health concerns within the Government of Jordan. Under 1971 and 1976 legislation, the Ministry's broad mandate includes:

- provision of preventive, curative and pharmaceutical services;
- health education and training;
- supervision of the private sector, including hospital, medical and pharmaceutical services, laboratories and the health professions;
- development of health policy for the Kingdom.

Although the laws do not define a target population for MOH services, it is by implication the segments of the population unable to afford private care, or ineligible for RMS or UNRWA services.

The 1971 legislation established a High Health Council as an advisory body to the Ministry, for purposes of effecting coordination of all health care providers in the country. Its members were to include the Secretary and Undersecretary of the Ministry of Health, the RMS Director, the Director of the UNRWA Health Section, the President of the Jordanian Medical Association, the President of the charitable Red Crescent Society, and representatives of the professions of dentistry, nursing, pharmacy and midwifery.

This Council did not become an effective mechanism until 1976, when the late Health Minister, Dr. Mohammed Al-Bashir began to use it. An executive committee of the Council was formed, and its meetings began to be chaired by His Royal Highness Crown Prince Hassan, in the context of His Highness' concern with social development planning. Membership was expanded to include representation from the National Planning Council, the Prime Minister's Office, the Ministry of Labor and Social Affairs, and the Ministry of Education. An examination of the health sector was commissioned, through the U.S. Agency for International Development. Six days after assisting the completion of the documentation of this examination, Dr. Al-Bashir was killed in a helicopter crash, another victim of which was the late Queen of Jordan. Further efforts at effecting sector coordination awaited resumption of these activities by a new Minister.

The Minister does have, on paper, an internal focal point for health sector planning and coordination - the Directorate of Planning and Foreign Relations. This unit was created under the 1976 law with a view to establishing a health planning capability within the Ministry undistracted by short-term operational tasks. The planning function had previously been located in the Directorate also charged with handling foreign training of health sector personnel. As of late 1976, however, the same official was managing both the planning and the training functions, and staff resources needed to carry out comprehensive sector planning had not been fully developed.

The Ministry of Health's operating budget for Fiscal Year 1976 was 5.9 million Jordanian dinars (J.D.'s) - 4.3% of the total national operating budget

as compared with 3.9% in 1974 and 3.8% in 1975. The Budget further sub-divides the health allocation into the following categories:

	Total (in J.D.'s 000's)	as % of Ministry of Health Budget
Curative Medicine	4,201.9	71.1
Preventive Medicine	991.3	15.4
Laboratories	215.6	3.7
Administration	209.5	3.5
X-Ray	164.7	2.8
Training and Education	154.0	2.6
Dentistry	93.0	1.6

The Ministry's capital budget for Fiscal Year 1976 was 650,000, J.D.'s - .5% of the national capital budget (as compared to 1.3% in 1974 and 1.1 % in 1975). The budgeted capital expenditures were in the following categories:

	Total (in J.D.'s 000)	% of Total
Nurses' Domitories	418.0	64.0
Tuberculosis and Malaria Equipment	97.5	15.0
X-Ray Equipment	56.4	8.7
Laboratories	38.6	6.0
Training	15.0	2.3
Vaccines	10.0	1.5
Dentistry	4.0	.6

Converted to dollars, the two budgets allocate, on an annual basis, \$10.84 per Jordanian citizen - a not unimpressive figure. Of concern, however, would be the preponderance of spending in the curative medicine area, a pattern that has held firm in Ministry budgets for the past decade.

Health and Economic Planning

There have been significant improvements in health status and in the quantities of health services available to citizens in Jordan in the decades since the end of World War II. These increases have not come, however, as the result of any prioritization of the health sector by the government.

As have many developing countries, Jordan has used central planning as a policy tool in striving to attain better standards of living. Plan documents have been issued since the early sixties, covering varying periods of time. The most recent such document is the Five Year Plan for Economic and Social

Development, 1976-1980. The "general development objectives" stated in this document have as their focus: (1) structural change in the economy, (2) high GNP growth rates, (3) better income distribution, (4) high employment levels, (5) reduction of trade deficits, (6) reduction of dependence on external revenue sources, and (7) decentralization. These objectives are to be pursued through a carefully elaborated program of projects. Projected funding allocations to these projects, by sector, over the planning period, is displayed in Table 17.

