

PN-AAT-616

ISBN 41892

# INSTITUTE FOR MIDDLE EAST PEACE AND DEVELOPMENT

معهد  
الشرق الاوسط  
للسلام  
والتنمية

The  
Graduate  
School  
and  
University  
Center  
CUNY

33 West  
42 Street  
New York  
NY 10036  
212-944-6444

המכון  
ללמודי שלום  
ופיתוח  
במזרח התיכון

62

## HEALTH STATUS AND SERVICES IN THE WEST BANK AND GAZA STRIP

Report

of

"Cooperation for Development: A Community-Based Health Project"

USAID Grant No. NEB-0187-G-SS-4110-00

Sten H. Vermund, M.D., D.P.H., M.Sc.  
Chief of Health Team

Susan G. Miller, Ph.D.  
Project Director

Stephen P. Cohen, Ph.D.  
Principal Investigator

2980187

004516

002062-  
5

Institute for Middle East Peace and Development

September 1985

HEALTH STATUS AND SERVICES IN THE WEST BANK AND GAZA STRIP

Report

of

"Cooperation for Development: A Community-Based Health Project"

USAID Grant No. NEB-0187-G-SS-4110-00

Sten H. Vermund, M.D., D.P.H., M.Sc.  
Chief of Health Team

Susan G. Miller, Ph.D.  
Project Director

Stephen P. Cohen, Ph.D.  
Principal Investigator

Institute for Middle East Peace and Development

September 1985

# INSTITUTE FOR MIDDLE EAST PEACE AND DEVELOPMENT

معهد  
الشرق الاوسط  
للسلام  
والتنمية

The  
Graduate  
School  
and  
University  
Center  
CUNY

33 West  
42 Street  
New York  
NY 10036  
212-944-6444

המכון  
ללמודי שלום  
ופתוח  
במזרח התיכון

"Cooperation for Development: A Community-Based Health Project"  
USAID Grant No. NEB-0187-G-SS-4110-00

HEALTH STATUS AND SERVICES IN THE WEST BANK AND GAZA STRIP

## EXECUTIVE SUMMARY

Susan G. Miller, Ph.D.  
Project Director

Sten H. Vermund, M.D., M.Sc., D.P.H.  
Chief of Health Team

Stephen P. Cohen, Ph.D.  
Principal Investigator

## "Cooperation for Development: A Community-Based Health Project"

USAID Grant No. NEB-0187-G-SS-4110-00

### EXECUTIVE SUMMARY

#### A STUDY OF HEALTH STATUS AND SERVICES IN THE WEST BANK AND GAZA STRIP

##### Introduction

Health planning on the West Bank and Gaza has been impeded by a lack of unbiased, data-based studies on the status of Palestinian health. Palestinian sources, both private and university based, have their own set of data and assessments; Israeli sources have studied similar issues and come to different conclusions. International agencies offer yet another source of analysis which does not necessarily accord with either Israeli or Palestinian sources. The renewed interest in the Palestinian situation, stimulated by the "quality of life" initiative, necessitated a more critical look at Palestinian health. For a long time, infrastructure activities rather than service activities have been the main focus of development assistance in the West Bank and Gaza Strip. The new interest in the human impact of foreign aid has made the Palestinian health sector an appropriate area for study. These were the fundamental issues behind the Institute-sponsored health study conducted during the period September 1984 through September 1985.

##### Project Goal

The purpose of this study was to gather relevant available information on health status and services in the West Bank and Gaza. Using this body of factual and descriptive material as a starting point and supplementing it with selected field studies, the Health Team sought to draw a balanced, statistically based picture of Palestinian health. The results of the year-long effort are contained in the final report, "Health Status and Services in the West Bank and Gaza Strip".

##### Statement of Problem

1. Health care services are being delivered on the West Bank and Gaza Strip through several independent systems with little or no coordination among them. These services include:

- government health system (Israeli-financed)
  - "charitable" health sector (locally financed, with resources from outside the region)
  - UNRWA health system (supported by that agency)
2. There is no overarching estimate of the size of resources entering the health sector in the West Bank. There is no one planning facility to manage the flow of resources. Competition, duplication, and laissez-faire development are the hallmarks of health development in this zone.
  3. Despite impressive strides forward in the past two decades, Third World patterns of health are found in the West Bank and Gaza Strip, including high infant mortality rates, nutritional problems, and deficiencies of sanitation and water.
  4. While some segments of the Palestinian population suffer from diseases which are no longer prevalent in the industrialized world, other segments are subject to "modern" illnesses such as obesity, hypertension, and heart disease which are not adequately detected or treated.
  5. Vast differences exist between rural and urban areas, resulting in inequities in service delivery and quality of care.
  6. Budgets for health are shrinking for all funding sources, especially in the government sector where considerable belt tightening has taken place. Additional resources for health must come from untapped sources in the private sector and the international arena.

#### DATA SUMMARY

##### Health Services

The West Bank is divided into the following seven administrative districts: Hebron, Bethlehem, Ramallah, Nablus, Tulkarm, Jenin, and Jericho. The districts with the best government and private health services are Bethlehem, Ramallah, and Nablus, while the more rural and peripheral districts are relatively poorly served. For example, in 1984 Bethlehem/Ramallah/Nablus had 2.01 hospital beds per 1000 persons, while Hebron/Tulkarm/Jenin/Jericho had 0.70 beds per 1000 persons. The peripheral districts are further disadvantaged by poorer transportation access to Jerusalem and its medical services; low rate of participation in the health insurance scheme; lower average socioeconomic status of population; fewer resources in primary care and hospital services in the private sector; lower expenditures per bed in the government hospitals; and less attractive professional environments for well qualified physicians and nurses.

The Gaza Strip does not show the same dichotomy between central and peripheral regions. While the private sector resources there are few, aggressive advocacy of primary care by the Health Department and the United Nations Relief and Works Agency (UNRWA) has led to improvements in health status. Geographic proximity and high rates of insurance participation and UNRWA eligibility also contribute to the relative ease of access to both preventive and curative services in Gaza. Nonetheless, serious financial and administrative constraints operate on the private sector in the Gaza Strip. About 1.8 beds per 1000 persons were available in Gaza's hospitals in 1984. Primary care services are better organized, more accessible, and more widely used in the Gaza Strip than in the West Bank. The leading cause of death in children under five years of age is perinatal diseases (largely prematurity) in the Gaza Strip, whereas in the West Bank bronchitis and pneumonia, followed by gastritis and diarrhea, are the most common causes of death. While major strides still need to be made in health services in the Gaza strip, its health indices are largely superior to the apparently more prosperous and sophisticated West Bank.

Trends in hospital statistics reveal a net decline in both the West Bank and Gaza Strip in the available hospital beds in both government and private sectors: from 2.15 beds per 1000 persons in 1970 to 1.78 in 1983 in the West Bank (including the mental hospital) and from 2.50 per 1000 persons in 1975 to 1.82 in 1983 in the Gaza Strip. While strides have been made in primary care, bed occupancy rates have not fallen and an overall lack of good quality hospital facilities is widely felt. Quality of hospitals is particularly poor in the economically strapped government sector. Because of inflation and the Israeli economic crisis, plans for hospital renovations have been severely curtailed and operating budgets have been cut.

The impact of the economic crisis is seen in primary care as well. Programs to build clinics in villages of fewer than 3,000 persons have been postponed. Since early 1985, free care in government facilities which was formerly provided to uninsured children under three years of age, was limited to children under one and one-half years of age. Only 40% of the population in the West Bank have government health insurance, while in the Gaza Strip about 80% are insured. Therefore, it is likely that reduced eligibility for free care in the toddler age group will have a greater impact in the West Bank than in the Gaza Strip.

#### Human Resource Development

Personnel issues in the West Bank and Gaza Strip are paramount. Low salaries lead physicians to seek private practice opportunities in more prosperous zones, especially near Jerusalem. Nurses can make double the salaries in private charitable hospitals than in government hospitals. Both nurses and doctors in the Gulf States are paid salaries about six times those of their counterparts in the West Bank. Thus, there is one kind of brain drain locally -- that of experienced medical personnel from peripheral districts towards the

center -- and another one from the West Bank and Gaza Strip to the Gulf and other Arab states or to the West. Scholarships for medical school are readily available from Eastern European nations and the Soviet Union, but difficult to obtain for Western countries, with the exception of the United Kingdom. Unless creative and dramatic programs are initiated to improve the quality of professional life in the periphery, these districts will continue to be vastly underserved by qualified physicians, nurses, and allied health professionals.

### Validation through Field Studies

The Institute Health Team sought to validate secondary data sources (Chapters V and VI) with a series of health studies. The first (Chapter I) provided a demographic model to better describe infant mortality rates (IMR) and critically reviewed arguments on the likelihood of marked underreporting of infant deaths. Our estimates of '982 IMR for the West Bank are 53.5 to 63.5 per 1000 live births, about double the reported rates. In the Gaza Strip, our model indicated estimate of 53.1 to 56.1 per 1000 live births, about 35% over reported rates. While both figures blur certain urban/rural mortality differences, they clearly show better health status in the West Bank and Gaza Strip than in Jordan or in Egypt, but poorer status than that among Israeli Arabs. These figures also indicate that considerable challenges in primary care and hospital service delivery need to be overcome before health status in the West Bank and Gaza Strip can emerge from a "Third World" pattern of IMR and analogous health indices.

A second study (Chapter II) examined causes of admission and death at a major pediatric facility in the southern West Bank (Caritas Baby Hospital) in order to validate reported morbidity and mortality rates. Results revealed gastrointestinal and respiratory infections to be the most common cause for infant admissions. Prematurity and hypothermia had case fatality rates over 30%. Hebronites were more likely to be seriously ill on admission than patients from Bethlehem. Differences among male and female patients are being further explored, as are historic trends, but a Third World pattern of morbidity is noted. Some inroads into largely preventable causes of death are apparent, but whether good hospital care or better primary care prior to hospitalization are responsible is not known. Vaccine preventable diseases were uncommonly seen, confirming official statistics. Hypothermia was a very common cause of death in the winter months, particularly in Hebronite infants. Ongoing surveillance of such well placed and well kept statistics can provide valuable information for health planning and assessment.

A third study (Chapter III) used inpatient records at the Mount of David Orthopedic Hospital to outline utilization patterns of a tertiary referral facility in the West Bank and to examine the characteristics of important causes for orthopedic or neurologic disability in childhood. Among the many interesting findings were: lower female:male ratios for congenital dislocated hips than seen in other parts of the world; broad use of hospital referral facilities (e.g. surgery) by persons from more distant districts; and

restricted use of hospital emergency facilities (e.g. fracture care) by other than local people. Again, relatively few cases of vaccine preventable diseases were noted.

Another study (Chapter IV) was a survey of health consumers in the Hebron district to determine patterns of use and evaluation of the available health care services. Local personnel who assisted in this research effort were coordinated by the research division of the Hebron Graduates Union working with the Institute. Findings revealed a mixed pattern of service use depending of the type of problem (childbirth, immunization, serious illness or injury), ease of access, and insurance coverage. Hebronites are concerned about quality of medical care and appear willing to receive services from any source -- including Israeli -- if the care is good. The clearest example of this the high degree of reported use and satisfaction with the government's immunization program. Subjects with larger families and those living in rural districts outside the city were significantly more likely to report an experience in which medical care was needed but unavailable. This pilot study of consumer behavior and preferences offers new information to health planners about users' priorities and concerns. Moreover, willingness to participate in the study -- conducted by Palestinians -- was widespread. Prior fears about Palestinian resistance to survey research proved to be completely unfounded.

#### Opportunities in Palestinian Health Some Recommendations

Palestinian health receives relatively little outside aid per capita compared to the situation in neighboring countries. Support for human resource development; for services, equipment, and access; and for information gathering are all important priorities. Grass roots efforts are required to build local managerial competence. Externally aided initiatives in management and control are the most politically sensitive, but are also key to the process. Moreover, the change which has occurred over the past year in Israeli attitudes towards private sector development in health augurs well.

Foreign assistance agencies should consider realigning their spending priorities to place a greater emphasis on the health sector. A noticeable improvement in primary and preventive health services would have a great impact on the lives of people in these zones. For rural people it would mean better access to even basic health care; for urban residents, it would mean better emergency facilities to deal with illness resulting from stress, tensions, and the life upheavals caused by the political environment.

Creative approaches to health development have to be implemented. Integrated initiatives in health are of paramount importance. Training without a clear understanding of future needs, equipment without training and coordination among various services, or any of the above without relevant research are unproductive.



Public and private sectors will continue to co-exist without coordination. This leads to waste, mismanagement, and low motivation for medical personnel in the underpaid public sector. Efforts must be made to take maximum advantage of all available resources and weave them into one coordinated system, overcoming present political barriers. Local Palestinians are willing to take on this task and are further ahead on this point than outside donors.

Restrictions on health development in the private sector should continue to be removed. Expectations are now high that more open Israeli policies will continue. A positive attitude on the part of the authorities to private sector initiatives is extremely important in promoting an environment for change.

Funding for health would be forthcoming from Palestinian sources if there were a consensus on goals. Already large amounts of outside capital are flowing into the West Bank to supplement the estimated \$8 million per year Israel is spending on health. Helping local organizations to take the lead in advocating for health improvements is the recommended strategy for bringing in fresh Palestinian/Arab assistance into this zone.

## TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
I. MORTALITY RATE ESTIMATES FOR THE WEST BANK AND GAZA STRIP: Demographic Models and Critical Review	8
II. PEDIATRIC ILLNESSES IN THE SOUTHERN WEST BANK: A Hospital-Based Study	27
III. PATTERNS OF ORTHOPEDIC ILLNESS AND INJURY IN THE WEST BANK AND GAZA STRIP: A Hospital-Based Study	50
IV. THE USERS' PERSPECTIVES OF HEALTH SERVICES IN HEBRON: A Community-Based Study	68
V. HEALTH IN THE WEST BANK: A Profile from Secondary Sources	80
VI. HEALTH IN THE GAZA STRIP: A Profile from Secondary Sources	127
VII. AN ASSESSMENT OF HEALTH STATUS AND SERVICES IN THE WEST BANK AND GAZA STRIP: Conclusions from "Cooperation for Development: A Community-Based Health Project"	155
VIII. WORK IN PROGRESS	164
IX. REFERENCES CITED	168

Figures and Tables follow the chapter to which they refer.

## LIST OF FIGURES

### Following Chapter I

Figure I-1: Overall reported mortality rates and age-specific mortality rates for selected Arab populations, 1955-1983.

### Following Chapter II

Figure II-1: Number of admissions and average days of hospitalizations per patient, Caritas Baby Hospital, 1957-1984.

Figure II-2: Hospital mortality rates, Caritas Baby Hospital, 1957-1984.

### Following Chapter III

Figure III-1: Number of admissions per year and average length of hospital stay, Mount of David Orthopedic Hospital (Bethlehem), 1974-1984 (semilogarithmic scale).

Figure III-2: Proportion of total admissions due to trauma/emergency or for pre-scheduled reasons, Mount of David Orthopedic Hospital (Bethlehem), 1974-1984.

Figure III-3: Patient services provided by Mount of David Orthopedic Hospital (Bethlehem), 1974-1984 (semilogarithmic scale).

Figure III-4: Number of patients receiving various ancillary services at Mount of David Orthopedic Hospital (Bethlehem), 1974-1984 (semilogarithmic scale).

Figure III-5: Number of ancillary services provided by Mount of David Orthopedic Hospital (Bethlehem), 1974-1984 (semilogarithmic scale).

Figure III-6: Proportion of total for selected primary diagnoses, Mount of David Orthopedic Hospital (Bethlehem), Selected months, 1974-1984.

Figure III-7: Relative frequency of a specific orthopedic diagnosis by region of residence, Mount of David Orthopedic Hospital (Bethlehem), Selected months, 1974-1984.

Following Chapter V

Figure V-1: West Bank health districts.

Figure V-2: Number of cases per 100,000 population (selected diseases).

Following Chapter VI

Figure VI-1: Gaza Strip.

Figure VI-2: Reported mortality rates, maternal and child health, Gaza.

## LIST OF TABLES

### Following Chapter I

- Table I-1: Recorded deaths in the West Bank and Gaza Strip, selected years.
- Table I-2: Ratios of numbers of deaths in the West Bank and Gaza Strip.
- Table I-3: Population of the West Bank and Gaza Strip by sex and age, 1967-1982.
- Table I-4: Infant mortality among selected Palestinian and other populations.
- Table I-5a: Births by mother's age: Number of births.
- Table I-5b: Births by mother's age: Percentage of total births born to mothers 15-19 or 40+.
- Table I-6: Age-specific fertility rates and total fertility rates (TFR).
- Table I-7: Post-neonatal mortality rate (PNM) as proportion of total infant mortality rate (IMR).
- Table I-8: Selected vital statistics from 30 developed nations after 1945.
- Table I-9: Mortality indicators.
- Table I-10: Estimates of death rates after age 1 (circa 1982).
- Table I-11: Proportional relationships of death rates of selected Arab populations.
- Table I-12: Estimates of infant mortality rates (IMR) circa 1982.
- Table I-13: Estimates of unrecorded births soon followed by death, circa 1982.

## Following Chapter II

- Table II-1: Frequency ranking of common primary diagnoses, 1982 and 1983, Caritas Baby Hospital (Bethlehem).
- Table II-2: Frequency ranking of most common diagnoses (primary and other), 1982 and 1983, Caritas Baby Hospital (Bethlehem).
- Table II-3: Primary diagnoses by region of residence, 1982, Caritas Baby Hospital (Bethlehem).
- Table II-4: Primary diagnoses by region of residence, 1983, Caritas Baby Hospital (Bethlehem).
- Table II-5: Case fatality rates by primary diagnosis, 1982 and 1983, Caritas Baby Hospital (Bethlehem).
- Table II-6: Mortality rates of selected primary diagnoses by region of residence, 1982, Caritas Baby Hospital (Bethlehem).
- Table II-7: Mortality rates of selected primary diagnoses by region of residence, 1983, Caritas Baby Hospital (Bethlehem).
- Table II-8: Age group by region of residence, 1983, Caritas Baby Hospital (Bethlehem).

## Following Chapter III

- Table III-1: Most common primary diagnoses by frequency of occurrence for selected months, Mount of David Orthopedic Hospital (Bethlehem).
- Table III-2: Age at admission to hospital, Mount of David Orthopedic Hospital (Bethlehem).
- Table III-3: Secular trends in age at admission to hospital, Mount of David Orthopedic Hospital (Bethlehem).
- Table III-4: Emergency and scheduled admissions by region of residence, Mount of David Orthopedic Hospital (Bethlehem).
- Table III-5: Frequency ranking of four most common primary diagnoses by region of residence, Mount of David Orthopedic Hospital (Bethlehem).

## Following Chapter IV

- Table IV-1: Occupations of respondents and spouses, Survey of users of health services in Hebron district.

- Table IV-2: Educational level of respondents and spouses, Survey of users of health services in Hebron district.
- Table IV-3: Respondents' choice of medical services, Survey of users of health services in Hebron district.
- Table IV-4: Frequency ranking of reasons for respondents' choice of medical services, Survey of users of health services in Hebron district.

Following Chapter V

- Table V-1: Indicators of medical services utilization, West Bank, 1970-1983.
- Table V-2: Hospital beds by region, 1984.
- Table V-3: Hospital occupancy rates by region, 1983.
- Table V-4: Staff of government hospitals, 1983.
- Table V-5: Staff of selected West Bank and Jerusalem private hospitals, 1983.
- Table V-6: Hourly wages (US\$ equiv.) of nurses in government and selected private hospitals, Dec. 1983.
- Table V-7: West Bank facilities of Public Health Department by region, 1983.
- Table V-8: Visits to maternal/child health (MCH) clinics
- Table V-9: Health activities of charitable societies 1984: Hebron.
- Table V-10: Health activities of charitable societies 1984: Bethlehem.
- Table V-11: Health activities of charitable societies 1984: Ramallah.
- Table V-12: Health activities of charitable societies 1984: Nablus.
- Table V-13: Health activities of charitable societies 1984: Jenin.
- Table V-14: Health activities of charitable societies 1984: Tulkarm.
- Table V-15: Health activities of charitable societies 1984: summary.
- Table V-16: Notifications of selected infectious diseases, Judaea and Samaria, 1968 to 1984.
- Table V-17: Causes of death of children 0-4 years, by age and diseases, 1983.

Following Chapter VI

Table VI-1:	Population statistics, 1983.
Table VI-2:	Gross national product per capita (US\$ equiv.), 1982.
Table VI-3:	Employment by economic branch, Gaza Strip and West Bank, 1983.
Table VI-4:	Reported deaths by primary cause, all ages, Gaza, 1981-1983.
Table VI-5:	Primary cause of death by age group, 0-5 years, Gaza, 1982, 1983.
Table VI-6:	Infectious diseases reported from hospitals and clinics, Gaza, 1967-1984.
Table VI-7:	Indicators of medical services utilization, Gaza Strip, 1975-1983.



HEALTH STATUS AND SERVICES  
IN THE WEST BANK AND GAZA STRIP

## INTRODUCTION

People everywhere need and deserve decent health care; access to medical help is universally upheld as a fundamental human right. Even in the tumultuous setting of the West Bank and Gaza, there is a deep-seated conviction that health care services must be protected from the political winds that buffet the region.

The starting point for "Cooperation for Development: A Community-Based Health Project" was our assumption that Palestinian health was an issue which, more than any other, could be taken out of the political arena. In the course of carrying out the research over the past year, our basic intuition was borne out: we found that Palestinians, Israelis, and Americans alike were searching for ways to remove health from the controversy which entangles most efforts for economic and social change in the region.

In this environment, the Institute began its work in September 1984. The results of our year-long inquiry are contained in the following report. Over the past twelve months, we have reached our goal of producing an objective, data-based study of Palestinian health within the West Bank and Gaza. Along the way, we learned the difficult lesson that despite one's best efforts, health and politics often intersect. We also learned that on many levels and in many places, dedicated health professionals are working to thwart that

misalliance. Their help and cooperation helped us overcome countless obstacles and made this study possible. Palestinians and Israelis alike, firmly committed to the humanitarian goal of providing better health care, supported this venture -- often at considerable professional risk. Their balanced and generous participation has permitted us to bring together many data sources, both published and unpublished. What attracted and reassured them was the promise -- firmly kept -- that our work would go forward as science, using objective criteria for collection, analysis and presentation. The results may be controversial, and for some even painful; the credibility of our findings is left to the judgment of the reader.

It is our hope that "Cooperation for Development" will initiate a fresh look at the problems of economic and social change in the region, by showing how the layers of myth that have enveloped most sectors of Palestinian development can be removed through careful, unbiased research and analysis. One of the more lasting contributions of the study may be the methodological model it offers for future needs assessments in this troubled area.

This report is divided into nine chapters. Chapters I through IV are devoted to original research. Chapters V through IX review secondary source materials, assess the health sector in the West Bank and Gaza, and summarize work in progress.

Chapter I focusses on estimates of infant and child mortality rates, in order to put the health status of the region in a readily understood international context. Chapter II examines common causes for hospital admissions and deaths in children, using data primarily from the Hebron and Bethlehem districts. Chapter III is also a hospital-based study, but the hospital is a specialty referral center for orthopedics, whose patients come from a much broader catchment area. Issues relevant to rehabilitation and disability are addressed, as well as the role of the tertiary facility in the West Bank. In our study, social risk factors for disease are examined along with biological ones. Chapter IV, a pilot field study of users' perspectives on health services in the Hebron district, is of special interest to social scientists.

Chapters V and VI cover the West Bank and Gaza, respectively, using secondary sources. Although data from the government sector and UNRWA were readily available, a special effort was made to gather information about local charitable initiatives as well. Chapter VII is our assessment of the foremost challenges to health development on the West Bank and Gaza, based on our understanding of the data. Chapter VIII describes our work in progress and outlines further output from the study, beyond its official termination. Chapter IX is a bibliography of sources consulted, including documents not specifically referenced in the text, many of which remain in our files and constitute a significant collection of materials on West Bank/Gaza health.

To acknowledge all those who helped us in learning about health on the West Bank and Gaza is an impossible task, but some general categories of assistance should be mentioned. The leadership of many charitable societies, most private voluntary organizations active in health, university faculty members, and private physicians and other health professionals were among those who contributed valuable information and directed us toward the key issues. The Civil Administration was generous in providing health and social service data, and facilitating visits to government institutions. UNRWA health authorities both locally and in Vienna familiarized us with their services and with problems in refugee health. Specific research assistance was provided by: the Central Bureau of Statistics (Israel) and the National Center for Health Statistics (USA) in Chapter I; the Caritas Baby Hospital and the Verein Caritas Kinderhilfe Bethlehem (Switzerland) for the work in Chapter II; The Mount of David Orthopedic Hospital and the Holy Land Christian Mission (USA) for Chapter III; the Hebron University Graduates' Union, the Hebron Young Women's Club and the Hebron Health Committee for the work in Chapter IV; the Civil Administration (Israel) Health and Social Welfare Departments, the UNRWA Health departments, the World Health Organization, the Palestinian and Jordanian Information offices (USA), the Near East Bureau of USAID, and many individuals, charitable societies, and private voluntary organizations for Chapters V and VI. We are deeply grateful for their assistance.

Finally, we wish to make special mention of the Institute Health Team who participated in every stage of this project: Mayris Webber, M.P.H.; Angela

Babin; David Haddow, M.P.H.; Katherine Davenny, M.P.H.; Eric Goldstein, M.A.; Richard Garfield, RN, Dr.P.H.; Harriet C. Arnone, Ph.D. (author, Chapter IV); Eitan Sabatello, Ph.D. (co-author, Chapter I); Claude Lama; Naela Refa'at, M.A.; Bethamie Horowitz, M.A.; Kim Bergner; Erica Damsky; Basima Ahed, M.A.; and Lynn Ruggiero, M.A.; with special thanks to Michael Katz, M.D. and Hayyim Obadyah for their assistance in editing and report preparation. The superb teamwork and dedication of all made this report possible.

Susan G. Miller, Ph.D.  
Project Director

Sten H. Vermund, M.D.  
Chief of the Health Team

CHAPTER I  
MORTALITY RATE ESTIMATES  
FOR THE WEST BANK AND GAZA STRIP  
Demographic Models and Critical Review

Introduction

Estimates of major public health rates in a given region are of considerable importance to health planners (Refs. 2,14,26,36,48,59). Where underreporting of deaths or births is widely recognized, demographic models are employed to estimate the rates. If underreporting is a problem, a given figure such as an infant mortality rate (IMR) can mislead the health planner into a strategy which may be inappropriate. For several years, a debate has remained unresolved regarding IMR and other vital statistics in the West Bank and the Gaza Strip. Whereas Israeli Ministry of Health (MOH) officials believe that reported death rate for infants and others give a fairly accurate picture (West Bank IMR = 28 deaths per 1000 live birth and Gaza Strip IMR = 43 deaths per 1000 live births in 1982), the Israeli Central Bureau of Statistics (CBS) believes that there is considerable underreporting of infant deaths, with estimates of IMR closer to 70 (Refs. 50,51). Field surveys with UNRWA data (Refs. 55,74,75,94,99) and by Bir Zeit University researchers (Refs. 34,35,36) gave estimates even higher than the CBS, presumably because of selection of

especially needy study populations and/or their earlier date of IMR estimate. The Palestinian Liberation Organization (PLO) has its own estimates (Ref 72). We have reviewed available data from demographic and epidemiologic sources of Israeli, Palestinian and international origins to present the debate in scientific terms (in contrast to political terms). We then estimate IMR and crude death rates (d) of other age groups using defensible assumptions, contrasting them to reported statistics for the West Bank, and separately for the Gaza Strip.

### Background

Only two censuses have been performed in the last 25 years in the West Bank. IMR's at the time of Jordan's census in 1961 and Israel's census in 1967 were estimated to be from 130 to 150 deaths per year for children under 1 year of age per 1000 live births (LB) (Refs. 20,64,76). By 1969, death registration revealed IMR in the West Bank at 90 per 1000 LB, an improbably fast rate of decline, more likely reflecting underreporting of infant deaths as well as genuine decline in IMR. From 1970 to 1984, IMR's for the West Bank have demonstrated an erratic pattern ranging from about 40 to 25 per 1000 LB (Ref. 51). During the same period, IMR estimates by the MOH in the Gaza Strip have fallen steadily from 80 to 40 per 1000 LB (Refs. 50,51). Registered data, then, report Gazan IMR to be over 50% higher than IMR on the West Bank. Data presented in Chapter VI on the Gaza Strip's higher rates of in-hospital birth, higher numbers of clinic visits per person, better access



to government and UNRWA primary care and hospital services, better health reporting system, etc. compared to the West Bank make this degree of difference surprising.

When CBS demographers estimate total population in the absence of a recent census, they must estimate birth and death rates to complement more reliable border records on immigration and emigration. In a recent reassessment of population estimates, the CBS assumed an IMR of 100 per 1000 LB for the mid-1970's for both the Gaza Strip and the West Bank from its field survey of child deaths done in 1976 (Refs. 20,76). The figure for IMR used in 1982 was 70/1000 LB, about twice the recorded West Bank/Gaza Strip rate. The magnitude of the discrepancy between the recorded and the estimated IMR, the inability of separate agencies within the Israeli government (MOH and CBS) to resolve their disagreement as to which figure (recorded or estimated) is more valid, and the desire to have an objective evaluation of the issue, spawned this study of demographic IMR models for the West Bank and, separately, for the Gaza Strip.

### Methods

Mortality patterns from reported vital statistics for the West Bank and Gaza Strip are examined, concentrating on the years after 1975 (little disagreement exists about death reporting deficiencies prior to 1975). Stillbirth rates, birth statistics by birthweight, crude death rates (d) and age specific death

rates, particularly IMR and childhood (ages 1-4 years) death rates, are compared with rates from other populations. Comparison populations include Palestinians who continued to live in Israel after 1948, termed Israeli Arabs, and Kuwaitis (Refs. 18,58,59a). Statistics are also drawn from Europe, North America, and Australasia for comparisons (Ref. 71).

The assumption is made that various specific indicators of mortality (as age specific death rates) are functionally related to one another (Ref. 13). For example, if a population were to show a high death rate among children aged 1-4 years and a correspondingly high proportion of deaths were due to infectious diseases, then mortality rates, particularly IMR, should be high. Data were incomplete, and therefore some age-specific death rates had to be calculated. Where:  $d$  = mortality rate;  $D$  = number of deaths;  $B$  = number of births;  $P$  = population, we calculated the following mortality rates (numbers in parentheses indicate population age group):

Mortality Rate Calculation

Description

$$d(1+) = [D-D(0)]/[P-B]$$

Mortality Rate in persons 1 year or older equals total number of deaths minus number of deaths under 1 year of age divided by the total population minus the number of live births.

$d(1-4) = [D(1-4)]/[P(0-4)-B]$  Mortality rate in persons aged 1-4 years equals number of deaths in ages 1 through 4 years divided by the population ages newborn through 4 years minus the number of live births.

$d(5+) = [D-D(0-4)]/P(5+)$  Mortality rate in persons 5 years of age or more equals number of deaths minus deaths under 5 years divided by population 5 years and older.

These calculations were necessary because only total and infant (under 1 year of age) deaths were available for both the West Bank and Gaza Strip, and deaths of children aged 1-4 years in 1981-83 in the West Bank and in 1982 in the Gaza Strip.

Infant mortality rates were estimated in several ways. First, the relationship between IMR and the post-neonatal mortality rate (PNMR) was established from statistically reliable populations whose health status was likely to be similar to that of Arab inhabitants of the West Bank and Gaza Strip. Second, using estimated  $d(1+)$ ,  $d(1-4)$ , and  $d(5+)$ , corrections were made for the number of deaths above age 1 when one compares it to the model population of Israeli Arabs and a second model population of Kuwaitis. Then corrections were made of estimated total deaths, the differences being the

corrected number of infant deaths. Relation of  $d(1+)/d$  is applied to West Bank and Gaza Strip populations to estimate IMR. Third, birth statistics by birth weight were examined for plausibility. Fourth, percentages of deaths and births which occurred in hospital were assessed to characterize the likelihood of registration and level of mortality. Refugee statistics were compared to overall probable mortality values. Our analysis is based on data on recorded deaths (D) in the West Bank and Gaza Strip.

### Results

Data obtained from unpublished MOH sources were complete in only selected years (Table I-1). They suppose that the IMR is higher in the Gaza Strip than in the West Bank (1982 estimated populations were 476,300 and 747,500 respectively, Table I-2). The total number of registered deaths (Table I-1) yields crude death rates (d) which are more erratic than would be expected if a sophisticated reporting system were in place, ranging from 5.8 to 6.8 in the Gaza Strip and from 4.9 to 5.4 in the West Bank (Table I-2). The age structures of the two populations are similar (Table I-3). Variation in D or d between the West Bank and the Gaza Strip does not necessarily occur in the same direction in a given year. The ratios of D, when the West Bank value is used as the denominator, varies from a high of 84 in 1978 to a low of 69 in 1980 (Table I-2). When one compares death rates of the Israeli Arabs (with a relatively complete reporting) to Gaza Strip and West Bank values, d in the Gaza Strip around 1980 is similar to that seen in Israeli Arabs in the late 1970's (Ref. 18).

Proportions of patients dying in hospitals has been erratic in the West Bank since 1974, but has always remained under 30%. The Gaza Strip has had a more stable proportion of those who die in hospitals over the time period, of about 40%. Comparable statistics from Israeli Arabs since the early 1970's reveal about 45% of deaths occurring in hospitals. During the 1970's the proportion of recorded births in hospitals or birthing centers has risen steadily from 13% in the late 1960's in both regions to nearly 75% in the Gaza Strip, and to nearly 50% in the West Bank by 1983 (See Tables V-15 and VI-7). Nearly all these medically supervised births occurred in hospitals in the West Bank, whereas in Gaza about half were deliveries in hospitals and half in birthing centers. The comparable figure for Israeli Arabs in 1970 was 91%, all in hospitals (Ref. 18). Excluding birthing centers, in-hospital births in 1982 for the West Bank and Gaza Strip combined is lower than the 55% for Israeli Arabs in 1960.

Surveys of childhood mortality are conducted yearly by UNRWA health personnel in refugee camps in the West Bank on samples from 13 to 17 camps. IMR's of 84 for the mid 1970's (Refs. 55,75,94) have fallen to about 50 in 1978-80 and 40 in 1981-83 (Ref. 99). No decline has been noted in the past three years. These estimates are about 1.5 times higher than those reported in West Bank statistics. Details regarding the camps are not given in the reports (Refs. 75,94), except that the average population was under 6,000 and that the usual UNRWA primary care services were available to them.

Proportion of infant deaths attributed to enteric and respiratory infections may exceed 50% in the developing world; a comparable value for industrialized nations is under 10%. Values for the West Bank, Gaza Strip, Israeli Arabs, and Kuwaitis reveal a "Third World" pattern for cause of reported deaths in the Gaza Strip and West Bank. Israeli Arabs and Kuwaitis have patterns more similar to those of industrialized nations (Table I-4) (Refs. 18,21,26,29,58). This is confirmed in our Caritas Baby Hospital study (Chapter II).

Examination of birth weight statistics revealed that in the West Bank, the proportions of recorded births weighing less than 2500 grams were 9.3% in 1982 and 6.8% in 1983. One month of Gaza Strip data available to us (June 1983) revealed only 5.2% of births under 2500 grams and 18% of births of infants over 4,000 grams. These low birth rates are similar to or lower than those for Arabs and Jews in Israel in the 1980's (Refs. 18,65). Birth rates in the West Bank and Gaza Strip at all ages (Table I-5) are higher than than those of either Arabs or Jews in Israel. Fifteen percent (15%) to 22% of all births are from mothers ages 15-19 or 40 and over (Table I-5b). High fertility rates extend to teenagers and women over 40 years of age (Table I-6).

The ratio of post-neonatal mortality rates (PNMR) to IMR in the same period were used to compare West Bank and Gaza Strip populations with statistics from Israeli Arabs, Israeli Jews (Table I-7), and with selected values from 30 industrialized countries from around the world (Table I-8). The ratio of

PNMR/IMR expressed as a percentage reveals that the West Bank ratio tends to be markedly higher than that in the Gaza Strip or in Israeli Arabs, which in turn were higher than the PNMR/IMR ratio in Israel (Table I-7). In all, the ratio declines with time, regardless of which population is surveyed. Since reported PNMR is near 20 per 1000 live births in the West Bank, we examined post-World War II statistics of industrialized nations (Ref. 71), ascertaining that the average IMR when PNMR had been 20 was 43.0 per 1000 live births (S.D. 4.6; range 32-54; n=23). If we addressed the issue with another strategy, we found that for a given IMR of 28 per 1000 live births (that reported in the early 1980's for the West Bank), the average PNMR was 10.2 per 1000 live births for 29 developed nations (S.D. = 2.4; range 5.4-17). (Countries were not included if their statistics were not available or if the rates were not represented in post 1945 data.)

Stillbirth rates (SBR) were available for Israeli Arabs, selected refugee camps in the West Bank, and for the Gaza Strip (Table I-9). For a SBR of about 17 per 1000 live births (as recorded from UNRWA survey-based estimates in West Bank refugee camps), one sees a wide range of IMR in the developed countries. IMR was as high as 70-80 per 1000 live births in Hungary and Romania, but as low as 21 in Sweden, England and Wales. Again from a different perspective, for an IMR of 28 (as recorded in the West Bank in the early 1980's), the SBR in 25 industrialized countries varies widely from 8 to 30. The eastern European countries average 10-11; the Scandinavian countries, the United Kingdom, the Netherlands, Canada, and the United States average 17-

18/1000 LB (Table I-8). Ratios of SBR to IMR, expressed as a percentage, are around 60% for the very developed countries from the late 1940's through the early 1980's. For eastern Europe and selected southern European nations like Portugal, the ratio is about 40%. The ratio is as high as 60-70% for the whole West Bank if we presume refugee estimates of SBR to be generalizable to the entire West Bank. Reported SBR values are closer to patterns of Western countries at an IMR of 28 than to Eastern European patterns (Table I-9). SBR reported in the Gaza Strip is quite low, 7.6 per 1000 live births in 1982 (Table I-9). This is comparable to rates seen in Scandinavia today (Ref. 71).

Other age specific mortality rates can be compared (Table I-9). In 1981-84,  $d(1+)$  (mortality rate after age 1) was recorded to be 4 per 1000 population in the West Bank, a level comparable to that of Israeli Arabs in 1970. Recorded  $d(5+)$  (mortality rate after age 5) was 4.35 per 1000 population, again similar to the 4.2 of Israeli Arabs in 1970. Recorded  $d(1-4)$  (mortality rates for ages 1-4 years inclusive) was only 1.6 in 1981-3, a value which Israeli Arabs reached only in the 1980's (Table I-9).

Possible underreporting was quantified by using 1970 Israeli Arab statistics. For 1982, the  $D(5+)$  is assumed to be based on more complete reporting than  $D(1+)$  or  $D(1-4)$  for the West Bank and Gaza Strip. Using the equations described in the Methods section, we corrected for the number of deaths above age 1, then corrected the total number of deaths (Table I-10). Using  $d(5+)$  as 4.5, just 3% higher than the recorded rate for 1981-83, the  $d(1-4)$  for the



West Bank of 1.6 is unlikely given 1970 Israeli Arab rates, and may rather be 1.8 to 2.5. A second model population, which has experienced rapid change in health status possibly analogous to the West Bank or Gaza Strip experiences, is the non-Kuwaiti population (many of whom are Palestinians) in Kuwait (Refs. 58,59a). Their  $d(1-4)$  was about 2-2.5 per 1000 population in the late 1970's, when their recorded IMR was similar to 1970 Israeli Arabs, but higher than the 1982 West Bank recorded IMR. The calculations in Table I-10, then, indicate that deaths of young children may be underreported by 15-60% in the West Bank, but only 5% in the Gaza Strip.

Underregistration of deaths in the over 5 year age group may occur in the elderly, persons temporarily abroad (particularly those who are ill seeking care in Europe or the Gulf States), or the many persons employed outside the West Bank (mobility is high, given immigration statistics from Jordan River checkpoints). Using prevailing  $d(5+)$  in Israeli Arabs around 1970, we estimated slightly higher  $d(5+)$  for the West Bank of 4.5 to 5.1, representing death underregistration from 3% to 17% among persons aged 5 or more, or on average about 400 cases. From the corrected estimates for deaths in the 1-4 and over 5 year age groups, a corrected number of deaths in persons aged 1 or more is obtained, as estimated  $d(1+)$ . New crude mortality rates ( $d$ ) are estimated, and by multiplying  $d$  with the total estimated population, estimates of total deaths ( $D$ ) were obtained. The difference between  $D$  and  $D(1+)$  gives  $D(0-1)$  and IMR is then derived by dividing  $D(0-1)$  by live births that year multiplied by 1000+. The IMR recorded in the West Bank in the early 1980's

paralleled that of Israeli Arabs identified as Muslims in 1978-79 and was lower than that of total Israeli Arabs (Muslim and Christian) in 1970 (1). For the Gaza Strip, the recorded IMR in 1981-1983 was similar to that of Israeli Arabs around 1970 (Table I-9).

Analysis of data for the Israeli Arabs from 1955 to 1982 and for the Kuwaiti population in Kuwait from 1979 to 1981 (selected as the most completely reported Arab populations in similar stages of health development) reveals a functional relationship of  $d(1+)$  to  $d$  through a fairly constant multiplicative factor of 1/65 to 1/70, i.e.  $d(1+)$  is about two thirds of  $d$  (Table I-11). Using this ratio of  $d(1+)/d$  as 0.67, a range of estimated  $d$ 's for the West Bank and Gaza Strip are calculated. Multiplying the new ranges of  $d$  with the referent populations, a new estimate of total deaths, deaths in one-year-olds or older, and finally, infant deaths by subtraction are calculated. A range of likely IMR's is calculated (Table I-12). The range of probable 1982 West Bank IMR is 53.5 to 63.5 deaths per 1000 live births. The Gaza Strip estimate is lower, from 53.1 to 56.1 deaths per 1000 live births. This represents about a 100% underestimate of IMR for recorded West Bank statistics and a 30% underestimate for the Gaza Strip's reported data.

- - - - -

- 1) Israeli Arab figures have included East Jerusalem since 1970. If IMR's in East Jerusalem are underreported as some demographers believe, little change would be expected in total rates. Assuming 30% underreporting of infant deaths in East Jerusalem, total Israeli Arab IMR would decline only 5%; in 1982, for example, the postulated "true" IMR would be 22 instead of the recorded 21 per 1000 live births.

## Discussion

More general IMR estimates have been made by the CBS for the West Bank and Gaza Strip, less detailed than those reported here. IMR was estimated by CBS to be 150/1000 LB in the mid 1970's, and 70/1000 LB in the early 1980's (Refs. 17,20,76). These are the figures used to estimate total population size in the absence of post-1967 census figures. The Ministry of Health (MOH), using the total population size estimates without critical comment, has rejected the CBS estimates of IMR, believing that:

rather crude assumptions and estimates were made of mortality, including uniform mortality levels between the sexes, and between urban and rural centres and Judaea, Samaria and Gaza, despite the differences in social and geographical character of the areas. (Ref. 50,p.9)

The best alternative, the MOH believes, is to use reported deaths for all age groups:

The population estimates of the Central Bureau of Statistics are used in this report. However, the death rates of infants, children and of all ages reported here are those based on reported deaths, which we consider to more closely represent the reality than the rates assumed by the CBS. These data are based on deaths reported by families, hospitals and local physicians. Particularly for deaths occurring after one month of age [these] data [are] considered to be close to the real situation in view of the extensive development and utilization of health services, health insurance and growing demand of the population for health care (Ref. 50, p.9).

The demographic models developed here would tend to reject both MOH reported death rates as much too low and CBS modeled death rates as somewhat too high. We believe our IMR estimates to be the most reasonable for the following reasons:

1. Crude death rates for the West Bank and Gaza Strip are quite erratic over time (Tables I-1 and 2), almost certainly representing reporting variation rather than genuinely fluctuating rates. The marked differences in values from columns 7 and 9 in Table 2 contrast to stability of the ratio of non-Jewish to Jewish deaths in Israel which has been consistently 0.12 to 0.16 from 1960 to 1978.

The age of structures of the populations of the West Bank and Gaza Strip are quite similar (Table I-3). Crude death rates and age-specific death rates are consistently reported lower in the West Bank. If reported deaths were correct, then ratios of  $D(WB)/D(GS)$  should be as consistent over time as are the Israeli data described. Erratic statistics in the face of population ratios of constant magnitude over time certainly represent reporting artifacts.

2. Reported data reveal Gazans to be experiencing higher mortality than West Bankers. Government and UNRWA health services are better organized, more available, and more accessible in the Gaza Strip than in the West Bank (Refs. 50,51). Primary health care and public health services have

developed more rapidly and rural health challenges have been overcome to greater extent in Gaza Strip than in the West Bank (Refs. 1,60,61,62,63). Our model indicates 1982 IMR to be on average about 7% higher in the West Bank than the Gaza Strip (Table I-12), whereas reported statistics state IMR to be more than 60% higher in the Gaza Strip than the West Bank.

3. Recorded d in the Gaza Strip in 1982 is similar to that of Israeli Arabs of 1970, whereas 1982 recorded d in the West Bank resembles that of Israeli Arabs of the late 1970's. These registered mortality data support the notion that there is a strong similarity between West Bankers and Israeli Arabs in terms of mortality and, presumably, underlying health conditions. Underlying cause of death demonstrates this to be quite false (Table I-4). Such a conclusion of near parity between West Bankers' and Israeli Arabs' mortality rates also conflicts with the striking differences between the two groups in other respects - economic status, urbanization, health insurance, quality and availability of medical services, and literacy - all of which demonstrate West Bankers to be at a relative disadvantage (Refs. 11,18,21,51,74). Reported mortality rates in West Bank, Gaza Strip, Kuwaiti, and Israeli Arabs are graphically represented in Figure I-1, emphasizing the improbably low d(1-4) for the West Bank in particular.
4. The current low frequency of hospitalized deaths in the West Bank (under 30%) and the relatively low frequency of in-hospital births (46% in 1982)

makes death register comparability to that for Israeli Arabs unlikely. The latter group had about 45% deaths in hospitals in the early 1970's, but in-hospital births were 91% in 1970, occurring in better staffed and equipped hospitals (Ref. 18).