**Table 17: SECTORAL DISTRIBUTION OF INVESTMENT ALLOCATIONS
UNDER THE FIVE YEAR PLAN, 1976-1980
(In Millions of Jordanian Dinars)**

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1976- 80</u>
Agriculture	5.9	8.4	9.3	8.2	8.2	40.0
Water	17.9	15.8	12.1	21.6	29.9	97.4
Mining	12.3	9.6	11.4	14.2	12.4	59.9
Manufacturing	34.5	56.1	42.6	20.0	16.0	169.2
Tourism and Antiquities	12.8	3.5	4.5	6.2	7.4	24.4
Electricity	10.9	12.2	9.4	6.7	3.6	42.8
Trade	.4	1.1	1.5	.8	-	3.8
Transport	27.1	30.3	30.9	23.6	8.0	119.9
Communication	5.3	4.5	3.4	3.2	3.7	20.1
Culture and Information	.5	1.3	.9	.1	.1	2.9
Education and Youth Welfare	5.6	8.0	7.9	7.1	5.9	34.6
Health	.8	1.4	2.0	2.4	2.5	9.0
Social Work	.2	.2	.2	.2	.2	1.0
Labor and Voca- tional Training	.8	1.0	.8	.6	.6	3.8
Housing and Gov't Buildings	15.6	16.9	18.0	17.8	17.8	86.0
Municipal and Rural Affairs	7.0	8.9	9.5	7.8	6.1	38.8
Miscellaneous	3.0	2.7	2.2	2.0	1.5	11.3
TOTAL	150.6	181.5	166.6	142.5	123.9	764.9

Source: National Planning Council, Five-Year Plan, p. 64.

The first nine categories listed in the table are shown to be receiving about 75% of the resources needed for the investments foreseen. The remaining 25% is allocated to the "social" sectors. Health is shown to be receiving about 1.2% of the overall total.

This low level for the health sector, as a percentage of the total

investment package projected by the plan, would seem to reflect assumptions common to many development planning efforts, to the effect that health status improvements come as a result of economic growth, and that they do not play any significant role in the growth process itself. Accumulating evidence, however, is tending to show that health measures can have significant developmental effects, in terms of educability and productivity in the labor force, increased entrepreneurial activity, and opportunities for settlement and development of previously uninhabitable areas.¹

Myrdal has also noted a tendency characterizing South Asian planning efforts to ignore "obstacles to raising production posed by attitudes, institutions and low living levels, particularly in regard to nutrition, health and educational facilities, which should rationally motivate much more incisive remedial policies..."² Myrdal explains this tendency in terms of a sociology of the officials engaged in the planning process. Whatever the reasons, the process in Jordan would seem to have followed a similar pattern, with health and the other social sectors receiving low priority.

The health chapter of the Plan presents fourteen categories of projects for funding within the planning period. Fifty-six percent of the funds cited as flowing to the health sector are designated for hospital construction, thirty-six percent for new clinics, health centers and other such smaller facilities, and the remaining eight percent for projects such as new in-service nurses quarters, a new building for the Ministry's Nursing equipment, and a new quality control laboratory for pharmaceuticals.

Eighty-two percent of the funding for these projects is projected as coming from Jordan's general budget, eleven percent from Jordan's own private sector, and the remaining seven percent from external sources.

No attempt is made to relate the program of investments projected for the health sector to the larger developmental goals articulated at the beginning of the Plan. The priority given to hospital construction would seem to run counter to several of the Plan's overall objectives - full employment, balance of trade, and better distribution of income. An emphasis on larger numbers of smaller facilities, and on programs to train auxiliary staff to provide basic services at such facilities, would result in increased employment of lower and middle level personnel, would depend less on imported materials, and would provide a wider distribution of "health income" through increased accessibility of health services to citizens.

¹ Alan L. Sorkin, Health Economics in Developing Countries, (Lexington, Mass: D.C. Health and Co., 1976), pages 43-52. Sorkin cites several pertinent sets of research findings. A summary of research findings in this area may also be found on page 82 of the October 1976 "World Bank Research Program," a booklet published by the Bank.

² Gunnar Myrdal, Asian Drama (New York, Pantheon, 1968) pages 720-21.

CHAPTER FIVE

CURATIVE RESOURCES

Traditional Practices

There has existed for centuries in southwest Asia an indigenous cluster of beliefs attributing illnesses or injuries to spirits which enter the body and create difficulties, or to persons or objects with the power to influence the body negatively. It is possible today to see villagers in Jordan wearing charms whose purpose is to ward off such spirits, or to see talismans tacked over the door of dwellings, or attached to houses, carts or the interior of automobiles, with the intent of diverting the influence of the "evil eye." When a person become ill or injured, a hot piece of metal has traditionally been placed on an affected area of the body to drive out the invading spirit, or a heated glass or teacup applied to the skin, with the intention of sucking the spirit out.

Jordan is undergoing extremely rapid social change. Western medical practices have been widely accepted, as is evidenced in the utilization data provided subsequently in this chapter. It is, therefore, difficult and probably pointless to attempt to determine exactly how the indigenous and the modern health care systems are affecting each other. Where Western medical practices are seen to be efficacious, they are accepted and sought out, to the extent that practitioners encounter requests for injection and medications in situations where they are not medically justified.