5. UNRWA is the central administrative authority for refugee camps. Access to preventive and curative health care is thought to be good compared to villages (Refs. 95,99). Though considerable improvements have been made in government service coverage for West Bank villages with over 3,000 persons, lack of insurance coverage has restricted utilization. More reliable registration of vital events and higher health standards may exist in the camps than in the villages, features favoring lower and higher record reliability for the Gaza Strip than the West Bank, given the marked excess in number of camp-dwelling refugees in the Gaza Strip (Chapter VI). Studies from selected West Bank refugee camps have shown IMR's to be about 40 in 1981-83 (Refs. 94,99). Centralized UNRWA administration facilitates more complete medical and vital records follow-up than might be achieved in villages of comparable size. It seems unlikely that a minimum refugee camp IMR of 40 is consistent with the West Bank IMR of 28 in 1982.
  
6. Low birth weight rates (proportions of all births less than 2500 grams) in the West Bank of 9.3% and 6.8% for 1982 and 1983 respectively are more erratic than plausible for adjacent years, probably reflecting reporting

errors. These levels have only been achieved by the industrialized nations with excellent perinatal care and medically supervised delivery services (Ref. 37). They are similar to or lower than low birth weight percentages in Israel in the 1980's (Refs. 51,65). Because low-weight births are a leading cause of infant mortality, one might expect lower IMR for the West Bank than for Israel given lower low-weight birth rates; this is admittedly impossible, and represents substantial underreporting of these low birth weight babies. From a list of 31 of the most highly developed countries the median proportion of low birth weight infants is 6.4% for 1979-81 (Ref. 37, p.115), whereas their median IMR is 11 per 1000 live births for 1982 (Ref. 37, p.113).

The low rate of low birth weight newborns is also incompatible with the high total fertility rates of 6.1 to 7.4 children per average woman ages 15-44 seen in the West Bank and the Gaza Strip in 1982 and 1983 (Table I-6). Of the Arab nations with 1982 total fertility rates of greater than 6, only Kuwait and the United Arab Emirates have a 1982 IMR under 50 (Ref. 37, pp. 120 f.). Very high fertility rates among teenagers and women over 40 years of age (Tables I-5b and I-6) are likely to result in higher low birth weight rates and higher IMR.

Figures from the Gaza Strip for June 1983 reveal only 5.2% of all births under 2500 grams, with fully 18% of all births over 4,000 grams. The first figure is lower and the second higher than expected, probably

reflecting some underregistration of low birth weight babies who are likely to have died shortly after birth without either the birth or the death being registered.

8. Ratios of SBR to IMR in the West Bank are closer to those of the most developed European nations (e.g. Scandinavia) than to those of less developed nations (e.g. Portugal, Eastern Europe). Eastern European IMR's have decreased from very high to moderate over the past 30 years, more analogous to West Bank medical realities than the Scandinavian model. A similar argument can be made regarding PNMR and IMR ratios, for which ratios derived from reported rates make the West Bank improbably resemble Scandinavia more than Eastern Europe.
9. The ratio  $D(1+)/D$  for recorded data in the Gaza Strip (0.69) is very close to that expected, based on Arab populations with good quality vital statistics data (Israeli Arabs of the early 1970's and Kuwaitis around 1980), at time periods comparable to their likely rates of health development (Table I-11). These observations also indicate that underreporting of deaths in the Gaza Strip is mainly concentrated in infants under 1 year. West Bankers, on the other hand, seem by the  $D(1+)/D$  criterion to have reached the same level as Israeli Arabs in 1982 (Table I-11).



At this point in the argument, one can conclude that the likelihood of underreporting of infant and, to a lesser extent, childhood deaths is high. Objections may arise about the magnitude of the reporting deficit which we have postulated, based on our 1982 West Bank IMR estimate of 53.5 to 63.5 or the Gaza Strip estimate of 53.1 to 56.1. These estimates postulate 20-30% underreporting of infant deaths in the Gaza Strip and 43-53% underreporting in the West Bank (Table I-12). It is more useful to estimate postulated unregistered infant deaths as a percentage of recorded births, assuming that a vast majority of unregistered infant deaths are unrecorded births soon followed by death. One calculates, then, that missing only 2.7 to 3.7% of all recorded births accounts for the total number of unregistered infant deaths which we have postulated in the West Bank in 1982 (Table I-13). This figure is only 1.1-1.4% for the Gaza Strip (Table I-13). Our assumption for these calculations is that all the missing infant deaths are those of births soon followed by death, and that no vital record emerges from either the birth or the death in these cases. In absolute numbers, 700-1,000 births in the West Bank and fewer than 300 of Gazan births have gone unrecorded along with unrecorded subsequent death. The percentages of 3% and 1% for missing birth coverage are actually quite low for Third World vital statistics registries, and seem quite probable given West Bank and Gaza Strip conditions respectively. The percentages could be even lower if part of the unrecorded infant deaths do not match unrecorded short-lived births, but rather occurred weeks or months after the birth and the birth's registration. This is quite likely to represent some component of unregistered deaths in the West Bank at

least, given the indications that even deaths of children ages 1-4 years are underreported (Table I-10). This is less likely to occur in the Gaza Strip, because birth registration leads to registry for vaccination. Missed vaccination is eventually followed up, and unregistered deaths which might have occurred are then detected and registered (Drs. Y. Abed and E. Lasch, personal communications).

Because IMR estimates of 51 to 64 are lower than the 70 that CBS assumed for purposes of population estimation for 1982 (Ref. 20), those population estimates should be corrected by "making alive again" only 300-350 persons in both the West Bank and Gaza Strip. These additions only represent 4 and 7 per 10,000 of the total respective populations, and just 2 and 4 per 1000 of the 0-4 year age group populations.

We believe that the demographic evidence for underreporting of infant deaths in the West Bank and the Gaza Strip is irrefutable. Only the magnitude of the underreporting is subject to dispute (2). Using conservative assumptions and

- - - - -

- 2) In presenting this modeling results to MOH health professionals who have, in the past, preferred to use reported death statistics to modeled ones, a suggestion was made on their empirical judgement. The MOH personnel stated that probable 1985 IMR's for West Bank cities, villages with health clinics, and villages without clinics might be 30, 40, and 60 per 1000 LB respectively. If one accepts these estimates, then perhaps 1982 IMR's were 15% higher (given rapid developments in vaccine coverage and oral rehydration technologies in recent years), or 34.5, 46, and 69 respectively. Estimates of urban:rural distributions for 1982 are about 30:70. Of the latter, about one-half the rural population will have lived in a smaller village not served by a clinic in 1982. Presuming agreement with all these assumptions, this "alternative model" generates  $(0.3 \times 34.5) + (0.35 \times 46) + (0.35 \times 69) = 50.6$  deaths per 1000 live births, just under the lower range of our West Bank estimate. Perhaps the discrepancy between MOH and CBS estimates is not a serious one.

giving a range of probable values accounting for different assumptions rather than a single value, we believe IMR to be from 53.5 to 63.5 deaths per 1000 LB in the West Bank, and 53.1 to 56.1 deaths per 1000 LB in the Gaza Strip. The vital statistics in the Gaza Strip demonstrate more complete recording of events than the West Bank for infant, children, and adult deaths.

Child deaths rates are estimated to be underreported in the West Bank; our estimated true d(1-4) is from 1.8 to 2.5 deaths per 1000 population ages 1-4 years, compared to a recorded rate of 1.56. The d(1-4) rate for the Gaza Strip is more likely to be 2.5 compared to a 2.37 recorded rate for 1982. These newly estimated rates are comparable to rates seen today in the United Arab Emirates or Kuwait (Ref. 37, p.121), and those of Israeli Arabs around 1970 (Ref. 18).

The implications of these IMR and d(1-4) estimates for the West Bank and Gaza Strip are outlined in Chapter VII, "An Assessment of the Health Situation in the West Bank and Gaza Strip".

IA = Israeli Arabs  
 WB = West Bank  
 GS = Gaza Strip  
 K = Kuwait

$$1+ = \frac{\text{Deaths in } \geq 1 \text{ yr. old}}{\text{Pop. } \geq 1 \text{ yr. old}}$$

$$5+ = \frac{\text{Deaths in } \geq 5 \text{ yr. old}}{\text{Pop. } \geq 5 \text{ yr. old}}$$

$$1-4 = \frac{\text{Deaths in 1-4 yr. old}}{\text{Pop. 1-4 yr. old}}$$

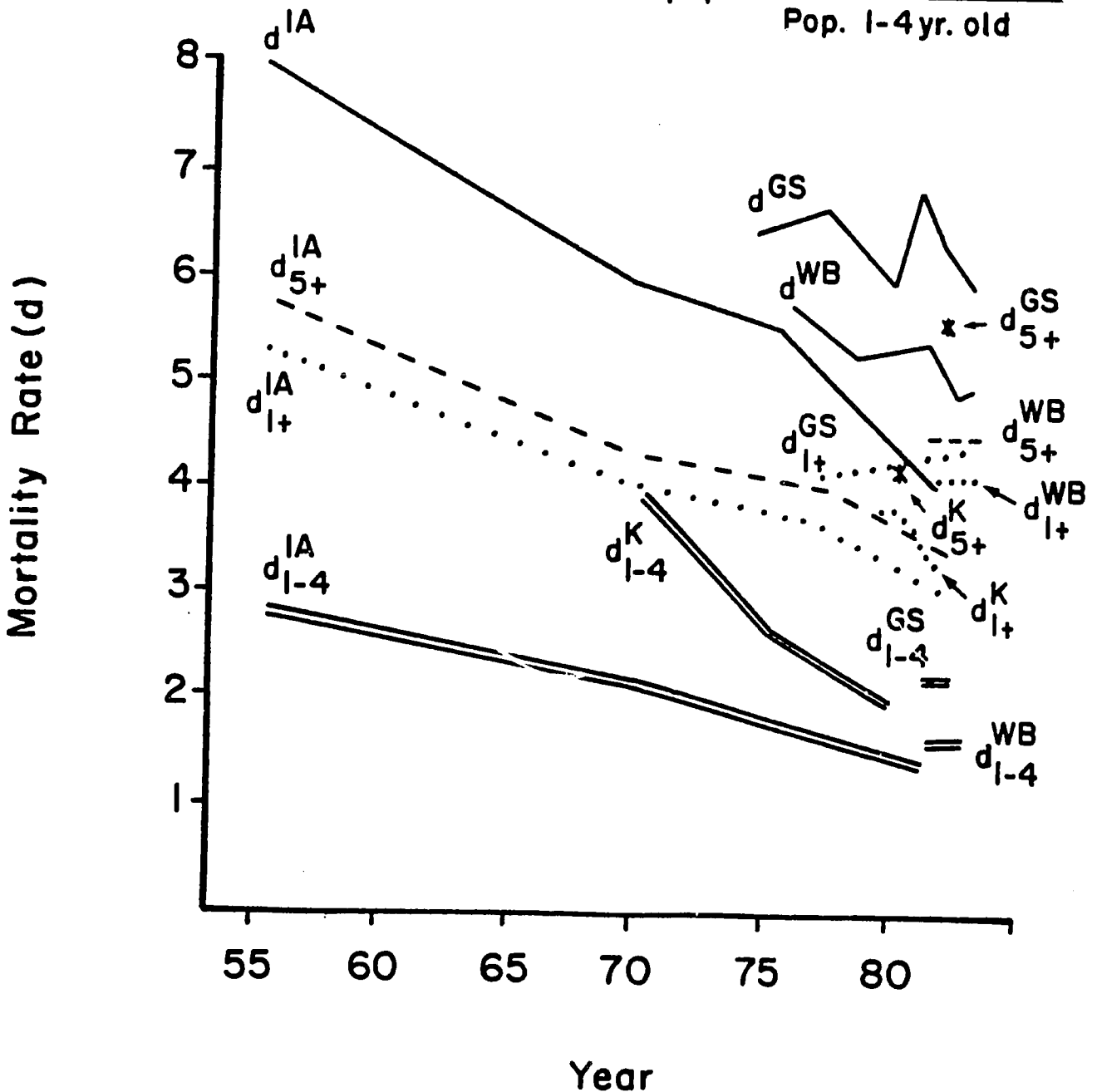


FIGURE I-1: Overall reported mortality rates and age-specific mortality rates for selected Arab populations, 1955-1983. (Source: Refs 18,19,58,59a, and unpublished statistics)

Estimated Mortality Rates  
 Table I-1  
 Recorded Deaths in the West Bank and Gaza Strip, Selected Years  
 (Source: CBS unpublished data)

Year	WEST BANK				GAZA			
	Total	-----Age Group-----			Total	-----Age Group-----		
		0 - <1	1 - 4	5 -		0 - <1	1 - 4	5 -
1968	2,795	860			3,106			
1970	3,382				2,828			
1971						1,503		
1972		1,062				1,465		
1973						1,465		
1974					2,663			
1975	3,991					1,428		
1976		876				1,348		
1977						1,348		
1978	3,727				3,130	1,163		
1979					2,779	1,083		
1980	3,872	901			2,667	920		
1981	3,973	910	199	2,864	3,169	1,067		
1982	3,655	809	157	2,689	2,966	965	165	1,836
1983	4,114	885	164	3,065	2,872	857		

**Estimated Mortality Rates**  
**Table I-2**  
**Ratios of Numbers of Deaths in West Bank and Gaza Strip**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	GAZA			WEST BANK			GAZA:WEST BANK RATIOS		
Year	Absolute # Deaths	Population (x 1000)	CDR (a)	Absolute # Deaths	Population (x 1000)	CDR (a)	Ratio of Absolute # Deaths Gaza:WB	Ratio of Population Gaza:WB	Ratio of CDR Gaza:WB
1978	3,130	463.0	6.8	3,727	708.0	5.3	84.0%	65.4%	128%
1979	2,779	444.7	6.2						
1980	2,667	456.5	5.8	3,872	724.3	5.3	68.9%	63.0%	109%
1981	3,169	468.9	6.8	3,973	731.8	5.4	79.8%	64.1%	124%
1982	2,966	476.3	6.2	3,655	747.5	4.9	81.1%	63.7%	127%
1983	2,872			4,114			69.8%		

(a) CDR = Crude Death Rate (Absolute Number of Deaths divided by Total Population).

Mortality Rate Estimates

Table I-3

Population of the West Bank and Gaza Strip by Sex and Age, 1967-1982

(Source: Ref. 20)

Age	GAZA								WEST BANK			
	MALES				FEMALES				MALES		FEMALES	
	1967 (c)	1967 (xii)	1981 (xii)	1982 (xii)	1967 (c)	1967 (xii)	1981 (xii)	1982 (xii)	1967 (xii)	1982 (xii)	1967 (xii)	1982 (xii)
Total	189.1	184.7	232.8	236.7	200.6	196.1	236.1	239.6	290.7	372.5	295.2	375.0
0-4	40.2	40.8	49.0	47.9	36.5	37.2	45.2	45.0	57.2	67.2	52.2	63.5
5-9	32.3	31.2	39.0	40.6	29.9	29.0	35.7	37.7	51.0	59.9	46.1	55.9
10-14	30.1	29.3	28.7	29.1	27.0	26.3	26.7	27.2	43.6	50.7	36.9	46.8
15-19	19.7	18.8	30.6	31.0	19.5	19.0	27.6	27.9	25.8	48.6	24.7	43.6
20-25	10.0	9.7	21.9	22.0	15.9	15.3	20.8	20.8	15.6	40.0	21.2	37.3
25-29	6.1	5.9	18.9	19.1	12.6	12.1	17.7	17.7	11.2	27.8	17.2	25.5
30-34	8.6	8.4	10.0	10.9	11.5	11.0	11.8	11.7	12.5	12.4	16.1	14.5
35-39	7.6	7.4	4.9	5.6	11.7	11.4	9.9	10.1	11.3	9.0	16.5	14.8
40-44	7.6	7.4	4.0	3.9	9.1	8.8	9.0	8.5	11.2	8.5	14.0	13.6
45-49	5.3	5.2	7.0	6.4	5.1	5.0	7.8	8.0	8.3	10.0	8.7	13.2
50-54	4.3	4.1	4.9	5.2	5.7	5.5	7.8	8.4	7.4	8.9	9.0	13.5
55-59	3.1	3.0	4.9	5.3	2.4	2.3	5.9	6.3	6.6	8.8	5.1	11.1
60-64	4.3	4.2	3.0	3.4	4.9	4.8	3.1	3.2	9.0	6.1	9.7	6.3
65+	9.7	9.3	6.0	6.2	8.7	8.4	7.1	7.2	20.0	14.6	17.8	15.4

(c) = census

(xii) = December estimate

**Mortality Rate Estimates**

**Table I-4**

**Infant Mortality among Selected Palestinian and Other Populations**

(Source: Refs. 18,21,50,51,58,59a,75,99)

Population	Year	Reported IMR (per 1000 live births)	Causes of Infant Deaths (% of total deaths)		
			Enteric infections	Respiratory infections	Combined
West Bank, Total (a)	1982	27.1	20%	31%	51%
	1983	28.5	21%	35%	56%
West Bank, Refugee Camps	1981-83	38.0	20%	21%	41%
Gaza Strip	1982	43.1	19%	26%	45%
Israeli Arabs	1970	37.2	14%	16%	30%
	1981	21.1	2%	6%	8%
Kuwaitis	1980	32.9	6%	8%	14%

(a) CBS statistics (reflect minor inconsistencies with other data sources, e.g. MOH, Civil Admin., other CBS figures)



Mortality Rate Estimates  
 Table I-5a  
 Births by Mother's Age  
 (Source: CBS, unpublished data)

Number of Births (x1000)

Year:	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Age														
WEST BANK														
Total	26.4	28.2	28.9	29.3	30.5	30.4	31.7	31.2	30.5	31.5	30.4	30.5	29.8	30.1
15-19	1.8	3.1	3.6	4.1	5.1	4.9	5.5	5.1	4.7	4.7	3.3	3.5	2.9	4.5
20-24	5.4	6.5	6.8	6.9	7.4	7.9	8.2	8.2	8.8	8.9	9.1	9.1	8.7	9.2
25-29	6.3	6.8	7	7.3	7.3	7.5	7.4	7.5	6.9	7.4	7.3	7.4	7.5	7.2
30-34	5.3	5.4	5.4	5.1	5	4.8	5.3	5.3	5	5.4	5	5	5.1	4.6
35-39	4.9	4.6	4.4	4.3	4.2	3.9	3.9	3.7	3.6	3.7	3.9	3.7	3.7	3.2
40-44	2.1	1.5	1.4	1.3	1.2	1.2	1.2	1.2	1.3	1.2	1.5	1.5	1.6	1.2
45+	0.6	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2
GAZA														
Total	16.0	17.5	18.5	19.0	20.4	20.7	21.5	21.4	22.0	21.3	21.6	22.1	22.8	22.3
15-19	0.8	1.6	2.0	2.2	2.0	2.5	2.5	2.6	2.6	2.6	2.4	2.5	2.4	3.4
20-24	3.0	3.9	4.4	4.8	5.2	5.7	5.9	6.3	6.2	5.9	6.0	6.2	6.6	6.4
25-29	3.7	4.4	4.4	4.5	4.9	4.9	5.5	5.4	5.6	5.4	5.6	5.6	5.9	5.6
30-34	3.5	3.6	3.6	3.5	3.7	3.6	3.7	3.4	3.7	3.8	4.2	4.3	4.4	3.9
35-39	3.6	3.0	3.0	2.9	2.9	2.7	2.7	2.5	2.6	2.4	2.3	2.3	2.3	2.0
40-44	1.1	0.8	0.9	0.9	1.3	1.0	1.0	1.0	1.0	0.9	0.9	1.0	1.0	0.8
45+	0.3	0.2	0.2	0.2	0.4	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2

**Mortality Rates Estimates**  
**Table I-5b**  
**Births by Mother's Age**  
 (Source: CBS, unpublished data)

**Percentage of Total Births Born to Mothers 15-19 or 40+**

Age	Year:	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
15-19	W Bank	6.8	11.0		14.0	17.1	16.1	17.3	16.3	15.5	14.9	10.9	11.5	9.7	15.0
	Gaza				11.6	10.1	12.1	11.6	11.8	11.4	11.5	11.2	11.4	10.5	15.2
40+	W Bank	10.2	6.4		5.5	5.0	4.6	4.4	4.5	4.9	4.4	5.9	5.9	6.4	4.6
	Gaza				5.8	8.4	6.3	5.6	5.5	5.7	5.3	5.1	5.5	5.3	4.5
Combined	W Bank				19.5	22.1	20.7	21.7	20.8	20.4	19.3	16.8	17.4	16.1	19.6
	Gaza				17.4	18.5	18.4	17.2	17.3	17.1	16.8	16.3	16.9	15.8	19.7

Mortality Rates Estimates  
 Table I-6  
 Age-Specific Fertility Rates and Total Fertility Rates (TFR)  
 (Source: calculations from unpublished data, CBS)

YEAR	AGE								TFR
	Combined	0-19	20-24	25-29	30-34	35-39	40-44	45+	
<b>WEST BANK</b>									
1970	213.7	63.0	264.2	353.0	335.5	318.6	140.1	57.2	7.66
1971	224.8	101.9	325.9	382.4	337.3	306.5	102.0	30.3	7.93
1972	222.7	108.8	331.8	387.3	342.3	296.4	91.7	25.3	7.92
1973	218.8	117.2	318.6	399.6	324.4	285.7	88.9	22.0	7.78
1974	219.7	136.4	319.2	399.1	310.7	282.4	79.9	19.9	7.74
1975	216.5	125.5	313.7	428.6	300.2	330.2	83.6	16.3	7.99
1976	223.3	135.5	306.4	433.5	331.8	278.8	88.9	16.3	7.96
1977	214.7	122.9	282.6	439.3	329.5	263.7	87.4	17.2	7.71
1978	202.8	109.7	283.2	392.4	312.9	244.4	90.4	14.2	7.24
1979	204.5	108.0	269.6	389.6	344.6	245.7	88.7	14.9	7.31
1980	193.1	75.9	262.0	347.8	330.2	260.5	107.3	24.9	7.04
1981	191.2	80.2	250.1	325.1	345.8	249.2	108.2	21.3	6.89
1982	183.7	67.1	232.9	292.7	354.1	252.1	116.3	24.8	6.70
1983	181.3	108.1	234.8	260.8	297.4	217.8	85.8	15.1	6.12
<b>GAZA</b>									
1970	193.3	40.6	205.2	319.0	355.8	349.6	110.3	54.4	7.17
1971	205.7	73.2	264.8	366.5	361.3	300.7	82.7	34.9	7.42
1972	208.7	84.3	287.7	356.8	356.9	305.4	85.1	29.3	7.53
1973	210.0	92.2	289.2	348.7	351.3	314.9	87.9	30.1	7.57
1974	217.2	80.3	294.5	368.0	363.6	317.9	124.8	51.7	8.00
1975	214.9	99.6	295.7	373.5	337.2	300.3	101.5	33.3	7.71
1976	218.6	100.4	286.9	407.4	329.1	293.3	99.3	25.6	7.71
1977	214.5	104.9	231.3	378.7	301.8	264.2	106.2	31.6	7.39
1978	215.6	101.5	282.8	382.3	314.3	264.0	108.6	31.1	7.42
1979	209.3	101.4	273.0	357.7	327.4	240.7	104.4	28.5	7.02
1980	210.6	86.1	284.6	356.9	361.8	237.0	102.0	22.5	7.25
1981	208.7	89.6	297.7	313.7	365.0	231.6	108.0	24.1	7.15
1982	218.0	86.6	315.3	332.6	378.5	229.7	117.1	27.9	7.44
1983	209.9	130.8	295.8	300.2	315.3	187.2	88.5	20.4	6.69

## Mortality Rates Estimates

Table I-7

Post-Neonatal Mortality Rate (PNM) as Proportion of Total Infant Mortality Rate (IMR)  
 (Source: calculations from unpublished data (CBS), Ref. 18; definitions Ref. 64)

POPULATION	YEAR	IMR (a)	PNM	PNM:IMR
West Bank	1976	27.6	19.5	71%
	1980	29.6	18.4	62%
	1981	29.9	20.1	67%
	1982	27.1		
Gaza Strip	1977	63.0	46.9	74%
	1980	43.0	28.0	65%
	1981	52.3	27.1	52%
	1982	43.1	23.0	53%
	1983	38.5	19.2	50%
Israeli Arabs	1960	48.0	31.2	65%
	1970	43.4	25.6	59%
	1980	24.4	11.4	47%
	1982	21.0	10.6	50%
Israeli Jews	1949	51.7	29.6	57%
	1950	46.2	23.5	51%
	1960	27.0	10.7	40%
	1982	11.6	3.7	32%

(a) CBS statistics; reflect minor inconsistencies with other data sources  
 (Ministry of Health, Civil Administration, other CBS figures)

Mortality Rates Estimates  
 Table I-8  
 Selected Vital Statistics from 30 Developed Nations after 1945  
 (Source: Ref.13)

Nation	IMR PNMR SBR			Infant Mortality Rate Post-Neonatal Mortality Rate Stillbirth Rate			(All rates per 1000 live births)		
	Year	PNMR	SBR	Year	IMR	Year	IMR	Year	IMR
Canada	1959	10	13	1946	47	1952	38		
Denmark	1952-53	9	19	1945-46	43	1952	29		
England/Wales	1951-52	9.5	23	1945-46	44	1963	21		
Finland	1957	11	14	1950	41	1954	31		
Ireland	1962-63	9	NA	1951	45		NA		
No. Ireland	1958	9	NA	1949-50	44	1967	24		
Netherlands	1948-49	11	19	1945-46	42	1949	27		
Norway	1950	13.5	16		NA	1948	30		
Scotland	1958	9	23	1948	45	1965	23		
Sweden	1946	8	20		NA	1952	21		
United States	1952-53	8	14		NA	1949-50	30		
Australia	1947-48	8	NA		NA		NA		
Japan	1961	12	30	1954	44	1968	15		
New Zealand	1948	10.5	18		NA	1951	28		
Austria	1966	7.5	11	1953	50	1956	43		
Belgium	1961	9.5	15	1952	45	1954	41		
France	1957-58	13	17	1952-53	38	1950-60	27-48		
W. Germany	1962-63	7.5	14	1951	54	1957	36		
Switzerland	1953-54	8	15		NA	1948	36		

Mortality Rates Estimates  
 Table I-8  
 Selected Vital Statistics from 30 Developed Nations after 1945

(Continued)

Nation	Year in which IMR = 28			Year in which PNMR = 20		Year in which SBR = 17	
	Year	PNMR	SBR	Year	IMR	Year	IMR
Israel	1964	12	14	1957-58	37		NA
Italy	1971-72	11	14	1960	44	1968	33
Portugal	1978-79	11	14	1972-74	40	1974	38
Spain	1970	10.5	NA	1962-63	40		NA
Bulgaria	1968	14	10	1963	36		NA
Czechoslovakia	1959-60	10	14	1953-54	45		NA
E. Germany	1964-65	12	13	1959	41	1958	44
Hungary	1976	5.5	8	1962	48	1952	70
Poland	1972	11	9	1965-66	40		NA
Romania	1981	17	9	1979	32	1957-58	70-80
Yugoslavia			NA	1975	40		NA

"NA" indicates statistics were either not available or not applicable after 1945.  
 Nations grouped for comparison (see text).

Mortality Rates Estimates  
 Table I-9  
 Mortality Indicators  
 (Source: Refs. 18,21,50,51,75,99)

INDICATOR	Israeli Arabs					West Bank, Total				West Bank, Selected Refugee Camps				Gaza Strip		
	1955	1960	1970	1976	1982	1976	1981	1982	1983	1975	1981	1982	1983	1976	1981	1982
IMR (Total)	63	48	44	33	22	28	30	27	29	84	37	39	40	67	52	43
IMR (0-28 days)	15	17	18	17	11	8	10			24	9	15	18	22	25	20
IMR (1-11 mos.)	47	31	26	16	11	20	20			60	28	24	22	45	27	23
d(1-4)	2.9	2.5	2.2	1.8	1.4				1.6						2.2	2.4
d(5+)	5.8	5.4	4.4	4.2	3.4				4.35						4.8	5
d(1+)	5.3	5	4	3.8	3				4					4		4.3
d	8	7.5	6	5.6	3.8				5.2					5.9	7	6.2
Stillbirth Rate	14.0	15.0	14.0	11.5						22	19	14	19	3.7	5.2	7.6

IMR and stillbirth rates per 1000 live births.  
 d = Deaths per 1000 total population of referent group.  
 IMR = d(0 - <1)

Mortality Rates Estimates  
 Table 1-10  
 Estimates of Death Rates after Age 1 (circa 1982)

Age	Total Est. Population (x1000)	Recorded Deaths (Rates)	Assumed Rates	Estimated Deaths	Ratio Recorded: Estimated	Estimated Rates
<b>WEST BANK</b>						
1-4	100.7	162 (1.56)	2.5	252	156%	
			2.2	221	136%	
			1.8	181	112%	
5+	616.8	2684 (4.35)	5.1	3146	117%	
			4.5	2776	103%	
1+	717.5	2846 (3.97)	high (a)	3398	119%	4.74
			medium 1 (b)	3367	118%	4.66
			medium 2 (c)	3028	106%	4.22
			low (d)	2957	104%	4.12
<b>GAZA</b>						
1-4	69.5	165 (2.37)	2.5	174	105%	
5+	283.7	1836-1936 (4.8-5.0)	5.4	2072	112-107%	
			5.1	1957	107-101%	
1+	453.2	2001-2101 (4.4-4.6)	high (a)	2246	112-107%	4.96
			low (d)	2131	106-101%	4.70

- (a) highest assumed rates for 1-4 and 5+ age groups.
- (b) medium assumed rate for 1-4 ages group and highest assumed rate for 5+ age group.
- (c) lowest assumed rate for 5+ age group and highest assumed rate for 1-4 age group.
- (d) lowest assumed rates for 1-4 and 5+ age groups.

N.B. Other combinations lie between.



**Mortality Rates Estimates**  
**Table I-11**  
**Proportional Relationships of Death Rates of Selected Arab Populations**

Population	Year	Proportion d(1+):d	Proportion d(1-4):d(1+)	Proportion d(1+):d(5+)
Israel	1955	66	55	91
	1960	67	50	93
	1970	67	54	91
	1976	68	47	90
	1982	79	47	88
West Bank	1981-83	79	32	91
Gaza Strip	1976	60-68		
	1981-82	69	51	86-90
Kuwait	1979-81	73	59	90

Mortality Rates Estimates  
 Table I-12  
 Estimates of Infant Mortality Rates (IMR) circa 1982

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	d(1+)	Estimated d (a)	Estimated D (b)	Estimated D(1+) (c)	Estimated D(0) (d)	Estimated IMR	Proportion of Infant Deaths Unrecorded (e)
<b>WEST BANK</b>							
	4.74	7.1	5300	3400	1900	63.5	54%
	4.66	7.0	5230	3350	1880	63.0	54%
	4.22	6.3	4710	3030	1680	56.0	48%
	4.12	6.1	4560	2960	1600	53.5	43%
<b>GAZA STRIP</b>							
	4.96	7.4	3530	2250	1280	56.1	25%
	4.70	7.0	3340	2130	1210	53.1	20%

- (a) d(1+) divided by 0.67.
- (b) Estimated d multiplied by total referent population.
- (c) From Table 10, rounded off.
- (d) Estimated D minus Estimated D(1+) (i.e. total estimated deaths of infants under one year of age).
- (e) Percentage of Estimated D(0) which are unreported (from col.5 and Table 1).

**Mortality Rates Estimates**  
**Table I-13**  
**Estimates of Unrecorded Births Soon Followed by Death, circa 1982**

	(1)	(2)	(3)	(4)
	Recorded Infant Deaths (a)	Estimated Infant Deaths (b)	Estimated Unrecorded Infant Deaths	Proportion of Unrecorded Deaths to Recorded Births (c)
West Bank (d)	809	1900	1030	3.7
(e)		1600	730	2.7
Gaza Strip (d)	965	1280	280	1.3
(e)		1210	210	2.9

- (a) From Table 1
- (b) From Table 12
- (c) From Table I-5a
- (d) Highest estimate
- (e) Lowest estimate

CHAPTER II  
PEDIATRIC ILLNESSES IN THE SOUTHERN WEST BANK  
A Hospital-Based Study

Introduction

The Caritas Baby Hospital (CBH) in Bethlehem is part of the charitable organization Verein Caritas Kinderhilfe Bethlehem (VCKB) based in Switzerland. CBH treats infants and young children, particularly those in the toddler age group. Founded in 1952, the hospital has grown from a 14-bed clinic to a modern facility of 79 beds. Hospital admissions have increased from 811 in 1974 to 1801 in 1983, with a current 96% bed occupancy rate. CBH/VCKB is also involved in preventive and outreach programs, particularly three regional clinics.

Key years in the hospital's history are indicated by arrows on Figures II-1 and II-2: the late 1950's were times of infectious epidemics in refugee camps; 1966 was the year of transition to a new in-patient building; 1967 was a war year; in 1973 incubators were used for the first time and a new definition of in-patient mortality was used, including patients who were dead on arrival or died within the first 24 hours of hospitalization; in 1978 the

new hospital was opened and a greater range of services were gradually added to serve sicker patients.

As the only major pediatric hospital facility in the area, CBH occupies a unique position for service to the southern cone of the West Bank. Because of its role as the primary referral center for both the private and the public sectors in the Hebron and Bethlehem districts, CBH is a valuable source of data on the prevalent childhood diseases which require in-patient care.

#### METHODS

From 1954 through 30 June 1979, the following data were recorded by CBH on an in-patient log for each admitted infant or child:

- Identifying number (for hospital use)
- Name
- Age
- Sex
- Nearest relative's name
- Village and district of residence
- Admission and discharge dates
- Number of days in hospital
- Diagnosis
- Outcome of hospitalization (improved, died, etc.)
- Miscellaneous notes

In 1979 a more extensive log was developed by Caritas administrative personnel. In addition to the above information, the following data have been recorded for each patient admitted since 1 July 1979:

- Out-patient number (unique to each patient)

- Father's and grandfather's names
- Religion
- Whether parents are living
- Profession of father
- Number of children in family
- Refugee status
- Economic status of family
- Total number of hospitalizations
- Institution or physician referring patient
- Financial data

In this study, hospital records data were numerically coded on site and keypunched for computer analyses in New York using SAS software (Ref. 75c). Diagnoses which were missing, illegible, or impossible to code using ICD-9 (Ref. 47) were checked through individual chart review.

These data were then analysed to determine the following:

1. The most common discharge diagnoses, using both a single primary diagnosis and up to five associated diagnoses.
2. Detailed information for five selected diagnoses of major health importance.
3. Regional similarities and differences in primary diagnosis and admission patterns.
4. Comparative death statistics by age and sex (Refs. 14,38) based on primary diagnosis.

Cause of death was ascertained from primary diagnosis or from associated diagnoses when appropriate (e.g. when primary diagnosis was cardiopulmonary arrest). Charts were reviewed when additional information was required.

Other information was compiled from hospital statistics assembled from yearly summaries on file. Statistical analyses of these data were done with chi-square, Fisher's exact test, and other standard methods (Refs. 8,33).

## RESULTS

Admissions to CBH have on the average doubled from 1957 to 1984 (Figure II-1). In addition, CBH has periodically changed hospital policy to admit, rather than transfer, more seriously ill children, reflected in in-patient mortality ratio over time from 1957 to 1984 (Figure II-2). Historical events which correlate with mortality changes are described in the discussion. Characteristics of 1982 and 1983 admissions are presented here.

### Common diagnoses

The most common groups of discharge diagnoses (considering primary diagnosis only) are intestinal infections/gastroenteritis (representing 21.5% of 1982 and 30.3% of 1983 admissions) and respiratory infections/bronchopneumonia (representing 24.7% of 1982 and 25.2% of 1983 admissions) (Table II-1).

The third most common primary diagnosis is nutritional deficiencies/failure to thrive (FTT), representing 15.1% of all admissions in 1982 and 7.0% in 1983. Congenital anomalies were the fourth most common primary diagnosis in 1982

with 4.1% of all admissions, whereas in 1983, the fourth most common primary diagnosis was hypothermia, representing 4.3% of all admissions. The fifth most common primary diagnosis in both 1982 and 1983 was prematurity, with 4.0% in each year.

In addition to the primary diagnosis, most patients had additional diagnoses. The average number of all diagnoses was 2.2 in 1982 and 2.3 in 1983. When all diagnoses assigned to a patient are considered, gastroenteridites, seen in 37% of all hospitalized children in 1982-1983, and respiratory infections, seen in 39.2% of all admissions in 1982-1983, are still the most common diagnostic groups (Table II-2). When all diagnoses, primary and associated, are considered, the third and fourth most common diagnoses in 1982 and 1983 are nutritional deficiencies/failure to thrive and metabolic disturbances. Nutritional deficiencies/failure to thrive were diagnosed in 28.6% of all hospitalized children in 1982 and 22.0% in 1983. Metabolic disturbances presented in 16.9% of all patients in 1982 and 32.8% in 1983. Metabolic disturbances were usually acidosis and/or dehydration associated with gastroenteritis.

Of the remaining seven diagnoses presented in Table II-2, it can be seen that although the rank order of diagnoses is somewhat different for 1982 and 1983, the same diagnoses are represented, i.e. the 22 most frequently occurring diagnoses are the same in both years. Differences in ranking are due largely to changes in the frequencies of three diagnoses. Sepsis was seen in 7.2% of



all children in 1982 and 3.6% in 1983. (Not every case of sepsis was bacteriologically confirmed.) Hypothermia represented 6.7% of all patients in 1982 and 9.2% in 1983. Infections of the ear and mastoid process were recorded in 6.2% of all children in 1982 and 12.8% in 1983.

Of the primary diagnoses for 1982 and 1983, approximately 62% were in the category of infectious diseases; of which 82% were gastrointestinal (GI) and respiratory infections (Tables II-3 and II-4). Marked regional differences are noted for GI and respiratory infections (see below).

Of the more than 50 diagnostic groups represented in the admissions data, we selected five diagnoses for a more detailed analysis as primary diagnoses: hypothermia, failure to thrive, prematurity, cardiopulmonary arrest, and gastrointestinal infections. The analyses presented here are intended as models, rather than as a comprehensive view of all CBH admissions. (See Chapter VIII for a description of work now in progress.)

#### Gastrointestinal infections

Patients who died with gastrointestinal infections as their primary diagnosis represented 0.2% of all hospital admissions for 1982 and 0.4% for 1983. Deaths associated with gastrointestinal infections as primary diagnosis represented 3.1% of all deaths in 1982 and 4.6% in 1983. This is termed the proportionate mortality rate (PMR). Case fatality rates were 1.1% (4/373) in 1982 and 1.3% (7/546) for 1983 (Table II-5).

For both years, the proportions of males and females with gastrointestinal infections as a primary diagnosis (e.g. 1982: 53.6% males, 46.4% females) closely approximated the male to female proportions for all admissions (e.g. 1983: 51.8% males, 48.1% females). Case fatality rates for males were 0.5% (1/200) in 1982 and 1.1% (3/283) in 1983. For females, the case fatality rates were 1.7% (3/173) and 1.5% (4/263) (differences in case fatality rates for pooled 1982 and 1983 between males and females are not significant).

For both 1982 and 1983, the most common associated diagnoses were metabolic disorders, respiratory tract infections, failure to thrive, and nutritional deficiencies, mainly malnutrition/marasmus. These four diagnoses represent about 70% of all the associated diagnoses when gastrointestinal infection is the primary diagnosis. The largest percentage of associated diagnoses (44.5%) is represented by metabolic disturbances, mainly dehydration and acidosis. Dehydration alone accounted for 30% of all GI associated diagnoses in 1983, and acidosis for 15.8%.

Gastrointestinal infections are most frequent as a primary diagnosis during the summer months. For both 1982 and 1983, the peak frequency (15%) occurred in July and the lowest frequency (1.3%) in February.

Failure to thrive

Of all patients admitted in 1982, 0.4% died with a primary diagnosis of failure to thrive (FTT); the comparable in-patient mortality rate in 1983 was 0.1%. FTT represented 5.5% of all hospital deaths in 1982 and 1.3% in 1983. Case fatality rates were 3.3% (7/211) in 1982 and 2.3% (2/88) in 1983.

As a primary diagnosis, FTT was assigned more frequently in 1982 (12.2% of all primary diagnoses) than in 1983 (4.9%). Females were given a primary diagnosis of FTT more frequently than males in proportion to admissions for both 1982 and 1983 (e.g. in 1983 females were 48.1% of all admissions but 57.3% of all those with FTT primary diagnosis). However, in 1982 the case fatality rate for males was greater: 5.6% (5/90) as compared to 1.7% (2/121) for females. In 1983, the case fatality rates were similar: 2.5% (1/40) for males and 2.1% (1/48) for females (differences in case fatality rates for pooled 1982 and 1983 between males and females are not significant).

The associated diagnoses occurring most frequently with a primary diagnosis of FTT were similar for both 1982 and 1983: gastrointestinal infections (24% for the years pooled); respiratory tract infections (15%); metabolic disturbances, mainly dehydration (9%); and nutritional deficiencies, mainly malnutrition (8%). However, cases of death associated with a primary diagnosis of failure to thrive almost always had associated diagnoses for a different set of serious conditions, including congenital anomaly, meningitis, and digestive disease.

Analysis by month of admission for failure to thrive as a primary diagnosis shows two very different patterns for 1982 and 1983. In 1982, the peak of admissions (12.9% of FTT) occurred in August, with the lowest frequency (2.9%) in February. In contrast, the 1983 peak occurred in March (18.2%), with the lowest frequency of admissions in July (1.1%). (More years are currently being examined; see Chapter VIII.)

#### Prematurity

Patients dying with a primary diagnosis of prematurity represented 1.2% of all hospital admissions in 1982 and 1.5% in 1983. Considering all deaths, prematurity was the primary diagnosis in 16.4% of deaths in 1982 and 14.5% in 1983. Case fatality rates for prematurity as a primary diagnosis were similar for both 1982 and 1983: 30.4% (21/69) and 30.6% (22/72) respectively. The case fatality rate for males in 1982 was greater than the rate for females: 34.1% (14/41) for males, 25% (7/28) for females. The reverse occurred in 1983, when the case fatality rate for females was 40% (12/30) compared to 23.8% (10/42) for males (differences in the pooled data for 1982 and 1983 between males and females were not significant).

The associated diagnoses most frequently occurring with a primary diagnosis of prematurity were sepsis, hypothermia, and respiratory distress syndrome (RDS). Sepsis predominated as an associated diagnosis in 1982 (18%), but was the

65

least frequent of these three associated diagnoses in 1983 (6%). Not all these cases of presumed sepsis were bacteriologically confirmed. Hypothermia was the most frequently associated diagnosis in 1983 (23%), with 12% in 1982. (These differences in hypothermia and sepsis frequencies parallel the changes in frequencies for all diagnoses of hypothermia and sepsis at CBH noted in the respective years.) RDS was associated with 11.5% of all patients admitted with prematurity as a primary diagnosis in both 1982 and 1983.

#### Cardiopulmonary arrest

Patients dying with cardiopulmonary arrest (CPA) as the primary diagnosis were 0.75% of total 1982 admissions and 2.4% of total 1983 admissions. CPA was the primary diagnosis for 10.2% of all hospital deaths in 1982 and 28.3% in 1983. CPA as a primary diagnosis had the highest case fatality rate of all primary diagnoses, presumably reflecting preferential selection by physicians of this category as the cause of death. Rates for 1982 were 92.9% (13/14) and for 1983 97.7% (43/44), with no significant differences between males and females.

The associated diagnoses for 1982 and 1983 were from several different diagnostic categories. All the deaths associated with CPA as a primary diagnosis in 1982 had two or more associated diagnoses of other serious conditions, including meningitis, encephalitis, cerebral palsy, RDS, and aspiration pneumonia. For 1983, hypothermia and respiratory tract infections were the most frequent of the associated diagnoses. This clinical picture

implies that these patients are already very ill when they are admitted, something that can be confirmed by analyzing the length of stay in CBH prior to death (analysis in progress).

### Hypothermia

Hypothermia as a primary diagnosis represented 3.1% of all primary diagnoses in 1982 and 4.3% in 1983. Considering all diagnoses, the likelihood of a patient having a diagnosis of hypothermia was 6.7% in 1982 and 9.2% in 1983. Deaths of patients whose primary diagnosis was hypothermia represented 1.1% of admissions in 1982 and 1.3% in 1983. For all deaths, hypothermia was the primary diagnosis in 14.8% of cases in 1982 and 15.1% in 1983. Case fatality rates for hypothermia as a primary diagnosis were 35.2% (19/54) in 1982 and 29.5% (23/78) in 1983. By sex, case fatality rates for both years combined were 33.3% (21/63) for males and 30.4% (21/69) for females. In proportion to total admissions by sex, for both years, females have higher admissions for hypothermia as a primary diagnosis than do males.

In combined data for 1982 and 1983, 47.7% of hypothermia primary-diagnosis admissions are males (males are 54% of total admissions) and 52.3% are females (who are 46% of total admissions). As expected, the greatest proportion of these cases is admitted in the winter months, with peak frequency in January and no admissions in the summer. Both 1982 and 1983 show similar patterns: in 1982, for example, there were no primary diagnoses of hypothermia from June

through October, followed by a sudden increase in admissions in December (to 22.2% of the annual total) and a rapid decline in frequency in April to May.

Of the 132 cases of hypothermia as primary diagnosis in 1982 and 1983 combined, 101 cases (76.5%) occurred in neonates (designated by ICD-9 codes 778.2 and 778.3). Deaths occurred in 23 of these neonatal cases, giving a case fatality rate for combined years of 22.8% (23/101) for neonatal hypothermia. Children under 6 months of age were at greatest risk in 1982 and 1983, both for being admitted and for dying in-hospital with hypothermia as a primary diagnosis. Of all Hypothermia (as primary diagnosis) admissions from both years combined, 89.4% were less than 6 months of age, and all deaths occurred in children under 6 months of age. Of all patients with hypothermia as a primary or associated diagnosis, 14.9% died in the two years combined. The associated diagnosis occurring most often with a primary diagnosis of hypothermia was sepsis: 2% of hypothermia-associated diagnoses in 1982 and 15.6% in 1983. (This large increase in frequency does not parallel an overall decrease in sepsis diagnoses.) Of the 19 deaths in 1982 which were associated with hypothermia as primary diagnosis, 8 (42%) had an associated diagnosis of sepsis and 7 of the 8 (87.5%) were neonates. Six (26.1%) of the 23 deaths in 1983 had an associated diagnosis of sepsis, and 4 (66.7%) of these were neonates. Sepsis is recorded at CBH on clinical grounds and is not always bacteriologically confirmed.

Most of the admissions (79.6%) for hypothermia as a primary diagnosis are patients whose fathers are mainly casual laborers or are unemployed. This pattern holds across all districts and reflects the pattern for all CBH admissions (71.5%).

For 1982 and 1983 combined, Hebron had 48.5% of all the hypothermia primary-diagnosis cases and Bethlehem represented 40.9%. Hebron had a case fatality rate for the two years combined of 19.7% (26/132) and Bethlehem a rate of 9.1% (12/132). Hebron admissions with a primary diagnosis for hypothermia were therefore more than twice as likely to die as were such patients from the Bethlehem district ( $p < .01$ ).

Hypothermia cases arise from a relatively small number of villages or towns. In 1982, all primary-diagnosis hypothermia patients in the Hebron and Bethlehem zones came from 17 and 14 locales respectively. In 1983 hypothermia patients from Hebron and Bethlehem districts came from 19 and 15 locales respectively. The exact number of villages in the two regions is unknown to us, but is over 120.

#### Regional differences in primary diagnosis

Regional differences exist in relative frequency of primary diagnosis in both 1982 and 1983. A primary diagnosis was significantly less likely to be



gastrointestinal infection in patients from the Bethlehem District than from the Hebron district in 1982 ( $p < 0.001$ ) and in 1983 ( $p < 0.001$ ).

The frequency of meningitis as a primary cause of admission is not significantly different in the two districts. Respiratory tract infections, both in 1982 and 1983, were significantly more common as a proportion of all admissions in Bethlehem district patients, than in Hebron ( $p < 0.05$ ). The proportion of all admissions for prematurity is significantly higher in Hebron district patients than Bethlehem district patients in 1982 ( $p < 0.001$ ) and 1983 ( $p < 0.001$ ). Hebron patients were also relatively more likely to have a primary diagnosis of hypothermia than patients from Bethlehem, significant in 1982 ( $p < 0.05$ ) but not significant in 1983.

### Regional Similarities

Demographic characteristics of the CBH population from the Hebron district are similar to those of patients from the Bethlehem district. Family size, as measured by number of children, is similar for both districts: the mean number of children is 4, with a range of 1-16. The proportions of males to females are comparable, with approximately 53% males to 43% females among patients from both districts. The age distributions of both districts show the greatest proportion of patients to be less than 1 year of age (Table II-8). For Hebron and Bethlehem, 75% and 61% of patients respectively are older than 27 days but less than 12 months of age. The proportions of positive

(improved, cured) and negative (no change, transfer, death) patient outcomes by district also demonstrate similarities. For example, 1983 outcomes show Hebron with 83% positive outcomes and 13.3% negative outcomes, compared with 84.6% positive outcomes and 12.3% negative outcomes for patients from the Bethlehem district (differences statistically not significant).

#### Death Comparisons

Fifty percent (50%) of the 128 deaths in 1982 are due to five groups of primary diagnoses (Table II-6) and 66.4% of of the 152 deaths to the same diagnoses in 1983 (Table II-7). Mortality rates for in-patients over time are erratic but represent a general downward trend from the late 1950's to the early 1970's, and again from 1973 to 1980 (Figure II-2).

In 1982 and 1983, regional differences in the infant mortality rates are apparent (Tables II-6 and II-7). Hebronites were significantly more likely to have death as an outcome than those admitted from the Bethlehem district ( $p < .01$ ); patients from the Hebron district had a 4.2% in-patient mortality rate in 1982 and 5.0% in 1983, compared with 2.1% for both years from the Bethlehem district.

In 1982, there were 128 deaths, 7.4% of all hospital admissions for that year. In 1983, there were 152 deaths, 8.5% of all hospital admissions. In 1982 the Hebron district, with 51% of the in-patient population, represented 57% of all

in-patient deaths. For the same year, Bethlehem, with 41% of the in-patient population, represented 28% of all in-patient deaths. Similarly, in 1983 Hebron, with 49% of admissions, represented 58.6% of in-patient deaths, while Bethlehem, with 35% of the in-patient population, represented 25% of in-patient deaths.

Females were more likely than males to have death as an outcome, though this was not statistically significant for pooled 1982 and 1983. For example, in 1983 females, who represented 43.8% of the in-patient population, accounted for 49.3% of the 152 in-patient deaths. Males, in contrast, represented 56.2% of the in-patient population and accounted for 48.7% of the in-patient deaths. For all hospital admissions in 1983, 9.5% of females and 7.6% of males had death as an outcome. For Hebron females, 10.8% had death as an outcome, compared to 9.5% of Hebron males. For admissions from the Bethlehem district, 7.8% of females and 4.4% of males had death as an outcome.

In both 1982 and 1983, the highest death rate occurred in patients under 6 months of age, both years showing similar age distributions for in-patient deaths. The largest number of deaths occurred in patients more than 27 days but less than 6 months of age, proportionate to the size of this age class, which in 1983 represented 43.0% of all admissions (Table II-8) and 45.5% of all in-patient deaths. Hebronites, who for both years represent the greatest proportion both of deaths and of number of admissions for all age classes under 6 months of age, accounted for 58.8% of deaths in this age group, and

Bethlehem for 19.6% in 1982. Hebron accounted for 58.9% and Bethlehem 24% of all in-patient deaths in 1982. For both 1982 and 1983, deaths for the two groups of youngest patients, those less than 7 days and 7-27 days of age, were disproportionately high. For example, in 1983 patients less than 7 days of age, who represented 6.6% of all in-patient admissions, accounted for 20% of all in-patient deaths. Of these deaths, 61% were from the Hebron district, which represents 47.8% of admissions for the under-7-days age group.

Bethlehem patients, in contrast, represented 33.6% of admissions for this age group and accounted for only 16% of the deaths. In the same year, patients 7-27 days of age represented 7.3% of the in-patient population but accounted for 17% of all in-patient deaths.

### Discussion

Caritas Baby Hospital is an invaluable source of data regarding those infants and young children most likely to come for in-patient care. It is the most substantial pediatric facility serving the southern districts of the West Bank. Because distances from even the most distant parts of the southern cone are under 100 kilometers, selection bias for hospital admission is minimized for the most seriously ill children. This is confirmed by the high proportion of lower income persons served by the hospital.

We do not claim that CBH statistics are comprehensive. There is a high probability that some children do not reach medical attention for important

medical problems, that some die out of hospital (see Chapter I, "Mortality Rate Estimates"), or that some seek care at other in-patient facilities in Hebron, Bethlehem, Jerusalem, or Ramallah, or in Israeli facilities. However, we believe that CBH statistics are reasonably representative of major pediatric causes of morbidity and mortality in the Hebron and Bethlehem districts, and that they do not have the same flaws as other sources for morbidity data. At the same time, we are quite confident that CBH statistics are not representative of Jerusalem and other regions, since children are likely to have been referred for special reasons.

One alternative data source is those disease surveillance statistics routinely reported to the Civil Administration, emphasizing infectious diseases. Although these statistics can be used to infer general trends and to identify occasional epidemics, they are limited by underreporting, lack of regional identification of cases, and sparse information on non-infectious diseases.

A more reliable indicator of serious diseases is cause-of-death statistics, because deaths are much more likely to be reported than illnesses. Nonetheless, underreporting of infant and child (ages 1-4 years) deaths is problematic in the West Bank (Chapter I).

Analysis of data from a sentinel source such as CBH can validate and extend the information available from reported death data, providing a much more powerful planning tool for health development. Together, they can, for

example, pinpoint regional differences, identify risk factors for disease, or document program impact. Such data are essential if community-oriented primary care, based on analysis of local needs and conditions is to be successfully implemented (Refs. 25,48,53,54).

The usefulness of the CBH data is illustrated by regional comparisons. Hebron is clearly a disadvantaged region when compared to Bethlehem in a number of indices (Chapter V). This is confirmed in the CBH study where nearly 50% of all admissions are from Hebron. Disease-specific and age-specific mortality rates are higher for Hebronites. Acute illnesses requiring rapid primary care intervention, like gastroenteritis and hypothermia, are disproportionately represented. This Hebron disadvantage is not surprising. Hebron is socio-economically disadvantaged, has more restricted transportation, has fewer primary care and hospital services (Chapter V), and has more limited health personnel resources. Yet, data-based documentation of the adverse health outcome of such disadvantage has until now not been readily available.

A number of primary health care initiatives have begun in the Hebron district within the past three years, targetted at gastroenteritis. The CBH data confirm that the target is an appropriate one -- many more cases of gastroenteritis are admitted from Hebron than from other districts. Whether these local initiatives, specifically the opening of the Red Crescent Society Rehydration Center in 1982 and the greater use of oral rehydration therapy in government-run clinics, have had any impact on CBH admissions for

71

gastroenteritis from Hebron is uncertain. However, after cleaning and analyzing data from 1980, 1981, and 1984, we will address this issue of community health evaluation with analysis of trends in frequency and severity of gastroenteritis admissions. Further work using laboratory stool results is planned, pending approval from the VCKB administration.

CBH data show that other diseases would also be appropriate targets for primary health initiatives in Hebron. Failure to thrive or nutritional deficiency is more common, both as a primary and an associated diagnosis, in Hebronites than in patients from Bethlehem. Hypothermia is more common, prematurity more often seen, and disease-specific case fatality rates almost invariably higher.

Whether analyses consider absolute numbers, numbers per population at risk, or proportion of all admissions due to a particular diagnosis, Hebronites tend to be in relatively poorer health than patients from Bethlehem. One exception to this is the propensity toward respiratory infections among patient from Bethlehem. This may be due to the relative ease for Bethlehemites in reaching the hospital, or it may reflect the reluctance of Hebron referrers to send children for whom hospitalization seems less urgent in favor of those more seriously ill, such as the dehydrated or premature child. Meningitis also breaks the trend for an excess in Hebron, differences between the two regions not found to be statistically significant, but our sample is small.

Meningitis is relatively straightforward in its clinical therapy and may be

more likely than prematurity, for example, to be treated in the local Hebron hospital. Multivariate analyses will be completed to determine how Hebron origin interacts with other risk factors for death, such as age and sex.

CBH data are useful to assess program impact in the southern districts. For example, CBH data document a dearth of cases of vaccine-preventable diseases (e.g. tetanus, measles, poliomyelitis, pertussis). This would verify other data documenting success in vaccine programs conducted by regional Public Health Departments (Refs. 21,22,50,51,99). WHO recommends such validations of those routinely reported statistics which are commonly subject to underreporting (Ref. 112).

Other programmatic issues are currently being analyzed by the Institute Health Team. For example, we are addressing the issue of whether persons with government insurance are at lower risk compared to those without free insurance. Presumably, future study of CBH data could determine the impact of the 1985 decision by the Public Health Department clinics to reduce the age limit for free children's care to 1 1/2 years (instead of 4 years). New public health initiatives by the government or private sector will benefit from insights provided by continuing analyses of CBH data.

Many primary health care challenges were identified by the CBH study. Failure to thrive and malnutrition continue to be seen as primary or associated conditions. The cause of death profile reflects a Third World pattern of



infectious diseases in which death is often preventable by a good primary care system. Conditions of poverty are reflected in diagnoses such as hypothermia, regularly seen with high case fatality rates. Improved hospital care may help to a degree, but greater progress could be made in the primary care segment of the health care system.

Prematurity is another condition for which both improved prenatal and maternity service is important in order both to reduce the numbers of premature babies and to provide effective neonatal intensive care to these babies after birth. In addition, a study of age of mothers of premature babies compared to age of mothers of children admitted for other reasons could provide important information of the relative risk faced by women of varying ages. This is true, too, for other diagnoses.

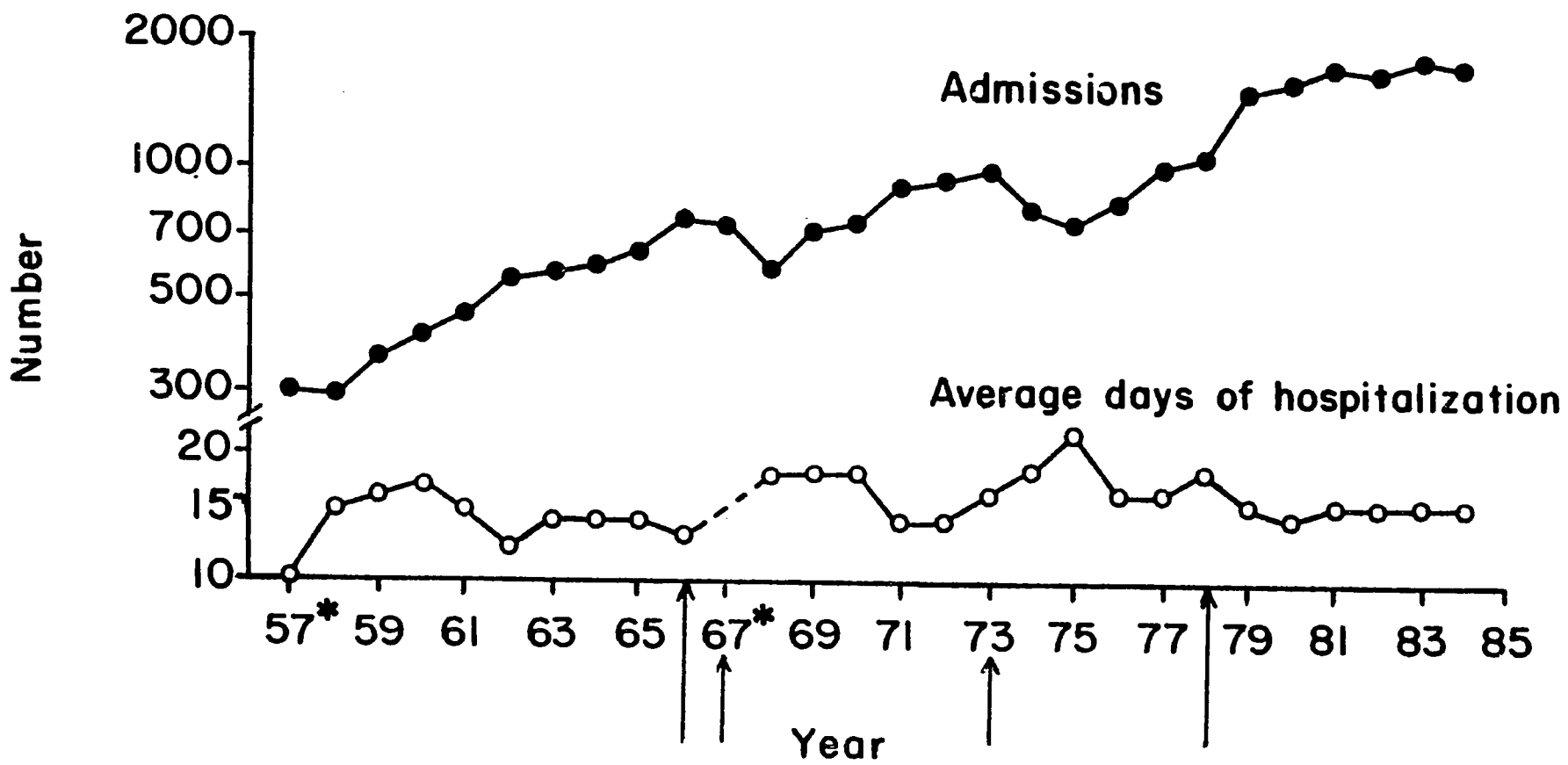
We are aware of the study's complexities. The task of pursuing research at a distance is a complex one. For example, cardiopulmonary arrest is not an adequate primary diagnosis and charts must be reviewed on an individual basis. Whether hypothermia is due to cold injury, as the seasonal distribution implies, or is due to sepsis, as implied by many secondary diagnoses associated with primary diagnosis of hypothermia, must be determined by a chart review.

In a September 1985 visit to its headquarters in Switzerland, Dr. Vermund confirmed the VCKB's interest in continuing its involvement, building

7/8

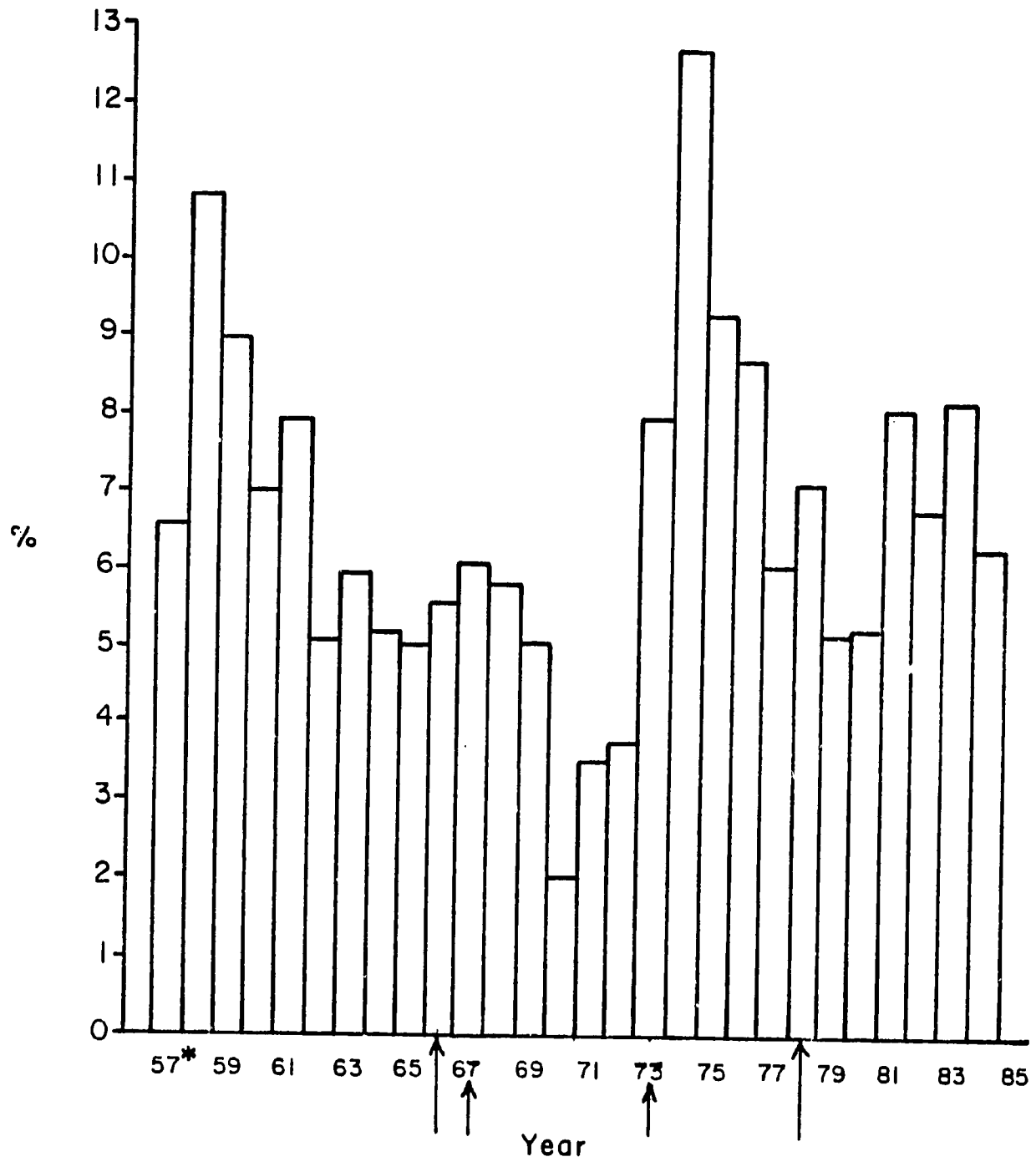
Palestinian research and evaluation expertise in the fields of pediatrics and public health. The research design employed in this study can be supplemented with in-depth studies of specific disease entities of public-health and clinical importance. The data of this study serve as a guide for improving community-oriented primary care and hospital services (Refs. 10,25,29,39,48, 53,54,77, 79). Specific suggestions are included in Chapter VII, "An Assessment of Health Status and Services in the West Bank and Gaza".

FIGURE II-1: Number of Admissions and Average Days of Hospitalization per Patient (Semilogarithmic scale). Caritas Baby Hospital (Bethlehem), 1957-1984.



\* 1957 includes April through December only; 1967 data on average days of hospitalization unavailable.  
Arrows: See text.

FIGURE II-2: Hospital Mortality Rates.  
Caritas Baby Hospital (Bethlehem), 1957-1984.



\* 1957 includes April through December only.  
Arrows: See text.

Caritas Baby Hospital  
 Table II-1  
 Frequency Ranking of Common Primary Diagnoses, 1982 and 1983

Diagnosis	ICD-9 Code	1982			1983			1982 and 1983 Combined		
		Frequency Ranking	# (a)	% (b)	Frequency Ranking	#	%	Frequency Ranking	#	%
All Respiratory Infections	460-66,480-87,490	1	427	24.7%	2	454	25.2%	2	881	24.9%
Gastrointestinal Infections	001-009	2	373	21.5%	1	546	30.3%	1	919	26.0%
Nutrit. Def. and FTT (c)	260-269,783.4	3	262	15.1%	3	126	7.0%	3	388	11.0%
Congenital Anomalies	740-759	4	71	4.1%	6	57	3.2%	6	128	3.6%
Prematurity	765.1	5	69	4.0%	5	72	4.0%	4	141	4.0%
All Hypothermia	778.20,778.30,991.60	6	54	3.1%	4	78	4.3%	5	132	3.7%
All Others			467	27.0%		464	25.8%		931	26.4%
Unknown			9	0.5%		4	0.2%		13	0.4%
<b>Total</b>			<b>1,732</b>	<b>100.0%</b>		<b>1,801</b>	<b>100.0%</b>		<b>3,533</b>	<b>100.0%</b>

- (a) Total Number of Admissions
- (b) Proportion of all Admissions
- (c) Nutritional deficiencies and Failure to thrive

Caritas Baby Hospital

Table II-2

Frequency Ranking of Most Common Diagnoses (Primary and Other), 1982 and 1983

Diagnosis	ICD-9 Code	1982			1983		
		Frequency Ranking	# (a)	% (b)	Frequency Ranking	# (a)	% (b)
Respiratory Infections	460-66,480-87,490	1	665	38.6%	2	714	39.7%
Gastrointestinal Infections	001-009	2	586	34.0%	1	733	40.8%
Nutrit. Def. and FTT	260-269,783.40	3	494	28.6%	4	395	22.0%
Other Metabolic Disorders	270-279	4	292	16.9%	3	589	32.8%
Genitourinary disorders	580-629	5	147	8.5%	9	133	7.4%
Anemias	280-289	6	136	7.9%	7	162	9.0%
Congenital Anomalies	740-759	7	128	7.4%	8	140	7.8%
Sepsis	038.90	8	124	7.2%	11	65	3.6%
Hypothermia	778.20,778.30,991.60	9	116	6.7%	6	165	9.2%
Ear/Mastoid Infections	380-389	10	107	6.2%	5	231	12.8%
Premature	765.1	11	81	4.7%	10	97	5.4%
<b>Total</b>			<b>2,876</b>	<b>166.7%</b>		<b>3,424</b>	<b>190.4%</b>

(a) Total Number of Admissions

(b) Proportion of all Admissions (1982 N = 1725, 1983 N = 1798)  
(Total greater than 100% due to multiple diagnoses.)

69

Caritas Baby Hospital  
 Table II-3  
 Primary Diagnoses by Region of Residence, 1982

Diagnosis	ICD-9 Code	HEBRON		BETHLEHEM		JERUSALEM		ALL OTHERS		TOTAL	
		# (a)	% (b)	#	%	#	%	#	%	#	%
Intestinal Infections	001-009	207	23.7%	107	18.6%	32	18.9%	27	25.7%	373	21.6%
Sepsis	038.90	13	1.5%	9	1.6%	3	1.8%	2	1.9%	27	1.6%
Nutritional Deficiencies	260-269	29	3.3%	16	2.8%	2	1.2%	4	3.8%	51	3.0%
Failure to Thrive (FTT)	783.4	146	16.7%	30	5.2%	22	13.0%	13	12.4%	211	12.2%
All Nutrit. Def. and FTT		175	20.0%	46	8.0%	24	14.2%	17	16.2%	262	15.2%
Other Metabolic Disorders	270-279	6	0.7%	5	0.9%	0	0.0%	0	0.0%	11	0.6%
Meningitis	322.9	9	1.0%	17	3.0%	1	0.6%	0	0.0%	27	1.6%
Acute Respiratory Infections	460-466	35	4.0%	54	9.4%	16	9.5%	6	5.7%	111	6.4%
Bronchopneumonitis/Pneumonia	480-487	118	13.5%	100	17.4%	28	16.6%	9	8.6%	255	14.8%
Bronchitis	490	31	3.5%	18	3.1%	9	5.3%	3	2.9%	61	3.5%
All Respiratory Infections		184	21.1%	172	29.9%	53	31.4%	18	17.1%	427	24.8%
Congenital Anomalies	740-759	34	3.9%	27	4.7%	8	4.7%	2	1.9%	71	4.1%
Premature	765.1	45	5.1%	19	3.3%	0	0.0%	5	4.8%	69	4.0%
Hypothermia, CI, Neonatal (c)	778.20, 778.30	22	2.5%	19	3.3%	0	0.0%	5	4.8%	46	2.7%
Hypothermia, Non-Neonatal	991.6	4	0.5%	3	0.5%	1	0.6%	0	0.0%	8	0.5%
All Hypothermia		26	3.0%	22	3.8%	1	0.6%	5	4.8%	54	3.1%
All Others		175	20.0%	151	26.3%	47	27.8%	29	27.6%	402	23.3%
<b>Total</b>		<b>874</b>	<b>100.0%</b>	<b>575</b>	<b>100.0%</b>	<b>169</b>	<b>100.0%</b>	<b>105</b>	<b>100.0%</b>	<b>1723</b>	<b>100.0%</b>

(a) Total Number of Admissions  
 (b) Proportion of all Admissions from Region  
 (c) CI = Cold injury

94

Caritas Baby Hospital  
 Table II-4  
 Primary Diagnoses by Region of Residence, 1983

Diagnosis	ICD-9 Code	HEBRON		BETHLEHEM		JERUSALEM		ALL OTHERS		TOTAL	
		# (a)	% (b)	#	%	#	%	#	%	#	%
Intestinal Infections	001-009	311	35.2%	153	24.4%	39	24.7%	43	33.6%	546	30.4%
Sepsis	038.90	2	0.2%	4	0.6%	1	0.6%	0	0.0%	7	0.4%
Nutritional Deficiencies	260-269	27	3.1%	6	1.0%	2	1.3%	3	2.3%	38	2.1%
Failure to Thrive (FTT)	783.4	53	6.0%	18	2.9%	5	3.2%	12	9.4%	88	4.9%
All Nutrit. Def. and FTT		80	9.1%	24	3.8%	7	4.4%	15	11.7%	126	7.0%
Other Metabolic Disorders	270-279	11	1.2%	8	1.3%	1	0.6%	11	8.6%	31	1.7%
Meningitis	322.9	8	0.9%	17	2.7%	2	1.3%	0	0.0%	27	1.5%
Acute Respiratory Infections	460-466	36	4.1%	60	9.6%	15	9.5%	9	7.0%	120	6.7%
Bronchopneumonitis/Pneumonia	480-487	128	14.5%	136	21.7%	23	14.6%	11	8.6%	298	16.6%
Bronchitis	490	16	1.8%	10	1.6%	5	3.2%	5	3.9%	36	2.0%
All Respiratory Infections		180	20.4%	206	32.8%	43	27.2%	25	19.5%	454	25.3%
Congenital Anomalies	740-759	27	3.1%	20	3.2%	8	5.1%	2	1.6%	57	3.2%
Premature	765.1	40	4.5%	21	3.3%	2	1.3%	9	7.0%	72	4.0%
Hypothermia, CI, Neonatal	778.20, 778.30	13	1.5%	8	1.3%	2	1.3%	0	0.0%	23	1.3%
Hypothermia, Non-Neonatal	991.6	25	2.8%	24	3.8%	3	1.9%	3	2.3%	55	3.1%
All Hypothermia		38	4.3%	32	5.1%	5	3.2%	3	2.3%	78	4.3%
All Others		186	21.1%	143	22.8%	50	31.6%	20	15.6%	399	22.2%
<b>Total</b>		<b>883</b>	<b>100.0%</b>	<b>628</b>	<b>100.0%</b>	<b>158</b>	<b>100.0%</b>	<b>128</b>	<b>100.0%</b>	<b>1797</b>	<b>100.0%</b>

(a) Total Number of Admissions (excluding 4 out of 1801 in whom diagnosis is unknown).  
 (b) Proportion of all Admissions from Region

98



Caritas Baby Hospital  
 Table II-5  
 Case Fatality Rates by Primary Diagnosis, 1982 and 1983

1982		MALES			FEMALES			TOTAL		
Diagnosis	ICD-9 Code	Total Number Cases	Total Number Deaths	Case Fatality Rate (a)	Total Number Cases	Total Number Deaths	Case Fatality Rate (a)	Total Number Cases	Total Number Deaths	Case Fatality Rate (a)
Hypothermia	778.20,770.30,991.60	24	9	37.5%	30	10	33.3%	54	19	35.2%
Failure to Thrive	783.40	90	5	5.6%	121	2	1.7%	211	7	3.3%
Premature	765.1	41	14	34.1%	28	7	25.0%	69	21	30.4%
Cardiopulmonary Arrest	427.50	6	5	83.3%	8	8	100.0%	14	13	92.9%
Gastrointestinal Infections	001-009	200	1	0.5%	173	3	1.7%	373	4	1.1%
<b>Total</b>		<b>361</b>	<b>34</b>	<b>9.4%</b>	<b>360</b>	<b>30</b>	<b>8.3%</b>	<b>721</b>	<b>64</b>	<b>8.9%</b>

1983		MALES			FEMALES			TOTAL		
Diagnosis	ICD-9 Code	Total Number Cases	Total Number Deaths	Case Fatality Rate (a)	Total Number Cases	Total Number Deaths	Case Fatality Rate (a)	Total Number Cases	Total Number Deaths	Case Fatality Rate (a)
Hypothermia	778.20,770.30,991.60	39	12	30.8%	39	11	28.2%	78	23	29.5%
Failure to Thrive	783.40	40	1	2.5%	48	1	2.1%	88	2	2.3%
Premature	765.1	42	10	23.8%	30	12	40.0%	72	22	30.6%
Cardiopulmonary Arrest	427.50	20	20	100.0%	24	23	95.8%	44	43	97.7%
Gastrointestinal Infections	001-009	283	3	1.1%	263	4	1.5%	546	7	1.3%
<b>Total</b>		<b>424</b>	<b>46</b>	<b>10.8%</b>	<b>404</b>	<b>51</b>	<b>12.6%</b>	<b>828</b>	<b>97</b>	<b>11.7%</b>

(a) Case Fatality Rate = Total Number Deaths divided by Total Number Cases.

0/0

Caritas Baby Hospital

Table II-6

Mortality Rates of Selected Primary Diagnoses by Region of Residence, 1982

Diagnosis	ICD-9 Code	HEBRON			BETHLEHEM		
		Number of In-patient Deaths	Mortality Rate (a)	PMR (b)	Number of In-patient Deaths	Mortality Rate (a)	PMR (b)
Hypothermia	778.20,778.30,991.60	11	0.64%	8.6%	6	0.35%	4.7%
Failure to Thrive	783.40	4	0.23%	3.1%	1	0.06%	0.8%
Prematurity	765.1	12	0.70%	9.4%	8	0.46%	6.3%
Cardiopulmonary Arrest	427.50	9	0.52%	7.0%	2	0.12%	1.6%
Gastrointestinal Infections	001-009	1	0.06%	0.8%	2	0.12%	1.6%
All Others		36	2.09%	28.1%	17	0.99%	13.3%
Total		73	4.23%	57.0%	36	2.09%	28.1%

Diagnosis	ICD-9 Code	ALL OTHERS			TOTAL		
		Number of In-patient Deaths	Mortality Rate (a)	PMR (b)	Number of In-patient Deaths	Mortality Rate (a)	PMR (b)
Hypothermia	778.20,778.30,991.60	2	0.12%	1.5%	19	1.10%	14.8%
Failure to Thrive	783.40	2	0.12%	1.6%	7	0.41%	5.5%
Premature	765.1	1	0.06%	0.8%	21	1.22%	16.4%
Cardiopulmonary Arrest	427.50	2	0.12%	1.6%	13	0.75%	10.2%
Intestinal Infections	001-009	1	0.06%	0.8%	4	0.23%	3.1%
All Others		11	0.64%	8.6%	64	3.71%	50.0%
Total		19	1.10%	14.8%	128	7.42%	100.0%

(a) Proportion of in-patient deaths to total admissions in which diagnosis is known (N=1725).

(b) PMR = Proportionate Mortality Rate (Number of Inpatient Deaths divided by total hospital in-patient deaths, N=128).

27

Caritas Baby Hospital

Table II-7

Mortality Rates of Selected Primary Diagnoses by Region of Residence, 1983

Diagnosis	ICD-9 Code	HEBRON			BETHLEHEM		
		Number of In-patient Deaths	Mortality Rate (a)	PMR (b)	Number of In-patient Deaths	Mortality Rate (a)	PMR (b)
Hypothermia	778.20,778.30,991.60	15	0.83%	9.9%	6	0.33%	3.9%
Failure to Thrive	783.40	2	0.11%	1.3%	0	0.00%	0.0%
Premature	765.1	14	0.78%	9.2%	5	0.28%	3.3%
Cardiopulmonary Arrest	427.50	29	1.61%	19.1%	9	0.50%	5.9%
Intestinal Infections	001-009	5	0.28%	3.3%	2	0.11%	1.3%
All Others		24	1.34%	15.6%	16	0.89%	10.5%
Total		89	4.95%	58.6%	38	2.11%	25.0%

Diagnosis	ICD-9 Code	ALL OTHERS			TOTAL		
		Number of In-patient Deaths	Mortality Rate (a)	PMR (b)	Number of In-patient Deaths	Mortality Rate (a)	PMR (b)
Hypothermia	778.20,778.30,991.60	2	0.11%	1.3%	23	1.28%	15.1%
Failure to Thrive	783.40	0	0.00%	0.0%	2	0.11%	1.3%
Premature	765.1	3	0.17%	2.0%	22	1.22%	14.5%
Cardiopulmonary Arrest	427.50	5	0.28%	3.3%	43	2.39%	28.3%
Intestinal Infections	001-009	0	0.00%	0.0%	7	0.39%	4.6%
All Others		15	0.83%	9.9%	55	3.06%	36.2%
Total		25	1.39%	16.4%	152	8.46%	100.0%

(a) Proportion of in-patient deaths to total admissions (N=1797).

(b) PMR = Proportionate Mortality Rate (Number of In-patient Deaths divided by total hospital in-patient deaths, N=152)

20

Czritas Baby Hospital  
 Table II-8  
 Age Groups by Region of Residence, 1983

Region	0 days - < 7 days		7 days - 27 days		28 days - < 6 mos.		6 mos. - < 12 mos.		1 yr. - < 2 yrs.		2 yrs. - < 4 yrs.		≥ 4 yrs.		Total	
	# (a)	% (b)	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Hebron	54	47.8%	59	47.2%	418	56.7%	204	48.9%	77	36.8%	15	20.0%	7	19.4%	834	48.7%
Bethlehem	38	33.6%	49	39.2%	220	29.9%	146	35.0%	89	42.6%	40	53.3%	15	41.7%	597	34.9%
Jerusalem	11	9.7%	8	6.4%	51	6.9%	39	9.4%	24	11.5%	15	20.0%	8	22.2%	156	9.1%
All Others	10	8.8%	9	7.2%	48	6.5%	28	6.7%	19	9.1%	5	6.7%	6	16.7%	125	7.3%
Total	113	100.0%	125	100.0%	737	100.0%	417	100.0%	209	100.0%	75	100.0%	36	100.0%	1712	100.0%
Proportion of Total Admissions:		6.6%		7.3%		43.0%		24.4%		12.2%		4.4%		2.1%		100.0%

(a) Total number of admissions.

(b) Proportion of all admissions in age group.

29

CHAPTER III  
PATTERNS OF ORTHOPEDIC ILLNESS AND INJURY  
IN THE WEST BANK AND GAZA STRIP  
A Hospital-Based Study

Introduction

Considerable attention is focussed on hospitals in the West Bank and Gaza as the most visible components in the health care system. While some facilities are community hospitals designed to serve local or district needs, a few serve as tertiary care facilities. Most of the Palestinian referral-oriented hospitals are in Jerusalem, such as Makassed, August Victoria, St. Joseph's, and St. John's Ophthalmic Hospitals. Almost unique, then, in the West Bank outside East Jerusalem is Mount of David Orthopedic Hospital. We used a sample from the in-patient log from 1980 through 1984 in conjunction with yearly hospital statistics to examine several issues: the common orthopedic problems admitted to this facility; the characteristics of patient origin, age, and sex, linked to primary diagnoses; frequency of admission for emergency contrasting with elective admissions from different districts; and trends in cause of admission over time.

Patient referral patterns to Mount of David might be suggestive of future patterns for other hospitals which are constructed or renovated to serve a larger catchment area. Epidemiologic characteristics of patients admitted can provide valuable help in pursuing prevention or earlier detection of potentially disabling conditions. Cultural patterns of care of male and female patients can be examined. All the data provide guidance for primary care workers as to the prevalent orthopedic conditions admitted to this facility. Finally, a statistical baseline is created for more comprehensive studies of disability and rehabilitation in the West Bank.

#### Mount of David Orthopedic Hospital: Background

The Mount of David Orthopedic Hospital, located in Bethlehem, is the only in-patient facility devoted exclusively to the treatment and rehabilitation of orthopedic disorders in the West Bank and Gaza Strip (Ref. 44). It is administered by the Holy Land Christian Mission of Kansas City, Missouri and directed by Dr. Ahmed F. Zwaiter, FRCS, a British-trained Palestinian orthopedist.

Mount of David Orthopedic Hospital is an impressive structure, administratively well organized, which has substantially expanded its services to the population since a new hospital was completed in 1982. Because of its status within the Palestinian community, Mount of David treats a substantial proportion of selected orthopedic conditions, particularly congenital

dislocated hips and talipes equinovarus (clubfeet). Therefore, in addition to the analysis of administrative data and trends in hospital use, further sections of this report will consider diagnostic and epidemiologic trends when the data are likely to reflect true community trends.

The hospital offers a variety of in-patient and out-patient services including surgery, pharmacy, laboratory, radiology, and physiotherapy. As of December 1984, the staff included two orthopedic surgeons, one anesthesiologist, and three orthopedic resident physicians. There are 33 employees in the Nursing Department, 12 in administration, 7 in the paramedical services, 13 in physiotherapy, 6 in maintenance, and 33 in other non-professional positions. In 1982, the old building was replaced by a modern facility having a greater capacity for treatment and services. During the transition year, the hospital provided fewer in-patient services, although the out-patient department remained active. In fact, in 1982, the total number of outpatients decreased by only 16% compared with 1981, but in-patient admissions decreased 56.3% (Figure III-1). The old facility had 50-55 beds, whereas the new building had 68 beds occupied as of January 1983, with a potential for 73 in 1984. There is enough space to double this number of beds, but other factors such as cost of food storage and preparation, administrative and medical staffing, and completion of the top floor must be arranged before the maximum number of beds can be put into operation. (A recent USAID grant has provided resources for the last need.)

## Methods

Routine statistics were compiled to examine hospital utilization from 1974 through 1984. In addition, data from the in-patient log were analyzed to characterize all patients admitted during the months of January, April, July, and October in 1980, 1981, 1983, and 1984. Only selected months were sampled because of time constraints. Data from 1982 were not considered because the hospital underwent construction and was closed for part of this year.

Information taken from the in-patient log included:

1. case number
2. new or readmission status
3. age
4. sex
5. region of residence
6. emergency or scheduled ('cold') admission
7. date of admission
8. date of discharge
9. number of days hospitalized
10. miscellaneous information about special patients, e.g. escorts of children, hospital employees
11. primary and secondary diagnoses

A medical secretary employed by Mount of David was trained by the Institute Health Team to review the patient log and code the information in a numeric form. All diagnoses were then re-coded according to the ICD-9 (International Classification of Diseases - Ninth Edition, Ref. 47) before keypunching and data analysis. The selective and non-random nature of the in-patient log from which information was coded and the sampling scheme of four months from four years lent themselves to descriptive rather than etiologic analyses. Tests for statistical significance of dichotomous variables were by chi-square analysis or Fisher's exact test (Refs. 8,33).



## Results

Hospital Utilization: In 1981, there were 755 in-patient admissions to Mount of David. By 1984 this figure had nearly doubled to 1422 (Figure III-1). The increase in the number of in-patient admissions reflects the opening of the new, larger facility, with additional beds. In contrast, length of stay in the hospital dropped throughout the 11-year period 1974-1984. In 1974, the average length of stay (as calculated by the total number of patient days in year/ number of discharges in the same year) was 37.1 days. This figure rose to 48.7 days in 1978. In 1979, the average length of hospitalization fell sharply to 23.0 days, and in the following years, the figure ranged from 14 to 18 days (Figure III-1). Prior to 1978, there were minimal physiotherapy services in Hebron and Nablus, and Mount of David Orthopedic Hospital rehabilitated patients from these towns as in-patients. The opening of out-patient clinics in each city by Mount of David and the expansion of other out-patient services and facilities after 1978 may account, in part, for the decline since 1978 in the average length of stay.

Between 1975 and 1981, the percentage of trauma and emergency in-patient admissions was consistently low, ranging from 6.0% to 16.3% of all admissions. The hospital doubled the number of emergency and trauma admissions during its year of transition to the new hospital in 1982. This figure increased again to 29.3% of all admissions by 1984 (Figures III-2 and III-3). This continued

rise is in part attributable to a change in hospital policy concerning emergency and elective admission. Prior to 1982, emergency or trauma cases over the age of twelve were rarely accepted for evaluation, with the exception of serious emergencies. After 1982, this age limit was raised to eighteen years.

The number of patients receiving laboratory tests, x-ray services, and physiotherapy sessions all increased from 1974 to highs in 1979, and then increased again noticeably in 1983 and 1984 after the new facility became functional (Figure III-4). Likewise, the absolute number of cast, surgical, and laboratory procedures, x-ray exposures, and physiotherapy sessions showed the same increases (Figures III-3 and III-5). The only activity which exhibited a declining trend was the absolute number of medications dispensed and, consequently, the number of patients receiving pharmaceuticals (Figures III-4 and III-5). This decline was due to a change in hospital policy in 1981-1982, when non-indigent patients were asked to purchase their own medications outside the hospital.

Patient Characteristics: The total number of patients seen during the 16 months studied was 1343. The majority (98.9%) had a single admitting diagnosis. Because so few patients had a second diagnosis, analyses were conducted on the first diagnosis only. The frequency ranking of admitting diagnoses from most to least frequent is included in Table III-1 for all months studied combined.

95

The single most frequent cause of admission was congenital dislocated hip(s) (CDH) which accounted for 22.3% of all primary diagnoses. Another congenital orthopedic disorder, talipes equinovarus (TEV) or club-foot, was the second most frequent cause of admission, and represented 9.3% of all admissions. The third was admission due to upper extremity fracture (8.9%), and the fourth acute poliomyelitis and post-poliomyelitis paralysis (PPP) grouped together (8.3%; including three acute and 108 PPP cases). These four diagnostic categories accounted for almost half (48.8%) of all admissions in the period under study.

Two hundred nine total fracture cases were admitted, representing 15.6% of all admission diagnoses. Twenty-five (25) cases of auto accident trauma without fracture represented another 1.9% of all admission diagnoses during the period under study. If upper and lower extremity fractures are considered as a single diagnostic group, they rank as second most common cause of admission.

The age distribution of the patient population was, in great part, determined by administrative policy to reserve 80% of its bed capacity for patients aged 21 and under. The age range at admission was from one month to 80 years. Half of all admissions were eight years of age and younger (Table III-2).

Diagnoses over time (again considering only the primary diagnosis by year) showed the proportion of companions, i.e. admitted persons who were were not

ill but occupied a bed (usually mothers accompanying small children), increased from 0.9% of admissions in the months sampled in 1980 to 3.9% of admissions in the same months during 1984. Rehabilitation admissions for PPP dipped slightly in absolute numbers, but reduced by more than 59% as a proportion of all causes for admission over the sampling period (Figure III-6). Admissions for congenital hemiplegia and cerebral palsy (CP) increased in number; only the former category increased notably, from 0.4% in 1980 to 2.8% of all admissions in 1984 ( $p > .05$ ).

Backache as an admitting diagnosis increased slightly over time, from 5.7% in 1980 to 7.3% of all diagnoses in 1984 (Figure III-6). During the months sampled, scoliosis cases were entirely absent until 1984. Twenty cases were hospitalized in the four-month 1984 sample after arrival of a trained scoliosis specialist who performed the procedures, representing 4.1% of all admissions that year. The sex ratio was 1.5 male : 1.0 female cases. The mean age at admission for scoliosis patients was 16.7 years and the median age 17.0 years.

Admissions for CDH, combining unilateral and bilateral cases, remained rather consistent in proportion of all cases, and represented from 21.3% to 24.8% of all admissions over the time sampled (Figure III-6). TEV admissions, combining unilateral and bilateral cases, also remained consistent, ranging from a low of 7.3% in the 1984 sample to a high of 11.3% in the 1981 sample (Figure III-6). Due to the increase in number of hospital beds, the 1984 sample reflected treatment of more TEV patients than the 1981 sample.

Fractures, especially of the upper extremity, showed a steady increase over time, both in absolute numbers and in proportion of all admissions. In 1984 upper extremity fractures represented 11% of all admissions, an increase of 129% from the 1980 data (Figure III-6). A nearly fourfold increase in absolute number of cases was seen in the months sampled.

Analysis of age of admission by diagnosis revealed that for combined unilateral and bilateral cases of CDH, the most common admitting condition, the overall mean age for hospitalization was 3.9 years (median 3.0 years) during the period under study. For bilateral CDH cases only, the mean age was younger: 3.6 years (median 2.0 years). The sex ratio was 1 male : 3.5 female cases.

The other major congenital disorder, TEV was treated in younger patients. The mean age was 3.1 years, and the median 2.0. In bilateral cases the mean age was 2.6 years and the median 2.0. The sex ratio was 2.2 males : 1 female. In both major congenital conditions, bilateral cases were younger at admission than unilateral cases.

Trauma, as a group, combined all diagnoses of fracture, as well as Achilles tendon rupture, ligament injury, tendon rupture, crush injury, and post-burn cases. In the 16 months sampled, 231 such patients were admitted. The mean age was 16.1 years with a median of 10.0 years and male predominance of 2.6:1.

PPP cases, 108 in number, were on average 11.1 years old (11.0 years median) at admission. There was a trend toward decreasing number of admissions over the months of the 1980, 1981, and 1983 sample, followed by a rise in 1984 (Figure III-6). The sex ratio was 1.6 male : 1 female case.