One observer summarized the situation in this way:

There is little in the way of logic to prevent Western practitioners and Middle Eastern patients from engaging in mutually beneficial health programs. The Western practitioner need not condemn Middle Eastern practices designed to prevent the evil eye or evil spirits from operating on the body, and the Middle Eastern patient need experience no conflict in preventing another evil -germs- from entering the body. The essential reasoning is not too dissimilar.¹

¹ Ailon Shilon, Peoples and Cultures of the Middle East, (New York, Random House, 1969), p. 383.

Facilities

In December, 1975, there were thirty-five hospitals being operated in Jordan by the country's various providers. Table 18 presents an overview of these facilities and their utilization in 1975.

Table 18: HOSPITALS, 1975

<u>Sub-Sector</u>	<u>Hospitals</u>	<u>Beds</u>	<u>Admissions</u>	<u>% Occupancy</u>
Civil Government	13	1,630	63,254	71
Military	4	1,055	29,084	59
Private	18	649	27,234	51
TOTAL	35	3,334	119,572	63%

Source: MOH and RHS records, as compiled by Heery International.

Inpatient facilities tend to be clustered in the urbanized areas of Jordan. Table 19 shows numbers of inpatient beds by sub-sectors and by their location in one of the Kingdom's five governorates. (Four of the governorates, though, stretch to the eastern border, and the location of a hospital in the western part of a governorate is of no significance to nomadic or semi-nomadic people living in eastern parts.)

Table 19: INPATIENT BEDS, TOTAL AND BY SUB-SECTOR
COMPARED TO POPULATION LOCATION

	<u>Civil Government</u>		<u>RMS</u>		<u>Private</u>		<u>Total</u>		<u>Popula- tion- Distri- bution</u>
	No.	% of total	No.	% of total	No.	% of total	No.	% of total	
Irbid	284	17	200	19	137	21	621	19	28.0
Amman	1027	63	855	81	476	73	2358	71	57.5
Balqa	100	6	-	-	-	-	100	3	6.5
Kerak	91	6	-	-	36	6	127	4	5.4
Ma'an	128	8	-	-	-	-	128	4	2.6

Source: Ibid.

Salient features of Table 19 seem to be:

- almost total concentration of private and military facilities in the north.

- location of civil government facilities in Amman governorate in a proportion slightly in excess of the population concentration.
- Irbid governorate as badly underserved by inpatient facilities.

Tertiary care resources are located in the three largest hospitals - King Hussein Medical Centre, Ashrafieh Hospital, and the University Hospital - all in Amman.

King Hussein Medical Centre, a 438 bed facility operated by the Royal Medical Services, provides specialty services in cardiology, endocrinology, nephrology, and neurology; cardiac surgery and thoracic surgery; neurosurgery; ophthalmology; plastic surgery; and hemodialysis and cardiac catheterization.

Ashrafieh, a 666 bed hospital operated by the Ministry of Health, offers services in dermatology, chest disease, physical medicine and rheumatology, neurosurgery, ophthalmology, thoracic surgery, and radiation therapy and nuclear medicine.

The University Hospital (with 375 beds at present) has programs in the major medical and surgical specialties, with the exception of cardiac surgery, neurosurgery, and hemodialysis, for which the hospital refers patients to King Hussein Medical Center.

While subspecialty programs are concentrated at these three largest hospitals, most other hospitals are oriented toward basic inpatient care in general medicine and surgery, obstetrics, and pediatrics.

General medicine and general surgery are available at the remaining hospitals in Jordan, with the exception of the Ma'an T.B. Hospital (operated by the Ministry of Health) and the Nour T.B. Hospital (private), both oriented toward long-term care for tuberculosis patients, and several small private hospitals, dedicated exclusively to obstetrical services. Obstetrical services are available at all hospitals except the Ma'an T.B. Hospital, the Nour T.B. Hospital, and the Ma'an Surgery Hospital. Pediatric care is provided at all Royal Medical Services and all government hospitals except the Ma'an T.B. Hospital, and at most of the private sector hospitals.

Operating Characteristics

In line with the distribution of beds in Jordan, the government hospitals have the largest share of of inpatient activity. Admissions to government hospitals accounted for more than half (52.9 percent) of total admissions in Jordan in 1975. The remaining admissions were almost evenly divided between the military sector (24.3 percent) and the private sector (22.8 percent).

Occupancy rates were highest in the government hospitals in 1975. The overall occupancy rate for government hospitals was 71 percent. The Royal Medical Services hospitals experienced 59 percent occupancy, and the private hospitals had 51 percent occupancy.