Backache, the admitting diagnosis for 82 cases (6.1% of total) became a more common cause for admission over the time period sampled. The mean age of admission was 39.7 years, and the male to female ratio was 1:1.2. Another diagnosis with a predominance of adults was lower extremity fracture, whereas upper extremity fracture was more likely in the pediatric age group.

Secular trends in age at admission by diagnosis were examined for three major diagnostic categories: CDH, TEV, and PPP (Table III-3). Mean and median ages were reported, because the mean age could be significantly influenced by a single entry of age at one of the extremes, thus skewing the age means and making them less useful for comparison. Because of the sampling scheme which did not cover either complete years or consecutive years, trend data should be interpreted as suggestive rather than definitive.

Unilateral cases of CDH were on average older at admission than bilateral cases. Mean ages for unilateral cases sampled in a given year ranged from 3.0 to 5.6 years, median ages from 2.0 to 5.0 years. Mean ages for bilateral cases ranged from 3.2 to 4.2 years, median ages from 2.0 to 3.0 years.

Unilateral cases of TEV were consistently older at admission than bilateral cases. The mean age range of both unilateral and bilateral admissions remained stable over time. Means of unilateral cases ranged from 3.2 to 5.0 years and medians from 2.0 to 3.5. In bilateral cases, means ranged from 2.4 to 2.9 years and medians from 1.0 to 3.0.

The mean age range at admission for PPP was 9.8 to 12.8 years and median 9.0 to 15.0. There was no trend evident over time toward a change in age at admission.

Seasonal Variation was examined by combining admissions from the same four months over the four-year period. July had the most admissions (424), followed by October (365), April (315), and January (239).

Admissions for TEV occurred most often during October and for CDH during January, but no seasonal variation in birth prevalence should be inferred because of artifacts of referral and scheduling of admissions. Fractures showed a clear seasonal variation, with the highest percentage of all admissions and highest absolute number of admissions for fractures in October. The peak period for admission of PPP cases was July. PPP patients represented 10.1% of admissions during the July months.

The average length of hospital stay varied little over the four-year period sampled. In 1980 the mean stay was 16.5 days (median 7.0 days), in 1981 17.6 days (median 3.9), in 1983 14.7 days (median 8.0), and in 1984 17.8 days (median 8.9).

Examination of geographic distribution revealed that over the entire period, 19.4% (261) of all admissions were from the Bethlehem district, 18.1% from Hebron, 15.9% from Nablus, 12.2% from Gaza, 10.6% from Jerusalem, 9.8% from Ramallah, and 7.7% from Jenin. The remaining 6.3% came from Israel (1.1%), Jordan (0.8%), and other West Bank and external regions (4.4%). During the months sampled, all regions within the West Bank and the Gaza Strip increased the number of patients admitted to Mount of David over time. Gazans increased both in absolute numbers (from 21 admissions in 1980 to 71 in 1984) and in the percentage of all admissions over the four-year period (from 9.3% to 14.4%)

The ratio of emergencies to scheduled admissions was 14.5% to 85.5% or 1:6 (Table III-4.) Bethlehem district residents, however, used this facility more often for the treatment of traumatic injury; 35.2% (92/261) of admissions from this region were emergency. Gazans, on the other hand, had only six trauma patients admitted in the 16 months sampled, 3.7% of its total number of admissions to Mount of David.

A diagnostic profile of admissions by region (Table III-5 and Figure III-7) showed the major emergency admissions from the Bethlehem district to be



fractures (29.5%) and automobile accidents (4.2%). Backache (7.7%), CDH (7.7%), miscellaneous (6.5%), PPP (4.6%), osteoarthritis (4.6%), cerebral palsy (3.1%), and congenital hemiplegia (4.6%) were the other important admitting diagnoses from this region, together representing 69.4% of all causes for admission. There was a statistically significant excess of fractures, crush injuries, post-burn, and ruptures when taken together as a group ( $p < .01$ ). , while admissions for TEV, CDH, and PPP were significantly less often seen from this region when compared to all other regions ( $p < .05$ ).

The Hebron district represented the second most common residence of Mount of David patients. CDH was the most frequent cause of admission for Hebronites (33.9%), more than expected from general frequencies ( $p < .01$ ). All fractures combined represented the second frequency rank (14.8% of all admissions from this region), followed by TEV (12.3%), and PPP (9.7%).

Nablus admissions were, in order of frequency: CDH (29.4%), TEV (15.4%), PPP (8.4%), and cerebral palsy and congenital hemiplegia (7.9%). Statistically, there were excesses of cases of CDH ( $p < .01$ ) and TEV ( $p < .01$ ), and fewer than expected trauma cases (fractures, post-burn, and ruptures) from this region ( $p < .01$ ).

Patients from Gaza were admitted most frequently for CDH treatment (21.1%), PPP (12.4%), TEV (10.6%), and backache (8.7%). Fractures represented 3.1% of admissions from Gaza, lower rates than would be expected compared to other regions ( $p < .01$ ), while PPP cases were higher than expected ( $p < .05$ ).

Jerusalem patients were admitted most often for fractures (22.4%), CDH (13.3%), TEV (7%), and backache (7%). Both CDH ( $p < .05$ ) and trauma, including fractures, post-burn, crush injury, and ruptures ( $p = .05$ ), were significantly different from to the hospital population as a whole, the number of trauma admissions higher than expected and that of CDH admissions lower.

Patients from Ramallah were admitted most frequently with CDH (22%), fractures (18.2%), TEV (12.9%), and cerebral palsy including congenital hemiplegia (9.0%).

Residents of Jenin came to Mount of David primarily for CDH (34.0%), fractures (15.5%), PPP (7.8%), and backache (5.8%). Given the travel distance from Jenin, fractures and backache were surprisingly common causes of admission. CDH cases attained statistical significance ( $p < .01$ ) for proportional excess from this region.

### Discussion

Mount of David Orthopedic Hospital, like most tertiary care facilities, reflects a patient population consistent with the executive and professional interests of the staff. In addition to its well known technical expertise in the treatment of TEV and CDH, trends over the time period under study revealed that the number and proportion of admissions as companions (i.e. admitted

persons who were were not ill but occupied a bed, usually mothers accompanying small children) increased (from 0.9% to 3.9% of all admissions). This increase was probably in response to modern pediatric thinking encouraging maternal involvement in hospitalization to facilitate rapid rehabilitation of children, and demonstrates the hospital's commitment to both the physical and emotional wellbeing of its patients (Ref. 75b). Other changes over the time period examined were directly related to policy decisions. The raising of the age ceiling for non-emergency cases in 1982 presumably explains the increase of admitted fracture patients since that year, rather than any change in the incidence of fractures. The absence of scoliosis cases prior to 1984 also does not reflect its absence from the community, but rather the staff's newly acquired ability to treat this disorder since 1984. It is interesting that the sex ratio of admitted scoliosis cases was 1.5 male : 1.0 female cases. This is in contrast to the well reported female dominance of scoliosis in North America (Ref. 57). It may be that traditional female dress, usually worn by the age of puberty, serves to hide lateral curvatures in all but the most severe female scoliosis cases. Also, surgical correction may be more readily sought for boys than for girls. Admissions for companions, fractures, and scoliosis all increased over time. Upper extremity fractures in children are more often seen among in-patients in 1984 than in 1980, reflecting either rising trends in community incidence or changes in hospital utilization. PPP cases decrease as percentage of all admissions, but remained rather stable in the absolute number of admissions during the months sampled (35 cases in 1980, 31 cases in 1984). This still implies a shrinking pool of potential

admissions from the community, which would be quite consistent with well documented vaccine campaign successes (Chapters V and VI).

CDH, the most common congenital disorder, can serve as a key barometer of regional early identification and intervention programs. Because it is present at birth, but not obvious, regional differences in number and age of referrals to Mount of David probably reflect the relative success of early intervention and screening programs in Bethlehem and Jerusalem (CDH is a significantly smaller proportion of all admissions,  $p < .01$ ) and conversely their relative failure in Nablus, Jenin, and Hebron regions (CDH excess,  $p < .01$ ). Our hypothesis is that earlier CDH diagnosis in Bethlehem and Jerusalem results in greater medical treatment success and less need for surgical intervention. An alternative view is that physicians prefer earlier surgical repair for CDH from Bethlehem and Jerusalem zones. Whether this represents better medical care (as we surmise) or inappropriately aggressive therapy can be checked with chart review. Additional investigation of CDH and other congenital conditions is also important to address issues of focal community risk, perhaps due to consanguinity (Refs. 45,46).

Regional distribution of patient origin did not shift markedly in the 1980-1984 period. Physical proximity to the hospital is of major importance in the observed utilization pattern. As expected, admitted cases of trauma are heavily represented by the Bethlehem and Hebron districts, whereas distal zones rarely referred patients for unscheduled admissions to Mount of David.

105

The relatively large proportion of fractures from Jenin (Figure III-7) compared to Nablus, Gaza, and Tulkarm is an exception. There does not seem to be any particular link between the hospital and the Jenin zone, e.g. there is not a disproportionate number of employees from Jenin, or any special religious or social relationship. Thus, questions raised are: Why are the absolute numbers from Jenin so much greater than those from the equidistant and equally populated Tulkarm zone? Are there transportation related differences? Why are there so many more acute conditions? The answers may lie in patterns of diagnosis and referral or may be genuinely a result of prevalence differences between regions for selected conditions. Local investigation could help address these issues. Another interesting finding is the excess of PPP cases from Gaza, perhaps due to a true community excess in the numbers of these cases. Problems relating to polio vaccine efficacy in Gaza are discussed elsewhere in this report (Chapter VI), but the small sample size of this study does not permit speculation on a link between this phenomenon in the 1970's and a relative PPP excess in Gaza today (Refs. 60,63).

The relative absence of fractures from Gaza implies either that alternative treatment is readily available or that the trip from Gaza to Bethlehem discourages seeking care for acute injuries in distant zones. Distribution of cases was quite broad, with Hebron and Bethlehem districts combined representing under 38% of all admissions. (The comparable figure for Caritas Baby Hospital is 83%.)

In conclusion, the data provided by this hospital reflect its expertise in surgical treatment of conditions not readily treatable elsewhere in the West Bank and Gaza. Mount of David provides, at affordable cost (for charity cases no cost), tertiary care of orthopedic disorders which have been referred from the primary health care system. Because of this, these data can be used to measure relative regional efficacy in early diagnosis and referral, as well as to provide indications of relative frequency of different conditions.

Analyses of the data will address average age of admission by region and length of hospital stay by region, among other issues. The Mount of David Orthopedic Hospital has invited the Institute's Health Team to continue research which will include follow-up data on CDH cases, long-term surgical outcome, efficacy of post-surgical rehabilitation in different regions, basic epidemiological characteristics of CDH in the Middle East, and other issues of local and scientific importance.

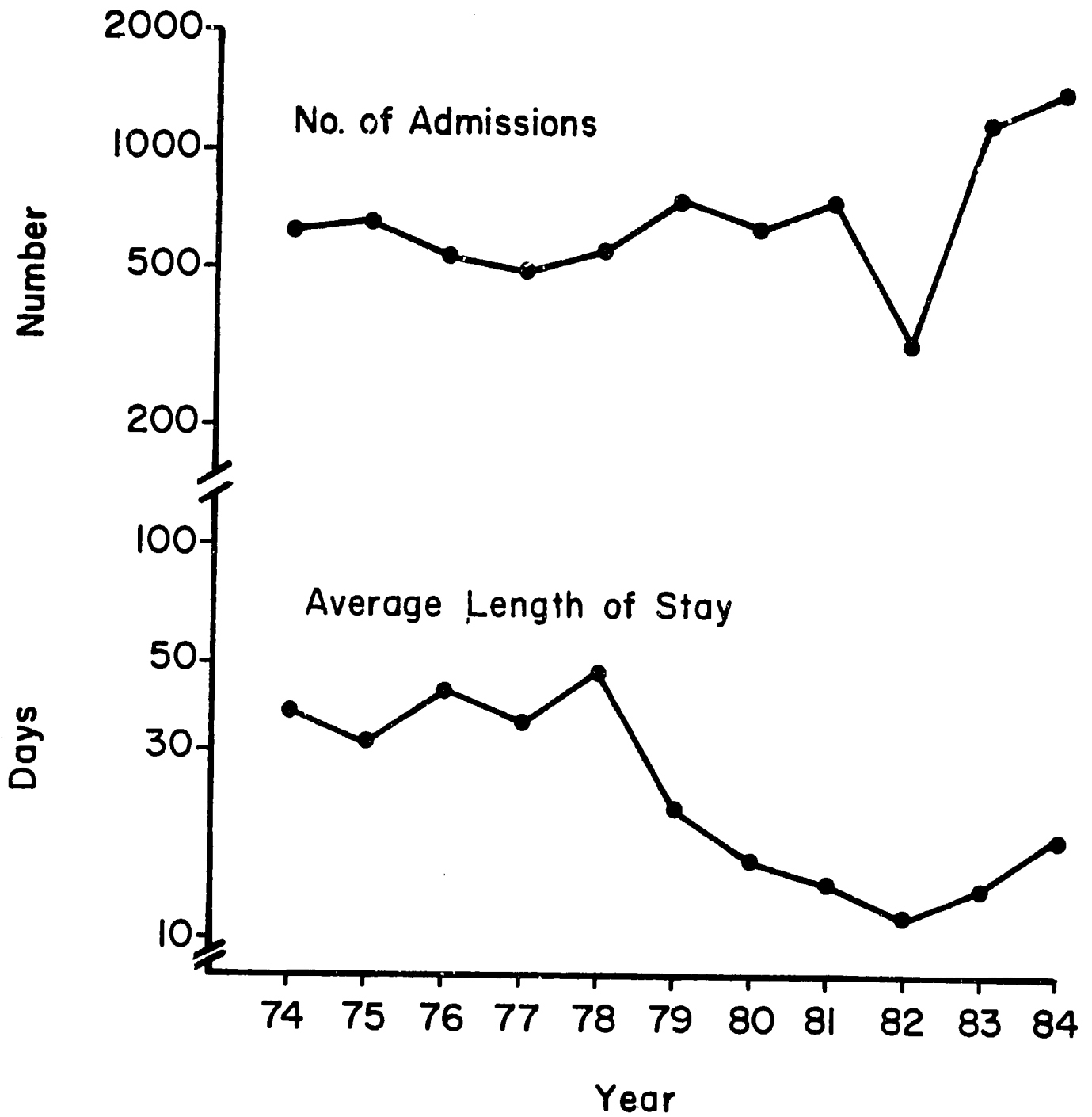


FIGURE III-1: Number of admissions per year and average length of hospital stay, Mount of David Orthopedic Hospital (Bethlehem), 1974-1984 (semilogarithmic scale).

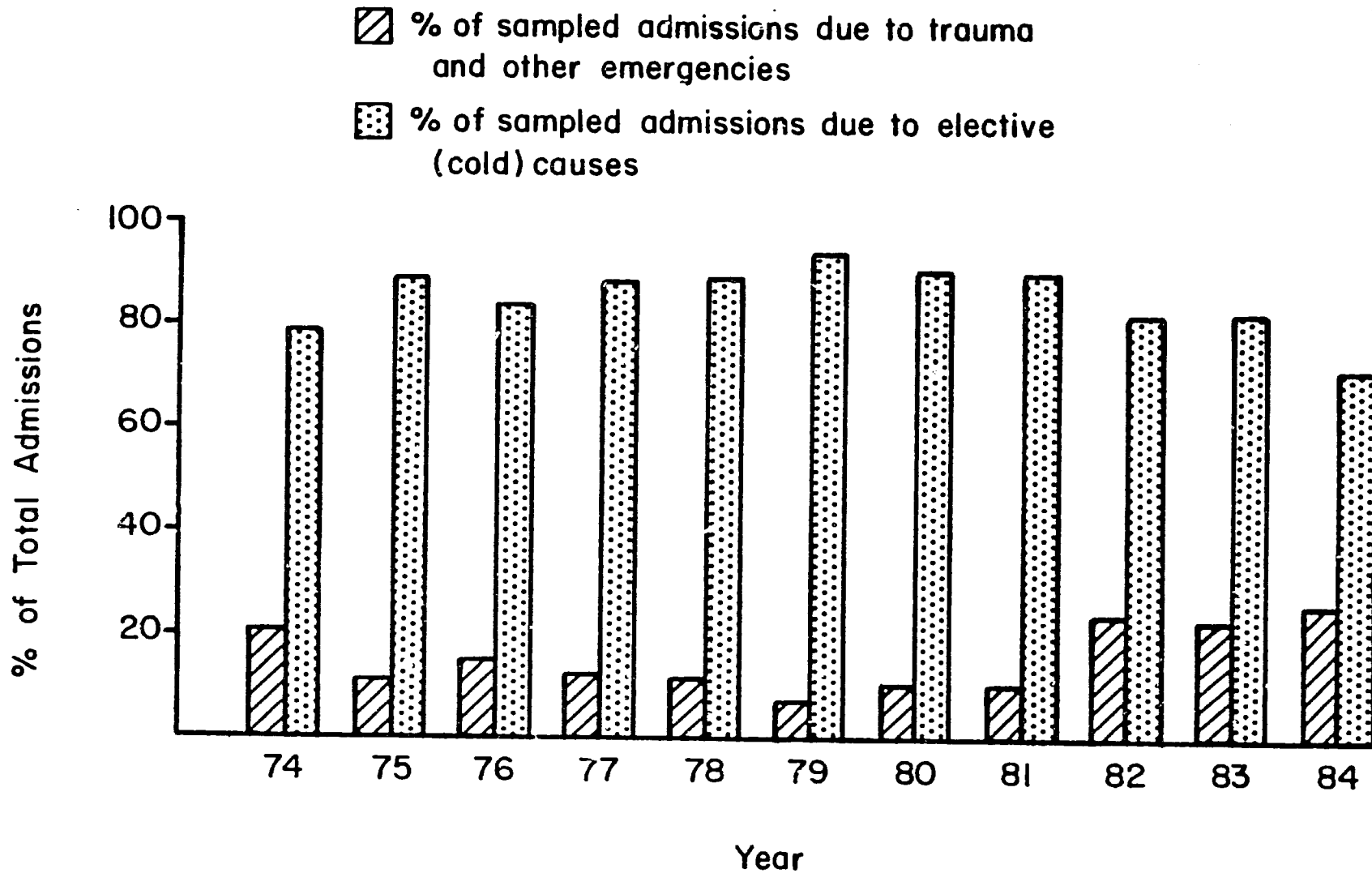


FIGURE III-2: Proportion of total admissions due to trauma/emergency or for pre-scheduled reasons, Mount of David Orthopedic Hospital (Bethlehem), 1974-1984 (semilogarithmic scale).



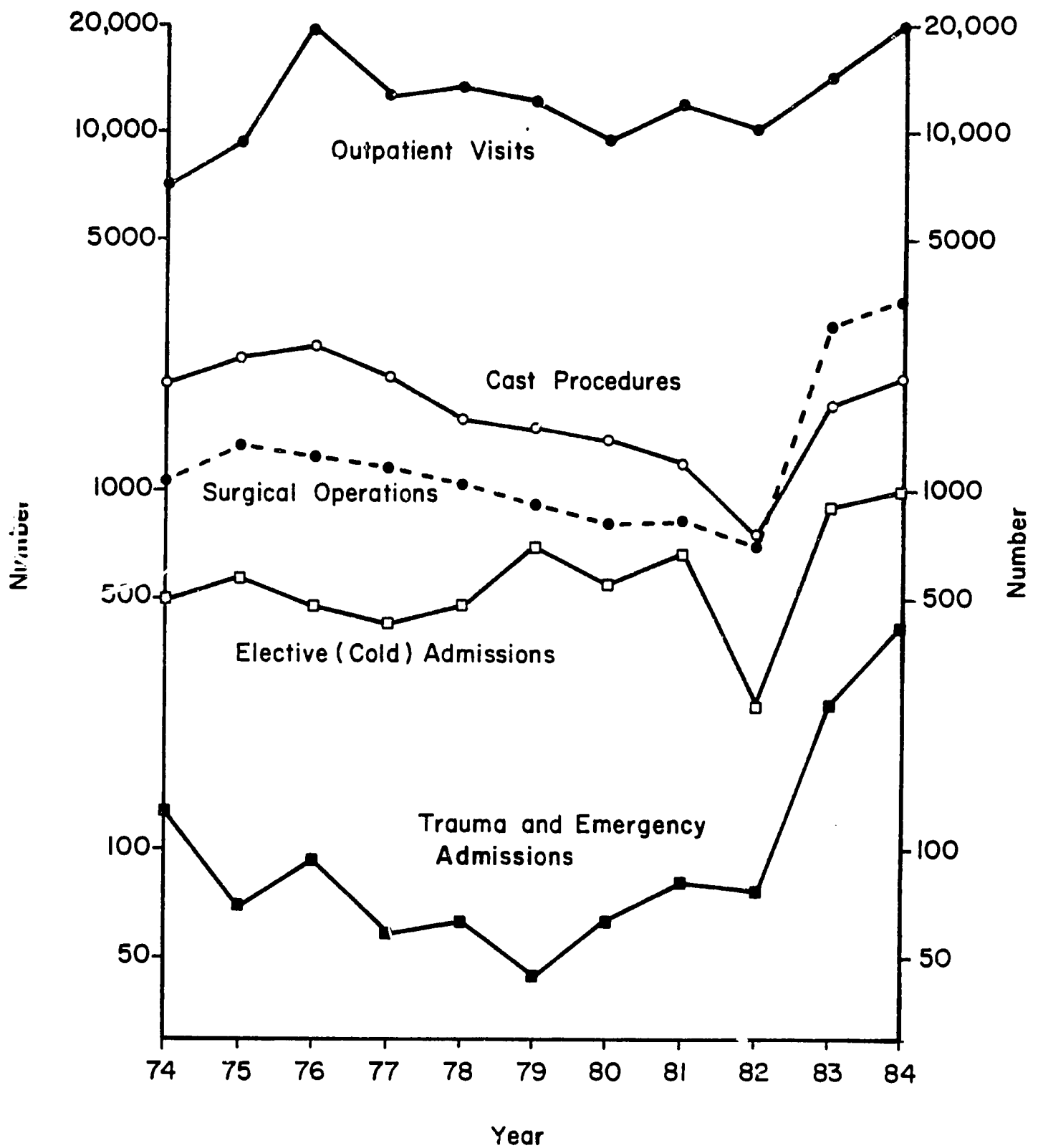


FIGURE III-3: Patient services provided by Mount of David Orthopedic Hospital (Bethlehem), 1974-1984 (semilogarithmic scale).

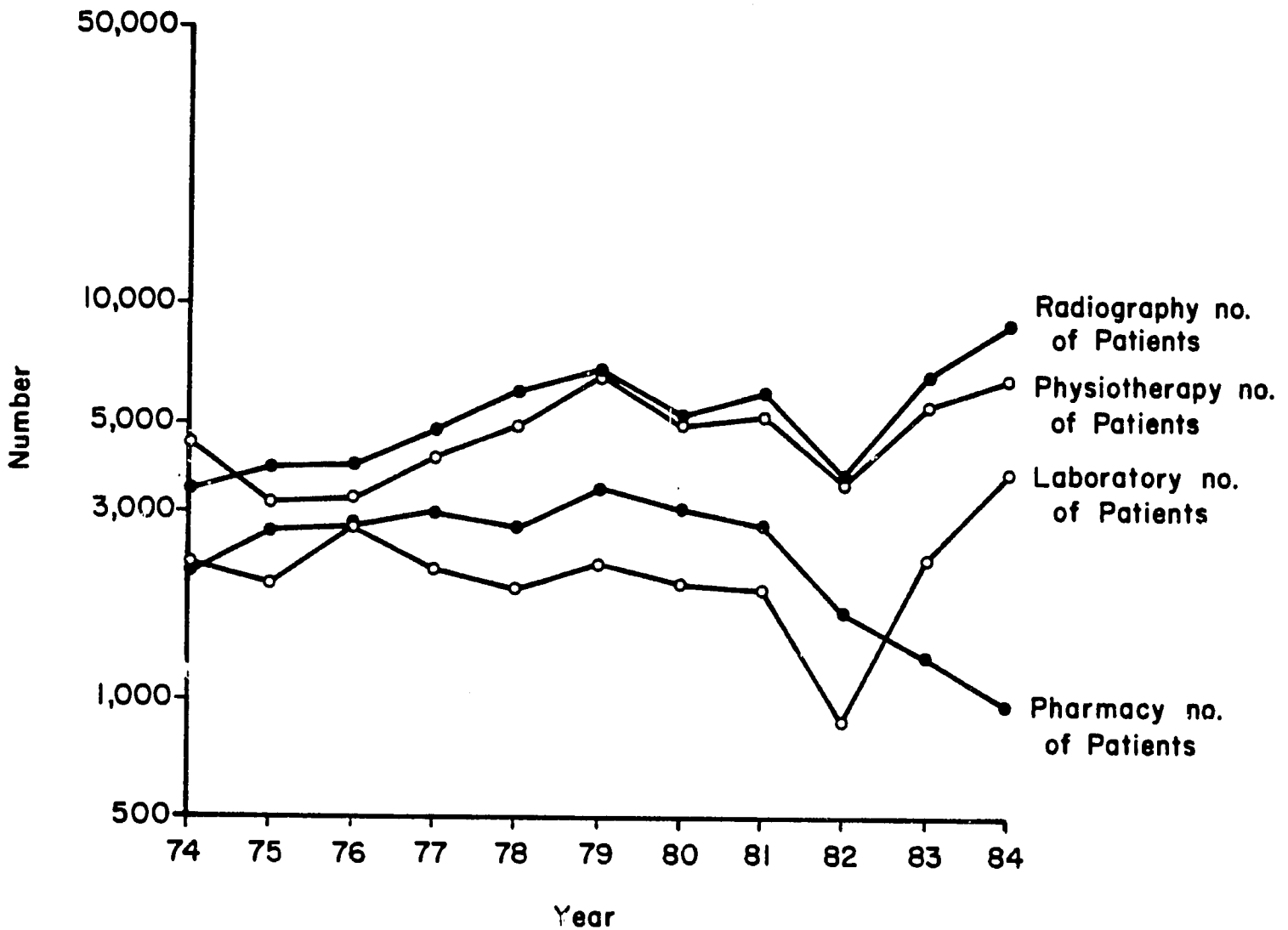


FIGURE III-4: Number of patients receiving various ancillary services at Mount of David Orthopedic Hospital (Bethlehem), 1974-1984 (semilogarithmic scale).

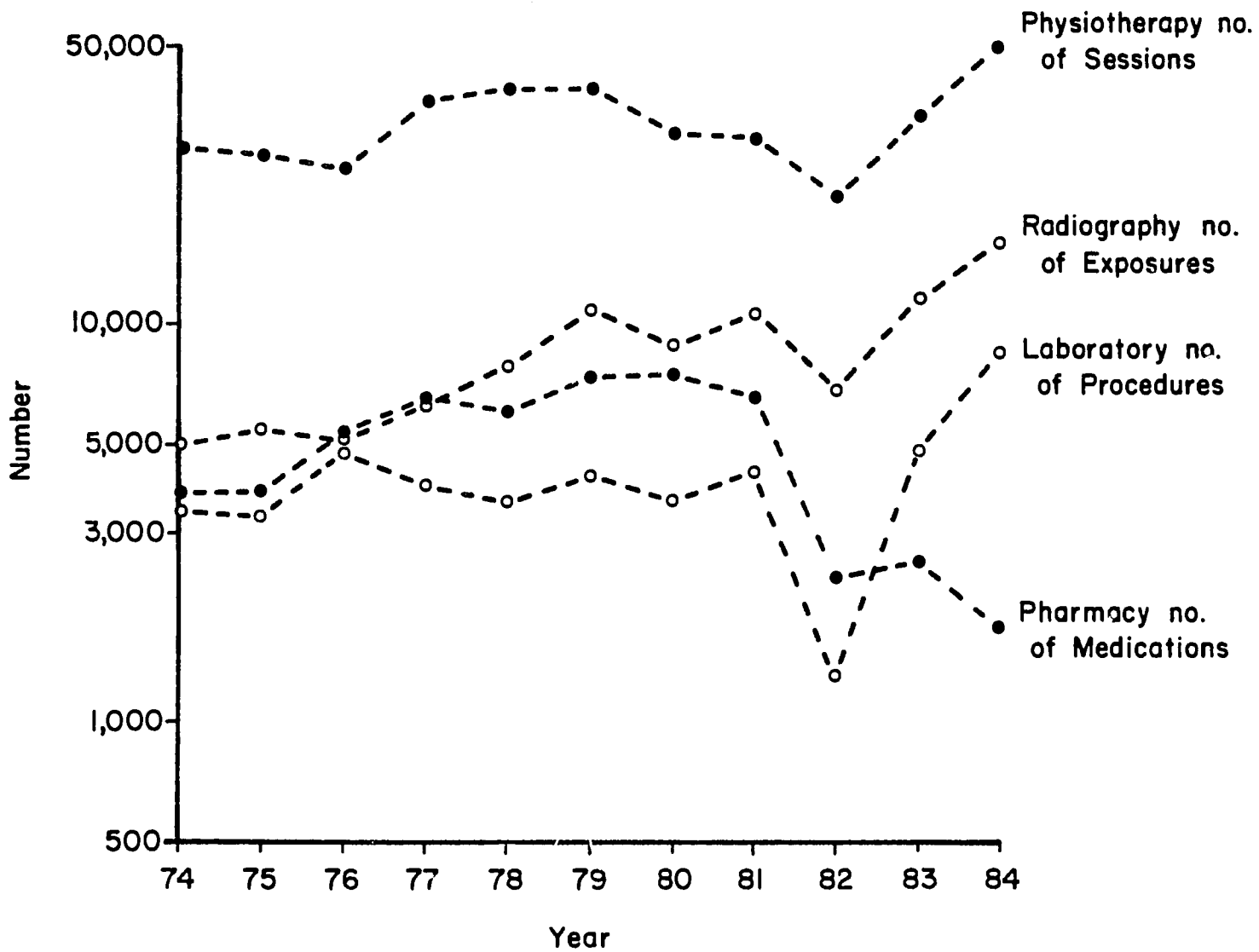


FIGURE III-5: Number of ancillary services provided by Mount of David Orthopedic Hospital (Bethlehem), 1974-1984 (semilogarithmic scale).

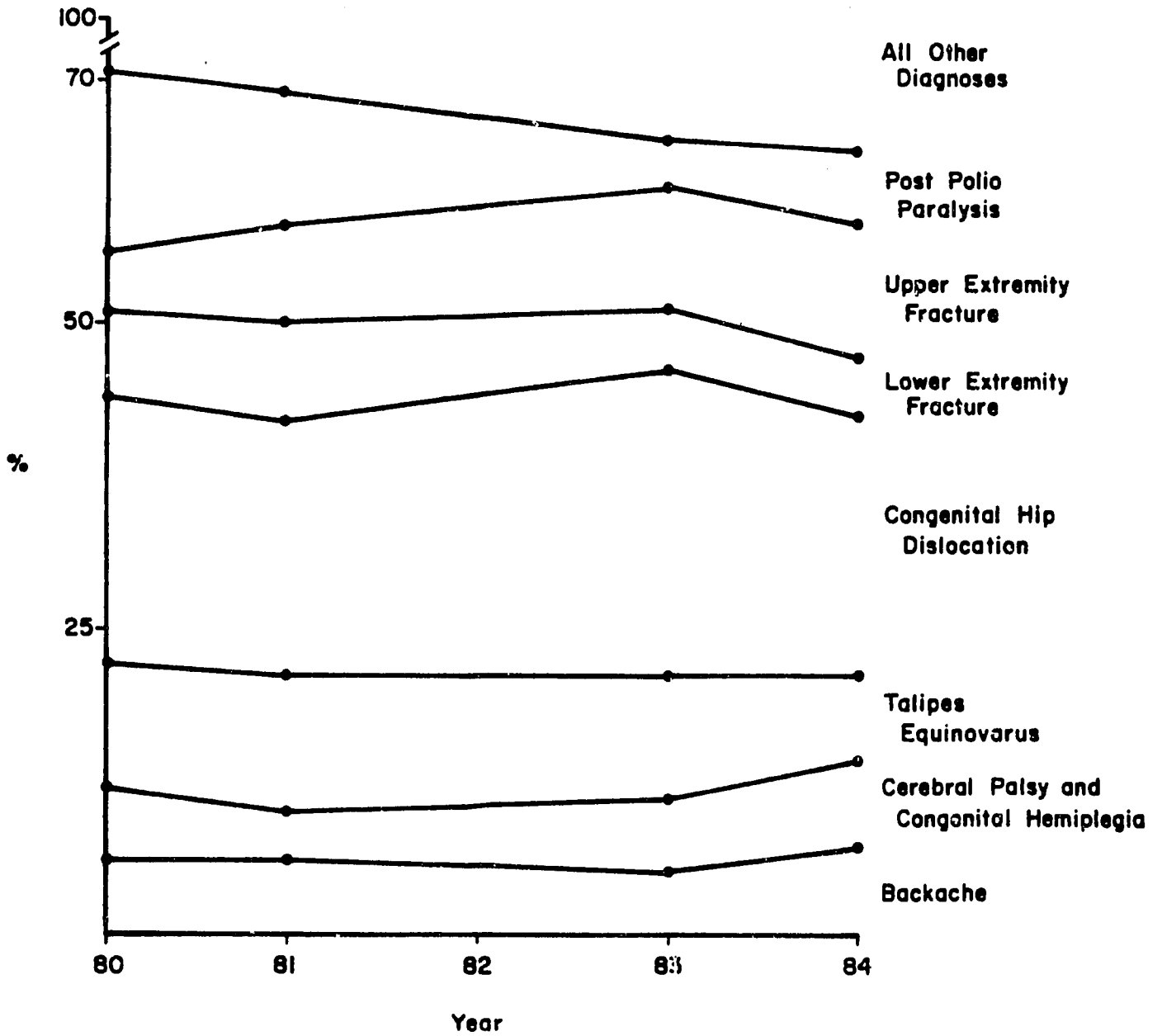
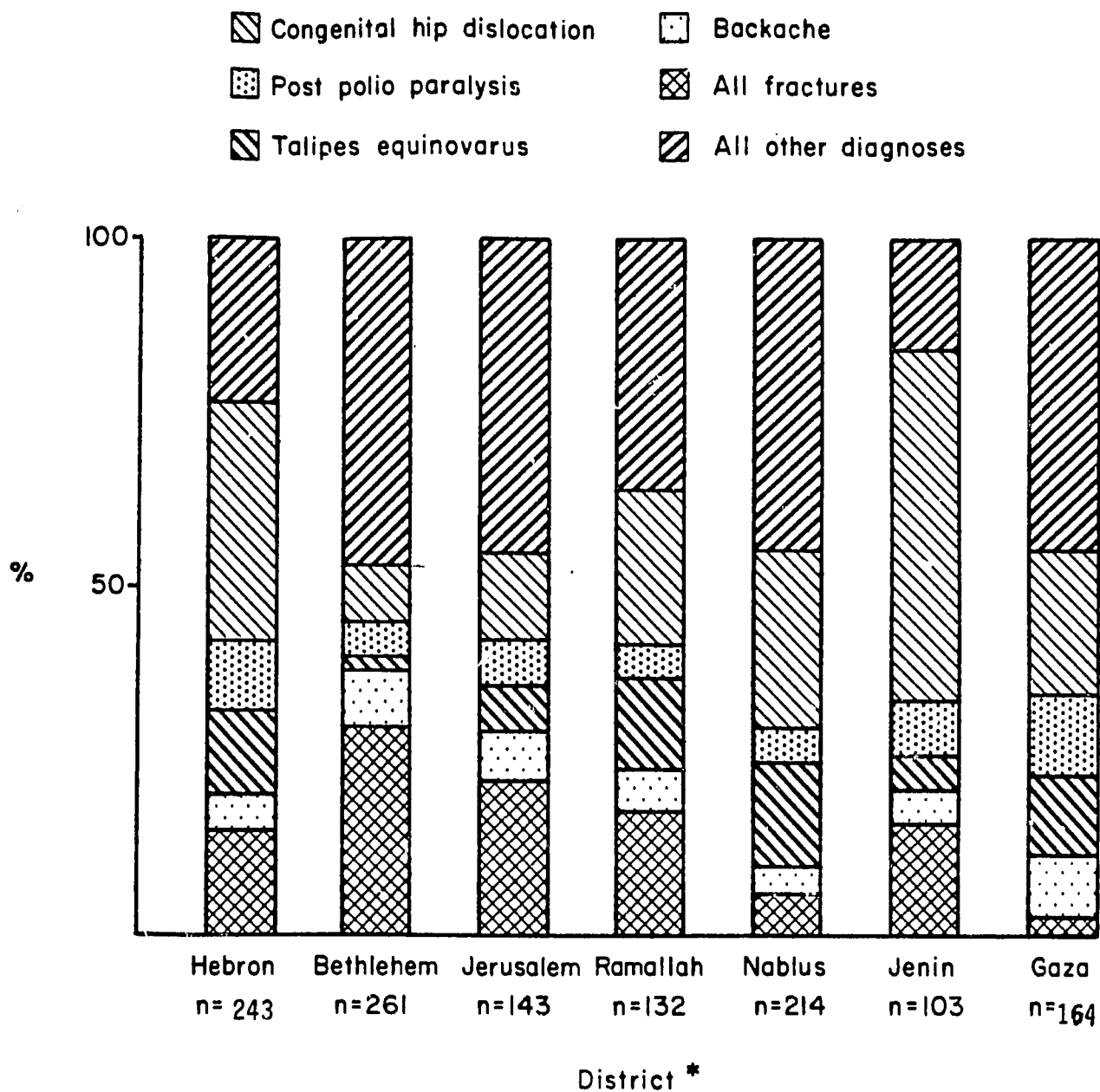


FIGURE III-6: Proportion of total for selected primary diagnoses, Mount of David Orthopedic Hospital (Bethlehem), Selected months, 1980-1984.



\* Jericho n=11, Tulkarm n=35, Other n=37

FIGURE III-7: Relative frequency of a specific orthopedic diagnosis by region of residence, Mount of David Orthopedic Hospital (Bethlehem), Selected months, 1980-1984.

Mount of David

Table III-1

Most Common Primary Diagnoses by Frequency of Occurrence for Selected Months

Frequency Rank	Diagnosis	Number of Patients	Proportion of all Admissions	Cumulative
1	Congenital Dislocated Hip(s)	300	22.3%	22.3%
2	Congenital Talipes Equinovarus	125	9.3%	31.6%
3	Fracture, upper extremity	120	8.9%	40.6%
4	Acute Poliomyelitis and PPP (a)	111	8.3%	48.8%
5	Backache	82	6.1%	55.0%
6	Cerebral Palsy (b)	81	6.0%	60.9%
7	Fracture, lower extremity	80	6.0%	66.9%
8	Osteoarthritis	39	2.9%	69.8%
9	Other deformity	35	2.6%	72.4%
10	Companion of child patient	26	1.9%	74.4%
11	Trauma/ Auto accident	25	1.9%	76.2%
12	Prolapsed disc	22	1.6%	77.9%
13	Scoliosis/kyphosis	20	1.5%	79.4%
14	Erb's palsy	17	1.3%	80.6%
	Other and Miscellaneous	260	19.4%	100.0%
	TOTAL	1343	100.0%	100.0%

(a) PPP = Post-polio paralysis

(b) This category includes admissions for cerebral palsy and for congenital hemiplegia.

1/2

Mount of David  
 Table III-2  
 Age at Admission

Age	Number of Cases	Proportion of all Admissions	Cumulative
0 - <1	78	5.8%	5.8%
1 - 4	361	26.9%	32.7%
5 - 9	283	21.1%	53.8%
10 - 14	196	14.6%	68.4%
15 - 19	131	9.8%	78.1%
20 - 21	25	1.9%	80.0%
22 - 29	69	5.1%	85.1%
30 - 39	49	3.6%	88.8%
40 - 49	60	4.5%	93.2%
50 +	91	6.8%	100.0%
Total	1343		

Mount of David  
 Table III-3  
 Secular Trends in Age at Admission to Hospital

Year of Sampled Months	Number of Diagnoses in Sampled Months	Mean Age	Median Age
<b>CONGENITAL DISLOCATED HIP - Unilateral</b>			
1980	28	5.6	5.0
1981	13	3.0	2.0
1983	33	4.8	3.0
1984	43	4.0	2.0
Total	117	4.5	3.0
<b>CONGENITAL DISLOCATED HIPS - Bilateral</b>			
1980	23	3.2	2.0
1981	41	3.2	3.0
1983	63	3.2	2.0
1984	62	4.2	2.0
Total	189	3.6	2.0
<b>TALIPES EQUINOVARUS - Unilateral</b>			
1980	6	3.2	3.5
1981	14	5.0	3.0
1983	9	4.0	2.0
1984	12	4.0	2.0
Total	41	4.2	2.0
<b>TALIPES EQUINOVARUS - Bilateral</b>			
1980	16	2.9	3.0
1981	13	2.4	1.0
1983	31	2.6	1.0
1984	24	2.6	1.0
Total	84	2.6	2.0
<b>POST-POLIO PARALYSIS</b>			
1980	35	9.8	9.0
1981	27	12.7	14.0
1983	15	12.8	15.0
1984	31	10.5	9.0
Total	108	11.1	11.0

117



Mount of David  
 Table III-4  
 Emergency and Scheduled Admissions by Region of Residence

Region	Total Admissions	Total Emergency Admissions	Emergencies as Proportion of Total Admissions	Total Scheduled Admissions	Scheduled Admissions as Proportion of Total Admissions
Hebron	243	27	11.1%	216	88.9%
Greater Bethlehem	261	92	35.2%	169	64.8%
Jerusalem	143	23	16.1%	120	83.9%
Ramallah	132	19	14.4%	113	85.6%
Jericho	11	3	27.3%	8	72.7%
Nablus	214	8	3.7%	206	96.3%
Jenin	103	11	10.7%	92	89.3%
Tulkarm	35	3	8.6%	32	91.4%
Gaza	164	6	3.7%	158	96.3%
Other	37	3	8.1%	34	91.9%
<b>Total</b>	<b>1343</b>	<b>195</b>	<b>14.5%</b>	<b>1148</b>	<b>85.5%</b>

118

Mount of David  
 Table III-5  
 Frequency Ranking of Four Most Common Primary Diagnoses by Region of Residence (a)  
 (Continued on next page.)

HEBRON		BETHLEHEM		JERUSALEM		RAMALLAH	
Diagnosis and Ranking	Proportion of all Admissions from Region	Diagnosis	Proportion of all Admissions from Region	Diagnosis	Proportion of all Admissions from Region	Diagnosis	Proportion of all Admissions from Region
1. CDH	33.9%	1. All Fractures	29.5%	1. All Fractures	22.4%	1. CDH	22.0%
2. All Fractures	14.8%	2. Backache	7.7%	2. CDH	13.3%	2. All Fractures	18.2%
3. TEV	12.3%	2. CDH	7.7%	3. TEV	7.0%	3. TEV	12.9%
4. PPP	9.7%	4. PPP	4.6%	3. Backache	7.0%	4. CP & Cong.hemi.	9.0%
		4. Osteoarthritis	4.6%				
		4. CP & Cong.hemi.	4.6%				
Total Admissions From Region:	243		261		143		132
Admissions from Region as Proportion of Total Admissions:	18.1%		19.4%		10.6%		9.8%

(a) excluding Jericho (N=11), Tulkarm (N=35), and miscellaneous other areas (N=37).  
 Upper and lower extremity fractures are grouped as 'All fractures'.  
 Diagnostic category termed 'miscellaneous' is excluded.

Mount of David  
 Table III-5  
 Frequency Ranking of Four Most Common Primary Diagnoses by Region of Residence

(Continued)

NABLUS		JENIN		GAZA	
Diagnosis	Proportion of all Admissions from Region	Diagnosis	Proportion of all Admissions from Region	Diagnosis	Proportion of all Admissions from Region
1. CDH	29.4%	1. CDH	34.0%	1. CDH	21.1%
2. TEV	15.4%	2. All Fractures	15.5%	2. PPP	12.4%
3. PPP	8.4%	3. PPP	7.8%	3. TEV	10.6%
4. CP & Cong.hemi.	7.9%	4. Backache	5.0%	4. Backache	8.7%
Total Admissions From Region:	214		103		164
Admissions from Region as Proportion of Total Admissions:	15.9%		7.7%		12.2%

120

CHAPTER IV  
USERS' PERSPECTIVES OF HEALTH SERVICES IN HEBRON  
A Community-Based Study

On the West Bank, health services are offered by three independent systems: government, UNRWA, and the private sector (including charitable societies, private physicians, and paraprofessionals). This chapter targets the Hebron region and reports on a field-based pilot study of consumer behavior, experiences, and preferences (referred to in the USAID grant document as an "end-user survey"), which was conducted during March 1984. The study was designed to examine four questions:

1. Where do people in the area go for care for their different medical needs?
2. What factors influence their choice of services?
3. What is their experience with different services?
4. What are the areas of need from the consumer point of view?

The focus in the pilot study was maternal and child health. Interviews were conducted in Arabic with 163 Hebron area residents.

## METHODS

The study was developed and carried out in Hebron jointly by research staff from the Institute for Middle East Peace and Development and the University Graduates Union of Hebron. After preliminary discussions in the field and consultations with experts, the New York-based research team drafted an interview schedule. The draft was then reviewed and modified in Hebron by New York staff and local counterparts so that it would be appropriate to local conditions and would reflect local research priorities. The interview schedule consisted of a background information section, followed by a series of questions about subjects' past experiences with four specific health events, chosen because (a) they were likely to have occurred in most families, (b) they were likely to be reliably remembered, and (c) they are key concerns for MCH evaluation and planning. The events are:

1. Birth of last child (and prior children)
2. Immunizations
3. Most serious medical condition of any child
4. Most serious medical condition of self

For each event, subjects were asked where they received health services (if any), why they chose that provider, how they felt about the care they were offered, and whether they did (or would) return to that provider under similar

circumstances. In addition, each subject was asked general questions about the use of the Hebron health system. (The interview schedule was included as Appendix A in the project's "Second Quarterly Report" to USAID.)

### Interviewers

Interviewers for the study were selected among the members of the Hebron Young Women's Society, a civic organization in Hebron devoted to education and community service. Because the focus of the research was maternal and child health, all interviewers were female. All had prior interviewing experience and/or had studied research methods in their local secondary-school or university studies.

Interviewer training had both classroom and field components. Before entering the field, the 11 interviewers met as a group with Mr. Abdul Rahman Natsche of the Graduates Union, assisted by Dr. Harriet Arnone, for a three-hour classroom session. The interview schedule was presented and discussed, and procedures were described. Then, at the end of each working day, interviewers had a 30-45 minute training/supervision meeting with Mr. Natsche and Dr. Arnone to review their work and to discuss any difficulties they had encountered. These were productive sessions in which supervisors had the opportunity to correct problems in the interview and interviewers received useful feedback about their performance.

## SAMPLE

163 interviews were completed in the pilot study. No person approached to be interviewed refused to take part, and most subjects responded enthusiastically to being interviewed.

This pilot study was primarily (1) a field testing of the interview and of local sensitivities to research interviewing, and (2) an attempt to obtain preliminary information about health seeking behavior, there was no effort to draw a strictly representative sample. Rather, interviewers were instructed to visit a range of locations in the area (Hebron City, surrounding villages, and the al-Arroub refugee camp) and to seek interviews with as broad a range of people in each location as possible.

The sample population was 89% female (N=145) and 11% male (N=18). The mean age of subjects was 34.8 years, with a median age somewhat lower (32.5 years). All were Moslem. Most (86%) were married, and the average family size was 7.3 people.

As would be expected in Hebron, most were long-term residents of the area. Eighty-five percent were born in the city or district of Hebron as were 88% of their fathers. At the time of the interview, 52% lived in the city of Hebron, 41% in the outlying district, and 7% in the al-Arroub camp.

As indicated in Tables IV-1 and IV-2, the sample population represented a wide range of occupations and educational backgrounds. The average family income in the sample was 126.3 Jordanian Dinars (about U.S. \$321) per month.

The comparison of sample statistics with estimated population characteristics suggests that, in addition to overrepresenting women (as intended), the study sample slightly overrepresents city dwellers, so that monthly income may be somewhat higher than average.

#### Health Insurance Coverage

Because monetary/insurance factors often play such a significant role in selection of medical treatment, we asked about medical insurance coverage and investigated characteristics of people who did and did not have medical insurance. Forty-six percent of the sample had some kind of medical insurance, primarily government insurance. Insured families were significantly more likely to be headed by a person who had completed secondary school or more, whereas uninsured families were more likely to be headed by someone with no formal education. People in white collar occupations were significantly more likely to be insured, as were people living outside the city of Hebron. No other differences between insured and uninsured subjects reached statistical significance.



## RESULTS

### Choice of Service

Table IV-3 summarizes the pattern of use of public/private/UNRWA services reported in the study. The main point to be made is that people use services differentially, depending on the type of problem.

**Childbirth:** Among subjects with children, 36% reported that their last child was born at home. There was a strong trend toward preference for hospital births over time. Although 45% of children other than the last child were born at home, only 13% of subjects expressed a desire for future children to be born at home. Subjects used a variety of hospitals in the area, with 30% of the most recently born children delivered at the Hebron government hospital, 11% at local private hospitals, 4% at hospitals in Israel, and 12% at unspecified hospitals.

**Immunizations:** Ninety-six percent of the last-born children of subjects received immunizations from public services. No immunizations were reported from the private sector. Most immunizations (75%) were received at government facilities (hospitals, clinics, or temporary facilities) with the remainder at UNRWA facilities.

Most Serious Incident - Child: The choice of medical service for a child's serious medical problem varied depending on the nature of the problem. There was a tendency to use hospital services (75% total; i.e. 35% government, 15% private, and 25% unspecified hospital) for traumas such as accidents and to use private physician services (69%) for illness. (A number of incidents could not be clearly identified as either trauma or illness, and for those events use of services was mixed.)

Most Serious Incident - Adult: Since many of the serious problems reported by women were related to obstetric or gynecological care, three classification categories were created: trauma, illness, and ob/gyn. Adults, like children, tend to use hospital services more for trauma (60%) and private physician services for illness, both general (64%) and ob/gyn (This category did not include prenatal care or routine childbirth.) (56%).

#### Factors Which Influence Choice of Services.

Subjects were asked why they chose the service they did. Analysis of responses shows that people make their choice of service depending on different factors, such as: (1) the nature of the problem, (2) whether the family is covered by medical insurance, and (3) whether the family lives in the city of Hebron or in the outlying districts.

Responses were divided into five categories:

1. Access to care (e.g. "It is close by"; "It is too difficult to travel to other hospitals.")
2. Quality of care (e.g. "The doctors are good.")
3. Insurance (e.g. "We have insurance so we go to the government hospital.")
4. Cost (e.g. "It's cheaper.")
5. Interpersonal/social aspects (e.g. "They understand our customs.")

The reason most frequently given as the most important factor in choice was access to services (see Table IV-4). There is a different emphasis, however, when responses are analyzed according to the nature of the medical event. For home births, for example, the reason given most often is low cost, whereas for hospital births the main reason is good care. Easy access is the category most often cited for choice of immunization services; for serious medical problems -- both adult and childhood -- it is most often quality of care.

Among families with medical insurance, insurance becomes almost as important as convenient access to city dwellers and more important for people who live outside the city. For families without medical insurance, access remains the most important factor in choice of services. The surprising finding in the uninsured group is that cost does not seem to be dominant. Rather, the uninsured emphasize interpersonal/social aspects of care as second in importance to access.

### Evaluation of Different Services

The degree to which people report satisfaction with the health care they have received varies both with the event and the provider. It should be noted that the proportion of people who report being satisfied in each category ranges from a low of 50% (homebirth) to a high of 100% (hospitals in Israel for a serious incident).

**Childbirth:** A larger percentage of people whose children were born in hospitals or clinics are satisfied with their care (74%) than are people whose children were born at home (48%). These figures reinforce the findings that people are turning toward hospital births over time. The differences in evaluation between various types of hospitals (government, private, hospitals in Israel) are not statistically significant.

**Immunizations:** Those who take advantage of government immunization programs are overwhelmingly satisfied with the service.

**Serious Medical Events - Adult and Childhood:** There is a tendency for people to be somewhat more satisfied with private physician care (86%) than with hospital care, either government or private (72%). People discriminate among hospitals, however, with the care at hospitals in Israel being seen as most satisfactory and the care at the local government hospital least satisfactory.

### Areas of Need

All subjects were asked at the end of the interview whether they or anyone in their family had ever needed medical care in the Hebron area and found it unavailable. Twenty-eight percent of subjects answered "Yes". We tested a variety of theories about the characteristics of those people and found that only two variables distinguished them to a statistically significant degree from those who did not report having experienced a problem:

1. They are more likely to come from larger families (in which the greater number of people would naturally increase the probability that any event -- including inadequate medical care -- would occur; and which might represent families with fewer economic or social options).
2. They are more likely to live in the rural districts outside Hebron City, i.e. in those areas where the problem of access to care is most extensive.

### CONCLUSIONS

1. People in the Hebron district take advantage of a mix of services available, using some services of the public and some of the private sector,

depending on a variety of factors including access, insurance, and the nature of the condition. It does not appear to be the case that there are "private-sector users" and "public-sector users"; rather, families seem to choose one kind of service under some conditions and other kinds of services under other conditions. The fact that Hebron residents, however underserved they may be overall, are accustomed to exercising choice in obtaining medical care should be an important consideration in any health planning process.

2. Hospitals are particularly important to people in the Hebron zone at times of medical emergency. When the problem is a trauma, there is a clear tendency to seek care at local hospitals, a choice which overrides the clear preference for private physician care which obtains under other circumstances. Those responsible for local hospital planning should be aware of this perception when they develop area services.

3. For Hebron residents, access to care is the most important consideration in choosing among available services. The particular importance of this factor for residents in the rural zone supports findings presented elsewhere in this report about the need to consider not simply which services to provide, but also how people are going to get them. Given the lack of well developed public transportation and the fact that many people who need care live outside the city of Hebron, a viable emergency transport system appears to be a planning priority. Also, development of clinics in rural areas which would offer a range of primary health services seems to be a clearly expressed need.

4. Users discriminate among available services, sometimes traveling away from their immediate locale to receive "better care". They also place a great deal of emphasis on interpersonal aspects of health care. These findings suggest that in order for new health service initiatives to be accepted and widely used, they must not simply offer high quality services, but those services must conform to local traditions of health-care delivery. Our findings also imply that training cannot simply be a wholesale transfer of technical skills; rather, the subject matter must be tailored to the Hebron environment.

5. There exists in the Hebron area both a capacity for conducting field-based research and a receptivity among residents to the research process. These factors, demonstrated by the pilot study, allow the possibility of designing and implementing a data-based planning process in the health sector. Such a process would improve the quality of new programs, allow their impact to be evaluated, and permit reliable assessment of changes in the health status of the population.

Users' Perspectives  
 Table IV-1  
 Occupations of Respondents and Spouses

Occupation	Number of Respondents	Proportion of Respondents	Number of Respondents' Spouses	Proportion of Respondents' Spouses
White Collar	31	19.0%	36	22.1%
Manual	6	3.7%	46	28.2%
Sales	0	0.0%	21	12.9%
Agriculture	2	1.2%	5	3.1%
Transportation	0	0.0%	20	12.3%
Unemployed	0	0.0%	6	3.7%
Student	3	1.8%	0	0.0%
Housewife	108	66.3%	4	2.5%
No answer	13	8.0%	25	15.3%
<b>Total</b>	<b>163</b>	<b>100.0%</b>	<b>163</b>	<b>100.0%</b>



Users' Perspectives  
 Table IV-2  
 Educational Level of Respondents and Spouses

Education	Number of Respondents	Proportion of Respondents	Number of Respondents' Spouses	Proportion of Respondents' Spouses
None	34	20.9%	21	13%
Primary	37	22.7%	41	25%
Preparatory	31	19.0%	25	15%
Secondary	27	16.6%	17	10%
More than secondary	24	14.7%	51	31%
No answer	10	6.1%	8	5%
<b>Total</b>	<b>163</b>	<b>100.0%</b>	<b>163</b>	<b>100.0%</b>

Users' Perspectives  
 Table IV-3  
 Respondents' Choice of Medical Services

Medical Service	CHILDBIRTH (Last Child)		INOCULATION		MOST SERIOUS INCIDENT - Child							
	# (a)	% (b)	#	%	Trauma		Illness		Unclear		Total	
					#	%	#	%	#	%	#	%
Private Hospital	18	11.8%	0	0.0%	3	15.0%	12	19.4%	2	20.0%	17	18.5%
Government Hospital(c)	49	32.2%	111	76.6%	7	35.0%	3	4.8%	1	10.0%	11	12.0%
Israeli Hospital	6	3.9%	0	0.0%	0	0.0%	1	1.6%	1	10.0%	2	2.2%
Hospital (Unspecified)	20	13.2%	2	1.4%	5	25.0%	4	6.5%	1	10.0%	10	10.9%
Private Doctor	0	0.0%	0	0.0%	5	25.0%	41	66.1%	5	50.0%	51	55.4%
UNRWA Clinic	0	0.0%	32	22.1%	0	0.0%	1	1.6%	0	0.0%	1	1.1%
Home	59	38.8%										
<b>Total</b>	<b>152</b>	<b>100.0%</b>	<b>145</b>	<b>100.0%</b>	<b>20</b>	<b>100.0%</b>	<b>62</b>	<b>100.0%</b>	<b>10</b>	<b>100.0%</b>	<b>92</b>	<b>100.0%</b>
Other/No answer	11		18		143		101		153		71	

Medical Service	MOST SERIOUS INCIDENT - Self									
	Ob/gyn		Trauma		Illness		Unclear		Total	
	#	%	#	%	#	%	#	%	#	%
Private Hospital	3	12.0%	1	20.0%	6	13.3%	1	7.1%	11	12.4%
Government Hospital(c)	7	28.0%	2	40.0%	4	8.9%	2	14.3%	15	16.9%
Israeli Hospital	1	4.0%	0	0.0%	0	0.0%	0	0.0%	1	1.1%
Hospital (Unspecified)	0	0.0%	0	0.0%	6	13.3%	1	7.1%	7	7.9%
Private Doctor	14	56.0%	2	40.0%	29	64.4%	10	71.4%	55	61.8%
UNRWA Clinic	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Home										
<b>Total</b>	<b>25</b>	<b>100.0%</b>	<b>5</b>	<b>100.0%</b>	<b>45</b>	<b>100.0%</b>	<b>14</b>	<b>100.0%</b>	<b>89</b>	<b>100.0%</b>
Other/No answer	138		158		118		149		74	

(a) Number of responses (N = 163).  
 (b) Proportion of those answering.  
 (c) Includes government clinics.

## Users' Perspectives

Table IV-4

Frequency Ranking of Reasons for Respondents' Choice of Medical Services

Frequency Ranking	Reason	Number of Responses	Proportion of Responses
1	Access to Care	44	27.0%
2	Quality of Care	38	23.3%
3	Insurance	24	14.7%
4	Interpersonal/Social	22	13.5%
5	Cost	13	8.0%
	Other/No answer	22	13.5%
	Total	163	100.0%

## CHAPTER V

### HEALTH IN THE WEST BANK

#### A Profile from Secondary Sources

#### INTRODUCTION

##### Background

The West Bank represents a region of central importance in Middle East history. For the people living there, history is the experience of various occupations by various occupiers -- the Turks and the British in the first half of the twentieth century, Jordan from 1948 to 1967, and Israel from 1967 to the present. The emergence of Palestinian nationalism has brought the Palestinians themselves into the efforts to determine the political future of the region.

Uncertainty about issues of sovereignty is evident in the different names for the region. The appellation "West Bank", coined after Jordan's annexation of the territory, is usually used by the Palestinians themselves. "Judaea and Samaria", biblical terms, widely used in official Israeli circles, is responsive to Jewish historical attachments. Other names such as "the

occupied territories," or "administered territories," or simply "the territories" are used in a more military context. Throughout this report, we elect to use the term "West Bank," which seems politically neutral and suitable for descriptive purposes.

The area of approximately 5600 square kilometers (about the size of the State of Delaware) was part of east-central Palestine under the British Mandate. After 1948 it came under Jordanian control, until its capture by Israel in 1967. The West Bank was never a separate political entity (except for a brief period in 1948 when the Arab Higher Committee declared Palestine a sovereign state), even in the distant past. But recent history, both under Jordan but especially under Israeli occupation, has witnessed the crystalization of Palestinian identity. "Even in Jordan where official distinctions between Palestinians and the rest of the Jordanian population were virtually eliminated and integration has been most pronounced, the sense of a separate and particular (Palestinian) national identity persists.." (Ref. 42, p.24). Jordanian authority in pre-1967 West Bank was not seen as completely 'foreign,' given the shared language and culture, even though the Jordanian regime discouraged Palestinian national aspirations.

Over nearly two decades of Israeli occupation, there have been examples of successful economic and even personal relations between some Jews and Arabs, even though Israeli control is generally perceived as alien by the West Bank population. The overall situation has been characterized by one observer as

"monopolization of power by one national entity and collective powerlessness of the other" (Ref. 42). Tension and mutual suspicion are common. The same observer notes that "even ordinary civic issues are quickly suffused with nationalist overtones and become subjects, not of civic politics, but of Israeli-Palestinian confrontation" (Ref. 42, p. 27). We have seen this phenomenon in health and health statistics (Refs. 87-90, 103-111), so that our effort has been to apply strict scientific criteria to all data and their interpretations.

#### Administrative Regions

The West Bank is divided into seven administrative subdistricts: Jenin, Tulkarm, Nablus, Jericho, Ramallah, Bethlehem and Hebron (Figure V-1). Israel annexed East Jerusalem in 1967, which involved immediate and complete administrative integration, and extensive economic integration since then. Yet, East Jerusalem remains at the heart of the West Bank. Physically it lies at a halfway point on the Nablus-Hebron road, which links the north and south subregions of the West Bank. In socio-political and cultural terms East Jerusalem is preeminent in West Bank society: three daily newspapers are published there which serve the region, and most religious, labor, and civic organizations are headquartered there.

The regions within the West Bank are religiously, economically and politically diverse. Traditional rivalries and competition for limited resources from

outside the region can lead to tensions. On the other hand, there are many examples in health and other sectors which demonstrate interaction. The absence of regional-wide structures is a product of historical circumstances and of the post-1967 political context.

### Economy

The economy of the West Bank is fragmented regionally: from the period of the British Mandate onward the coastal plain saw most of the economic activity, with some "spillover" into the more economically stagnant hilly areas which relied on subsistence agriculture (Ref. 11, p.9). In the pre-1948 period, the main subregions of Nablus, Jerusalem, Hebron and Gaza were never economically integrated. After 1948, the Jordanian administration lumped together the three subregions in its jurisdiction, and integrated them somewhat into the economy of the East Bank.

In economic terms, under Jordan the area was characterized by labor intensive activities, such as agriculture and stone quarrying, limited industrialization, a highly migratory labor force, minimal investment infrastructure, and low levels of government expenditure. The official emphasis was on private economic initiatives in the East Bank (Ref. 11).

The Israeli occupation which followed the war in 1967 linked the West Bank with the relatively giant Israeli economy. Employment opportunities became

available in Israel and the Gulf States, and many men sought work either across the Green Line (the Jordanian-Israeli border from 1948 to 1967) or abroad. Approximately 80,000 people commute daily from the West Bank into Israel, including over 30% of Israel's agricultural and 35% of its construction workers. The difficult political climate has hampered the growth of the local economy, and restrictive laws have inhibited credit, export, and general economic development. Migration of skilled workers outside the area ('brain drain') is both a consequence of and contributor to economic limitations.

The area is poor in natural resources. Water is often scarce, and the land is largely hilly and rocky. Nonetheless, the agricultural sector is the main local employer; 85,200 dunams of land (about 15% of the total land area; 4 dunams equal about 1 acre) are cultivated for citrus and vegetables. Building stone is another major local industry, with quarries in Hebron and Bethlehem supplying approximately 2/3 of the building stone used in Jerusalem.

In the West Bank and Gaza combined, the work force of approximately 215,900 people is 87% male and 12% female. Of the female work force, 50% are agricultural, 21% professional, 13% skilled workers in industry, mining, building and transport, etc. Of men, 31% are skilled workers, 24% work as unskilled persons in industry and transport, 17% in agriculture, 11% sales, 4% professional (Ref. 81).



The average per capita income was \$666 in 1974 and \$940 in 1975 (Ref. 11, p.13). As per capita income continues to rise steadily, the GNP of the West Bank shows only modest growth, a discrepancy which points to the lack of regional economic development on the one hand and continued economic interdependence of the West Bank and Israeli economies.

### Demography

CBS estimates about 767,000 total population of West Bank in 1983, with a growth rate of around 2.7% per year. In 1983 46.2% of the population was age fourteen or younger. (See Chapter I for further details.) Below age 30 there are more men than women, while over thirty, women outnumber men, apparently due to male migration in search of work. The high birth rate for many years (reported at 39.8/1000 population in 1983) has resulted in a young population where 45-50% of the population is under the age of 14 (Chapter I).

## HEALTH SERVICES IN THE WEST BANK

### Hospitals

In 1970, the West Bank had 16 hospitals, 8 in the government sector and 8 privately run (Jerusalem excluded). There were about 1300 beds, providing 2.15 beds per 1000 population including 320 psychiatric beds at the Bethlehem Mental Hospital. There were about 1.5 beds/1000 when the psychiatric beds are

excluded. The Rafidia Hospital was opened by the government in Nablus in the mid 1970's, but bed numbers did not keep pace with rising population (Table V-1). As of 1983, there were 9 government hospitals and 8 private hospitals. There are some inconsistencies in various sources of data (Refs. 21,23,50,51), but the approximate bed numbers are 974 (654 medical, 320 psychiatric) government hospital beds and 391 private hospital beds (all medical), or 1.7 to 1.8 beds/1000 population, 71% in the government sector. There were 1.3 beds/1000 population when psychiatric beds are excluded (Table V-2).

Economic difficulties and inflation led to the closure of the French Hospital in Bethlehem and the reduction in functioning bed capacity at Mt. of David Orthopedic Hospital from 73 to 50 in 1985. General medical beds are now (1985) about 1.2 beds per 1000 population in the West Bank, 66% of the 988 beds in the government sector. Both the French and Mt. of David Hospitals hope to restore their beds by 1986, but it is unlikely that there will be a substantial bed increase in the West Bank overall. The net decline in beds/population from 1970 to 1985 is attributable both to population increase and a decrease in beds in the government sector (Table V-1).

### Regional Differences in Hospital Services

Hebron: The Hebron government hospital is the only hospital facility in this impoverished part of the West Bank. Children under 1-1/2 years of age and insured persons (about 40% of the population) can use the hospital free of

charge, while others are charged over US \$100 per night. (Deliveries are priced lower). The hospital is, by all accounts, inadequately staffed and outdated; it is perhaps the most deficient government facility on the West Bank. Based on population estimates (Table V-2), there are approximately 0.64 beds per 1000 population. Hospital reconstruction projects are partially completed, but additional funds have been very difficult to secure.

The government hospital is informally supported in many ways by the local community. The Patients Friends Society donated 4 renal dialysis machines. The Red Crescent Society patient transport vehicles (basic ambulances) regularly serve insured persons going to the hospital. Community aspirations are to build a new hospital outside the government sector; provisional administrative approval for this plan was obtained in January 1985. There are also plans to expand the government hospital and complete its renovation, although only limited funds are now available for that purpose.

Bethlehem/Ramallah: Together with Jerusalem, this central area represents the major hub of in-patient and private practitioner resources in the West Bank. The bed rate for Bethlehem, exclusive of the mental hospital, is 3.0 per 1000 population (temporarily 2.4 with 1985 bed reduction); for Ramallah it is 1.0/1000 (Table V-2). Hospital quality is spotty. Major building initiatives in the Beit Jala Hospital have been nearly halted by lack of funds for completion. The Ramallah Hospital Foundation and the Ramallah-based Arab Medical Welfare Association have sought to keep the Ramallah Hospital from

deterioration in the face of inflationary/budgetary pressures. The government has largely completed Ramallah Hospital renovations. Financial help from these private groups has enabled additional improvements. There is a widespread sentiment that Ramallah Hospital is somehow different from other government hospitals, perhaps due to effective local advocacy from respected health professionals, and is therefore more often a recipient of outside aid.

Considerable attention from Swiss, German, French, American, and other foreign Christian groups is focussed on Bethlehem health care (see Chapters II and III). Most of these institutions raise their funds abroad and face considerable difficulties in keeping up with local inflationary pressures. This restricts their abilities to expand or even maintain services. Two of the best hospitals in the West Bank were used as research sites by the Institute Health Team, because their records were well organized and readily accessible. This is in contrast to most in-patient facilities elsewhere in the West Bank, where records were far less accessible. Proximity to good private hospital facilities in Jerusalem (e.g. St. Joseph's, Makassed) is an added incentive for medical specialists resident in nearby Bethlehem and Ramallah.

Nablus: In addition to two government and two private hospitals, Nablus is a repository of considerable expertise in health. An apparent paradox here is that the al-Wattani (National) government hospital is considered one of the worst in-patient facilities in the West Bank, whereas Rafidia Hospital, also a

government facility, is one of the best. The bed rate for the district is 2.3 per 1000 population. The existence of the private Ittihad and Evangelical Hospitals has facilitated retention of excellent Palestinian medical personnel, who tend to seek practice opportunities in a community where they can also admit their private patients. A local group seeking to raise funds for the rundown al-Wattani Hospital has been far less successful than groups concentrating their philanthropy on private sector facilities. Construction projects at both government hospitals are stopped although near completion, due to a lack of funds to finish and operationalize planned innovations.

Jericho, Jenin and Tulkarm: These distal zones, like Hebron, are saddled with marginal facilities and often relatively under-trained hospital personnel. Bed rates for Jericho, Jenin and Tulkarm are respectively 3.7, 0.5 and 0.7 per 1000 population (Table V-2). Much of the in-patient care for residents of these zones is provided in Nablus, Ramallah, Jerusalem, or Bethlehem. As noted in Chapter III, even acute care for fractures from Jenin is commonly provided at the Mount of David Orthopedic Hospital in Bethlehem, more than a two-hour drive away, and many more hours by public transportation. There are very few private sector hospital beds: only 12 beds in Jenin's Ashiffa Hospital and 36 beds in an UNRWA facility in Qalqilya near Tulkarm. Neither facility provides a resource for admission of private patients. Bed occupancy in Jericho is quite low (see below).

### Occupancy Rates

Unpublished statistics on 1983 occupancy rates for government hospitals list the range as from 50.5% in Tulkarm to 119% for Bethlehem Mental Hospital (Ref. 23; Table V-3). The published 1983 overall occupancy rate for government hospitals was 71%. Private hospitals ranged from a low of 33% for Qalqilya Hospital near Tulkarm to 110% occupancy at Mount of David Orthopedic Hospital. The published rate for private hospital occupancy was 70% (Ref. 51). Published statistics vary somewhat from unpublished statistics and are presented in Table V-3. Low occupancy rates indicate that Jericho Hospital is the least efficiently utilized government hospital (Ref. 21).

In addition to local hospitalizations during 1984, 908 West Bankers were hospitalized in Israeli hospitals and 5639 persons were seen as outpatients at Israeli hospitals (Refs. 21, 51). Overall bed occupancy has not increased significantly despite a fall in beds/population (Table V-1). This may reflect changing out-patient utilization patterns, discouraging in-patient services for some conditions. It may also reflect restricted access for financial reasons.

### Government Hospital Employees

The total number of hospital employees in the government sector was 910 in 1983, including the Bethlehem Mental Hospital staff. There were 381 nurses,

130 physicians, and 398.5 other administrative and non-professional staff. The mean number of non-psychiatric beds to medical doctor ratio was 5.3:1, with a range from 8.7 beds per doctor in Jericho to 2.8 beds per doctor in Beit Jala. The ratio was 53 beds per doctor in the Bethlehem Mental Hospital. The mean number of non-psychiatric beds per nurse was 2.0 for the entire region with a range from 3.2 per nurse in Jericho to 1.7 in Ramallah and Beit Jala. The ratio for nurses was 5.9 per bed in the Bethlehem Mental Hospital (Refs. 21, 23). (Table V-4) Staff numbers in private hospitals are variable, in part due to the fiscal strength of the institution (Table V-5).

Employment in the government hospitals is often considered less desirable than employment in the private sector. One reason is the lower salaries in the government hospital and public health system. For example, in 1983 new staff nurses at Mount of David hospital earned over double the hourly wage of new staff nurses in 9 government hospitals (U.S. \$2.57 v. \$1.16 per hour) (Ref. 23; Table V-6). Low salaries contribute to morale and turnover problems in the government sector. (Table V-6, it should be emphasized, represents 1983 data, which have not been independently confirmed by the Institute Health Team. Nonetheless, we believe the relative figures to be indicative, even if absolute values are not precise).

### Expanded Use of Services

During the years 1975-1983, the number of hospital admissions increased 33% (from 37,000 to 50,000) in the government hospitals and by 50% (from 13,300 to almost 20,000) in the non-government hospitals; overall admission rates rose from 75 to 92 per 1000 population. During the same period, the number of visits to hospital out-patient clinics more than doubled, and the visit rate rose from 140 to 271 visits per 1000 inhabitants (Table V-1). These trends may indicate either an objectively expanded need for medical care, a growing awareness of its existence and availability, and/or improved access. The data also suggest that this expanded use of health services includes more care for patients with non-acute conditions for which people previously did not seek treatment at recognized health facilities.

### Decrease in length of hospitalization

While both the absolute number and rate of admissions to hospitals rose, the number of days hospitalized increased slightly in absolute number but decreased in rate (from 583 in 1975 to 509-528 per 1000 inhabitants in 1982-1983). The average length of in-patient hospitalization decreased from 7.8 to 5.8 days over the period.



### Decrease in risk indicators

The proportion of the patients admitted for hospitalization per 100 visits to a hospital or clinic decreased from 35% to 25% in the 1975-1983 period. This decrease is not likely to be due to a shortage of beds, because bed occupancy rates remained stable. Rather, the change probably indicates expanded use of out-patient health facilities for less critical symptoms and diseases.

For those who were admitted, surgical procedures per 100 admissions, death rates per 100 admissions, and death rates per 100 surgeries all decreased considerably during the 1975-1983 period. In non-government hospitals, the rate of surgery per 100 admissions has decreased more than in government hospitals, so that in 1983 the rates for the two sectors were similar: 21% and 22%. In the government hospitals, the risk of death per 100 admissions or per 100 surgeries decreased considerably: from 2.5 to 1.3 per admission and from 11.4 to 6.1 per surgery. In non-government hospitals, the risk of death per 100 surgeries rose from 4.8 to 7.9. This may indicate that non-government hospitals are responsible for an increasing proportion of complex or serious surgical procedures.

### In-hospital deaths and births

In-hospital deaths as a proportion of all registered deaths show an unexpected decreasing trend from 24% in 1975 to 18% in 1983 (not indicated in tables).

In addition, the proportion of births occurring in a hospital or birthing center rose from 30% in 1975 to 48% in 1983. While the latter indicates a very meaningful salutary trend in terms of infant health care and infant mortality rate: (IMR), the apparent decreasing proportion of in-hospital deaths casts serious doubts on the reliability of the mortality statistics (Chapter I). While the in-hospital birth trend bodes well for trends in IMR, more than half of all births in 1983 were still occurring outside of a medical facility.

#### Public Health Services

The government Public Health Department is responsible for community, general, and maternal/child health clinics in villages and towns, school health services, vaccination programs, supervision of sewage and garbage disposal, water, and food control (Ref. 21).

There are public health laboratories in Tulkarm, Ramallah, Nablus, Hebron, and Bethlehem/Jericho regions. No facility exists in Jenin. Public health laboratories are severely restricted in the services they provide, due to restrictions in funding and training.

Community clinic services are available free to insured persons, and on a fee-for-service basis to the uninsured. Children under 1-1/2 years of age, however, are serviced free regardless of insurance status, while uninsured pregnant women are seen at reduced fees.

Most general medical clinics are open from 8:00 a.m. until 2:00 p.m. and are staffed by a practical nurse. Frequency of physician visits is variable, depending upon the size of the population served, but visits usually occur about twice per week in village clinics. In urban community clinics, medical specialists may visit on a rotation schedule and full-time physicians may be present. As of 1984, there are reported to be 153 general community clinics, 110 maternal child health centers, and 4 centers for pulmonary disorders (2 concerned with prevention and 2 for treatment). The clinics are situated in villages of at least 3000 persons, as well as in urban areas. Regional distribution in 1984 of these government services is seen in Table V-7.

The relative utilization of MCH centers by region was calculated in order to make district comparisons using the 1983 population estimates and MCH number of visits as reported by the Civil Administration statistics (Table V-8). Eligible persons are defined as women 15-44 and children 3 and under. (The cut-off has since been reduced to 1-1/2 years and care for women is not free, thus these figures should be used only as an indication of relative utilization of government services). Approximately 13.1% of the West Bank population is 3 and under and about 20% of all persons are women of child-bearing age. Only 0.4 visits were recorded in government MCH centers per eligible person in 1983.

152

It appeared as though MCH clinics were least used in Hebron while Ramallah residents used government MCH services most often. This may reflect issues of access to services as well as perceived quality of care, since these services are largely free of charge.

The apparent success of the government's vaccination program was evaluated in a 1983 serosurvey. A sample of schoolchildren, aged 6-8 years, from both urban and rural districts, showed protective antibody levels in over 90% of those sampled for polio (Types I,II,III) and measles. Ninety-eight percent (98%) demonstrated protective antibody levels against tetanus, and 49% against German measles (rubella) (Ref. 51, p.13). However, the sample size used in this study was small. A sample of 120 children (none from Tulkarm) were tested for polio antibody levels; 125 children from all districts were tested for rubella; 117 children (none from Tulkarm) were tested for measles antibodies; and 100 children (district representation not available) were tested for tetanus antibodies (Ref. 51,p.97). Other evidence for vaccination program success is presented in Chapters II and III, as well as later in this chapter.

### Specialization Services

The distribution of hospital beds according to specialization areas by region demonstrates the range of services offered. All 7 health districts have general hospital beds in 4 basic departments: internal medicine, general

surgery, obstetrics/gynecology, and pediatrics. While Tulkarm and Jenin offer only these basic services, other areas offer beds for a few specializations as well. Hebron has ENT beds, dialysis beds, and incubators for prematures (Ref 51). Ophthalmology and dermatology services are available to out-patients. Al-Wattani Hospital in Nablus offers some ICU services, incubators for prematures, oncology, and physiotherapy services. Rafidia Hospital has ENT, orthopedic, and formal anesthesia services. Some hematology and coronary care service is provided at al-Wattani. An out-patient psychiatry clinic operates out of the Nablus Public Health Department, rather than the hospital. Ramallah offers dialysis beds. The MOH also indicates cardiovascular surgery; gastroenterology; coronary and intensive care unit; ear, nose, and throat; neonatal unit; and pediatric surgery. Jericho has physiotherapy, rehabilitation, and orthopedic beds. According to the MOH, Beit Jala (Bethlehem district) has the most extensive array of specialization services in the government system, including allergy, orthopedics, oncology, physiotherapy, pediatric orthopedics, pediatric surgery, and neurology.

Regionally, no new hospital services have been added in Jenin since 1972, in Tulkarm since 1975, and in Jericho since 1976. The neurology unit at Beit Jala was the most recent specialized department to be added to the government system (1983). This unit serves out-patients from the whole region on a consultative basis (Ref. 51, p.69a). Neurosurgery is not available, except in Israeli institutions. Data on specialized services at private hospitals are not presented by the MOH document.

United States-Based Private Voluntary Organizations (PVOs) Active in West Bank Health

American Near East Refugee Aid (ANERA) has its main administrative headquarters in Washington, D.C. ANERA has provided funding and service to over 100 health, education, community, and economic development projects in the West Bank, Gaza, and Lebanon since 1968 (Ref. 4). American Middle East Rehabilitation (AMER) became part of ANERA in 1971 (Ref. 3). USAID has funded selected ANERA projects since 1975. Financial support also comes from American individuals, businesses, corporations, and religious organizations (Ref. 4). In Fiscal Year 1984, ANERA provided \$800,450 in grants to 16 community and economic organizations and institutions. About \$50,000 was spent on health (Ref. 4).

Save the Children/Community Development Foundation (CDF) equips health care service centers, clinics, x-ray facilities, and laboratories, and facilitates developments in environmental health including sewage control, waste disposal, and irrigation and water supply control (Refs. 24, 24a). Specific budget figures were not available to the Institute Health Team.

Catholic Relief Services is based in New York City. Its West Bank and Gaza activities are especially focused on health education, appropriate technology in health, rehabilitation efforts, and a number of related activities in

155

nutrition and childhood development. Women are a particular educational target (Ref. 15). Evaluations of ongoing projects are in progress.

The Holy Land Christian Mission, based in Kansas City, Missouri, sponsors the Mount of David Orthopedic Hospital in Bethlehem. (See Chapter III, "Patterns of Orthopedic Illness and Injury", which is based on research at Mount of David Hospital.) The Holy Land Christian Mission also runs a food distribution service, 8 daycare centers for pre-school children in six refugee camps, and an Orphans' Home in Bethlehem (Ref. 44).

Lutheran World Relief/Lutheran World Services provides support for West Bank health primarily through funding for the Augusta Victoria Hospital in Jerusalem and for UNRWA clinic services. Eight clinics served about 21,000 patients, while Augusta Victoria Hospital cared for 6,111 patients in 1983 (Ref. 67).

Amideast is active in training both on site and in the United States. Opportunities for training in health have occasionally been made available.

#### Private Voluntary Organizations not based in the United States

A myriad of agencies from around the world provide health services in the West Bank. Sweden has funded partial renovation of Beit Jala Hospital. Caritas Baby Hospital (CBH) is supported by the Swiss organization Verein Caritas

Kinderhilfe Bethlehem. (See Chapter II, "Pediatric Illnesses in the Southern West Bank", which is based on research of data from CBH.) A Geneva-based Palestinian development group supports diverse activities. Gulf states provide support through the charitable societies. Many governments support UNRWA. Jordan continues to pay West Bank civil servants who were employed before 1967. Jordan is also the channel for additional health development resources. The British Council is active in on-site and United Kingdom-based training. These sources and others were not systematically surveyed for this report.

### Jerusalem

Health services in Jerusalem are not reviewed in this report. Although some services are provided exclusively to Jerusalemites, many agencies (e.g. Spofford Home and Four Homes of Mercy) provide services which are available to West Bank residents. Similarly, Jerusalem residents use health services on the West Bank, although probably not to the degree to which West Bankers use services located in Jerusalem. International agencies working exclusively in Jerusalem are not registered with the Civil Administration.

### Local Charitable Societies

In addition to foreign PVOs, there are local charitable societies which contribute to health care in the West Bank and Gaza. The Union of Charitable



Societies is a central coordinating body based in Jerusalem which facilitates interaction among charitable societies on the West Bank (Ref. 85).

Another region-wide group is the Union of Medical Relief Committees, which is comprised of volunteer Palestinian health providers. This organization is involved in a wide range of activities including medical advice to community organizations and direct medical care to remote villages via mobile health teams. In 1983, over 150 health providers participated in "weekend" volunteer work. The committees hope to establish permanent clinics in yet unserved villages (Ref. 86).

There are hundreds of private, religious or non-religious, organizations serving West Bank Palestinians. We present these by region, discussing in more detail only two of the largest groups: the Patients Friends Society (PFS) and the Red Crescent Society (RCS).

Activities by Region: A fairly comprehensive review of charitable society health services by region is presented in Tables V-9 to V-14, excluding the Jericho district, on which data were not available, while Table V-15 summarizes Tables V-9 through V-14. These data are compiled mostly from unpublished Civil Administration notes (Ref. 23), with some changes based on organizational brochures or annual reports. These data have not been independently validated by field research.

In Hebron, at least 20 charitable societies service the estimated population of at least 170,000 (Table V-9). No hospitals are run by charitable societies, but there are 15 clinics, of which RCS operates 3 and PFS runs 1. In 1984 the RCS saw a total of 16,500 patients, including 6,650 outpatients (72% of the regional total in the charitable sector), 1,000 in physiotherapy, and 8,850 in night emergency. Other RCS services include educational programs (450 individuals participated in health education training), teachers' training, library programs, and social programs. A new center for the mentally and physically handicapped has been opened in Hebron, and a new rehydration and emergency center is being built. The original rehydration center, dating from 1976, has become more active lately and primarily treats indigent uninsured persons. The center treated 2500 cases during the summer of 1984. Of these cases, 1178 (47.1%) received intravenous infusions (Ref. 41). In 1983, there were 902 cases of dehydration treated intravenously. The number of cases treated intravenously in 1983 and 1984 indicated a drop from the figures for 1981 (1826) and 1982 (1771) (Ref. 41). This trend suggests a decrease over time in the number of cases treated intravenously, and the growing popularity of oral rehydration therapy (ORT). The RCS emphasizes primary health care and pediatrics. It runs one of the two private charitable maternal and child care centers in Hebron, receiving 3200 patients in 1984 (Ref. 20a). The RCS supplies the only private sector ambulance transport vehicles (370 runs in 1984). Its laboratory and the PFS lab are the two charitable society labs in Hebron. The night clinic is staffed by 3 physicians, 2 nurses, and a pharmacist. For uninsured patients, this is the only low-cost night-time emergency service.

159

The PFS in Hebron has taken the initiative in providing advanced diagnostic services for local physicians and clinics. These are more focussed on adults, in contrast to the MCH focus of RCS. Services include: modern x-ray, emergency care, dentistry, selected laboratory services and some specialized evaluation of adult general medical problems (Ref. 20a). The PFS provides higher quality x-ray and laboratory services than those available at the local hospital, and took x-rays on 5140 patients and performed 9100 laboratory tests in 1984. The PFS donated 4 renal dialysis machines to the Hebron Government Hospital which in turn meets the running costs for those services (Ref. 40). A priority for the PFS of Hebron is their plan (provisionally approved in 1985) to build a new 300 bed hospital. The PFS plans to open the hospital in stages and to operate at full capacity only after recruiting and training the professional staff. Additions to the hospital staff will make it a major source of employment in Hebron.

Health education services are provided by almost every local charitable organization, with the Hebron Women's Organization and the RCS serving almost 20% of those enrolled in health education programs (Table V-1). Hebron currently lacks charitable society pharmaceutical services, nursing training, and blood bank services. These services are included in the planning for the new PFS hospital (Ref. 20a).

Bethlehem, with about 90,000 persons, has 3 hospitals run by charitable organizations. Caritas Baby Hospital (CBH) has 79 beds. The French Hospital is temporarily closed. The Mount of David Orthopedic Hospital has 73 beds, with 6 additional beds in its orphanages. For financial reasons, only 50-55 beds are operational in 1985. A variable number of children are in the Terre des Hommes facility for long-term rehabilitation for disabilities and/or malnutrition. CBH and Mount of David ran 27,700 laboratory tests in 1984.

More than half of all the 1984 clinic outpatient visits in the charitable society sector were made to Mount of David clinics (Table V-10). Twenty-four percent (24%) of outpatient visits were made to the Abu-Deis Orphanage clinic. Health education services were provided at 5 facilities; the Women's Federation at Beit Jala providing 41% of these services and Al-Amal/Abu Deis Organization providing 36%. Mount of David provided 6340 outpatients with physiotherapy and ran 12,000 laboratory tests. The Women's Federation at Beit Jala had about 6100 visits in 1984 to their maternal and child care clinic. Bethlehem, while having comprehensive hospital care, has few out-patient x-ray, ambulance, emergency, dental and family planning services in the charitable society sector (Ref. 20a).

In Ramallah (with a population over 130,000), at least 13 charitable organizations supplement the government and UNRWA health services. There are no non-government hospital services. There are about 21 outpatient clinics operated by charitable societies. The RCS operates 2 clinics, one at El-

Bireh, and one in the city of Ramallah. The RCS also provides the only charitable sector ambulance service in the area, making about 90 trips in 1984 (Table V-11). The PFS operates 10 to 12 clinics, accounting for 4500, or 19% of the total number of outpatients seen in charitable society-run clinics. Physiotherapy services available at the PFS provided care for 600 outpatients in 1984. The Bir Zeit Women's Organization plays a prominent role in health service to the area. Its one clinic supplied all of the family planning (510 patients), maternal and child care (120 visits), laboratory tests (6520 tests) and 91% of dental services (2800 patients) provided by charitable organizations in 1984. The Bir Zeit Women's Organization saw a total of 17,274 patients accounting for 61% of all patient visits. The Community Health Unit of Bir Zeit University has provided technical support to the Women's Organization efforts. The Arab College of Medical Professionals had 30 students enrolled in laboratory technician study and 110 nursing students. The Arab Medical Welfare Association is involved in funding West Bank hospitals, sending doctors to foreign training and education programs, equipping hospitals, sponsoring a planned tertiary care hospital (approved in 1984) in Ramallah, and sponsoring visiting medical lecturers for local doctors. Ramallah charitable societies do not have a blood bank, x-ray, or emergency services, but efforts are in progress to develop all of these.

Nablus has a population of about 150,000 and a total of 18 charitable societies providing health services as well as 2 private charitable hospitals. A main sponsor of Al-Ittihad Hospital, with 75 beds, is the Women's

Federation. Al-Ittihad Hospital treated 10,000 patients in 1984, gave 6595 units of blood, and had 4645 x-ray patients in 1984. The Evangelical or St. Luke's Hospital, sponsored by the Anglican church, has 65 beds and treated 3818 patients in 1984, ran 20,000 laboratory tests and had 1600 x-ray patients (Table V-12).

The Patients Friends Society started in 1980 and currently operates 3 out-patient clinics (over 28,000 patients in 1984) emphasizing diagnostic services generally unavailable elsewhere in the region. These include general medical care including first aid and emergency care, gynecology and obstetric care, modern x-ray services, laboratory services, some health education, dermatology, a pharmacy, and dentistry. In Nablus, the PFS is the only charitable society serving dental patients (Ref. 20a). In 1984, a total of about 28,000 patients were seen, of which over 5,300 were emergencies and 7000 were for dental services. The various services are not evenly used; the x-ray department, for example, is extremely busy whereas other laboratory facilities are underutilized (personal observation). Fees are quite low and charity cases receive services free of charge. Members of the local community pay subscriptions and make donations as well as assist in fundraising drives (Ref. 69a).

In addition to Al-Ittihad Hospital and the Evangelical Hospital, the PFS was the only other charitable society offering laboratory services (over 19,000 in 1984). The PFS served as the outpatient x-ray facility for 7799 patients in

1984, about 56% of all x-ray patients in the Nablus private non-profit sector. Blood bank services were provided by Al-Ittihad Hospital. The RCS provided ambulance and physiotherapy services (Ref. 20a) (Table V-12).

Jenin, with a population of over 123,000 has a total of 26 charitable societies associated with the area (Table V-13). There are no hospitals operated by this sector, and only 4 clinics. The PFS operates 2 of these, and provided 2000 of the region's total 2250 out-patient visits. Arrabah and `Anzah are the sites of 2 other clinics, yet these are new and only provided health education training in 1984. The PFS wants to open a center in the town specializing in ENT, obstetrics, cardiology, and general practice. The RCS is another health provider in this district. Their ambulance made 50 ambulance runs (Ref. 23a). They provided 250 maternal and child health care visits, the only supplier of such services listed by the Civil Administration files. The single laboratory is operated by the Abu Dhaif society, although it is not known how many laboratory tests or services were provided in 1984. Jenin apparently has far fewer charitable society services than other districts (Table V-13).

Tulkarm, with a population of about 140,000, is also underserved by charitable societies. Of the 13 clinics in the area, only one had outpatient services. One hundred-fifty outpatients were seen there in 1984, and 11 of the 13 clinics provided health education services to 1740 individuals. No other health services offered by charitable organizations were recorded by the Civil

Administration as being available in Tulkarm (Ref. 23a). The Red Crescent Society plans on building a 40-bed hospital, including ambulance, blood bank and laboratory services. The PFS is building a clinic and an x-ray and pathology center. Two other outpatient clinics are being built, and the Azoun Society is opening a health care clinic. A Qalqilya-based group wishes to construct a health center, including laboratory, physiotherapy and x-ray services (Ref. 20a) (Table V-14).

#### United Nations-Related Services

In May 1950, the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) undertook a program of relief for Palestinian refugees, putting in that category those who lived, or whose parents or grandparents lived, in Israel prior to 1948 (Ref. 92). The number of refugees registered with UNRWA from the West Bank in December 1982 was 343,293; of these, 86,923 (25%) are living in refugee camps (Ref. 97). The field staff of UNRWA number 17,162 individuals. UNRWA is funded by the United Nations (4%), nongovernmental agencies (1%) and governmental voluntary contributions (95%) (Refs. 97,98).