In 1975, the average length of stay for patients was 7.8 days at the Royal Medical Services hospitals, compared to 6.7 days in the government hospitals and

only 4.5 days in the private hospitals. The King Hussein Medical Center had the highest length of stay (12.4 days) of all hospitals in Jordan. A relatively high average length of stay was also registered at the University Hospital (8.1 days) and at Ashrafieh Hospital (7.7 days), the country's other two tertiary care hospitals.

Outpatient facilities

By one count, there were 4,236,763 visits to ambulatory health care facilities in Jordan in 1975. 26.2% of this workload was reportedly handled by the military sub-sector, 5.5% by the private sub-sector, and the remaining 68.3% by the civil government sub-sector.

While the outpatient activities of the military and private sub-sectors could be seen as straight-forward responses to needs of fairly well designated population groups - Jordanians in uniform and their dependents, and high-income urban residents - the activities at the civil government ambulatory care facilities seemed to require a more careful scrutiny. But available information on such facilities was inconsistent, both in the terminology used to classify the facilities and in indications of how many there are. Apparently, depending on the types of structures available in various locations, different kinds of facilities can be either operated separately or together, with similarly varying patterns of staffing. In addition to the out-patient units at hospitals, a network of free-standing facilities, with varying names such as "town clinic," "village clinics," "health center," and "health sub-center" offered a variety of ambulatory services. The important distinction seemed to be between clinics staffed by a full-time physician, and those visited by a doctor only once or twice a week.

Table 20, prescinding from the nomenclature difficulties, attempts an inventory of Jordan's ambulatory care facilities, and presents a gross count of their utilization in 1975.

Table 20: AMBULATORY CARE FACILITIES

	<u>No. of Facilities</u>	<u>Visits, 1975</u>
Civil Government		
Hospitals	13	371,507
Various Freestanding Facilities	363	2,190,511
Maternal and Child		
Health Centers	39	208,502
Dental Clinics	28	121,640
Military		
Hospitals	4	658,851
Medical Centers	16	223,498
Medical Battalions	5	228,255
Private		
Hospitals	16	60,389
Clinics	60	173,610

Sources: Ibid.

The rural village or urban community clinic is, or could be, the first point of contact between the population to be served and the health care system. It could be staffed so as to ensure ready access into that system for curative services and to ensure ongoing delivery of those preventive services that can strike health problems at their root causes.

Such does not seem to be the case with Jordan's clinics, which are staffed predominantly with male nurses, whose education and training is reported to vary from one month of hospital-based training to 18 months of practical nursing training. Whether they have full practical nursing qualifications or less, the tasks entrusted to and performed by these nurses are consistently limited: they provide simple first aid, gather patients together when the physician comes to visit, give injections and other medication in individual cases when the physician prescribes, and keep the clinic premises clean. In short, the practical nurse, in most locations, is a combination porter, janitor, clerk, and nurse aid.

The nurse does no health education or health promotion work, although he is in continual residence at the clinic, a base from which he could provide the kinds of ongoing services most needed at the local level: simple, routine curative services (which maximize use of the supervisory physician's time and ensure ready patient access into the health care system), health education, especially in nutrition and hygiene, simple case-finding, ongoing sanitation and other environmental health activities, and monitoring of vital statistics.

Manpower

Physicians

In mid-1976, there were 1,109 physicians licensed to practice medicine in Jordan. 402 -36%- of them were employed by civilian government agencies, 394 - another 36%- were in private practice, and 313 -28%- were employed by the Royal Medical Service.

The overall physician/population ratio was 1/1,803. This compared favorably with recently reported physician/population ratios in neighboring countries:

Lebanon	1/1,435 ^a
Jordan	1/1,803
Egypt	1/1,913 ^a
Syria	1/2,671 ^b
Iraq	1/3,348 ^a

Sources: a - Health, Sector Policy Paper Series, IBRD.
b - Syrian Ministry of Health.

If military physicians are not factored in, the physician/population ratio jumps to a less impressive 1/2,512. But large numbers of dependents of members of Jordan's armed forces, as well as certain categories of civilian government employees, do receive medical care through the Royal Medical Service. The lower ratio is, then, probably a more accurate reflection of the actual situation.

The overall availability of physicians in Jordan may be favorable, but their distribution is not, and actual accessibility to the whole population of physician services is problematic. Table 21 compares distribution of physicians in the civil government and private sub-sectors with the general population distribution.