Medical services to the West Bank Palestinians included both curative and preventive care. UNRWA runs 32 health clinics in 19 camps, 4 towns, and 3 surrounding villages. There is an appropriate referral system for patients needing special or more intensive care. UNRWA operates the hospital in

108



Qalqilya (36 beds), and this hospital serves the refugees in the north with surgical, pediatric, maternity and other medical care (Refs. 95,99). UNRWA also subsidizes 231 general and specialized beds, including 100 general beds at the Augusta Victoria Hospital in East Jerusalem, and 75 beds at the Bethlehem Mental Hospital. Including the 36 beds at Qalqilya and 6 maternity beds in camps, UNRWA is responsible for a total of 273 beds.

In 1983, there were about 390,000 visits to UNRWA outpatient clinics. For the 198 general hospital beds, nearly 2000 individuals were admitted in 1983. There were 188 deaths, so the in-patient mortality rate was 9%. The average length of stay for an UNRWA-sponsored refugee was 5.4 days, and the average daily bed occupancy was 181/198 or 90% bed utilization (excluding the Bethlehem Mental Hospital).

For the 75 mental hospital beds at Bethlehem, 204 patients were admitted in 1983, and the average length of stay was 246 days. Bed utilization for beds subsidized by UNRWA was 187%, implying refugee usage of unsubsidized beds.

Maternal and child health care was provided for 5098 pregnant women in 1983, and 5749 deliveries were registered in the home, hospital, or MCH center (Refs. 95,99). All pregnant women were encouraged to register at pre-natal clinics from their 4th month of pregnancy, and they received extra food and iron tablets throughout their pregnancy and nursing period. In the camps, 50% of deliveries occur at home, and a Child Birth Attendant plus nurse or midwife

attends most births. Health and child care education is provided for the mother. In 1983, there were 15,979 children under care from birth to age 3. Twenty-four Child Care Clinics are operated by UNRWA in the West Bank, with about 19 located in camps, and 4-5 in surrounding towns.

The Child Health Clinics maintain growth records and keep immunization information until the child enters school. The immunization program follows the guidelines of WHO's expanded program including protection against polio, diphtheria, whooping cough, tetanus, measles and tuberculosis. In 1983, 56,353 primary doses and boosters of BCG, Oral Polio, Tetracocque, DPT and Measles vaccinations were administered. Extra measles boosters were given following the 1982 measles epidemic (Refs. 95,99). UNRWA coordinates its vaccination efforts with the Public Health Department program.

Studies carried out at UNRWA state that the primary cause of death for young children has changed from gastroenteritis and dehydration, (33.3% of all infant deaths in 1975, 17% in 1982) to respiratory disease. Better management of infant gastroenteritis has prompted the expansion of rehydration/nutrition centers to the 19 special care clinics that provide more intense pre-hospital supervision of the children. Health education training in oral rehydration therapy (ORT) is now provided for the mothers. In 1983, 603 children were admitted to these clinics, of whom 27 died.

UNRWA also provides school health services. Nearly 40,000 school children were enrolled in 98 schools in the West Bank in 1983, of whom 7263 attended the supplementary feeding programs and 8847 were examined by a health professional. Of school-age children, 4937 were given DT vaccinations and 8738 received BCG vaccination and boosters. Other school health services include a physical examination and screening of vision, hearing, weight, height, and teeth.

There are services for TB in Hebron, Nablus and Ramallah. Diagnosis, treatment, medications, follow-up services and supplementary feeding are provided for tubercular patients. Only 4 new cases of TB were detected in 1983, and TB cases under control numbered 183. This number both reflects genuine decline in TB incidence and prevalence, and limitations in the laboratories to diagnose the disease adequately.

UNRWA also provides special care clinics for specific diseases including: diabetes, rheumatic heart disease, dermatology and ear/nose/throat illness. Dental care was provided on an out-patient basis (20,541 consultations in 1983) (Ref. 97).

Finally, UNRWA also provides environmental and sanitation services. Water supply, clean environment, waste control and disposal, pest control and control and upkeep of public facilities were all projects involving UNRWA. Concrete drains are under construction, and UNRWA subsidizes the construction

of private family latrines. Open sewage drains are still found in some camps. UNRWA gathers its own independent health statistics, some of which have been used in Chapter I. The Agency has a health infrastructure both parallel to and separate from that of the government.

The United Nations Development Programme (UNDP) has been involved with agricultural aid and education worldwide since 1970 (Ref. 91). UNDP has been active in the improvement of drinking water, sanitation, and water supply, with the goal of improving health and controlling water-borne infectious diseases. In 1979, UNDP began assistance to the Palestinians in the West Bank and Gaza Strip, with agricultural assistance and food processing training, sanitation, water supply maintenance, and waste control (Ref.91). UNDP has provided fellowships for West Bank and Gaza students seeking training in midwifery, medicine, surgery, nursing, environmental, and paramedical services.

UNDP supplies medical and laboratory equipment and health training and teaching aids to hospitals and other health institutions. UNDP has recently allocated \$2 million for a nursing and paramedical training center (Ref.91) to be based in Bethlehem.

UNICEF (United Nations Children's Fund) is increasingly active in the West Bank and Gaza. It has funded a childhood rehabilitation program in Ramallah, a Hebron program for village health education workers, and works closely in all initiatives related to WHO's Expanded Programme on Immunization.

The World Health Organization (WHO) has recently set up a WHO Collaborating Center for Health Services Research in Ramallah, funded through UNDP. This will serve as a research unit, primarily for government sector health services.

The UNDP, WHO, and UNICEF work through host country governments. Initiatives through these agencies, thus, have primarily affected the government health sector.

UNRWA, also a United Nations agency, works exclusively with refugee health issues, and has its own health care delivery and public health infrastructures. The private charitable societies are funded from contributions of the local community, from Palestinians living outside the West Bank or Gaza, from the government of Jordan and from the Gulf States, or from foreign governments, like the United States, via the private voluntary organizations. PVO's often focus on a number of grass-roots development projects, primarily in the area of agriculture. A few efforts cut across the private sector/public sector/UNRWA lines. For example, the Ramallah Foundation is a United States-based funding conduit for the Ramallah Hospital, a public sector institution. The Jordanian Medical Association, a West Bank-wide medical professional organization, pays unemployed physicians to work in both private and public sector facilities.

Such examples of interaction across administrative sectors are the exception rather than the rule. Data on services are best collected directly from the agency providing the services, a Herculean task given the degree of decentralization in the private sector. Civil Administration files are incomplete though they remain an important source of data on Palestinian health and social services.

## HEALTH STATUS IN THE WEST BANK

### Vital Statistics

As the health care system in any region improves, the discrepancies between actual, estimated, and reported data diminish. It is axiomatic that in an area where reporting of health-related data is minimal, sporadic, or based on inaccurate diagnoses, that these reported data may be less accurate than estimates based on modeling or surveys. It is important to introduce this caveat into the analysis of reported health data from the West Bank.

The reported infant mortality rate (IMR) of the West Bank for 1983 was 29.4 per 1,000 live births (LB) (Ref. 51). Data from the UNRWA-administered refugee camps reported the 1983 IMR at 39.7/1000 LB (Ref. 51). The Central Bureau of Statistics (CBS) estimated the IMR in the early 1980's at about 70/1000 LB (Refs. 19,50). The Institute's Health Team estimates the IMR in

the West Bank to be between 54 and 64 per 1,000 live births (Chapter I). Lack of coordinated efforts of midwives may account for some of the underreporting, since in 1983 the proportion of births in medical centers and hospitals was 48% of all reported deliveries in the West Bank (as compared with 72% in the Gaza Strip) (Ref. 51, p.9). If there is underreporting, only 1-3% of all births would have to go unregistered both as births and deaths, to account for our IMR estimates, compared with reported IMR (Chapter I, Table I-13). Since unreported births are more likely to belong to short-lived infants, this may be a quite realistic projection.

The birth rate (42 per 1,000 population) and fertility rate (200 per 1,000 female population aged 15-44) are among the highest in the world (Refs. 51, 81). Yet, only 7% of births were classified in 1979 as low birth weight (LBW), i.e. below 2,500 grams (Ref. 51). Again, this figure may be biased by the underreporting of neonatal deaths occurring in this LBW category. LBW babies are, of course, in a high risk category for infant mortality and are statistically associated with young mothers, and mothers with many children and short birth intervals.

The UNRWA camps list the stillbirth rate (SBR) at 11 per 1,000 registered births; a stable rate over the early 1980's (Ref. 95), yet underestimated given international comparisons (Chapter I).

The crude death rate (CDR) in 1983 was 5.4 per 1,000 population and has not changed substantially in the past decade (Ref. 51, p.5). Reported life expectancy in the early 1980's was 62 years of age (Ref. 51, p.3). The actual figure may be younger since these data are composite figures including the West Bank and Gaza Strip, with the latter generally demonstrating the best vital statistic estimates (Chapter I).

### Immunization

The Israeli Ministry of Health operates a highly successful immunization campaign against childhood infectious diseases in the context of the World Health Organization (WHO) Expanded Programme of Immunization (EPI). The administered vaccines in the West Bank include:

- Polio: 90% coverage, combined inactive and live polio vaccine; since 1978 (Ref 51, p.92)
- Measles: 90% coverage
- Diphtheria, pertussis, tetanus (DPT): 90% coverage
- BCG (tuberculosis): given to school-age children since 1978
- Rubella: introduced in 1980, given to girls at 12 years of age.  
(This is analogous to the United Kingdom system rather than United States strategies.) A WHO grant for rubella control was received in 1985.
- Tetanus: given at MCH centers to women during pregnancy.



Smallpox vaccine coverage was reported to be 100% in 1978, but was terminated in 1980 (Ref. 51). Outbreaks of these vaccine-preventable diseases have continued to occur in recent years, but the general trends have shown a marked decline in the overall incidence (Table V-16). There is wide-spread public acceptance of the EPI program in the West Bank (Chapter IV; Figure V-2.)

A program to immunize against Rift Valley Fever was begun in 1978 after an epizootic in Egypt (Ref. 74a). Despite recent vaccine campaigns for sheep and cattle, brucellosis remains a clear public health problem in the West Bank (Ref. 51), especially in the southern zone. In 1973 and 1974, only 1 case of brucellosis was reported. In 1981, 194 cases were reported, and 186 in 1984.

#### Selected Causes of Morbidity and Mortality

Gastroenteritis and respiratory infections are the leading causes of childhood mortality in the West Bank (Table V-17). The Civil Administration reports (1983) that 53% of mortality in children under 4 years of age was due to diarrhea and respiratory infections (Ref 21). The situation is typical of a developing region with sanitation and health services which are less than optimal. In 1981, gastroenteritis was made a reportable disease in the West Bank, and an ORT program was instituted in the health centers in the area (Ref. 51). Yet problems exist with the distribution of oral rehydration salts packets, which have not yet received universal acceptance from providers and

recipients. UNRWA services have an aggressive ORT program through their clinic systems, with better results evident than for the West Bank as a whole.

Parasitic disease: A 1976 survey of 2,500 schoolchildren showed that 50% were positive for one or more intestinal parasites. Giardia, Taenia saginata, pinworm, hookworm, and Entamoeba are endemic in the West Bank (Ref. 51).

Malaria was certified eradicated from the West Bank by WHO in 1970. Cutaneous leishmaniasis is still endemic south of Nablus and in the Jordan Valley (Refs. 7,12,70); the resulting facial scarring is referred to locally as the "rose of Jericho" (Ref. 113). From 1972 to 1980, one Nablus dermatologist treated 237 cases (Ref. 7). A total of 369 cases was reported to the government from 1972-1984 inclusive.

Other infectious diseases: There were 95 reported cases of tuberculosis (TB) in 1983, yielding a case rate of 12.3 per 100,000 population (Table V-16). This is much lower than the recent case rates for tuberculosis in New York City (Ref. 72), but about the same as reported US rates for 1982 (11.0 per 100,000 population). No mandatory bacteriologic confirmation of suspect cases is required (Table V-16). Visits to TB referral laboratories by the Institute Health Team found diagnostic abilities to be rudimentary. The MOH believes that reported cases are overestimated (Ref. 51), which would postulate West Bank TB rates lower than United States rates. The Institute Health Team believes reported cases to be underestimates of true prevalence. Outbreaks of cholera occur infrequently in the West Bank. The last one occurred in 1981

with 7 cases and 1 death. No cases have been reported since. Due to poor sanitation, infectious hepatitis remains a problem in the West Bank. There were 467 reported cases in 1984 (Ref. 51, p.106). Due to the protracted nature of symptomatic hepatitis, some health practitioners believe that there is considerable drain on economic and human resources from this disease. Although trachoma is reported by the MOH as minimal (Ref. 51, p.112), a 1982-1983 survey of 9,054 Palestinians in the West Bank and Gaza Strip revealed trachoma infection present in 28.4% (2,586) of the sample. The report also stated that trachoma is the second leading cause of blindness (Ref. 82).

Mental illness: The Bethlehem Mental Hospital is the only substantial in-patient psychiatric service on the West Bank. The hospital is reserved for chronic cases, and the average length of stay is measured in months; a stay for years at a time, however, is unusual. Recent establishment of out-patient mental health services meets a community need, judging from the high utilization rates in these clinics. Due to the political climate in the region, stress-related illness would be expected to occur. An example of psychogenic illness occurred in 1983 when 949 cases of acute sickness developed from putrid gas escaping from a school latrine (Ref. 16). Drug abuse may be occurring among Palestinian youth living near Jerusalem, but data are unavailable (Ref. 27). According to unpublished studies, smoking, presumably stress related, is increasing in frequency, especially among the young and among women.

Environmental conditions

Water: Water quality in the West Bank was analyzed in 1984 in 8 village water supplies in the Jordan River valley. It was found that 67% of the stored water supplies had fecal coliform counts well above WHO's acceptable limits (Ref. 78). Over-pumping of ground water is increasing its salinity through penetration of sea water (Ref. 51, p.115). A system of water testing with subsequent chlorination of contaminated water was instituted in 1981. In 1983 routine chlorination was made a policy and its implementation is ongoing (Ref. 51, p.116).

Sewage: Only four cities have sewage treatment plants in the West Bank. Sewage disposal in the refugee camps is under UNRWA control and also needs upgrading. The raw sewage problem is especially severe in the Hebron district, exacerbated in Hebron City by the settlement at Kiryat `Arba whose effluent joins that of the city.

Food protection: Public health sanitarians monitor food quality in the West Bank. Public health laboratories exist in Ramallah and Nablus. In 1983, 581 violators of food-handling health codes were brought before a tribunal with 522 convictions (Ref. 51, p.119). Use of unpasteurized milk in the rural sectors is common, spreading brucella and other pathogens. Other food-borne diseases are also seen. It is widely felt that with more resources, preventive services could be expanded to provide more public protection.

Lead intoxication: Lead poisoning is a public health concern. The main sources are flour ground in mills with lead parts and lead-glazed pottery made locally (Ref. 51, p. 118; Refs. 43,68). Screening for lead intoxication is not widely performed.

### Nutritional Status

The total energy consumption per capita in 1982-1983 for the West Bank was 2,833 calories. This broke down into 81.9 grams of protein, 24.9 grams of animal protein, and 77.3 grams of fat per day (Ref. 51, p.13). Although this average energy intake is within the WHO recommended dietary allowance, the burden of enteric pathogens may decrease its effective utilization. Malnutrition and failure to thrive remain common primary diagnoses in at least one West Bank pediatric facility (Chapter II), although exact community prevalence is uncertain. Two recent unpublished Master's-degree essays indicate more rural malnutrition than heretofore recognized, and confirmatory studies are needed (Refs. 69,80).

## CONCLUSION

### A Critique of Data Sources: West Bank

Government services on the West Bank are a diminishing factor in health care. For those Palestinians not entitled to coverage through their work, participation may be expensive, especially for day workers. In addition, services are contracting, and eligibility for free service has been reduced. There is no trend of increased Palestinian enrollment in insurance, so membership remains static at about 40% of the population. Both Palestinian and Israeli health professionals describe a vicious cycle of underfunded government primary care and substandard hospital services which in turn discourage voluntary insurance purchase. In 1985, cuts in services were instituted which, while universally regretted, excluded uninsured children ages 1-1/2 to 3 years from free curative government services (preventive programs like vaccination remain free of charge). This new situation may contribute to greater morbidity and even mortality from gastrointestinal and respiratory diseases so common in these toddlers.

The economic crisis in the government sector has its parallel in UNRWA, with recent cutbacks in the Agency's budget for primary care services for refugees (Ref. 95). In the private sector, the picture is mixed. Major new initiatives in building and services are being undertaken by the charitable societies, even as similar initiatives are interrupted in the government

sector. For example, a major expansion of in-patient services at the Mount of David Hospital is currently underway; yet in 1985 the nearby French Hospital was closed. It is not possible to make any generalizations about the "fiscal health" of private charitable initiatives. Local charitable societies differ in their level of activity, depending in large part on their ability to raise money both in the West Bank and abroad. Another factor is their varying success in dealing with the Civil Administration bureaucracy in securing authorizations for their project activities. In the past, considerable friction has been generated by slowness in granting permissions, particularly for projects for which there is a palpable need. Protracted waiting periods of months and even years, which are seen as part of the normal bureaucratic process by Israelis, are regarded by Palestinians as a form of harrassment. In the face of reductions in government and UNRWA budgets, private charitable initiatives should be encouraged by all, because they can play an increasingly important role in improving West Bank health.

Another source of tension lies in legitimate differences of opinion as to what problems exist and how they should be addressed. In part, such differences emerge from an absence of reliable data interpreted objectively. Government data are often extremely useful, but only when their limitations are acknowledged (Chapter I). Reported deaths, for example, provide insight into common causes of death, but do not represent a virtually complete death registry as claimed by the authorities (Refs. 50,51). Routine statistics demonstrate inconsistencies with unpublished government documents, and

differences also exist in ostensibly identical data from Civil Administration, Central Bureau of Statistics, and Ministry of Health sources. Having spent considerable time in all three agencies with persons responsible for such statistics, we attribute this latter phenomenon to understaffing. A frankness about deficits in vital statistics and service statistics is needed, particularly regarding government statistics from the West Bank. Such frankness was an important part of improving Gaza Strip statistics in the 1970's (Chapter VI).

UNRWA statistics are generally reliable, yet they are grossly underutilized because of limited resources for research in this U.N. agency. UNRWA health officials expressed to us a keen interest in pursuing health studies that would characterize achievements and existing challenges in refugee health. The private charitable societies and the private voluntary organizations remain service-oriented with little interest in research activities. For them, research is seen as a luxury. Yet the lack of solid data about health needs is one justification used by the authorities to limit growth in the private charitable sector. It may also contribute to the lower priority assigned to health projects by overseas funding sources compared to other economic or social areas of need. Relevant research, in this context, is actually a necessity.

Development of a low-cost, on-going, collaborative system of information sharing and processing is not likely to occur in the current political



climate. Nonetheless, much can be done to improve integration among existing information systems. Catholic Relief Services has taken the lead among the PVO's, with its efforts to document the impact of its health education programs. Recently the Red Crescent Society in Hebron has begun more detailed monthly summaries of services provided and the nature of the problems treated. The WHO Collaborating Center for Health Services Research based in Ramallah promises to increase evaluative abilities in the government sector. With some notable exceptions, the West Bank universities are largely untapped resources for health-related research. If a model could be developed to facilitate sharing of relevant data between groups, an important step towards depoliticizing health statistics will have been taken. The Palestinian people can only benefit from the collection of independent health data gleaned from the field research of all main health providers.

Some suggestions for specific data useful for planning purposes, which are not now readily available include: regional breakdowns of reported deaths and diseases; details of hospital and public health budgets; details of services provided and data from quality assurance programs when these exist; prevalent conditions, case fatality rates, and surgical outcomes from hospitals (expressed also by region of patient origin for hospitals drawing from more than one region); field-based research from representative areas on nutrition, mortality, prevalent diseases, veterinary conditions, water and sanitation, and so on. Information already available from data collected by the Public Health Department, the Central Bureau of Statistics, the UNRWA, and many

private sector organizations, could be put to use if resources for compilation, selective confirmatory studies, and analyses were available. Planning for training would benefit from more detailed personnel evaluations. Studies of factors which might predict higher retention of health professionals, particularly nurses, would be useful in training policy.

Creating an environment in which research and data collection are a valued goal is important. While the uses of research for planning are widely appreciated, the methodologies to accomplish this goal are less well understood. Training in the research aspects of public health for a new generation of Palestinian health professionals is a necessary prerequisite for the advancement of health care in this area.

FIGURE V-1

WEST BANK HEALTH DISTRICTS

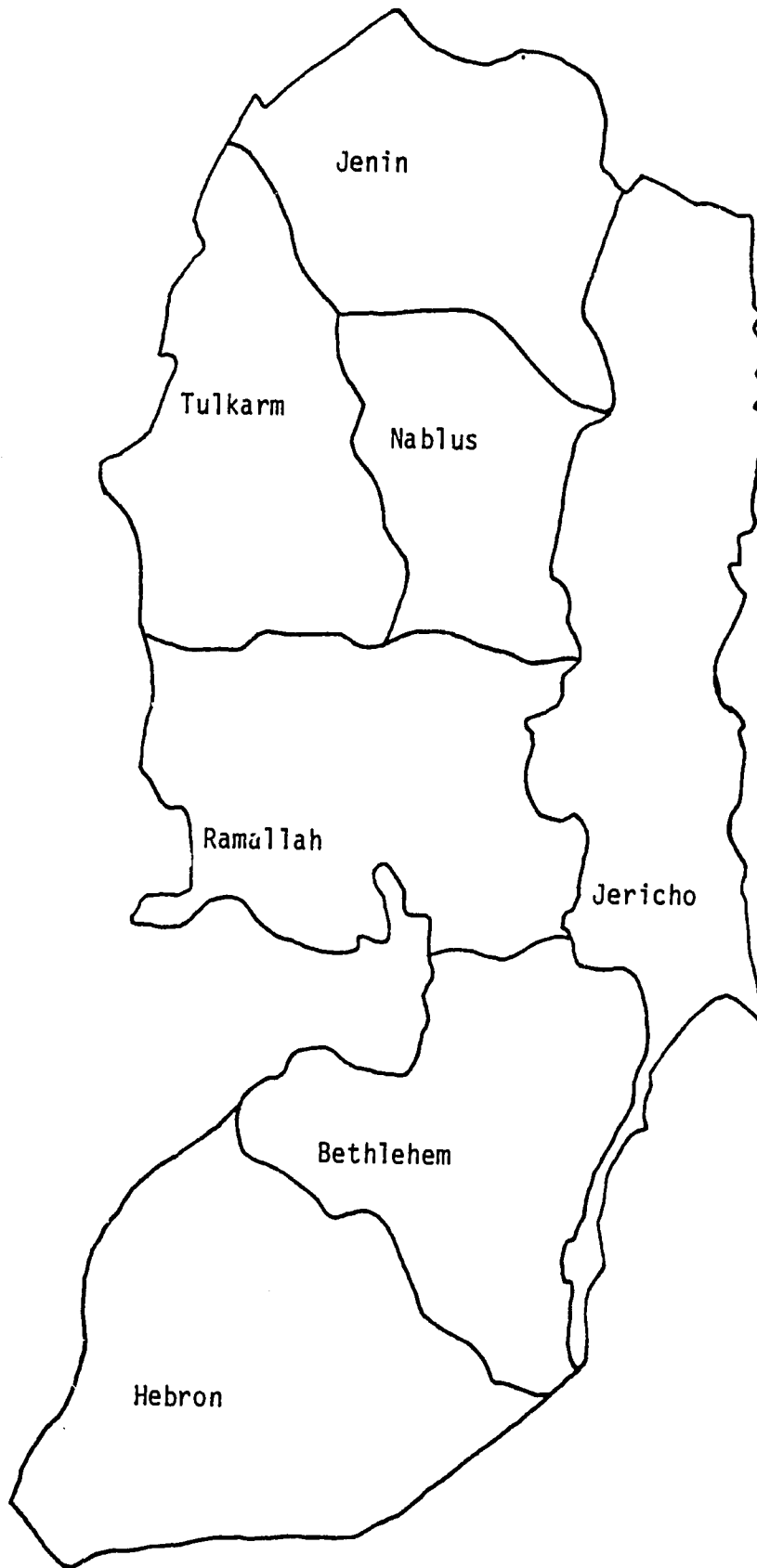
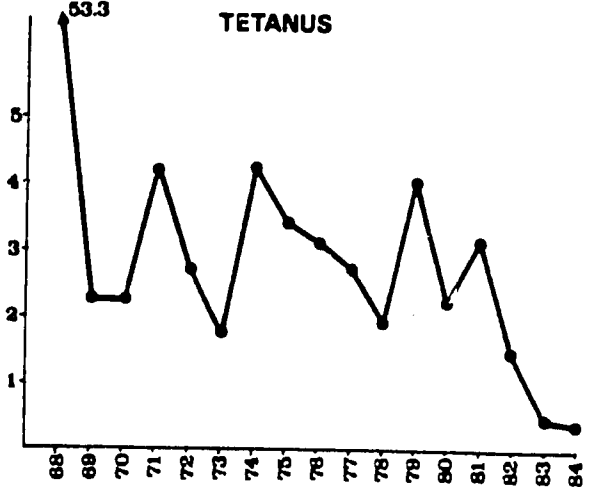
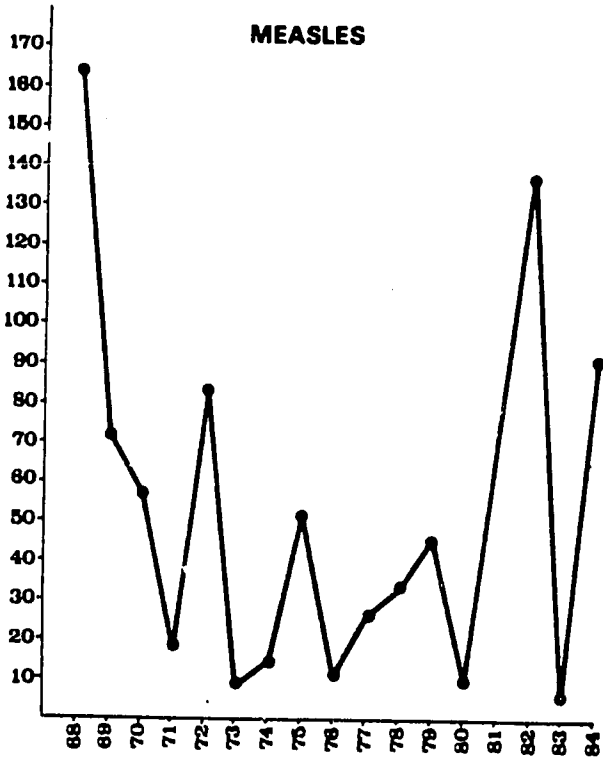
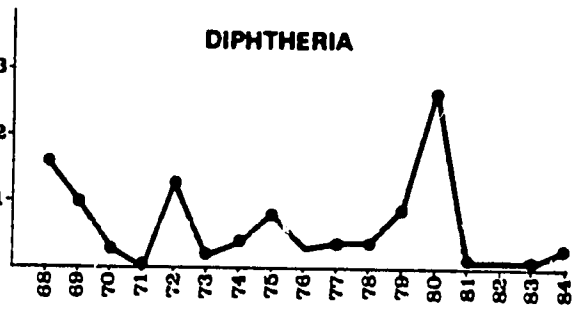
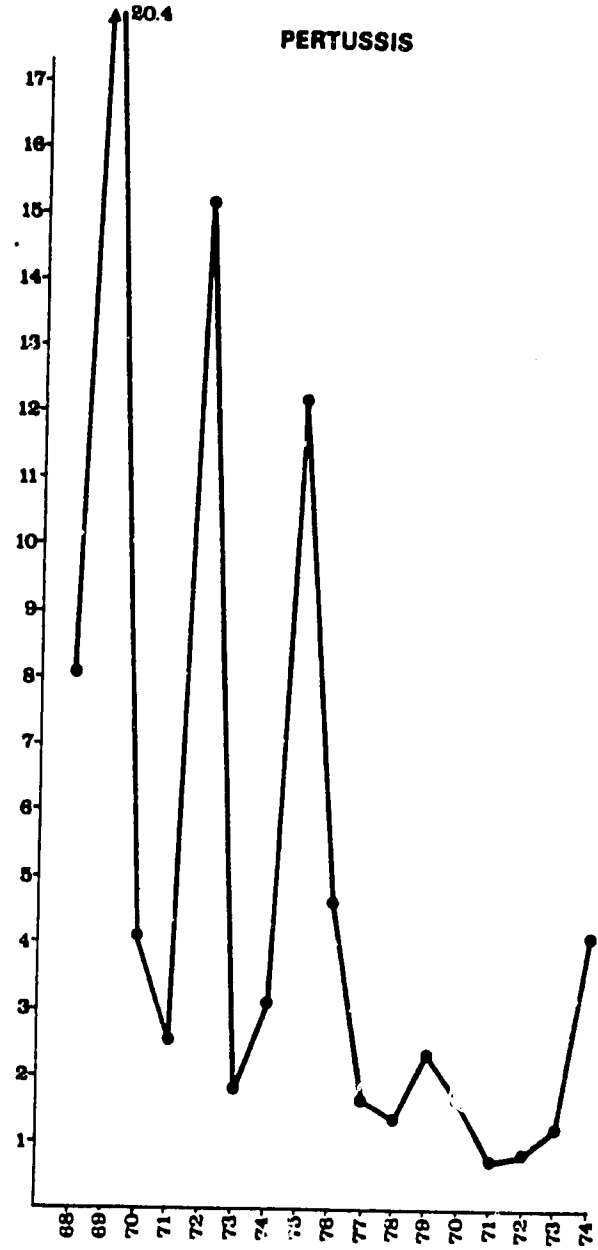
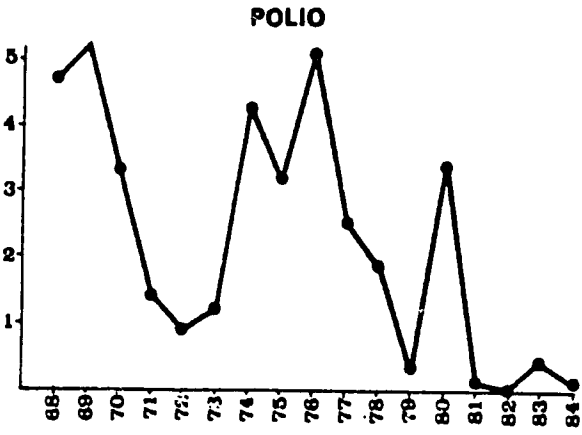


FIGURE V-2

NO. OF CASES PER 100,000 POPULATION



Source: Ref. 51, (p.96), Unmodified

125

TABLE V-1:  
INDICATORS OF MEDICAL SERVICES UTILIZATION (West Bank 1970-1983)

Year	Per 1000 average population				Per 100 admissions		Admitted per 100 visits to Hospitals/ Clinics	% Deaths in Surgery	% Bed Occupancy	% Births in Hospitals	Average Length of Stay in Hospital
	Beds	Admissions	Visits to Clinics	Days of Hospital- ization	Surgery	Deaths					
<b>Total</b>											
1970	2.15	65.8	120.8	542	40.4	3.30	35.2	8.2	69.2	20.7	
1974	2.12	69.8	136.3	581	50.6	4.25	33.9	9.3	75.1	29.0	
1975	1.98	74.6	140.2	583	24.6	2.24	34.8	9.1	80.5	30.1	7.8
1978	1.94	84.3	212.8	573	22.6	1.82	28.4	8.0	80.9	36.0	6.8
1980	1.85	87.7	211.8	544	22.2	1.43	29.7	6.4	80.6	40.4	6.1
1981	1.87	89.3	256.0	535	21.6	1.48	25.9	6.9	78.8	44.6	5.9
1982	1.79	87.8	245.9	509	22.3	1.48	26.3	6.1	78.2	45.7	5.8
1983	1.78	91.6	270.6	528	20.9	1.38	25.3	6.6	81.3	48.3	5.8
<b>Government hospitals</b>											
1970	1.71	54.3	97.9	451	25.2	2.08	35.7	8.3	72.9		
1974	1.51	50.2	112.5	428	22.1	2.38	30.9	10.7	77.1		
1975	1.39	54.9	109.1	423	21.2	2.48	33.5	11.4	83.3		7.7
1978	1.32	64.7	177.5	429	21.1	1.97	26.7	9.3	88.6		6.6
1980	1.34	67.5	174.4	425	22.4	1.47	27.9	6.6	86.7		6.3
1981	1.33	65.1	208.7	413	21.2	1.43	23.7	6.7	85.0		6.4
1982	1.30	62.5	201.1	394	23.5	1.51	23.7	6.4	83.2		6.3
1983	1.27	65.8	222.1	402	21.1	1.29	22.8	6.1	86.0		6.1
<b>Non-Government Hospitals</b>											
1970	0.44	11.5	23.2	91	15.2	1.22	33.1	8.0	59.8		
1974	0.61	19.6	23.8	153	28.5	1.87	45.2	6.6	70.0		
1975	0.59	19.7	31.1	160	32.6	1.57	38.8	4.8	74.0		8.1
1978	0.62	19.6	35.3	144	27.7	1.30	35.8	4.7	65.9		7.5
1980	0.51	22.2	37.4	119	21.6	1.29	37.3	6.0	66.9		5.5
1981	0.54	24.2	47.3	122	22.5	1.62	34.3	7.2	67.6		5.1
1982	0.49	25.3	44.8	115	13.17	1.42	36.1	7.4	62.9		4.6
1983	0.51	25.8	48.5	126	20.3	1.60	34.7	7.9	69.0		4.9

18/9

West Bank  
 Table V-2  
 Hospital Beds by Region, 1984  
 (Source: Refs. 21,51)

Region	Est. 1984 Population	GOVERNMENT		PRIVATE		TOTAL		
		Absolute # Beds	Persons/ Bed	Absolute # Beds	Persons/ Bed	Absolute # Beds	Persons/ Bed	Beds/1000 persons
Hebron	168,800	100	1,688	0		100	1,688	0.6
Bethlehem	88,000	64	1,375	203	433	267	330	3.0
Jenin	123,200	55	2,240	12	10,267	67	1,839	0.5
Jericho	12,800	48	267	0		48	267	3.8
Nablus	146,400	203	721	140	1,046	343	427	2.3
Ramallah	130,400	124	1,052	0		124	1,052	1.0
Tulkarm	138,400	60	2,307	36	3,844	96	1,442	0.7
Total	808,000	654	1,235	391	2,066	1045	773	1.3
Beth. Mental Hosp.		320				320		
Total incl. Beth.Mental		974	830	391	2,066	1365	592	1.7

187

West Bank  
Table V-3  
Hospital Occupancy Rates by Region, 1983

Region	GOVERNMENT		PRIVATE			
	Hospital	Occupancy Rate (a)	Occupancy Rate (b)	Hospital	Occupancy Rate (a)	Occupancy Rate (b)
Nablus	Nablus	66.3%	70.8%	St. Luke's	72.5%	NA
	Rafidia	58.2%	65.2%	Al-Ittihad	70.0%	83.6%
Bethlehem	Bethlehem Mental	119.0%	119.0%	French	50.0%	45.1%
	Beit Jala	87.6%	91.8%	Caritas	93.6%	97.2%
Tulkarm	Tulkarm	50.5%	60.2%	Mt.David	110.0%	NA
				Qalqilya	33.0%	93.0%
Jenin	Jenin	66.3%	78.5%			
Hebron	Hebron	73.5%	75.6%			
Jericho	Jericho	55.7%	46.7%			
E.Jerusalem (c)	E.Jerusalem	70-80%	NA (d)	St. Joseph	70.0%	NA
				Augusta-Vic	81.0%	NA
				Makassed	76.0%	NA
				Maternity	45-50%	NA
				Dajani	51.3%	NA
				Red Crescent	80.0%	NA

- (a) According to unpublished Civil Administration documents; Ref. 23.  
 (b) According to Statistical Report, Health Services, Judaea and Samaria, 1983 (Civil Administration); Ref. 21.  
 (c) East Jerusalem figures included for comparison.  
 (d) NA = not available.

1/88

West Bank  
 Table V-4  
 Staff of Government Hospitals, 1983  
 (Source: Refs. 21,23)

Hospital	# Beds	Total Employees	Laboratory Staff	Doctors	Nurses	Beds/Doctor	Beds/Nurse
Jenin	55	64.5	3	10.5	25	5.2	2.2
Tulkarm	60	61	2	10	23	6.0	2.6
Nablus	85	98.5	6	12.5	45	6.8	1.9
Rafidia	118	143	6	19	63	6.2	1.9
Ramallah	124	164	13	25	72	5.0	1.7
Beit Jala	64	112	8	23	38	2.8	1.7
Jericho	48	44	1	5.5	15	8.7	3.2
Hebron	100	107.5	4	18.5	46	5.4	2.2
Bethlehem Mental	320	115	0	6	54	53.3	5.9
Total	974	909.5	43	130	381	7.5	2.6
Total excluding Bethlehem Mental	654	794.5	43	124	327	5.3	2.0

1985



West Bank

Table V-5

Staff of Selected West Bank and Jerusalem Private Hospitals, 1983

(Source: Refs. 21,23)

Region	Hospital	# Beds	Total # Employees	Laboratory Staff	Doctors	Nurses	Beds/Doctor	Beds/Nurse
Tulkarm	Qualquilya	36	18	1	1	10	36.0	3.6
Nablus	St. Luke's	65	76	3	7	26	9.3	2.5
	Al-Ittihad	75	110	2	6	43	12.5	1.7
Bethlehem	French	34	NA	1	1	11	34.0	3.1
	Caritas	79	150	8	8	80	9.9	1.0
	Mt. of David	73	112	1	7	32	10.4	2.3
Jerusalem	Augusta-Victoria	107	138	NA	11	71	9.7	1.5

West Bank  
 Table V-6  
 Hourly Wages (US\$ equiv.) of Nurses in Government and Selected Private Hospitals (Dec. 1983)  
 (Source: Ref. 23)

	Duty Hours/Week	PRIVATE					GOVERNMENT	
		Mt. David	Caritas	Makassed	Al-Ittihad	Augusta-Vic	Salary	Prof. Allowance (per year)
		45	36	45	45	45	40	
Matron	new	NA	NA	2.49	NA	NA		
	4 yrs.	NA	NA	2.66	2.28	NA		
	8 yrs.	4.36	NA	2.82	3.38	3.46	1.53	24.07
Staff Nurse	new	2.57	1.87	1.87	1.25	1.66	1.16	17.59
	4 yrs.	2.79	2.14	2.02	2.01	1.78	1.30	19.44
	8 yrs.	3.01	2.41	2.15	2.17	1.91	.40	23.15
	12 yrs.	3.23	2.68	2.24	2.37	2.03	.46	22.22
	12+ yrs.	3.46	2.95	2.35	3.31	2.15	.46	22.22
Practical Nurse	new	1.62	1.12	1.73	0.83-1.08	1.26	0.97	7.41
	4 yrs.	1.77	1.34	1.79	1.08-1.33	1.35	1.00	8.70
	8 yrs.	1.92	1.56	1.81	1.33-1.58	1.44	1.07	8.70
	12 yrs.	2.06	1.78	1.87	1.80	1.54	1.19	10.19
	12+ yrs.	2.21	1.99	1.92	2.79	1.63	1.19	10.19
Assistant Nurse	new	1.10		1.66	NA	NA	0.84	
	4 yrs.	1.17		1.72	NA	NA	0.88	
	8 yrs.	1.25		1.77	NA	NA	1.02	
	12 yrs.	1.32		1.83	NA	NA	1.02	
	12+ yrs.	1.43		1.88	NA	NA	1.02	
Midwife	new				1.11		1.04	16.67
	4 yrs.				1.38		1.24	18.52
	8 yrs.				1.66		1.30	19.44
	12 yrs.				1.94		1.40	21.30
	12+ yrs.				2.22		1.40	21.30
Night duty bonus (per night)				4.10	3.60			

191

West Bank  
Table V-7

West Bank Facilities of Public Health Department by Region, 1983

Source: Ref. 51, Table 31 (p.71); Ref. 51, p.69; Ref. 21, Table 2 (p.10) and Table 9 (p.20).

District	Est.Pop. (1983)	Staff		Number of Community Clinics (1984)	Number of MCH Centers (1984)	# visits to MCH Ctrs. (1983)
		Doctors	Nurses			
Tulkarm	133,200	12	51	32	27	21,849
Jenin	118,600	11	42	23	16	11,439
Nablus	140,900	14	51	24	18	17,828
Jericho	12,300	(a)	(a)	(a)	(a)	1,944
Ramallah	125,500	12	43	27	18	22,807
Bethlehem	84,700	8	29	15	9	9,375
Hebron	154,800	12	48	32	22	10,699
Total	770,000	69	264	153	110	95,941

(a) Figures for Jericho included in Bethlehem statistics (Ref. 51, p.71). Map of Distribution of Gov't Health Servs., Ref. 51, p.69, however, indicates 4 community clinics and 1 MCH clinic in Jericho and 10 community clinics and 8 MCH clinics for Bethlehem.

127

West Bank  
 Table V-8  
 Visits to Maternal/Child Health (MCH) Clinics  
 (Source: Ref. 19)

Region	Est. 1983 Population	Est. # Eligible Persons (a)	1983 Total # MCH Visits	Visits per Eligible Person (b)
Jenin	118,600	39,257	11,439	0.29
Nablus	140,900	46,638	17,828	0.38
Tulkarm	133,200	44,089	21,849	0.50
Ramallah	125,500	41,541	22,807	0.55
Jericho	12,300	4,071	1,944	0.48
Bethlehem	84,700	28,036	9,375	0.33
Hebron	154,800	51,239	10,699	0.21
<b>Total</b>	<b>770,000</b>	<b>254,870</b>	<b>95,941</b>	<b>0.38</b>

- (a) Eligible persons calculated at 33.1% of total population.  
 Approximately 13.1% of the population is 3 years of age or under  
 and about 20% of all persons are women of childbearing age (15-44); Ref. 19.
- (b) Total number visits divided by eligible persons.