Table 21: DISTRIBUTION OF PUBLIC AND PRIVATE PHYSICIANS, MID-1976

<u>Governorate and Population</u>	<u>No. MD's Public & Private</u>	<u>Ratio to Population</u>	<u>% Distribution of MD's</u>	<u>% Distribution of Population</u>
Amman 1,091,355	604	1:1516	76.0	57.5
Irbid 531,305	119	1:4465	15.0	28.0
Balqa 124,260	28	1:4438	3.5	6.5
Karak 102,354	20	1:5117	2.5	5.4
Ma'an	25	1:2003	3.1	2.6
----- 1,899,355	----- 796			

Source: MOH, Vital & Health Statistics Section.

Over three-quarters of the non-military physician population are shown to be in Amman, with its 57.5% of the general population, while Irbid, Balqa and Karak provinces appear underserved. The maldistribution is even more significant in the light of the normal tendency of physicians to be located in the larger population concentrations, so that even in Amman governorate, access for rural dwellers is not as good as the governorate figure would seem to indicate.

A similar distribution pattern is reported to prevail in the military sub-sector, with over three-fourths of physician manpower located in the northern governorates. This distribution pattern is, however, consistent with the reported distribution of uniformed service personnel.

There is a professional organization of physicians - the Jordan Medical

Association (JMA). In addition to the publication of the Jordan Medical Journal, the JMA sets standards for the recognition of medical training programs. This function is necessary because of the diversity of places in Asia, Europe and the Americas where Jordanian physicians have sought medical training. The JMA examines applicants' programs of study, and certifies to the Ministry of Health whether they meet acceptable standards. The Ministry issues medical licenses.

The Faculty of Medicine of the University of Jordan opened in the fall of 1972. Up to the present time, then, all Jordanian physicians have received their medical training outside the country. They have tended to come from an urban background, and the main criterion in their acceptance by foreign medical schools has been high academic grades. They have tended to come from Jordan's urbanized elites, and to engage themselves, in line with the prevailing tendency in the Western medical profession, in the pursuit of sophisticated specializations. There are, thus, relatively large numbers of specialist physicians practicing in Jordan today who are trained to deal with disease patterns prevailing in the industrialized countries, using the kinds of support systems readily available to physicians in those countries.

Relatively lesser numbers are found, however, in family practice, pediatrics, internal medicine and community medicine, fields much more critical in dealing with Jordan's most pressing health needs. The new medical school does have an explicit commitment to prepare community oriented general practitioners, who should begin to create a balance with the existing preponderance of specialists.

Nursing

Estimates of the number of registered nurses in Jordan vary. The Ministry of Health's figure for 1976 is 619, with 56 percent employed by civilian government agencies, 26 percent with the RMS, and 18 percent in the private sub-sector. There is thus, in the overall health sector, half again as many physicians as there are registered nurses, in a salient example of a lack of the kind of support western medical training presumes will be available to physicians.

Concurrent with the opening of its Medical Faculty, the University of Jordan also began a Bachelor of Science in Nursing program in 1972. The Ministry of Health operates a nursing college, with a 39-month curriculum. The RMS operates the Princess Muna Nursing College on the grounds of the King Hussein Medical Center outside Amman, with a 36-month program of study. A small nurse training program is also operated at the private Baptist Hospital in Ajlun.

Considerable effort has been put into recruitment campaigns for each of these nurse training programs. The primary obstacle to the success of these campaigns is thought to be the traditional unacceptability in Moslem societies of females attending to physical needs of males not of their own family. The benefits offered both to military and government nurses (housing, food, transport, and, in government, uniforms) have not yet proven to be wholly adequate incentives to counter social and familial pressures downgrading the status of the nursing profession.

There are also evident differentials among the health subsectors with regard

to compensation of nurses. A recent graduate starting work with the Ministry of Health earns JD 68.8, as compared with JD 82 in the RMS and JD 115 at the university hospital. Wage rates affect not only the attractiveness of the nursing profession in relation to other professions and the distribution of nurses among subsectors of health in Jordan, but also out-migration as well. It is estimated that the same new graduate described above can earn between two and three times more in the Gulf countries.

Other Health Professionals

There were estimated to be 195 formally qualified midwives in Jordan in 1976 - 70 percent employed by civilian government agencies, 8 percent by the RMS, and 22 percent in the private sub-sector. The Ministry of Health operates a midwifery school, with a maximum annual intake capacity of 26 students, and a 27 month program of study.

Midwives employed in the network of maternal and child health (MCH) centers operated by the Ministry of Health are responsible for far more than attendance at deliveries. Their duties include pre-natal care and post-natal follow-up, referral of serious problems to a physician, home visits, examination and vaccination of children, health and nutrition education, maintenance of birth records, and supervision of lower level employees at the centers. But use of the services offered by the MCH centers is reported to be low relative to the need. It is estimated that only about 38 percent of all births are attended by a formally trained midwife or obstetrician, and that the other 62 percent are handled by the traditional birth attendant, or dayah. While not a part of the organized health care system, the dayah is a central figure in the actual situation, and her existence would have to be dealt with in any attempt to strengthen the maternal and child health care situation in the Kingdom.