1/83

West Bank  
 Table V-9  
 Health Activities of Charitable Societies 1984: HEBRON  
 (Source: Ref. 20a)

Page 1 of 2

Society	Number of Clinics	Number of Patients Seen						Total
		Maternal/Child Care	Outpatient	Dental	Physiotherapy	Emergency	Family Planning	
Red Crescent	3	3,200	6,650		1,000	8,850		19,700
Hebron Women		350						350
Patients Friends	2		230	2,350				2,580
Family Plan'g & Protect'n	1						100	100
Dura	1		400					400
Surif	1		350					350
Sa'ir								0
Halhoul Women	1		740					740
Nuba	1		175					175
Tarqumiyah								0
Bayt Awla	1		600					600
ash-Shuyukh								0
Idnah								0
Bayt Kamil								0
az-Zahiriyah	1		1,000					1,000
Kharas								0
al-Samu'	1		65					65
Bayt 'Awa	1		350					350
Tafuti								0
ar-Rihiya								0
Bani Na'im	1		4					4
Total Number Facilities	15	2	10	1	1	1	1	
Total Number Patients		3,550	10,564	2,350	1,000	8,850	100	26,414

194

West Bank  
 Table V-9  
 Health Activities of Charitable Societies 1984: HEBRON  
 (Source: Ref. 20a)

Page 2 of 2

Society	Number of Hospital Beds	Number of Hospital Patients	Number of Laboratory Tests	Number of Patients Serviced by Ambulance	Units of Blood Distrib'd by Banks	Number of Patients rec'g X-ray Exposures	Number of Pharmaceu-ticals	Number of Persons in Health Ed Programs	Number of Nursing Students
Red Crescent			3,800	370				450	
Hebron Women Patients Friends			9,100			5,190		525	
Family Plan'g & Protect'n Dura								320	
Surif								260	
Sa'ir								230	
Halhou1 Women								260	
Nuba								110	
Tarqumiyah								150	
Bayt Awla								390	
aSh-Shuyukh								290	
Idnah								50	
Bayt Kamil								350	
az-Zahiriyah								300	
Kharas								80	
al-Samu'								190	
Bayt 'Awa								250	
Tafuti								330	
ar-Rihiya								180	
Bani Na'im								320	
Total Number Facilities	0	0	2	1	0	1	0	19	0
Total Number Patients	0	0	12,900	370	0	5,190	0	5,045	0

West Bank  
 Table V-10  
 Health Activities of Charitable Societies 1984: BETHLEHEM  
 (Source: Ref. 20a)

Page 1 of 2

Society	Number of Clinics	Number of Patients Seen					Total
		Maternal/ Child Care	Outpatient	Dental	Physio- therapy	Emergency	
Caritas Baby Hospital	1		4,175				4,175
Shama'a Village Clinic	1		300				300
Wad Rijal Clinic	1		300				300
Nahaleen Village Clinic	1		350				350
Ard Al-Insan							0
Islamaya/Bethlehem	1		2,820				2,820
Jericho Women							0
Abu Deis Orphanage	1		12,480				12,480
Women's Fed./Beit Jala	1	6100	2440				8,540
Al-Amal/Abu Deis							0
Patients Friends							0
Holy Land Christian Miss.	2		20,800		6,340		27,140
HLCM Orphan's Home							0
UNRWA/Seira	1		250				250
Nablus Clinic	1		150				150
Gaza Clinic	1		150				150
Bint Hayl al-Arabiya	1				900		900
Suba							0
Tafouti	1		(new)				0
Total Number Facilities	14	1	12	0	2	0	0
Total Number Patients		6,100	44,215	0	7,240	0	0
							57,555

19/6

West Bank  
 Table V-10  
 Health Activities of Charitable Societies 1984: BETHLEHEM  
 (Source: Ref. 20a)

Page 2 of 2

Society	Number of Hospital Beds	Number of Hospital Patients	Number of Laboratory Tests	Number of Patients Served by Ambulance	Units of Blood Distrib'd by Banks	Number of Patients rec'g X-ray Exposures	Number of Pharmaceuti-cals	Number of Persons in Health Ed. Programs	Number of Nursing Students
Caritas Baby Hospital	79	1,830	15,700						
Shama'a Village Clinic									
Wad Rijal Clinic									
Nahaleen Village Clinic									
Ard Al-Insan	60	380							
Islamaya/Bethlehem									
Jericho Women								250	
Abu Deis Orphanage									
Women's Fed./Beit Jala								750	
Al-Amal/Abu Deis								650	
Patients Friends					60				
Holy Land Christian Miss.	50	1,420	12,000						
HLCM Orphan's Home	6	1,280					1,740		
UNRWA/Seira									16
Nablus Clinic									
Gaza Clinic									
Bint Hayl al-Arabiya									
Suba								180	
Tafouti								(new)	
Total Number Facilities	3	4	2	0	1	0	1		1
Total Number Patients	195	4,910	27,700	0	60	0	1,740	1,830	16

1987



West Bank  
 Table V-11  
 Health Activities of Charitable Societies 1984: RAMALLAH  
 (Source: Ref. 20a)

Page 1 of 2

Society	Number of Clinics	Number of Patients Seen						Total
		Maternal/ Child Care	Outpatient	Dental	Physio- therapy	Emergency	Family Planning	
Jifna Women	1		2,400					2,400
Red Crescent/Beira	1		1,500					1,500
Red Crescent/Ramallah	1		200					200
Bir Zayt Women Society's Friends	3	120	13,844	2,800			510	17,274
Patients Friends	1		1,500					1,500
Bala'in	2		1,500		600			2,100
Rafat	1		300					300
Mazra'ah al-Qibliyah	1		300					300
Abu Falah	1		250					250
Ras Karkar	1		350					350
Kafr Nimah	1		150					150
Shabatin	1		250					250
Deir al-Suran	1		400					400
Dir Abu Mashal	1		400					400
Khubr	1		300					300
Arab Coll.of Med.Prof'ls	1		300					300
Women's Fed./Ramallah	1		50					0
Bani Zayd	1		(new)					50
Arura	1							0
Women's Renaissance	1		100					0
Women's Fed./Beira	1			270				100
Burqah	1							270
Family and Child Protection	1							0
Arab Med. Welfare Assn.	1							0
Total Number Patient Facilities	26							
Total Number Patients		1	21	2	1	0	1	
		120	24,094	3,070	600	0	510	28,394

198

West Bank  
 Table V-11  
 Health Activities of Charitable Societies 1984: RAMALLAH  
 (Source: Ref. 20a)

Page 2 of 2

Society	Number of Hospital Beds	Number of Hospital Patients	Number of Laboratory Tests	Number of Patients Serviced by Ambulance	Units of Blood Distrib'd by Banks	Number of Patients rec'g X-ray Exposures	Number of Pharmas-cals	Number of Persons in Health Ed Programs	Number of Nursing Students
Jifna Women									
Red Crescent/Beira				90				150	
Red Crescent/Ramallah									
Bir Zayt Women			6,520					140	
Society's Friends								50	
Patients Friends									
Bala'in									
Rafat									
Mazra'ah al-Qibliyah									
Abu Falah									
Ras Karkar									
Kafr Nimah									
Shabatin									
Deir al-Suran									
Dir Abu Mashal									
Khubr									
Arab Coll.of Med.Prof'ls									110
Women's Fed./Ramallah									
Bani Zayd								40	
Arura								60	
Women's Renaissance									
Women's Fed./Beira									
Burqah									
Family and Child Protection									
Arab Med. Welfare Assn.								60	
Total Number Patient Facilities	0	0	1	1	0	0	0	6	1
Total Number Patients	0	0	6,520	90	0	0	0	500	110

1/19

West Bank  
 Table V-12  
 Health Activities of Charitable Societies 1984: NABLUS  
 (Source: Ref. 20a)

Page 1 of 2

Society	Number of Clinics	Number of Patients Seen						Total
		Maternal/ Child Care	Outpatient	Dental	Physiotherapy	Emergency	Family Planning	
Al-Ittihad Hospital								
Patients Friends	3		15,711	7,150		5,386		28,247
Family Planning & Protection	1						1,353	1,353
Huwarrah								0
Burin								0
Red Crescent	1				74			74
Social Center		10,700						10,700
Bisha	1		500					500
Solidarity	1		(new)					0
'Asira South	1		2,000					2,000
Evangelical Hospital								0
'Asira North								0
'Awsarin								0
Sabastiyah								0
Tall								0
'Awrif								0
Qusrah								0
Bayt Wazan								0
Total Number Patient Facilities	8	1	4	1	1	1	1	
Total Number Patients		10,700	18,211	7,150	74	5,386	1,353	42,874

200

West Bank  
 Table V-12  
 Health Activities of Charitable Societies 1984: NABLUS  
 (Source: Ref. 20a)

Page 2 of 2

Society	Number of Hospital Beds	Number of Hospital Patients	Number of Laboratory Tests	Number of Patients Serviced by Ambulance	Units of Blood Distrib'd by Banks	Number of Patients rec'g X-ray Exposures	Number of Pharmaceu- cal	Number of Persons in Health Ed Programs	Number of Nursing Students
Al-Ittihad Hospital	75	10,000	41,596		6,595	4,645			
Patients Friends			19,250			7,799			
Family Planning & Protection									
Huwarrah									
Burin								152	
Red Crescent								76	
Social Center				72	1,123				
Bisha								283	
Solidarity								50	
'Asira South									
Evangelical Hospital								250	
'Asira North	65	3,818	20,000			1,600			
'Awsarin								180	
Sabastiyah								85	
Tall								50	
'Awrif								75	
Qusrah								50	
Bayt Wazan								(new)	
Total Number Patient Facilities	2	2	3	1	2	3	0	(new)	
Total Number Patients	140	13,818	80,846	72	7,718	14,044	0	12	0
							0	1,251	0

20

West Bank  
 Table V-13  
 Health Activities of Charitable Societies 1984: JENIN  
 (Source: Ref. 20a)

Page 1 of 2

Society	Number of Clinics	Number of Patients Seen					Family Planning	Total
		Maternal/ Child Care	Outpatient	Dental	Physio- therapy	Emergency		
Red Crescent Jenin Charitable al-Jilmi		250						250 0
Qablat al-Mariqah								0
Al-Yasun								0
Kafr Dan								0
Burqin								0
al-Hashmiyah								0
Kafr Qud								0
Dar Burqin								0
Ya'bad								0
Turah al-Gharbiyah								0
Barta'ah								0
Arraba	1			(new)				0
'Anza	1			(new)				0
Qabatiyah								0
(a)								0
al-Fandaqumiyah								0
al-Zababidah								0
Sal`a								0
Raba								0
al-Jalqamus								0
Hospital Friends								0
Tubas								0
Aqqabah								0
Dayr Abu Da'if								0
Patients Friends	2	(new)	2000		(new)			0
Six others (locations unknown)								2,000
								0
Total Number Patient Facilities	4	2	1	2	1	0	0	
Total Number Patients		250	2,000	0	0	0	0	2,250

(a) Name illegible in source document.

201

West Bank  
 Table V-13  
 Health Activities of Charitable Societies 1984: JENIN  
 (Source: Ref. 20a)  
 Page 2 of 2

Society	Number of Hospital Beds	Number of Hospital Patients	Number of Laboratory Tests	Number of Patients Serviced by Ambulance	Units of Blood Distrib'd by Banks	Number of Patients rec'g X-ray Exposures	Number of Pharma-ceuticals	Number of Persons in Health Ed Programs	Number of Nursing Students
Red Crescent				50				80	
Jenin Charitable								260	
al-Jilmi								60	
Qablat al-Mariqah								220	
Al-Yasun								350	
Kafr Dan								120	
Burqin								190	
al-Hashmiyah								70	
Kafr Qud								70	
Dar Burqin								70	
Ya'bad								300	
Turah al-Gharbiyah								50	
Barta'ah								50	
Arraba								165	
'Anza								50	
Qabatiyah								300	
(a)								280	
al-Fandaqumiyah								46	
al-Zababidah								400	
Sal'a								50	
Raba								65	
al-Jalqamus								70	
Hospital Friends									
Tubas								330	
Aqqabah								80	
Dayr Abu Da'if								60	
Patients Friends								250	
Six others (locations unknown)								238	
Total Number Patient Facilities	0	0	0	1	0	0	0	32	0
Total Number Patients	0	0	0	50	0	0	0	4,274	0

(a) Name illegible in source document.

203

West Bank  
 Table V-14  
 Health Activities of Charitable Societies 1984: TULKARM  
 (Source: Ref. 20a)

Page 1 of 2

Society	Number of Clinics	Number of Patients Seen					Family Planning	Total
		Maternal/ Child Care	Outpatient	Dental	Physio- therapy	Emergency		
Red Crescent								
Al-Murabihat								0
Al-Shaykh								0
Bala'a								0
Anabta								0
(a)								0
Shuwayka								0
'Illar	1		150					150
'Attil								0
'Azzun								0
(a)								0
Nabi Ilyas								0
Sayda								0
Total Number Patient Facilities	1	0	1	0	0	0	0	
Total Number Patients		0	150	0	0	0	0	150

(a) Name illegible in source document.

201

West Bank  
 Table V-14  
 Health Activities of Charitable Societies 1984: TULKARM  
 (Source: Ref. 20a)

Page 2 of 2

Society	Number of Hospital Beds	Number of Hospital Patients	Number of Laboratory Tests	Number of Patients Serviced by Ambulance	Units of Blood Distrib'd by Banks	Number of Patients rec'g X-ray Exposures	Number of Pharma-ceuticals	Number of Persons in Health Ed Programs	Number of Nursing Students
Red Crescent								80	
Al-Murabitat								420	
Al-Shaykh								220	
Bala'a								120	
Anabta								125	
(a)								340	
Shuwayka								90	
`Illar								90	
'Attil								150	
'Azzun								85	
(a)								20	
Nabi Ilyas								(new)	
Sayda								(new)	
Total Number Patient Facilities	0	0	0	0	0	0	0	13	
Total Number Patients	0	0	0	0	0	0	0	1,740	0

(a) Name illegible in source document.

205



West Bank  
 Table V-15  
 Health Activities of Charitable Societies 1984: SUMMARY  
 (Source: Ref. 20a)

Page 1 of 2

Region (a)	Total Number of Societies		Number of Clinics	Number of Patients Seen						Total
				Maternal/ Child Care	Outpatient	Dental	Physio- therapy	Emergency	Family Planning	
HEBRON	21	# Patient Facilities	15	2	10	1	1	1	1	26,414
		# Patients		3,550	10,564	2,350	1,000	8,850	100	
BETHLEHEM	13	# Patient Facilities	14	1	12	0	2	0	0	57,555
		# Patients		6,100	44,215	0	7,240	0	0	
RAMALLAH	14	# Patient Facilities	26	1	21	2	1	0	1	28,394
		# Patients		120	24,094	3,070	600	0	510	
NABLUS	18	# Patient Facilities	8	1	4	1	1	1	1	42,874
		# Patients		10,700	18,211	7,150	74	5,386	1,353	
TULKARM	13	# Patient Facilities	1	0	1	0	0	0	0	150
		# Patients		0	150	0	0	0	0	
JENIN	26	# Patient Facilities	4	2	1	2	1	0	0	2,250
		# Patients		250	2,000	0	0	0	0	
TOTAL (b)	105	# Patient Facilities	68	7	49	6	6	2	3	157,637
		# Patients		20,720	99,234	12,570	8,914	14,236	1,963	

(a) Data for Jericho not available.

(b) Excluding Jericho.

206

West Bank  
 Table V-15  
 Health Activities of Charitable Societies 1984: SUMMARY  
 (Source: Ref. 20a)

Page 2 of 2

Region (a)	Number of Hospital Beds	Number of Hospital Patients	Number of Laboratory Tests	Number of Patients Serviced by Ambulance	Number of Blood Bank Units	Number of Patients rec'g X-ray Exposures	Number of Pharmaceutical Medications	Number of Persons in Health Ed Programs	Number of Nursing Students
HEBRON	0 0	0 0	2 12,900	1 370	0 0	1 5,190	0 0	19 5,045	0 0
BETHLEHEM	3 196	4 4,910	2 27,700	0 0	1 60	0 0	1 1,740	5 1,830	1 16
RAMALLAH	0 0	0 0	1 6,520	1 90	0 0	0 0	0 0	6 500	1 110
NABLUS	2 140	2 13,818	3 80,846	1 72	2 7,718	3 14,044	0 0	12 1,251	0 0
TULKARM	0 0	0 0	0 0	0 0	0 0	0 0	0 0	13 1,740	0 0
JENIN	0 0	0 0	0 0	1 50	0 0	0 0	0 0	32 4,274	0 0
TOTAL (b)	5 336	6 18,728	8 127,966	4 582	3 7,778	4 19,234	1 1,740	87 14,640	2 126

(a) Data for Jericho not available.

(b) Excluding Jericho.

107

TABLE V-16:  
NOTIFICATIONS OF SELECTED INFECTIOUS DISEASES, Judaea and Samaria, 1968 to 1984

Disease	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Measels	901	428	340	108	529	59	95	343	82	178	231	321	72	530	1020	53	736
Chicken pox	306	471	467	458	331	391	232	109	118	229	303	166	175	371	858	680	2948
Dysentery, para-typhoid and typhoid	270	231	124	128	112	42	93	128	294	390	124	61	106	261	136	348	349
Pertussis	44	122	24	17	96	11	20	81	32	11	9	16	11	5	6	9	33
Diphtheria	9	6	3	-	8	1	3	5	2	3	3	6	19	1	1	1	2
Poliomyelitis	26	31	20	9	6	8	29	21	35	17	13	2	24	1	0	3	1
Superperal fever	21	18	14	11	11	9	10	9	10	3	1	-	1	1	0	0	0
Meningitis	32	18	24	17	20	11	33	64	31	39	38	48	36	61	55	94	58
Relapsing fever	14	24	15	5	-	3	1	7	2	3	1	-	2	0	1	0	1
Scarlet fever	1	1	18	5	-	2	6	5	9	4	3	13	4	4	3	0	19
Erysipelas	10	3	6	3	2	-	-	1	2	5	1	1	-	1	3	0	0
Typhus	-	-	-	-	1	-	-	-	-	-	-	-	2	0	0	0	0
Malaria	2	-	10	5	7	2	4	20	22	19	18	12	15	7	4	0	0
Infectious hepatitis	75	105	84	44	66	46	113	97	141	92	294	146	692	392	240	495	467
Tetanus	292	14	14	27	18	12	29	23	22	19	5	7	8	10	6	4	3
Tetanus neonatorum	-	-	-	-	-	-	-	-	-	-	9	22	8	13	9	10	10
Syphilis	-	-	-	-	-	-	-	-	-	1	2	-	1	2	0	0	0
Rabies	-	1	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Brucellosis	-	-	-	-	-	1	1	15	13	14	31	59	51	194	176	141	186
Tuberculosis <sup>1</sup>	-	-	-	109	108	77	129	119	130	159	141	145	191	139	136	95	NA
Leishmaniasis	-	-	-	-	23	11	5	17	9	14	24	8	38	83	57	36	44
Cholera	-	-	61	1	7	-	-	-	-	1	-	8	-	7	0	0	0
Rubella	-	-	-	-	-	89	4	1	-	2	35	18	46	34	33	52	288
Encephalitis	-	-	-	-	-	-	-	-	-	-	3	8	2	1	3	6	5
Bilharziasis	-	-	-	-	6	-	-	-	-	-	-	-	1	0	0	0	0
Mumps	132	426	872	720	543	158	340	1252	430	301	907	406	310	708	1064	770	1354
Gonorrhoea	1	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-
Rheumatic fever <sup>2</sup>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	7	8	4

- Note: 1. Tuberculosis cases are reported without necessarily having bacteriological confirmation; the figures are considered to represent over-reporting of active tuberculosis.  
 2. Reporting of Rheumatic Fever commenced in 1981.  
 3. Reporting of diarrhoeal and gastroenteritis is for the age group 0 to 3 years only; this was commenced in 1981.  
 4. Reporting of infectious diseases is improved as a result of continuing education of medical staff of the importance of reporting as a basis of epidemiologic surveillance. As in other jurisdictions many infectious diseases are under reported, nevertheless this data serves as a valuable monitor of trends.  
 5. 1984 data include complete year. 1983 data corrected to include final report for total year.

Source: Ref. 51, Table 46 (p.99), Unmodified

TABLE V-17

סיבות מוות של ילדים בגילים 0-4 לפי גיל ומחלות, 1983

CAUSES OF DEATH, OF CHILDREN 0-4 YEARS, BY AGE AND DISEASES, 1983

Disease	Total	3 + 4	1 + 2	0	המחלה
Heart diseases	117	7	12	98	מחלות לב
Bronchitis & pneumonia	380	7	42	331	דלקת סימפונות ודלקת ריאות
Gastritis & diarrhoea	173	1	17	155	דלקת הקיבה והמעיים
Diseases of early infancy	101	—	2	99	מחלות של ינקות מוקדמת
Birth injuries & perinatal causes	46	—	1	45	פציעות של הילוד וגירמים פרינטלים
Congenital malformations	30	2	3	25	מומים מלידה
Other causes	202	17	53	132	סיבות אחרות
Total	1,049	34	130	885	סה"כ

Source: Ref. 21, Table 6 (p.15), Unmodified

204

## CHAPTER VI

### HEALTH IN THE GAZA STRIP

#### A Profile from Secondary Sources

#### HEALTH-RELATED SOCIAL INDICATORS

##### Geography and History

The Gaza Strip stretches along the Mediterranean coast northeast of the Sinai Peninsula (Figure VI-1). It has an area of 363 square kilometers (Ref. 51), which is about one-fifteenth the size of the West Bank. Gaza became part of British-mandated Palestine after World War I, and by 1922 it was the fourth largest city in Palestine. During the Israeli-Arab War of 1948-1949, the Gaza Strip came under Egyptian military administration. Thousands of Palestinian Arab refugees crowded into Gaza, and most have remained. In the pre-1967 period, the refugees had few employment opportunities, and despite assistance from the United Nations Relief and Works Agency (UNRWA), most lived at subsistence level. Since 1967, Israel has occupied the Gaza Strip (Refs. 30, 31).

### Demography

The Gaza Strip is one of most densely populated areas in the world, with an estimated 1,360 persons per square kilometer in 1983. (By comparison, the population density of the West Bank was about 137 per square kilometer in 1983). The Israeli Central Bureau of Statistics (CBS) estimated that the total population of Gaza in 1983 was 493,700. Slightly more than 50% are female (Chapter I). Estimated population growth was 3.5% in 1983 (Table VI-1). The age distribution of the population is characteristic of developing countries in that almost one half (48.7%) of the population in 1983 was 0-14 years of age, 33% were 15-34 years, and only 18.3% were over 34 years of age. Refugees comprise 77.5% of the population and 55% of the refugees live in camps. (On the West Bank, only 44.9% of the population are refugees, and 25.3% live in camps). Approximately 21% of the refugees served by UNRWA in the Arab world are in Gaza. UNRWA defines a refugee as one "whose normal residence was Palestine for a minimum of two years preceding the conflict in 1948 and who as a result of this conflict lost both his home and means of livelihood and took refuge in 1948, in one of the countries where UNRWA provides relief." Children and grandchildren of people who fall within this category are also considered refugees.

### Economic Factors

Farming is the largest industry in Gaza, and nearly three-quarters of the land is agriculturally cultivated. Agricultural products include field crops, vegetables and potatoes, melons, pumpkins, citrus, olives, meat, milk, fish, and eggs.

Non-agricultural industries include metal products, machinery, textiles, clothing, leather products, food processing, beverages, and tobacco. Israeli goods freely enter the Gaza market, but there are restrictions on the reverse flow of goods. The Gaza Strip has recently suffered from the instabilities caused by inflation and repeated devaluations of the Israeli shekel. The per capita GNP in 1982 was estimated at \$1055, approximately one-fifth that of Israel and 1.5 times greater than Egypt (Table VI-2).

The labor force as defined by the CBS comprises 32.8% of the population 14 years of age and over (Ref. 51). In 1983, 64% of the labor force was male. About 47% of the employed labor force worked in Israel (Table VI-3), mostly as unskilled laborers. Employment opportunities for the highly skilled and educated (e.g. doctors, engineers, and teachers) are limited. Thus, there is considerable incentive for skilled professionals to leave the Gaza Strip for employment in the Gulf states or elsewhere.

### Education

Nine years of schooling at the elementary and junior-high levels are compulsory, although not all elementary school-age children are enrolled. In 1983, 46.2% of females and 60% of males aged 14 years or older had seven or more years of schooling. There has also been a reported but unconfirmed decline in the number of students taking the secondary certificate examination (from 12,000 in 1968 to 7,800 in 1984) (Ref. 24). This may be due to youths dropping out of school and seeking jobs in the Israeli labor market. During the 1983-1984 academic year, more than half the pupils in school attended UNRWA institutions, 43% attended government institutions, and 3% attended other institutions.

### HEALTH SERVICES IN THE GAZA STRIP

#### Hospital Services

There are 6 hospitals serving the Gaza population, of which 4 are government, one is private, and one is operated jointly by UNRWA and the government. Collectively, there are 925 beds and 70 tuberculosis beds. In 1983, the general hospital bed rate was 1.9 per 1000 population (Ref. 51). The TB beds were recently converted for general respiratory illnesses, and may soon be phased out altogether.



Shifa Hospital, the main government facility, is located in Gaza City and has 340 beds. Renovations of the facility are in progress, including improvements in the water supply, sewage and electrical systems, kitchen, communications, and heating systems.

Renovations include the addition of an attached building with 5 operating theaters, x-ray and emergency rooms and additional intensive care, dialysis, burn, pathology, medical library, and blood bank services (Ref. 51). It is expected that the building addition will be completed in late 1985, although not all these services will be available at that time.

Khan Yunis Hospital (243 beds) serves the southern part of the Gaza Strip with internal medicine, surgery, pediatrics, ob/gyn, orthopedics, and a local blood bank (Ref. 51). Staff doctors routinely visit community clinics to provide consultative services.

The Nasser Children's Hospital was a semi-private hospital for surgery and obstetrics until 1973, when it became primarily a children's facility. By 1979, all adult services were transferred to Shifa Hospital. Specialty services include some pediatric surgery, cardiology, endocrinology, and genetics. The "day care" unit provides rehydration infusions and care for respiratory infections in winter. There are three pediatric sections and a neonatology unit. Nurses from Nasser Hospital are being trained in the neonatal intensive care unit of Beersheva's Soroka Medical Center and

specialists come from Beersheva and Jerusalem to teach and consult. The Nasser Hospital also provides specialty pediatric care in MCH clinics in the area (Ref. 51).

The Radwan facility has both ophthalmic and psychiatric hospitals. The ophthalmic section contains 57 beds. Up to 350 patients attend during the daily four-hour clinic. This hospital has participated in the programs resulting in the decline in the incidence of previously endemic chronic diseases such as trachoma and conjunctivitis (Ref. 51). It has a referral link and consulting service provided by the Assaf HaRofeh Hospital in Israel. In the psychiatric section of the hospital, there are out-patient and day-care services as well as a 25-bed acute care psychiatric unit and an EEG unit. Staff consists of a British-trained senior psychiatrist assisted by two Egyptian-trained psychiatrists and a team of psychologists and nurses. Chronic patients requiring long-term hospitalization are referred to the Bethlehem Mental Hospital.

Bureij Hospital (70 beds in 1983) was the regional TB hospital and now treats all respiratory diseases. It is scheduled for closing, since there has been a marked reduction in the incidence of TB and neither UNRWA nor the government health sector can afford to maintain the hospital. It has been involved in screening, diagnostic, and prevention programs, including BCG vaccination (Ref. 51).

The al-Ahli Hospital is a private facility with 60 beds, used both by insured persons and by the approximately 20% of the Gazan population that is uninsured. In-patient and out-patient services include laboratory, x-ray, pharmacy, ophthalmic clinic, dental clinic, physiotherapy clinic, respiratory clinic, and 24-hour emergency care. In addition, there is a specialist in urologic surgery. The maternity ward especially is used by uninsured patients. Services of the respiratory clinic are offered free of charge to patients who cannot afford the fee.

#### Laboratory Services

The central laboratory for the Gaza Strip is in the Rimal Clinic, a government facility; it serves as a backup to all hospital laboratories in the area, working in the areas of hematology, bacteriology, biochemistry, parasitology, and serology. The Institute Health Team has not evaluated the quality the work. Newly introduced procedures include thyroid function tests and new micromethods for bilirubin, LDH, CPK, D-xylose, digoxin levels, triglycerides, and serum iron, total iron binding capacity, assay, and lithium levels. In bacteriology, new serological tests were introduced which give results of cultures and sensitivity of specimens from blood, urine, pus, sputum, stool, cerebrospinal fluid, and wounds. The laboratory is linked to Israeli reference laboratories, particularly for virology, endocrinology, and food monitoring (Ref. 51).

The laboratory in Khan Yunis Hospital performs biochemistry, hematology, parasitology, and bacteriology tests, and also has an out-patient lab. Hematology, parasitology, and some biochemical tests are carried out in Shifa Hospital's laboratory. Nasser Children's Hospital and Bureij Hospital each have a small laboratory which does basic hematology, stool, and urine tests (Ref. 51)

#### Use of Hospital Services and Risk Indicators

In 1975 over 2,000 yearly visits to clinics were recorded per 1000 population, with a hospital admission rate of 118 per 1000 inhabitants and an average of 673 days of hospitalization per 1000 inhabitants. These figures declined in subsequent years, at least temporarily due to a change from free care for all Gazans to free care only for insurance holders. (Comparable figures for the West Bank were 140, 75, and 583 respectively in 1975.

Trends in the Gaza Strip probably reflect the very different health infrastructure and different demography compared to the West Bank (see conclusion, below). On the West Bank, more than two-thirds of the inhabitants live in small villages, where medical facilities are non-existent or extremely limited; in the Gaza Strip, the most common type of non-urban settlement is a refugee camp, where basic and expanded health facilities are provided by UNRWA or other relief agencies. Preventive and hospital services in Gaza are overwhelmingly in the government sector, and overall availability and access

to medical services is easier in the Gaza Strip than in the West Bank. The very high rates of visits to hospitals and to out-patient clinics in Gaza are especially notable. The decrease in rates of utilization (though still very high) may indicate less use by persons with mild symptoms. This seems consistent with the stabilization in the early 1980's of risk indicators for this region (rates of surgery and death per 100 admissions, death per 100 surgeries, hospitalizations per 100 clinic or hospital visits) (Ref. 23a; Table VI-7).

Another possible explanation offered for the decreasing demand upon health services and care in the Gaza Strip is the increased demand for parallel services in Israeli hospitals. Available data, however, do not support the hypothesis that Gazans are using hospitals inside Israel; only two percent (2%) of total admissions and six percent (6%) of hospitalization days of Gazans occur in Israel. The average length of a patient's stay in hospital decreased in the Gaza Strip from 6 to 5 days in the period 1975-1983.

The proportion of known births occurring in hospitals increased from 20% to 29% in this period, but if births in medical centers are added, the share of medically assisted births rose considerably, from 45% to 74% over the nine year period. The rate of in-hospital deaths as compared to all registered deaths also increased over this period, and ranged from 40% to 50% (a level similar to that prevailing, for example, among Israeli Arabs.

### Non-Government Health Providers

UNRWA has 9 health centers and 2 subcenters in the Gaza Strip. There is a health center in each of the 8 refugee camps, and services are also made available to non-refugees. The Gaza City Health Center, funded by the Swedish Save the Children (Redd Barna) organization, is the largest facility. There are 59 beds in these health centers, and referrals are made to Gazan hospitals as required. Rehydration, nutrition, obstetric care, and health education are the main services offered. Five full-time health educators do teaching and outreach in the community (Ref. 24). In 1982, there were 6 maternity wards, 9 rehabilitation nutrition centers, 9 MCH centers, 9 out-patient centers, and 2 dental clinics (Ref. 97).

UNRWA Maternal Health Care Centers provide care for the mother from the fifth month of pregnancy, including home visits made by trained midwives during and after the birth. Children are treated from birth to school age in Well-Baby Clinics which provide immunizations and standard medical examinations (Ref. 24).

Although most health services are provided by the government and UNRWA sectors, many charitable societies are quite active in health services in the Gaza Strip. The following societies and organizations were described as providing health-related services in a recent report on private, non-profit organizations in the Gaza Strip (Ref. 56):

1. al-Ahli Hospital
2. al-Amal Orphanage/Hope Institute
3. Arab Medical Association of Gaza
4. Benevolent Society
5. Blind Friends' Association
6. Central Blood Bank Society of Gaza
7. El-Wafa Invalids Society
8. Joint Charitable Committee
9. Near East Council of Churches Committee for Refugee Work/Gaza Area (NECC)
10. Palestine Women's Union
11. Patients Friends Benevolent Association
12. Red Crescent Society of Gaza
13. Society for the Care of Handicapped Children in Gaza
14. Society for the Welfare of Disabled and Aged Persons
15. Society of Women Graduates in the Gaza Strip
16. UNRWA/Pontifical Mission Centre for the Blind
17. UNRWA/Quaker Preschool Program
18. Young Men`s Christian Association (Y.M.C.A.)

Two of these organizations, the Red Crescent Society of Gaza and the Central Blood Bank Society of Gaza (CBBS), are described further below. RCS started services in 1972, and now runs 3 general clinics situated in Gaza City, Absan

el-Kabira, and Ab Ta'ima, as well as an emergency first aid center. Out-patient fees are low. Emergency transport to hospitals is provided by two RCS ambulances. Medicine, sold at cost, can be purchased at the RCS pharmacy. The main facility at Gaza can perform basic laboratory tests, while referrals to Rimal Clinic are made for complex cases. Two dental clinics are operated by the RCS, one in Gaza City and another in Khan Yunis where dental x-ray is available.

CBBS opened in 1972. Prior to 1967, no major surgery was performed in the Gaza Strip, partly due to the shortage of blood. In 1979 the CBBS procured its own modern facility, assisted by funds from CDF. The CBBS has small facilities in Khan Yunis and Rafah, with its main facility in Gaza City. It is active in health education and recruiting blood donations. A bloodmobile is used for outreach and collection purposes; the staff includes five trained technicians (Ref. 56).

While government and UNRWA health services concentrate on general health care and education, many private and charitable services focus on specialized health care, education, and rehabilitation. For example, most programs for handicapped individuals are operated by organizations within the private sector, and long waiting lists for these specialized services are reported.



### Primary Care and Public Health

Primary care services have been developed aggressively over the past decade both in the government and UNRWA sectors. Vaccination is nearly universal. Neighborhood clinics, both government and UNRWA, are readily accessible because of the 80% rate of government insurance participation, the fact that many Gazans qualify for UNRWA services, and close proximity. Quality of service, however, is not uniform, with gaps in training of personnel and provision of adequate supplies. Nonetheless, primary care achievements are considerable, especially when contrasted with the situation in the West Bank. Advances in primary care are reflected in the vital statistics for Gaza (Chapter I).

Maternal and Child Care: The first government-run MCH center in Gaza opened in 1971, in the Sejaya village. As of 1984 there were 24 centers. In 1975 services of these MCH centers were expanded to include curative, preventive, and diagnostic care. In 1977, Nasser Children's Hospital began providing MCH centers with specialty services. The proportion of births at birthing centers or in hospitals has risen dramatically: from 10% in 1967 to 46% in 1977 and 74% in 1982. (The West Bank showed the same positive trend, but at a slower rate: from 14% in 1968 to 36% in 1978 and 48% in 1983. MCH centers also offer prenatal care, growth monitoring and nutritional information. Until early 1985, care for all children up to three years of age was free of charge, but new regulations now limit free care to children under one and one-half

222

years of age. There are 145 dayas (traditional birth attendants) working in Gaza, and hospital training programs and licensing programs in the government sector are available. In 1983, children made 255,200 visits to government MCH centers, while women made 15,300 visits for gynecological care (Ref. 51). This represents 1.7 visits per potentially eligible person (i.e. women of child-bearing age and children under three years of age), which is more than four times greater than the comparable rate for the West Bank (Chapter V).

Nutrition: MCH clinics provide nutrition education for their clients. In 1982-1983, the total per capita energy consumption was estimated to average 2,516 calories for Gaza. In 1983, the reported rate of cases of low birth weight (less than 2500 grams) was slightly more than 5% for children born in government and non-government hospitals. (The figure for the West Bank was slightly higher at 6.8%). Such cases are probably underreported (Chapter I). No data are available for births occurring outside of hospitals.

Unfortunately, frank malnutrition is seen regularly in Gazan health facilities and in Gazan in-patients seen in West Bank hospitals, but its incidence is unknown (Ref. 51).

Immunization: Vaccination is one of the most successful public health programs in Gaza, and the rates of immunization coverage are reported to be over 90% for diphtheria, pertussis, polio, TB, and measles. Vaccination against tetanus is provided for women in their childbearing years, and the

program is now being extended to include high school students and youths. Immunization schedules include BCG for newborns within their first month of life. School-age children are checked and are given the BCG vaccine when Mantoux-negative. At this time, TB is at a low prevalence (Ref. 51, p.12). The Gazan TB program is more comprehensive than the program in the West Bank (Chapter V).

Health Education: Health education occurs in MCH centers. Government reports state that mothers are trained in infant nutrition, personal hygiene, sanitation procedures, home economics, and first aid for household accidents. They are also educated to recognize diarrheal diseases and to administer oral rehydration solution properly (Ref. 51). The UNRWA/Quaker pre-school program operates centers in all the refugee camps and in other poor neighborhoods. Primarily an educational program, primary health is also part of the curriculum. The program reaches the most disadvantaged families and involves mothers as well as the children.

Social Services: Welfare assistance for Gazans is provided by the Israeli government, UNRWA, and private organizations. Unfortunately, there is little coordination among these three sectors. The government provides assistance to those without income and unable to work. A family of four receives 40% of the average wage of the region. (Calculation of this average takes into account the salaries of those working in Israel). Smaller payments (cash or food) are provided to those unable to work who have income below subsistence level (Ref. 51).

UNRWA provides approximately 60% of the total volume of social services, but only refugees (78% of the population) are eligible for these services, according to a recent study sponsored by the Ford Foundation (Ref. 56). UNRWA has provided shelters and materials for building shelters in camps. The Agency widely distributed bi-monthly basic rations to refugees until September 1982; since then, distribution has been reserved for special hardship cases and pregnant/nursing women.

Health Insurance: Government health insurance has been offered in the Gaza Strip since 1978. In 1982, insurance rates ranged from \$9 to \$12 per month per family, and an estimated 80% of the Gazan population was insured; health insurance is voluntary except for those employed in the Civil Administration and for salaried workers in Israel. Insurance holders are eligible for primary care and local and referred hospital care in government facilities. Referral to Israeli hospitals must be approved by the Civil Administration, and budgetary constraints limit the number of such patients. Most medicines are supplied free to insurance holders, but since 1983 supplies in government pharmacies have been reduced, and insured patients often have to purchase medicines in private pharmacies at their own expense.

Housing, Sanitation and Water Supply: UNRWA provides basic community sanitation services to refugee camps, including the provision of water, disposal of wastes, drainage of rainwater, and insect and rodent control.

225

Outside the camps, the government provides sewage systems and water wells, tests water for bacteria and chemicals, and provides some services for waste disposal and vector control. (The proportion of the population outside camps with access to these services and the cost of these services were not reported in the sources available.)

In 1983, approximately 49.4% of dwellings consisted of one or two rooms, and the average number of persons per room was 6.3. In 1981, 39.7% of refugee households had running water, and 83.9% had electricity around the clock (Ref. 97). An UNRWA report claims that financial limitations have prevented the agency from carrying out major improvements in the delivery of its services (Ref. 97). In 1983, UNRWA directed and financed self-help programs in camps which involved laying sewers, constructing surface drains to facilitate the disposal of storm water, paving pathways, improving the water supply system and constructing family latrines (Ref. 95). Much of the Gaza Strip, particularly the cities of Gaza, Khan Yunis, and Rafah and the camps of Jabalia and Deir-el-Balah, has suffered from major sewage disposal problems. In most areas, households depend on cesspits for sewage disposal, although in Gaza City, Rafah, and Jabalia there are plans for new sewage systems, some of which have been begun. The collection system in Gaza City was rebuilt on a scale capable of handling the total sewage output from the projected population of the city in the year 2000. However, this increase in capacity has not been matched by an increase in neighborhood connections to the main system or in the maintenance of existing connections. In camps, where

cesspits are used, there is often a lack of waste collection equipment; pools and streams of noxious liquid develop, and in the summer the water is a gathering place for mosquitos and other potential disease vectors. Cholera is seen periodically, and local spread has occurred. Sewage is sometimes used for irrigation purposes, thereby polluting vegetables in the market, despite official efforts to eliminate this practice (Ref. 51).

Most villages and towns have a central water supply, but some outlying communities are not fully supplied. The CBS estimates that 100% of the population has access to some water supply, but the proportion with access to clean water is not reported (Ref. 18). In most camps, the water supply comes from UNRWA wells. The water in many communities has a high salinity level (700 - 1000 p.p.m.), due to overutilization of ground water resulting in falling water tables and gradual percolation of sea water inland. Since 1981, Israeli standards for water testing have been effect. The accepted standard is 2 Escherichia coli per 100 milliliters of water. Since 1983, water supplies were routinely chlorinated. Water samples from all the deep underground wells are routinely tested for coliform bacteria, Vibrio cholera, and other enteric bacteria, and a program for testing the level of dissolved chemicals is being developed (Ref. 51). The natural fluoride content of water is generally within the standard recommended for the prevention of dental caries (1.0 p.p.m.), though fluorosis is seen in many zones with water fluoride levels above those deemed salutary.

## HEALTH STATUS IN THE GAZA STRIP

### Causes of Death

In 1976, infectious diseases caused the highest proportion of reported deaths (37.6%) in the population of Gaza as a whole; by 1981 "diseases of modern life" including ischemic heart disease, hypertension, cerebrovascular disease, diabetes, malignancy, and automobile accidents had risen to 40% to become the greatest cause of death. By 1983, these diseases caused 44% of all reported deaths. A 51% decline in the proportion of deaths attributed to infectious diseases between 1976 and 1983 may reflect salutary trends in primary care (Table VI-4). For example, reported deaths caused by intestinal infectious diseases declined by 41% between 1981 and 1983, suggesting the possible impact of recently initiated oral rehydration therapy (ORT) programs.

Among the specific medical conditions, the leading causes of death in 1981-1982 were (in order): perinatal diseases, pneumonia, senility and all ill-defined diseases, heart diseases (exclusive of ischemic, hypertensive, and rheumatic), cerebrovascular disease, and intestinal infectious diseases. By 1983, malignancy and respiratory diseases (exclusive of pneumonia) replaced cerebrovascular disease and intestinal infectious diseases in the list of the top six causes of death. The proportion of deaths caused by respiratory diseases other than pneumonia increased by 269% between 1981 and 1983. This is consistent with a marked rise in the number of smokers and smoking-related

illnesses. It may also reflect improved reporting for chronic respiratory diseases. The continued high frequency of the term "senility and ill-defined diseases" reflects deficiencies in diagnostic practices, data recording or abstracting, and/or in pathology services.

The five leading causes of death in children under age five in 1983 are, in order: perinatal diseases (largely prematurity), respiratory diseases, infectious and parasitic diseases, congenital anomalies, and injury (Table VI-5). Most of those conditions are amenable to preventive initiatives, especially respiratory diseases and infectious and parasitic diseases, which together accounted for 43.8% of all reported deaths in children under 5 years old. The number of reported deaths in children ages 0-4 years increased 58% from 1982 to 1983, primarily due to increased deaths from respiratory diseases and injury. Death caused by infectious and parasitic diseases during the same time period decreased by about 40% for children under 5. Most health officials believe that the overall rise in reported deaths reflects improved reporting rather than a true rise in childhood death rates. This is consistent with the data and models presented in Chapter I.

For infants under 1 year, perinatal diseases caused the highest proportion of deaths in both 1982 and 1983. Injuries were common in 1-2 year olds, and ranked with respiratory diseases as the leading causes of death in 3-4 year olds in 1982-1983. In children aged 3-4, deaths attributed to injury rose 75% from 1982 to 1983. Since deaths from congenital anomalies tend to be fairly



constant, given a stable number of births over a short time period, the rise in deaths from this cause from 1982 to 1983 might confirm overall improved death reporting.

The 1982-1983 mortality rates for infants fell 11%, and by about 7.6% for 1-2 year olds. Mortality rates rose, however, by 57.6% for 3-4 year olds. It is uncertain how much improved reporting contributed to this rise. The fact that perinatal causes of death are the first cause of death in this age group contrasts to the West Bank situation (see Chapter II and V). It implies both better death reporting in Gaza and probably more progress in primary health care. Vital statistics models (Chapter I) yielding an IMR in the 51-53 range for 1982 indicate that considerable developments in health services and health status still need to be accomplished.

### Selected Causes of Morbidity

Diarrheal diseases are still the most important cause of infant hospitalization in the Gaza Strip. A three year program to expand oral rehydration therapy was begun in 1979 (Ref. 61). This program encompassed all community health centers and included community education in the use of oral rehydration solution (ORS). Between 1977, (the year before the ORS program was launched) and 1981, diarrheal related hospital days of care decreased by 42.0%. In addition, hospital deaths from diarrheal disease in children below the age of 1 year were reduced by 52% in the 1977-1981 period. The total

number of these deaths in the 1 month to 35 months age group was reduced by 53%. Despite these achievements, diarrheal diseases remain a major public health problem (Ref. 51, p.110).

Cholera: A Ministry of Health document states that imported cases of cholera with secondary spread have occurred periodically, including outbreaks in 1970 and 1976 (Ref. 51, p.111). In apparent error, Table 52 from the same source reveals no cases in 1976 and 243 cases in 1970. The Gaza Strip was cholera-free from 1977 until 1981 when an epidemic of 161 cases occurred, perhaps caused by secondary spread from a cholera victim from Jordan. The attack rate was 37 per 100,000 population, but there were apparently no fatalities (Ref. 51, p.111). Following the diagnoses of the first cases, an extensive preventive program was instituted in which all direct contacts were given doxycycline, and latrine sampling was carried out in neighboring homes. There was constant monitoring of water, sewage, and vegetables during the outbreak. In 1982 there was an outbreak which was confined to one family. Twenty-five cases were reported in 1983, though an UNRWA document stated that only 2 cases among refugees were reported (Ref. 97). No cases of cholera were reported in 1984 (Table VI-6). Since 1969, when there were 61 cases of cholera reported in the West Bank, there has been virtually no cholera reported from that area. The continued presence of cholera in Gaza may reflect better diagnostic or reporting abilities there than in the West Bank; or, it may genuinely be more common in Gaza due to high population mobility and perhaps to suboptimal sanitation.

221

Poliomyelitis: Trivalent oral polio vaccine (OPV) has been used in the Gaza Strip since 1968. An 80-90% coverage of infants was achieved by the mid-1970's, and the mean annual incidence of polio was about 10 per 100,000 population. Two polio epidemics occurred in 1974 and 1976 involving 75 and 77 children respectively, raising the incidence to 18 per 100,000 population. Of the children affected in these outbreaks, 34% in 1974 and 50% in 1976 had received 3 to 4 doses of OPV. After a vaccination campaign with Monovalent Type I vaccine, a serological survey was completed which showed an unexpectedly low proportion of seropositives. A correlation was found between the prevalence of diarrheal disease and vaccine failure, perhaps because of a failure of enteric establishment of the attenuated strain due to competing enterovirus. In 1978, a program combining live and killed polio vaccines was begun (Refs. 60,63). The average annual incidence rate of the disease declined to 2.5 per 100,000 population between 1978 and 1980, and no cases were reported among children who received the combined vaccine. Between 1981 and 1984, the number of reported cases was 0 to 3 per year, indicating that modifications in the immunization program have apparently succeeded in disease control.

Tetanus: Between 1967 and 1984, there was an erratic trend in the incidence of tetanus, including cases of tetanus neonatorum which occurred mainly among Bedouins. In 1976 and 1977, the prevalence of tetanus was highest, with 76 and 71 cases respectively. An expanded program of tetanus immunization has

232

been carried out, targetting pregnant women who attend government and UNRWA MCH centers and women of child-bearing age in Bedouin communities. A separate campaign was carried out in the 1970's in the southern part of the Gaza Strip to immunize the population over 16 years of age (Ref. 51). By 1982, there were only 11 reported cases of tetanus, with 6 in 1983 and 9 in 1984 (Table VI-6).

Measles: A measles vaccination program begun in 1970 had a low level of public acceptance. Since 1979, coverage has reached 90%, and the incidence of measles has decreased substantially from the high levels reported during the late 1960's and early 1970's. In 1980, the incidence of measles reached a low point with only 3 reported cases. Despite this success, an outbreak of 1,859 cases occurred in Gaza over six months in 1981-1982, simultaneous with an outbreak in neighboring districts in Israel. Analysis of 354 cases revealed that 217 (61%) had not been vaccinated, and the remaining 137 cases were vaccinated either too young (below the age of 9 months) or otherwise ineffectively. There were 70 reported fatalities, a case fatality rate of 3.8%, quite high by Western standards. Government data for 1983 indicated 77 cases of measles (i.e. 16.1 per 10,000 population) (Ref. 51, p.110), while an UNRWA document reported 9 cases among refugees (Ref. 97). Unless UNRWA statistics are incomplete, this might imply that this disease is now even better controlled among refugees than among non-refugees.

Vision: According to one published study, the Gaza Strip and the West Bank are in the neediest of three main categories of blindness defined by WHO. The study found a relatively high prevalence of cataract, trachoma, and blindness. The study determined that 80% of the current blindness was either curable or was preventable, and that the rate of binocular blindness was six times that of Europe (Ref. 24). The major causes of blindness in children were identified as trachoma, trauma, and strabismus. Government documents do not report visual problems to be a major health concern (Refs. 50,51).

Mental illness: Prevalence of mental disorders is not readily determined. Psychosomatic presentations of anxiety, depression, and hysteria are not infrequently seen. Alcoholism is rare due to religious norms and strong family cohesion. The latter may also explain the rarity of psychiatric hospitalization of geriatric patients, who are cared for at home. Surveys are taking place to estimate the prevalence of mental retardation in children, and results will be forthcoming later in 1985. The suicide rate in the Gaza Strip is 8 per million population (as compared to 12 per million in the United Kingdom), but cause of death could be underreported for suicide due to social reasons. Mental health providers are taking steps to decrease the isolation of mental patients in the Gaza Strip by encouraging family members to participate in their care (Ref. 28). No data are available on drug abuse.

Disabilities: A prevalence study of childhood disabilities has been completed recently by the Sun Day Care Center staff. A review by the Institute Health

Team of the research plan indicates that the study could provide valuable information. Results were not available to us as of this writing.

## CONCLUSION

The focus of "Cooperation for Development: A Community-Based Health Project" has been on the West Bank, with a more modified effort made in respect to Gaza. The decision to concentrate on the West Bank was made in response to a variety of factors such as: (1) limitations in the size of our field staff, (2) the greater controversy surrounding published data for the West Bank, and (3) the need expressed by donor agencies for guidelines for health development on the West Bank. As a result, our data and conclusions about Gazan health are based on secondary (government and UNRWA) sources, which are not especially self-critical in tone. Government sources, for example, are relatively accurate in their reporting of disease and death rates, but their self-assessment of the quality of government-provided health services is less candid. UNRWA vital statistics also seem reliable, and UNRWA's self-appraisals are somewhat sharper; yet UNRWA data would also benefit from an impartial, outside evaluation. Moreover, we have little information and/or data about the extensive private charitable sector, which appears to be providing significant services in Gaza. This gap is particularly lamentable, since private sector statistics would offer yet another perspective on health status in the area. As a result, this section of our report is limited by the constraints imposed by the available resources.