There were approximately 1,650 assistant, or practical nurses working in Jordan in 1976: 77 percent in the civil government sub-sector, 21 percent with the RMS, and 2 percent in the private subsector. About half of them had received 18 months training in one of several civilian and military practical nursing training programs. There has been less evidence of underenrollment in these programs than in the professional nursing programs. Those practical nurses serving without benefit of formal training have been developed through on-the-job apprenticeships. Underutilization of the practical nurses is thought partly to stem from the variation in their qualifications. With a relatively steady stream of graduates now coming from the training institutions in this area, however, the potential for a more standardized and thoughtful identification of tasks to be performed at this level is beginning to exist.

There are reported to be 350 pharmacists in Jordan, with nearly two-thirds employed privately.

There were in 1976 approximately 800 other supportive health professionals in a wide range of categories, which includes such specialties as laboratory technician, X-ray technician, anesthetist, sanitary inspector, pharmacist's

assistant, physiotherapist, dietitian and medical social worker. The absolute numbers of people in these and similar categories were relatively small. The Ministry of Health operates a Paramedical Institute, which graduated 90 persons in seven different specialties in 1976; the program has been hampered by underenrollment. A training institute for laboratory technicians at the University of Jordan had suspended its program temporarily in 1976.

CHAPTER SIX

PREVENTION

This chapter attempts an overview of the levels of effort underway in Jordan to deal on a preventive basis with the currently major causes of death and illness in the Kingdom.

The Maternal and Child Health Program

The Ministry of Health operates a network of Maternal and Child Health (MCH) centers, which target their services exclusively on that segment of the population - new mothers, infants and pre-school children - which is most at risk to disease and death in Jordan. The MCH program is thus as potentially as important an instrument for increasing life expectancy in the Kingdom as any other activity in its health service system. And yet Ministry officials are in agreement that the program is not fulfilling its potential.

As of 1976, there were 41 Maternal and Child Health (MCH) centers, half located in towns with populations over 10,000, and half in smaller communities, with populations of less than 10,000. Twelve MCH centers are physically integrated in the same building as Ministry health centers. The remaining centers are separate from but near to general purpose health centers.

Twelve centers are staffed with two midwives each; one additional center currently has 3 midwives; the main MCH training center in Amman has 7 midwives, and the remaining 27 centers are staffed with one midwife each. Each midwife is supported by one or two full or shared time assistant nurses. Physician services are provided to the MCH centers by MOH health officers from the health centers. Currently, each health center is responsible for medical support to 3 MCH centers, although it is estimated that physician coverage would require one MD for every 2 MCH centers. There are also 3 midwife-inspectors in the MCH system who are responsible for general supervision and on-the-job training.

The MCH center midwife is responsible for registration, observation, follow-up, mother-craft instruction and referral to the physician of expectant mothers in her catchment area, as well as for attendance at and immediate post-partum follow-up of home births. The midwife is also responsible for child health monitoring, conducted both in the MCH center and during home visits. Finally, the midwife is responsible for direct supervision of MCH center employees. Overall management of MCH center activities and personnel is the responsibility of the covering physician, who also carries out routine clinical examinations of registered mothers and children and special treatment of unusual situations.

Responsibilities of the assistant nurse include preparation of equipment and records, weight and height measurements, urine examination and, under direct supervision of the midwife, vaccinations.

In 1975, MCH activities included the provision of delivery services to approximately 3,000 mothers per year, representing less than 4 % of all deliveries.

33,732 expectant mothers received pre-natal care services from MCH centers in 1975, representing about 35% of the country's total pregnancies. The average number of prenatal visits per expectant mother was 1.89, for a total of 64,056. 15% of these were provided on a domiciliary basis by a trained midwife. Usually the first prenatal visit occurs in the second trimester.

4,878 mothers received post-natal care from MCH centers in 1975, representing 6% of all deliveries.

19,053 infants received the triple vaccine and polio immunizations in MCH centers, or less than 1 in 4 new births. The full schedule of immunizations cover an even smaller proportion (18%) of all newborns. This coverage is not substantially increased by the addition of immunizations provided by the private sector or the RMS.

Similarly, BCG vaccinations in the first year of life were administered to slightly over 13 percent of newborns, in collaboration with the staff of the chest disease control program. No other preventive services other than mother's health education and supplemental food distribution was offered by MCH centers.

The MCH program's coverage of its target population is thus clearly inadequate. No other area of direct health service activity is in greater need of immediate remedial effort.