It is our conclusion that the strong imprint of the government sector is apparent in all facets of Gazan health, yet it is not the full picture. Under the Egyptian administration, Gazans became accustomed to free health care -- although those services were elementary at best in the pre-1967 era. Historical expectations, plus the fact that many families are covered by national health insurance, have cast the government in the role of chief provider of health care. The Israelis have responded accordingly and created a highly centralized health delivery system.

The accomplishments of the government sector, particularly in primary care, have been amply noted throughout this report. There is no question that the majority of Gazans are living longer, healthier lives today than they did twenty years ago. However, these advances have not been made with the full participation of local Palestinian talent and initiative. The legacy of centralized authority in health has continued, to the detriment of growth in the private sector.

Nevertheless, as we have seen, private charitable societies abound and can even flourish. In some areas, the private sector is carrying a major share of responsibility, such as in the treatment of the disabled, the sight impaired, and the mentally handicapped. Greater assistance to these efforts is needed, and better coordination among various groups should be encouraged.

The sharp differentiation between government, UNRWA and the private charitable sector that we have noted on the West Bank is even more pronounced in Gaza. Given the small size of the area and the relatively good infrastructures that already exist, the compartmentalization of services is not a productive trend. Recognition of the strengths and abilities of each sector must occur as a first step toward greater coordination and internal and external resources should be mobilized in that direction.



FIGURE VI-1

GAZA STRIP

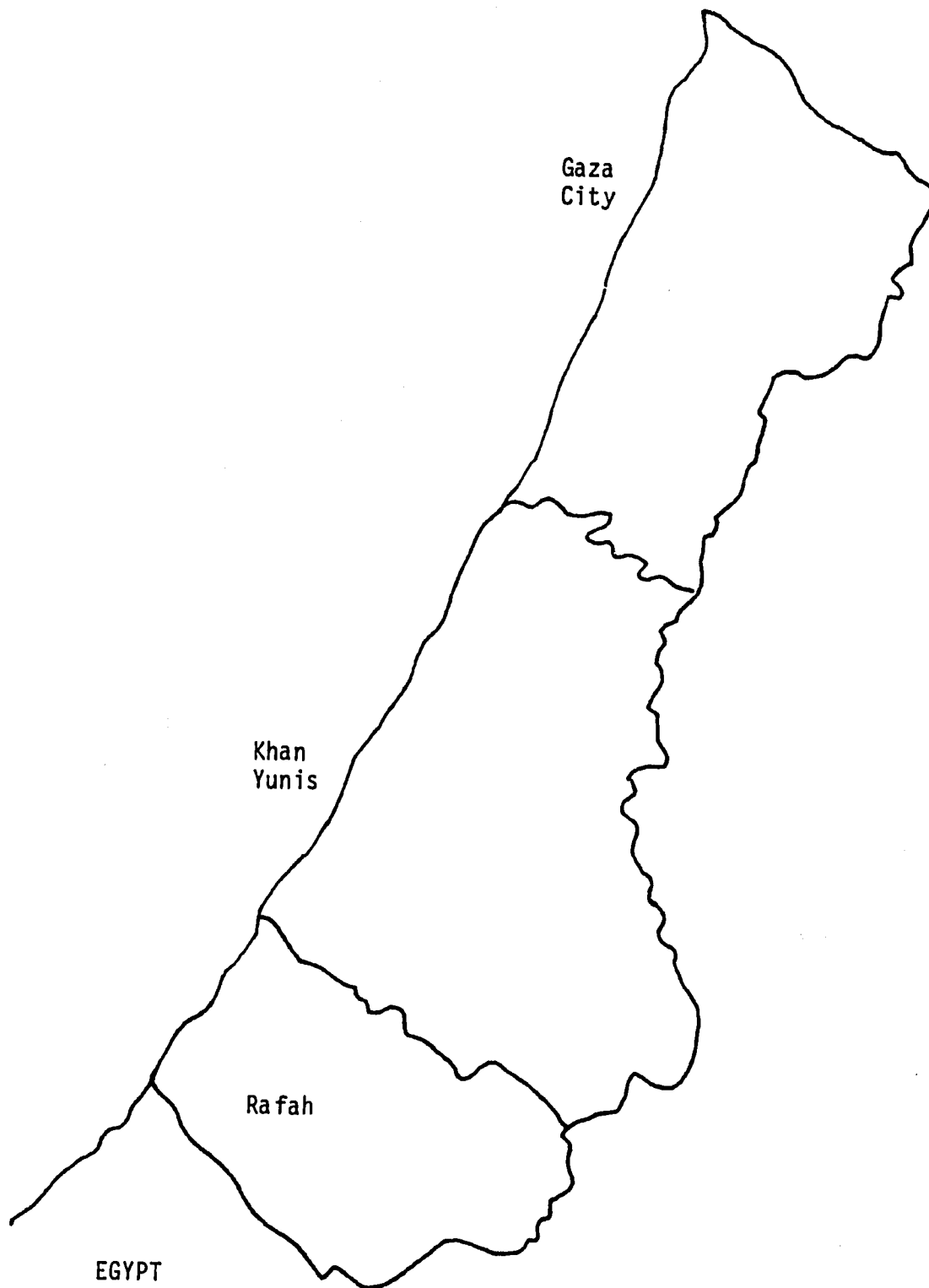
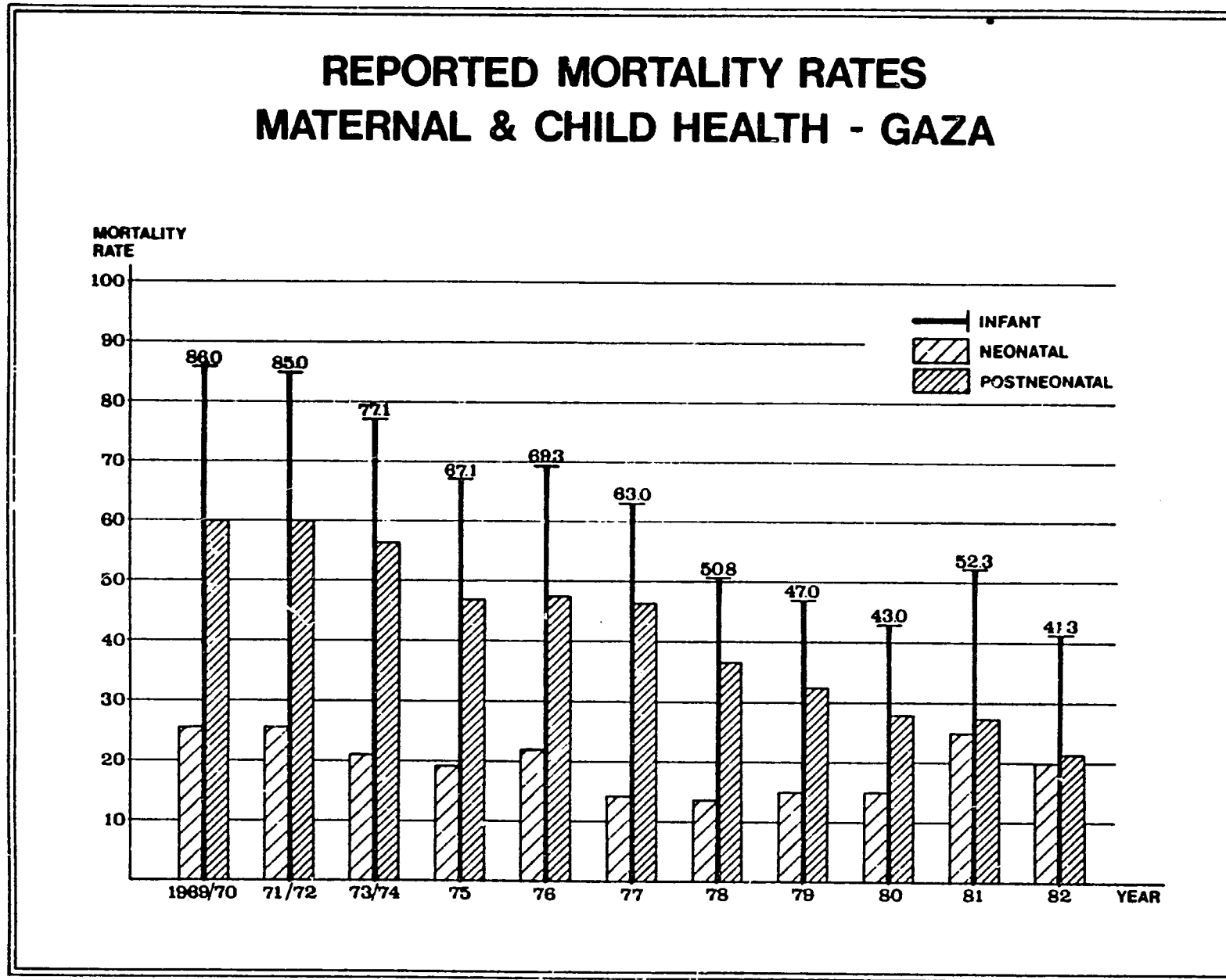


FIGURE VI-2



Source: Ref. 51, (p.89)

239

Gaza Strip  
 Table VI-1  
 Population Statistics, 1983  
 (Source: Refs. 18,49)

	GAZA STRIP	WEST BANK
Total Est. Population	493,700	767,300
Rate of Annual Growth	3.5%	2.7%
Natural Increase	18,200	23,300
Proportion by Age:		
0-14	48.7%	46.2%
15-34	33.0%	33.7%
35+	18.3%	20.1%
Total # Males	245,700	382,900
Total # Females	248,000	384,400
Males per 1000 Females	991	996

240

Gaza Strip  
Table VI-2  
Gross National Product per Capita (US\$ equiv.), 1982  
(Source: Refs. 18,102)

Area	Per Capita GNP
Gaza Strip	1055
West Bank	1380
Israel	5320
Jordan	1690
Egypt	670
United States	13160
France	11540

201

Gaza Strip  
 Table VI-3  
 Employment by Economic Branch, Gaza Strip and West Bank, 1983

	GAZA STRIP	WEST BANK
Total # Persons Employed (x1000)	85.3	147.2
Proportion Employed in Economic Branch		
Agriculture, Forestry, Fishing	18.0%	22.6%
Industry (Mining, Manufacturing)	17.1%	16.8%
Construction (Building, Public Works)	26.1%	24.7%
Commerce, Restaurants, Hotels	13.6%	12.8%
Transport, Storage, Communications	5.9%	5.0%
Public and Community Services	13.1%	13.4%
Other	6.2%	4.7%
Total	100.0%	100.0%

Source: Ref. 18

2511

TABLE VI- 4 . REPORTED DEATHS BY PRIMARY CAUSE - ALL AGES, Gaza 1981-1983

<u>Cause</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Intestinal infectious diseases	237	181	139
Tuberculosis	14	9	8
Malignancy	158	147	205
Diseases of endocrine system	53	80	92
Nutritional and metabolic diseases	30	22	51
Blood diseases	9	19	18
Hereditary and familial diseases	5	5	12
Inflammatory disease of CNS	56	36	71
Rheumatic fever (active)	2	2	0
Rheumatic heart disease (chronic)	34	31	27
Hypertensive heart disease	149	158	120
Ischemic heart disease	140	171	125
Other heart disease	257	222	292
Cerebrovascular disease	254	205	141
Diseases of arteries and veins	61	97	110
Pneumonia	423	368	281
Other respiratory diseases	52	103	192
Other diseases of digestive system	66	62	67
Nephritis and nephrosis	35	38	47
Disease of urogenital tract	23	9	13
Maternal mortality	9	5	12
Diseases of musculoskeletal system and skin	10	4	6
Congenital anomalies	55	62	76
Perinatal mortality	430	405	361
External injuries	191	170	173
Other bacterial diseases	48	24	16
Viral diseases	40	26	9
Senility and all defined diseases	<u>328</u>	<u>275</u>	<u>202</u>
TOTAL	3,169	2,966	2,866

Note: Data derived from Death Certificates reported to Government Health Services, Gaza.

Source: Ref. 51, Table 7 (p.53)

TABLE VI - 5 PRIMARY CAUSE OF DEATH BY AGE GROUP  
0-5 years, as per ICDA 8, Gaza 1982, 1983

<u>Codes</u>	<u>Cause of Death</u>	<u>Under 1 years</u>		<u>1 to 3 years</u>		<u>3 to 5 years</u>		<u>Total under 5</u>	
		<u>1982</u>	<u>1983</u>	<u>1982</u>	<u>1983</u>	<u>1982</u>	<u>1983</u>	<u>1982</u>	<u>1983</u>
000-136	Infective and parasitic	187	111	47	25	7	9	241	145
140-239	Neoplasm	-	1	-	0	4	3	4	4
240-279	Endocrine, nutrition	14	40	6	7	1	0	21	47
280-289	Blood forming	5	8	3	4	2	0	10	12
290-315	Mental disorders	-	1	-	0	-	0	-	1
320-389	Diseases of nervous system	30	37	2	6	2	5	34	48
390-458	Dis. of circulatory system	3	2	-	2	-	0	3	4
460-519	Dis. of respiratory system	249	212	44	34	8	14	301	260
520-577	Dis. of digestive system	10	17	4	7	-	1	14	25
580-629	Dis. of genitourinary system	-	1	-	2	-	1	-	4
680-769	Dis. of skin and subcut.	1	0	-	0	-	0	1	0
710-718	Dis. of musculoskeletal	-	0	-	0	-	0	-	0
740-759	Congenital anomalies	48	58	6	11	1	5	55	74
760-779	Perinatal (maternal & newborn)	404*	357	-	0	-	0	404	357
780-796	Symptoms, ill-defined conditions	3	1	1	0	-	0	4	1
800-999	Injury	11	11	19	24	8	14	38	49
	TOTAL	965	857	132	122	33	52	1,130	1,031
	RATES/1000	43.5	38.6	3.2	2.8	0.7	1.2	12.1	10.6

- Note: 1. \* of these 219 are prematurity.  
2. 0-1 = 0 - end of 11th month;  
1 and 2 = 12th to end of 35th month;  
3 to 5 = 36th to end of 59th month.  
3. Rate calculated from reported deaths x 1000 divided by the number of children in each age group. The total under 5 mortality rate in least developed countries is around 100 and in most advanced countries under 2 per 1000.

Source: Ref. 51, Table 8 (p.54)

2004

**TABLE VI-6 INFECTIOUS DISEASES REPORTED FROM HOSPITALS AND CLINICS, Gaza 1967 to 1984**

Disease	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Typhoid <sup>1</sup>	119	78	36	26	50	55	63	12	5	3	7	10	10	5	0	0	50	25
Salmonellosis	3	8	4	2	4	4	11	5	2	0	12	30	16	0	6	3	1	3
Meningitis <sup>2</sup>	65	19	16	13	9	6	5	19	28	41	35	36	26	45	60	35	76	54
Diphtheria <sup>3</sup>	3	0	0	0	0	0	0	0	1	2	2	4	0	0	0	0	0	0
Tetanus <sup>4</sup>	56	52	25	50	38	43	28	44	45	76	71	38	53	28	18	11	6	9
Pertussis <sup>5</sup>	125	199	30	111	2	31	4	1	46	25	11	0	1	6	122	47	72	257
Polio myelitis <sup>6</sup>	37	51	59	46	22	27	27	75	18	77	13	12	9	13	1	2	1	0
Syphilis	17	42	22	19	33	25	12	5	0	0	12	0	0	0	0	0	0	0
Gonorrhoea	6	6	8	5	1	5	2	0	0	0	3	1	0	0	7	0	4	1
Measles	651	1677	1465	2223	5552	1359	475	337	572	719	803	459	392	3	612	1515	77	64
Infectious hepatitis	874	676	875	1130	1069	1039	686	337	327	357	158	96	54	33	333	NA	369	671
Cholera	0	0	0	243	0	0	0	0	0	0	0	0	0	0	161	7	25	0

1. Typhoid and paratyphoid cases are based upon laboratory confirmed reports.
2. Meningitis includes meningococcal, hemophilus influenza, pneumococcal and unspecified.
3. Diphtheria cases have been reported exclusively from isolated Beduin groups living in central Sinai.
4. Includes both tetanus and tetanus neonatorum. Tetanus neonatorum cases occur mainly among Beduins; in 1980, 17 cases occurred; in 1983 2 cases were reported.
5. Pertussis - clinically reported, not bacteriologically confirmed.
6. Polio data corrected by results of lameness survey carried out in 1982.
7. Measles cases are those clinically reported, but are not confirmed by laboratory

Source: Ref. 51, Table 52 (p.108)

2/15



TABLE VI-7:  
INDICATORS OF MEDICAL SERVICES UTILIZATION (Gaza Strip 1975-1983)

Year	Per 1000 average population				Per 100 admissions		Admitted per 100 visits to Hospitals/ Clinics	% Deaths in Surgery	% Bed Occupancy	% Births in Hospitals	Average Length of Stay in Hospital
	Beds	Admissions	Visits to Clinics	Days of Hospital- ization	Surgery	Deaths					
Total											
1975	2.50	117.5	2182	673	28.3	2.22	5.1	7.9	75.7		5.8
1976	2.43	121.5	1777	832	26.2	2.53	6.4	10.4	69.7		5.0
1977	2.37	110.4	1478	573	29.0	2.52	6.9	8.7	68.4	45.8	5.1
1978	2.31	114.5	1333	565	25.6	2.33	7.9	9.1	67.1	58.9	5.0
1980	2.03	116.6	844	481	24.4	2.46	12.1	10.1	66.1	65.4	4.1
1981	1.93	118.1	886	459	24.0	2.35	11.8	9.8	63.8	70.0	3.9
1982	1.86	112.5	1036	437	27.9	2.27	9.8	8.1	63.4	73.8	3.9
1983	1.82	108.0	1111	425	31.2	1.97	8.9	6.2	64.1		3.9

Source: Ref. 23a

24/6

## CHAPTER VII

### AN ASSESSMENT OF HEALTH STATUS AND SERVICES IN THE WEST BANK AND GAZA STRIP

#### Conclusions from "Cooperation for Development: A Community-Based Health Project"

It is our conclusion that services in the West Bank and Gaza Strip are not adequate to meet the basic health needs of the Palestinians who live there. Data outlined in this report document this statement both for primary health services and for hospital services. Multiple examples from this report underscore the unmet challenges in primary care. Childhood admissions to the Caritas Baby Hospital in Bethlehem reflect a "Third World" distribution. High frequency and high case fatality rates for preventable illnesses such as cold injury are found (Chapter II). The rather advanced average age for surgical repair of congenital dislocated hips and talipes equinovarus at the Mount of David Hospital (Chapter III) suggests late discovery by the primary care system. Infant mortality rate estimates for 1982 in the range of 51-64 per 1000 live births (Chapter I) also point out the need for better primary care. The sense of frustration expressed by those sampled in the Hebron end-user study regarding perceived poor access to services (Chapter IV) is an important message.

Hospital services are objectively inadequate in both number of hospital beds and in quality of care. Most government hospitals are badly in need of physical improvement. Renovations begun some time ago at the Hebron Hospital, Beit Jala Hospital, and the al-Wattani Hospital in Nablus are not nearly completed as of this writing. X-ray services, laboratory services, and access to many basic in-patient services are all severely limited. The physical plants in private hospitals are considerably better, but these institutions are heavily dependent on uncertain sources of outside funding. The French Hospital in Bethlehem has been closed altogether, although there are plans to reopen it in the future.

Regional disparities are worrisome. The three districts of Jenin, Tulkarm and Hebron are farthest in distance from Jerusalem, are the poorest socio-economically, and have the least adequate local hospitals, with an average of 0.6 beds per 1000 people. (This figure includes non-government hospitals, see Chapter V) If health insurance participation were higher in these areas, if charitable society facilities were better equipped and financed, if there were adequate numbers of well-trained physicians and nurses in these districts, then perhaps the fact that there are not enough hospital beds would be less intolerable. But this is not the case. These districts are deficient in every respect. They have the fewest provisions for 24-hour medical coverage, the least access to ambulance transport, and are the most likely to find routine transportation restricted by road conditions, weather, and curfews.

2008

Urban centers like Nablus, Ramallah, and Bethlehem have better local health resources in hospital and primary care, better emergency transportation, and have more ready access to Jerusalem health resources.

The Gaza Strip has its own unique problems. Primary care coverage is impressive in its scope, yet serious lacunae exist in hospital and out-patient care. Because of the large size of the work force crossing daily to Israel, many households are enrolled in the government insurance program; because of the UNRWA presence in the camps, most refugees have easy access to medical care. Both UNRWA and the government have been sensitized to the importance of primary care and this concern is reflected in the statistics for hospital births, immunizations, etc. Nonetheless, the quality of care continues to be a problem and is probably worsening with cutbacks in both the government and UNRWA budgets for health. The number of hospital beds per thousand population has fallen over time with the rising population and additional beds now planned will not close the gap.

A success story in primary care is the vaccination program. The dearth of vaccine-preventable diseases in the region is documented in the UNRWA and government routine statistics, which may be underreported. However, independent validation comes from the rarity of admissions for vaccine-preventable diseases to the Caritas Baby Hospital (Chapter II) and the declining proportion of all admissions attributable to post-polio paralysis at the Mount of David Hospital (Chapter III). The administrative structure

needed to support a successful vaccine program seems to have penetrated the rural zones and recruited participation; it also appears to be capable of managing cold chain technologies. UNRWA actively participates in this program along with the private sector, particularly the women's charitable societies. The public appreciates the service (Chapter IV) which, somehow, has avoided politicization. The program in Gaza is equally effective (Chapter VI).

To sum up, in the West Bank we see a development of health services in the center at the expense of the periphery, a situation not at all unique to that region. In the Gaza Strip, we see careful attention to some primary health functions and services but neglect of others, as well as serious need for amelioration of the tertiary care situation. Poor distribution of services is not unusual. Indeed, if health services were distributed according to health needs, it would run counter to the usual work patterns and living preferences of health professionals. The unbalanced distribution of services also demonstrates the relatively greater political influence of modernized urban constituencies as opposed to more traditional rural ones, differences which predictably persist in that region.

Initiatives to correct these discrepancies are in progress, but they encounter a number of major obstacles. Each difficulty must be confronted in turn before important successes in local health development can take place. They are:

1. The acute economic crisis in Israel has led to a drastic shrinkage of budget and services in the government sector (according to budget data from unofficial government sources). Equipment and pharmaceutical shortages, inadequate capital development funds for hospital improvement, low wages, and the curtailing of plans to expand primary care have resulted. This in turn leads to a second problem:
  
2. Deteriorating government services make health insurance participation in the public sector less attractive, so there is now less incentive than in past years for voluntary insurance purchase by consumers. This decreases the self-generated funds available to the government health services to maintain adequate levels of service delivery and economies of scale are less likely to be attained.
  
3. There have been severe constraints placed on initiatives of the private sector (including charitable societies) to improve health. Until recently, hospital construction plans have been held in abeyance; charitable clinics limited, or in some cases closed; and donations from outside the area restricted. A discussion of the military and security justifications for these policies are outside the purview of this report. However, it is evident that until recently, the capability of the private sector to fill the

257

gap in health care has been constrained. Recent months have seen a shift in official policy, permitting new projects to go forward and new initiatives to be undertaken. However, it is not yet clear whether the changed attitudes on the part of the authorities will be sustained and have a positive impact over time.

4. Health development has not been made a special target of spending by the major international donor agencies in the West Bank and Gaza Strip. Outside donor priorities have contributed to the suppressed growth in the health sector. Until recently, USAID development funds have been primarily directed toward public works projects, rather than toward the building of community-based institutions (Ref. 11a). While projects which provide clean drinking water and efficient sewage removal are important to goals of public health, such projects may not strengthen the internal structures, both material and human, which are vital to an effective and self-sufficient health care system. Hospital construction, clinic expansion, physician/health professional training, public health oriented research, and the encouragement of Palestinian self-management in health are neglected areas.

In his analysis of USAID spending on the West Bank and Gaza from 1977 through 1983, Benvenisti surmises that of every USAID dollar allocated to West Bank/Gaza development, only one cent was

actually spent on health (Ref. 11.a). At the same time, traditional donors in the Arab World have also reduced their budgets for Palestinian development, including health. Even well-established agencies such as the Verein Caritas Kinderhilfe Bethlehem (VCKB) based in Switzerland and UNRWA are cutting back because of severe shortage of funds. USAID, however, has recently jumped into the breach and considerably increased its West Bank/Gaza budgets, and there is hope that the health sector may emerge from its low position on donors' lists of priorities.

5. Within the West Bank itself, regional cooperation in the private sector is a rarity. While some professional efforts to interact are successful (e.g. Jordanian Medical Association, Arab Medical Welfare Association), these groupings rarely mobilize themselves on the project level. Health improvements in one district are often perceived as competitive to projects in another. The planned Hebron hospital, for example, is viewed by some other communities as a threat to their own ambitions in that regard. Health planning sometimes does take place on a local level, but even there, different health-oriented groups operate without formal integration (despite many informal connections). Government employees are under Israeli constraints, UNRWA employees answer to Vienna, and charitable societies are often connected to umbrella organizations within or outside West



Bank/Gaza Strip; thus, freedom to interact is not always a locally determined option.

6. Local initiatives tend to focus on tertiary care insititutions which, although needed, will not guarantee reductions in morbidity and mortality to the neediest rural zones. The importance of primary care with community-level in-patient services, which offers the best answer to these needs, is not widely appreciated by influential health professionals in the West Bank in particular. In the Gaza Strip, Palestinian concern for improving hospital facilities is more in tune with the statistically indicated health needs of the community.

The conclusions of this study have significant ramifications for health planning for the West Bank and Gaza. They indicate clearly that strategies must be developed to target the neediest zones with primary care oriented initiatives which facilitate inter-group and inter-regional interaction. The programs and services provided must respond to concerns of local populations (Chapter IV). At the same time, local health professionals must be given the opportunity to provide the ideas and leadership necessary to stimulate greater international support for the welfare of their people. Government services should be included in such programs, as their exclusion harms the Palestinian recipients of care. Every effort must be made to seed rural zones with expertise, while providing incentives for health workers to stay in the West

Bank and Gaza. Training efforts, especially those which increase interregional interaction, should be encouraged in every possible way. Grass-roots initiatives in health education must also be encouraged, because self-help is a cardinal principle in primary-care development. We believe that initiatives which incorporate these concepts can succeed in overcoming most of the obstacles and other health challenges discussed in this report.

25/5

## CHAPTER VIII

### WORK IN PROGRESS

For one year the Institute for Middle East Peace and Development Health Team has gathered primary and secondary-source data addressing a variety of issues relating to health and health services in the West Bank and Gaza. The quantity of data currently in Health Team files is much greater than could be comprehensively analyzed and explored within a single year. Some of the work which the Institute will develop further is indicated below.

1. Demographic estimates of mortality rates will be confirmed with additional calculations, and the critical appraisals of other professional demographers will be sought for refinement of the present model (Chapter 1).
2. Studies of pediatric morbidity and mortality from the Caritas Baby Hospital will continue. Data from 1982 and 1983 are presented here, but the years 1984, 1981, 1980, 1975, 1973, 1970, 1967, 1965, 1960, and 1955 are currently being coded, cleaned, and computerized. Dr. Vermund, Chief of the Health Team, was invited to confer in September 1985 with officials of the Verein Caritas Kinderhilfe Bethlehem in

Switzerland to discuss expanding research efforts relevant to primary-care evaluation and planning, as well as other research agendas. Additional analyses of interest are being performed with the data from 1982 and 1983 (Chapter II), particularly evaluating demographic variables such as village of origin, father's profession, family size, etc. as they relate to diagnosis and outcome. Data from the bacteriology laboratory will better characterize such conditions as sepsis and gastroenteritis.

3. Data from health service providers in the Hebron district are available. The Health Team has been urged to continue efforts to better characterize health problems in this district, in coordination with local health professionals.
4. The Mount of David Orthopedic Hospital is interested in scientific investigations into epidemiologic risk factors and surgical evaluation for congenital dislocation of the hips, a regularly seen crippling disorder. A detailed questionnaire is being developed with the hospital staff and will, together with medical records, provide important obstetrical, familial, and social information. Implementation is expected to begin in October. Additional analyses are being made from data already available (Chapter III).

5. Further study of health services is planned with local health and academic workers in Hebron, if primary health initiatives go forward in the Hebron district. The Health Team has been invited to continue the "user attitudes" work with the University Graduate Union.
6. Mental health services can be examined in many ways. Applying the model already used for pediatric and orthopedic hospitals, we can begin to identify patients requiring immediate care. An invitation to begin such work has been informally extended by officials of the Bethlehem Mental Hospital.
8. Changes in lifestyles and subsequent implications for health require investigation. Smoking, obesity, and stress are the most immediate examples. A study has been designed which will take advantage of data from a West Bank insurance company.
9. A specific research proposal concerning the epidemiology of leishmaniasis has been made to the Health Team. This will be followed up, if a viable plan can be constructed consistent with current National Institute of Health activities on this disease in the Middle East.
9. The project's research design, using sentinel data sources for health assessment in the West Bank, will be defined and described in greater detail for the benefit of other researchers.

258

In all of the above research initiatives, the Institute will include scientific colleagues from the region in order to facilitate better health planning and treatment on both local and regional levels. Research tasks, such as data processing, analysis, and interpretation, will increasingly take place in the West Bank and Gaza Strip, seeding relevant skills into local medical environments.

Funds to continue such research activities will be sought by the Institute from foundations as well as private and corporate sectors. We are grateful to USAID for providing the means to initiate research of relevance to Palestinian health development for both the local and international scientific, medical, and development communities. It is our hope that our own efforts, together with those of others stimulated by this focus on health care, will lead to improved health and wellbeing in the region.

## CHAPTER IX

### REFERENCES CITED

1. Abed Y, Lasch EE, Hassan NA and Goldberg J: Community and Local Involvement in the Control of Infectious Diseases in Infancy. (unpublished). Presented at 4th International Congress of World Federation of Public Health Association. Israel, February 1984
2. Abramson JH and Gofin R: Mortality and Its Causes Among Moslems, Druze and Christians in Israel. Isr J Med Sci, 15(12): 965-972, 1979.
3. ANERA: The AMER Medical Division Health Services for Palestinians and Civilian Victims of War in the Middle East, 1983.
4. ANERA: Annual Report, 1984.
5. ANERA: Newsletters  
No. 65, West Bank Cooperatives-Development Through Cooperation, 1984.  
No. 69, Religion in the Middle East, 1985.  
No. 70, Health For All, 1985.
6. AMWA: Annual Report, 1984.
7. Arda HM: A Report of Cutaneous Leishmaniasis in the West Bank of Jordan. Jordan Medical Journal, 17(1): 57-63, 1983.
8. Armitage P: Statistical Methods in Medical Research. Oxford, Blackwell Scientific Publications, 1971.
9. Aroian LA and Mitchel RP: The Modern Middle East and North Africa. New York, MacMillan Publishing Co., 1984.
10. Barell V and Eliahu A: A Planning Cycle in the Development of a Community Health Program. Isr J Med Sci 19: 742-747, 1983.
11. Benvenisti M: The West Bank Project: A Survey of Israel's Policies. Washington, DC, American Enterprise Institute for Public Policy Research, 1984.
- 11a. Benvenisti M: U.S. Government Funded Projects in the West Bank and Gaza (1977-83). The West Bank Data Base Project, #13, 1984.

12. Blum M: Cutaneous Leishmaniasis and Leishmanin Reaction in Residents of Falfit (Samaria). (unpublished Master's thesis) Hebrew University-Hadassah Medical School, Jerusalem. 1978.
13. Brass W and Coale A: Methods of Analysis and Estimation. The Demography of Tropical Africa, Princeton, NJ, Princeton University Press, 88-150, 1968.
14. Canaan T: Arab Fertility and Child Mortality. J Pal Arab Med Assoc 111(2): 25-27, 1948.
15. Catholic Relief Services: Annual Report, 1983.
16. Center for Disease Control: Epidemic of Acute Illness on the West Bank. Morbidity and Mortality Weekly Report, Apr.(16): 205-208, 1983.
17. CBS (Central Bureau of Statistics, Israel): Causes of Death-1970. Jerusalem, Special Series No. 374, 1-111, 1972.
18. CBS: Statistical Abstract of Israel 1984.
19. CBS: Statistics of Judaea, Samaria and the Gaza Area 1983.
20. CBS: Revised Population Estimates for Judaea, Samaria and the Gaza Area. Statistics of Judaea, Samaria and the Gaza Area 1983. Israel.
- 20a. Civil Administration: Health Activities in Charitable Societies. (unpublished) Israel, 1984.
21. Civil Administration: Statistical Report Health Services Judaea and Samaria 1983, Israel, 1984.
22. Civil Administration: Judaea and Samaria Government Health Services. Monthly Statistical Bulletin, March, 1983.
23. Civil Administration: Unpublished documents, 1983-84.
24. Community Development Foundation: Health Services in the Gaza Strip. Gaza Health Plan. Report of the Community Development Foundation, 1985.
- 24a. Community Development Foundation: Public Health Care in West Bank and Gaza Strip. (unpublished proposal submitted to USAID).
25. Connor E and Mullan F (eds): Community Oriented Primary Care: New Directions for Health Services Delivery. Washington, DC, National Academy Press, 1983.



26. Davies AM: Demography, Morbidity and Mortality in Israel: Changes Over 30 Years. Isr J Med Sci, 15(12): 959-964, 1979.
27. Einstein S and Feig D: Drug Contagion in Jerusalem: A Pilot Investigation of the Israeli Drug Use Scene. Int J of the Addictions 14(3): 423-436, 1979.
28. El-Sarraj ER and Lasch EE: Integration of Mental Health Services and the Community in Gaza. (unpublished) Presented at the 4th International Congress of the World Federation of Public Health Associations, 1984.
29. Elzouki AY and Vesikari T: First International Conference on Infections in Children in Arab Countries. Pediatr Infect Dis 527-531, 1985.
30. Encyclopedia Americana. Vol. 12: 354-355, 1977.
31. Encyclopedia Britannica (15th ed.) Vol. 5: 156-157, 1985.
33. Fleiss J: Statistical Methods for Rates and Proportions. New York: John Wiley and Sons, 1981.
34. Giacamon R: (unpublished data) Bir Zeit University.
35. Giacaman R: Zbeidat 3 yrs After: A Case Study of Community Development in Health. (unpublished) Bir Zeit University.
36. Giacaman R: Planning for Health in Occupied Palestine. (unpublished) Bir Zeit University.
37. Grant J: The State of the World's Children 1985. Oxford: Oxford University Press (for UNICEF), 1984.
38. Hammoud EI: Sex Differentials in Mortality. An Enquiry with Reference to the Arab Countries and Others. WHO Special Subjects Report, 174-185.
39. Harfouche J: The Present State of Infant and Child Feeding in the Eastern Mediterranean Region. J of Tropical Pediatrics. 27: 299-303, 1981.
40. Hebron Patients Friends Society. (unpublished) Hebron Medical Center, Feb 1985.
41. Hebron Red Crescent Society: Administrative Report of the Jordanian Red Crescent Society. (unpublished) May 1985.
42. Heller MA: A Palestinian State: The Implications for Israel. Cambridge: Harvard University Press, 1983.

43. Hershko C et al.: Lead Poisoning in a West Bank Arab Village. Arch Intern Med 144:1969-1973, 1984.
44. Holy Land Christian Mission International: Annual Report, 1984.
45. Hurwich BJ and Nubani N: Blood Pressures in a Highly Inbred Community, Abu Ghosh, Israel. Isr J Med Sci 115(5):962-969, 1978.
46. Hurwich BJ, Rosner B, Nubani N, Kays EH, Lewitter FI: Familial Aggregation of Blood Pressure in a Highly Inbred Community, Abu Ghosh, Israel. Am J of Epi 115(5): 646-656, 1982.
47. International Classification of Diseases 9th Revision, Clinical Modification, Vols 1-3. US Dept. of Health and Human Services, 1980.
48. Ishaq J and Smith C: Standard of Health Care in the West Bank A Critical Review. (unpublished) Bethlehem University, 1982.
49. Ministry of Defence (Israel): Judaea-Samaria and the Gaza District, A Sixteen Year Survey (1967-1983). Jerusalem, 1983.
50. Ministry of Health (Israel): Health and Health Services in Judaea, Samaria and Gaza 1983-1984. Jerusalem, 1984.
51. Ministry of Health (Israel): Health and Health Services in Judaea, Samaria and Gaza 1984-1985. Jerusalem, 1985.
52. Lavine A (ed): Society of Change -- Judaea, Samaria, Gaza, Sinai 1967-1973. Jerusalem: Ministry of Social Welfare (Israel), 1974
53. Kark SL and Kark E: An Alternative Strategy in Community Health Care and Community-Oriented Primary Health Care. Isr J of Med Sci 19:707-713, 1982.
54. Kark SL: The Practice of Community-Oriented Primary Health Care. New York: Appleton-Century-Crofts, 1981.
55. Katbeh S: Health Situation in Gaza and West Bank. (unpublished) Jordanian Medical Doctors' Syndicate, April 1980.
56. Kelly A: A Study of Social Service Provision by the Private Non-Profit Organizations in the Gaza Strip. (unpublished report to the Ford Foundation) July, 1984.
57. Kelsey JL: Epidemiology of Musculoskeletal Disorders. NY, Oxford University Press, 1982.

58. Kohli KL and Al-Omair M: Infant and Child Mortality in Kuwait. J Biosoc Sci 15:339-348, 1983.
59. Kossaifi G: Demographic Characteristics of the Arab Palestinian People. The Sociology of the Palestinians. Nakhleh K and Zureik E (eds). New York: St. Martin's Press, 1980.
- 59a. Kuwait Bureau of Statistics: Annual Report, 1984.
60. Lasch EE, Abed Y, Gerichter CB, Massri M, Marcus O, Hensher R, Goldblum N: Results of a Program Successfully Combining Live and Killed Polio Vaccines. Isr J Med Sci, 19:1021-1023, 1983.
61. Lasch EE, Abed Y, Guenina A, Hassan NA, Abu Amara I: Evaluation of the Impact of Oral Rehydration Therapy on the Outcome of Diarrheal Disease in a Large Community. Isr J Med Sci, 19:995-997, 1983.
62. Lasch EE, Abed Y, Goldberg J, El Shawa R: Child Health Services in Gaza- An Experiment in Integration. (unpublished) Presented at 4th International Congress of World Federation of Public Health Association, 1984.
63. Lasch EE, Abed Y, Abdulla K, El Tibbi AG, Marcus O, El Massri, Handscher R, Gerichter CB, and Melnick JL: Successful Results of a Program Combining Live and Inactivated Poliovirus Vaccines to Control Poliomyelitis in Gaza. Reviews of Infectious Diseases, 6(2): 5467-5470, 1984.
64. Last JM (ed): A Dictionary of Epidemiology. Oxford, Oxford University Press, 1983.
65. Legg S, Davies AM, Prywes R, Sterk VV, and Weiskopf P: Patterns of Low Birth Weight in West Jerusalem with Special Reference to Maternal Origin. Brit J Prev Soc Med, 24:89-96, 1970.
66. Lunde AS: The Person-Number Systems of Sweden, Norway, Denmark, and Israel. US Dept. of Health and Human Services Series, 2(84), 1980.
67. Lutheran World Service: Annual Report, Jerusalem, 1983.
68. Manor E and Freundlich E: Lead Poisoning from Ceramics in the Arab Population. Arch Toxicol, Suppl. 6: 275-278, 1983.
- 68a. Mauser JS and Bahn AK: Epidemiology. WB Saunders, 1974.
69. Munshar JYA: An Epidemiological Study to Assess the Growth and Nutritional Status of Children Under 2 years of Age in Hebron District, West Bank. (unpublished) Jan 1985.

- 69a. Nablus Patients Friends Society: (unpublished report), 1984.
70. Naggan L, Gurders AE, Dizian R, Dannon Y, Shibolet S, Ronen A, Schneeweiss R, and Michaeli D: Ecology and Attempted Control of Cutaneous Leishmaniasis Around Jericho in the Jordan Valley. J of Infect Dis, 121(4):427-431, 1970.
71. Mortality Statistics from 30 Nations (data on file) National Center for Health Statistics 1945-1983.
72. New York Department of Health: Tuberculosis in NYC 1980.
73. Central Bureau of Statistics: Palestinian Statistical Abstract 1981, No. 3. Damascus, Palestinian Liberation Organization Economic Department.
74. Parker P: Health Care in the Occupied Territories. Lancet, 1:1321-1322, 1985.
- 74a. Pielemeier N: The Health Situation in the West Bank and Gaza Strip-North Sinai.-(unpublished report to USAID) Oct 1975.
75. Puyet JH: Infant Mortality Studies Conducted Among Selected Palestine Refugee Camp Communities in the Near East. (unpublished) UNRWA, 1979.
- 75a. Richardson JP: Tug-of-War: American Voluntary Organizations in the West Bank. J of Palestine Studies, 14(2), 137-148, 1985.
- 75b. Rudolph AM (ed): Pediatrics (17th Edition). Norwalk, Ct, Appleton-Century-Crofts, 1982.
- 75c. SAS Introductory Guide. SAS Institute, 1978.
76. Schmelz UO, Nathan G, Kenuir J: Multiplicity Study of Births and Deaths in Judaea, Samaria, and Gaza Strip, North Sinai. Central Bureau of Statistics Tech. Publ. Ser. No. 44. Jerusalem, 1977.
77. Singh R and Abudejaja A: Paediatric Priorities of the Eastern Mediterranean Region. Arab J Medicine, 1(9): 5-19, 1983.
78. Smith C: The Bacterial Quality of Drinking Water in Eight Villages of the Northern Jordan Valley: An Interim Report. Birzeit University Community Health Unit, Sept. 1984.
79. Smith PL: Infant Diarrhea in West Bank. New Engl J Med, 52:32-36, 1984.

265

80. Stein A: The Nutritional Status of the Palestinians Living in the Occupied West Bank. (unpublished) London, Queen Elizabeth College, April 1984.
81. Tahic J: An Assessment of Palestinian Human Resources: Higher Education and Manpower. J Palestinian Studies, 14(3): 32-53, 1985.
82. Thompson IM and Chumbley LC: Eye Disease in the West Bank and Gaza Strip. British J of Ophthalmology, 68: 598-602, 1984.
83. Tulchinsky TH et al. Bull WHO (forthcoming).
84. Tulchinsky TH: Health statistics in Israel. Lancet, 2:283, 1985.
- 84a. Tulchinsky TH: Preventive management of threatened epidemics. World Health Forum, 4:74-78, 1983.
85. The Union of Charitable Societies: Annual Report, 1982.
86. Union of Medical Relief Committees: Statement of Purpose and Activities. (unpublished) 1983.
87. United Nations: Living Conditions of the Palestinian People in the Occupied Arab Territories. 35th session. Agenda Item 61-e, October 1980.
88. United Nations: Living Conditions of the Palestinian People in the Occupied Palestinian Territories. Agenda Item 71, June 1982.
89. United Nations: Report of the Special Committee to Investigate Israeli Practices Affecting the Human Rights of the Population of the Occupied Territories. Agenda Item 69, October 1983.
90. United Nations: Report of the Special Committee to Investigate Israeli Practices Affecting the Human Rights of the Population of the Occupied Territories - Report of Special Political Committee. 38th session, Agenda Item 69, December 1983.
91. UNDP (United Nations Development Programme): Programme of Assistance to the Palestinian People. April 1984.
92. UNRWA (United Nations Relief and Works Agency): A Brief History 1950-1982.
93. UNRWA: Review of Measles Incidence in Gaza and West Bank. (unpublished memorandum) June 1982.
94. UNRWA: Infant Mortality Studies-West Bank Camps. Males, Females and Combined 1971-1982. (photocopy of graph from unknown UNRWA source).

95. UNRWA: Annual Report of the Director of Health 1983. United Nations Relief and Works Agency for Palestine Refugees in the Near East. 1984.
96. UNRWA: Map of UNRWA's Area of Operations. 30 June 1983. United Nations Relief and Works Agency for Palestine Refugees in the Near East.
97. UNRWA: Information Notes UNRWA and UNRWA Gaza. Issue No. 5, 1 January 1983.
98. UNRWA: Palestine Refugees Today. UNRWA Newsletter No. 108, October 1984.
99. UNRWA: Health Services Provided by UNRWA in the West Bank 1983. (unpublished) 1985.
100. Webber MP, and Vermund SH: Notes on the Epidemiology of Congenital Dislocated Hip Disorders. (unpublished) New York: Institute for Middle East Peace and Development. May 1985.
101. Winter ST. Infant Morbidity and Mortality. Isr J Med Sci 15(12): 973-975, 1979.
102. The World Bank Atlas 1985. 18th Edition.
103. WHO (World Health Organization): Health Conditions of the Arab Population in the Occupied Territories, Including Palestine. A36/Inf Doc/3, April 27, 1983.
104. WHO: Health Conditions of the Arab Population in the Occupied Arab Territories, Including Palestine. A36/Inf Doc/4, May 6, 1983.
105. WHO: Health Conditions of the Arab Population in the Occupied Arab Territories, Including Palestine. A36/Inf Doc/7, 9 May 1983.
106. WHO: Health Conditions of the Arab Population in the Occupied Arab Territories, Including Palestine. A36/Inf Doc/10, 9 May 1983.
107. WHO: Health Conditions of the Arab Population in the Occupied Arab Territories, Including Palestine. A37/Inf Doc/2, 8 May 1984.
108. WHO: Health Conditions of the Arab Population in the Occupied Arab Territories, Including Palestine. A37/Inf Doc/3, 7 May 1984.
109. WHO: Health Conditions of the Arab Population in the Occupied Territories, Including Palestine. A37/Inf Doc/4, 14 May 1984.

110. WHO: Health Conditions of the Arab Population in the Occupied Arab Territories, Including Palestine. A37/B/Conf. Paper No.6, 11 May 1984.
111. WHO: Health Conditions of the Arab Population in the Occupied Arab Territories, Including Palestine. Report of the Special Committee of Experts appointed to study the health conditions of the inhabitants of the occupied territories. A37/13, 7 May 1984.
112. WHO: Development of Indicators for Monitoring Progress Towards Health For All by the Year 2000. Geneva, 1981.
113. Yekutiel P. Infective Diseases in Israel: Changing Patterns Over 30 Years. Infect Dis 14(12): 976-982, 1979.