Nutrition

The Government of Jordan did not appear, in early 1977, to have a nutrition policy. Nutrition is not regarded as a separate sector in the Five Year Plan and no nutritional implications are stated in the Plan's articulation of agriculture or health sector policies. No administrative structure is charged with a planning or coordinative function for nutrition affairs. Such a structure could foster a shared view, among the several public and private agencies concerned, of the actual dynamics of Jordan's nutrition problems, and an understanding of the roles the various agencies might play in attacking the remaining "hard core" of malnutrition upon which improvements in standards of living tend to impact slowly.

Numerous commodity distribution programs have been operated in Jordan, with various forms of international assistance. The Ministry of Health's network of maternal and child health centers distributes corn-soya-milk and dried skim milk mixtures to poor families, with U.S. Food for Peace support. The Ministry of Education operates a school feeding program, with the support of the U.N.'s World Food Program. The Ministry of Labor and Social Affairs directs 102 child feeding centers, with CARE support. Save the Children and the Lutheran Federation have also sponsored feeding programs. There is little evidence that these uncoordinated programs, however, have had significant impact on the nutritional

status of the groups served. Many of the programs have reached only school children, who are less at risk and less benefitted by supplemental feeding than infants and preschoolers. The organizations administering these programs are cognizant of their inadequacies.

Children and women of childbearing age will continue to constitute a majority of Jordan's population for the foreseeable future. Greatly strengthened efforts to facilitate nutritional adequacy for these vulnerable groups are clearly required.

Water Supply

The Government of Jordan has established three separate institutions charged with making water more available and accessible to the population. They are the Amman Water and Sewerage Authority (AWSA), for the Amman metropolitan area; the Jordan Valley Commission, charged with overseeing the total development effort in the valley; and the Water Supply Corporation, with responsibilities for the rest of the country.

The Amman water supply situation has received important improvements since the creation of AWSA in 1972. Specific activities have included the replacement of old distribution pipes, the completion of twelve new wells, the construction of two main pumping stations, construction of 4,000 cubic meters of new storage facilities, and the laying of approximately 200 kilometers of new pipes. AWSA's objectives, for the year 2,000, include increasing the daily consumption rate of forty liters per person to one hundred liters per person, and reducing the percentage of piped water lost to actual useage from a currently estimated fifty-four percent to thirty percent.

The Jordan Valley Commission's massive program to effect full development of the valley's potential includes three water supply networks.

- The North East Ghor Project will serve 10 settlements in the northern part of the valley. The system will consist of developed spring sources, sand filtration, chlorination, storage and distribution. Construction is scheduled to start in mid-1977, and to be completed by mid-1978.
- The Middle East Ghor Project will serve 18 settlements in the middle part of the valley. Supply lines to 15 of the 18 settlements have been completed, and work on the main lines to the remaining settlements, plus the storage and distribution system started in October 1976, is scheduled for completion in late 1977.
- The South East Chor project will supply water to 8 settlements in the southern part of the valley. A first phase is scheduled for completion in late 1977, and a second phase is scheduled to start in 1979 and be completed in 1981.

The Water Supply Corporation also has underway, or in the planning stage, an impressive program of projects. Their 1980 objective is to provide approximately

90% of the 773 population centers they serve, with improvements in water supply sources sufficient to produce a per capita daily consumption approximating forty liters.

Table 22 provides an overview of the existing water distribution situation, and the improvements being planned by the water agencies.

Table 22: EXISTING AND PLANNED WATER DISTRIBUTION IMPROVEMENTS FOR JORDAN

Area	1975			5-Yr. Plan (JDM)	1980		
	Population	Water Pumped (MCM)	Com. Rate (l/c/d)		Population	Water Pumped (MCM)	Cons. Rate (l/c/d)
Amman City	652,000	18.8	40	4.7	765,000	29.1	58
Jordan Valley	70,000	.3	10	3.3	120,000	3.5	80
Balance of Jordan	1,178,000	8.3	20	23.2	1,415,000	18.7	40
TOTAL	1,900,000	27.4	30	31.2	2,300,000	51.3	45

Source: Government of Jordan Water Agencies, as compiled by Lee R. Lunsford.

The water agencies activities, however, consist almost totally of planning, development, operation, and maintenance of their systems. The Ministry of Health is the government entity legally responsible for monitoring and controlling the bacteriological quality of the water in these systems. The Ministry has not had at its disposal sufficient quantities of the human and financial resources required to perform this function. Thus, while there appears to be significant progress being made in the water quantity area, the whole question of water quality seems to be receiving far less priority attention.

Other Preventive Programs

The Ministry of Health's Directorate of Preventive Medicine has responsibility for disease and epidemic prevention, health education, and the coordination of preventive health activities carried out by institutions other than the Ministry. In addition to the Maternal and Child Health program just described, there are also under the Directorate's management, operational programs for malaria eradication, tuberculosis control and student health. The 1971 Public Health Law authorized additional divisions for nutrition, public health nursing, industrial health, and, mental health and geriatrics. Such divisions have not, to date, been staffed.

The Directorate's programs are "vertically" organized - their staffing,

budgeting and various support functions are carried on separately, resulting in inefficient use of Ministry resources and fragmentation of service delivery to citizens. More preferable would be a "horizontal" pattern of organization, integrating preventive with ambulatory care services and facilities, avoiding duplicative support activities, and maximizing single contacts with individuals, families and communities for multiple health-promotive, disease-preventive and primary diagnostic-curative purposes.

The malaria eradication program's mission is to prevent the recurrence of what used to be a most serious health hazard. Activities include:

- Detection, treatment, and follow-up of carriers, including the selective screening of immigrants and visitors coming from endemic areas, door-to-door screening of residents in areas where imported cases are found, screening of clinic patients by malaria workers located at selected outpatient facilities, passive detection relying upon the referral of any suspicious symptomatic case from either of the three major health care sectors, treatment and follow-up testing of cases, and home visits for ascertainment of carrier state.
- Vector surveillance and control, including entomologic survey work, residual home spraying, larvicidal activities in bodies of water, and drainage activities.

The program employs 735 persons divided into five sections:

- Administration (54 employees)
- Laboratory (14 employees)
- Operating (525 employees)
- Entomology (34 employees)
- Epidemiology (108 employees)

The majority of these employees, however are seasonal, and engage primarily in environment modification work. There are about 65 full-time field workers who specialize in activities including epidemiologic and entomologic surveys, and environmental operations workers. The skills and experience of these specialized health workers might well be utilized to perform valuable services in other sphere of health activity, notably in the areas of environmental sanitation, and perhaps in immunization and tuberculosis case-finding and follow-up, without reducing the effectiveness of the malaria program.

The Chest Disease Control Program focuses on the care and prevention of tuberculosis. Specific functions include a BCG vaccination program, a sputum examination screening program, radiographic screening of selected occupational groups, and registration, treatment and educational activities. There are 3 in-patient facilities - in Amman, Ma'raq and Ma'an, with 137 beds - and eight out-patient treatment stations. The program is staffed with 174 personnel, including eleven physicians, 71 nurses and technicians, and 92 support people.

It is probable that case finding, treatment, and follow-up activities could reach a larger proportion of the population by integrating tuberculosis activities with, on the one hand, malaria activities as discussed above, and, on the other, with multi-purpose health services using auxiliaries and nursing personnel attached to health centers and village health clinics. There is persuasive evidence from other countries that, especially with the aggressive early case-detection, treatment, and follow-up that could flow from integrated health services, most TB cases can be treated at home on an ambulatory basis, obviating the need for long and costly hospitalization. An integrated approach would enhance early BCG vaccination of infants and young children, allow for greater access to the population at large seeking other health services via the health center and clinics, and allow for efficiency by shared use of vehicles and mobile personnel working in malaria and environmental sanitation.

A school health program, started in 1975, is the product of collaborative arrangements between the Ministry of Education and the Ministry of Health. It is under the technical supervision of the Division of Preventive Medicine.

With a defined target population and specified objectives and timetable of activities, this program has contacted 30,000 first and seventh grade children, or 8 percent of all students.

Activities conducted by the school health teams include:

- Health and Sanitation Survey Work: The health survey includes a medical and dental examination conducted by a team either of one physician, and two nurses (one male, one female), or one dentist and one nurse, during the morning. Each team is responsible for contact with approximately 5,000 students. Each team is also responsible for surveying the sanitary conditions within the school.
- Health Care Service: Each team is also available in the afternoons to school-age patients, some of whom they refer for follow-up medical and dental care determined during the health survey.
- Facilities and Resources: Eight mobile medical and three mobile dental units, plus one main fixed administrative and educational unit presently form the available facilities and resources. Future plans include the timed extension of school health activities to all first and seventh grade students in all areas of the country (approximately 80,000).

Given an extremely high cost of mobile screening and treatment programs, and their low cost-effectiveness in all but highly unusual circumstances, it is probable that most of the work done by the school health program could be better done by an integration of this categorical program into the type of integrated health service mentioned above. Similar results might be achieved through the use of auxiliary personnel based at the fixed health centers and clinics near the schools, and through regular visits to these facilities (and perhaps to the schools) by specialized personnel (such as dentists) for consultation and continuing education of health center personnel and treatment of selected problems requiring their specialized skills. The health sanitation surveys could be satisfactorily performed by a well-trained nurse or auxiliary. Most treatment of common acute conditions uncovered could also be given by nurses or auxiliaries.

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