

E OLA MAU
THE NATIVE HAWAIIAN HEALTH NEEDS STUDY
MEDICAL TASK FORCE REPORT

The Native Hawaiian Health Research Consortium

ALU LIKE, INC.

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PREFACE

In FY1984 the United State Senate Appropriations Committee included a directive in the Supplemental Appropriations Bill for the U.S. Department of Health and Human Services (DHHS) to conduct a comprehensive health needs study of Native Hawaiians. On September 7, 1984, Senator Daniel K. Inouye sent a letter to Dr. Edward Brandt, Jr., Assistant Secretary for Health, requesting follow-up information on the health care needs study. Dr. Brandt referred the matter to Dr. Sheridan Weinstein of the Department of Health and Human Services (DHHS), Region IX.

Copies of the correspondence between Senator Inouye and Dr. Brandt were sent to interested parties in the community. ALU LIKE decided to pursue the health needs study further. ALU LIKE is a non-profit community organization assisting the Native Hawaiian community toward economic and social self-sufficiency. In November, ALU LIKE called together a group of University of Hawaii and community people with interests in the health needs of Native Hawaiians. The Hawaiian Health Research Consortium (HHRC) was formed as a result of this meeting. At a subsequent meeting, HHRC members decided to submit a health needs study concept paper to DHHS. The concept paper outlined the procedures for conducting the health needs study.

Dr. Sheridan Weinstein of DHHS-Region IX acknowledged receipt of the concept paper, but deferred action until the results from another research report were submitted.

In June 1985, DHHS provided funds to the Waianae Coast Comprehensive Health Center (WCCHC) to conduct the health

needs study. WCCHC was selected as the prime contractor because the Center had existing ties with DHHS and an established system to disburse the funds. WCCHC then subcontracted the study to ALU LIKE for the overall administration of the project.

The contract called for a comprehensive review of existing health data on Native Hawaiians. The entire project was to be completed within a six-month time period. In order to accomplish the study within this short time-frame, the HHRC decided to organize the project around five task forces. Each task force would be responsible for health data within its assigned area. The five task forces included 1) Mental Health Task Force, 2) Medical Task Force, 3) Nutrition/Dental Task Force, 4) Historical/Cultural Task Force, and 5) Strategic Health Plan Task Force.

The short notice as well as the short time available to conduct this study created some limitations. The limited time prevented a thorough and comprehensive analysis of the health data and necessitated narrowing the scope of the study. The time constraint required task force members to commit a substantial portion of their time to the completion of the study, within approximately five months, and many individuals who were interested in working on the task forces could not do so because of prior commitments.

A second limitation is the relatively few number of health professionals who are Native Hawaiian. The lack of Native Hawaiians in the field prevented the HHRC from gaining more representation of Native Hawaiian perspectives on the various aspects of health and health care. This limitation is addressed in the Recommendations sections of the various Task Force Reports.

A third limitation involves the different definitions of "Hawaiian" used in various research studies. The United States Census uses a self-report definition of ethnicity. The Census asked people to select the ethnic group which best described them. The Hawaii Health Surveillance Survey uses a parentage definition - if one or more parents are Hawaiian or Part-Hawaiian, then the individual is classified as Hawaiian or Part-Hawaiian. The U.S. Census estimated that the Hawaiian population in 1980 was 118,251. The Health Surveillance Survey estimated the Hawaiian population at 175,909, a difference of over 50,000 people.

In this report, the term "Native Hawaiian" is defined as "any individual, any of whose ancestors were natives of the area which consists of the Hawaiian Islands prior to 1778." This is the definition contained in the 1975 Title VIII Native American Programs Act declaring that Native Hawaiians are Native Americans eligible for special funds to provide services "to promote the goal of economic and social self-sufficiency." Thus, this definition is an inclusive definition comprising groups of people who have been categorized as "Part-Hawaiian" or "Hawaiian." When other research studies reviewed in this report deviate from this definition, this deviation will be noted.

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Purpose

The purpose of this report is to present a description of the current health needs of Native Hawaiians residing in the State of Hawaii, to identify factors which negatively affect Native Hawaiian use of health care services, and to suggest recommendations for adapting health care delivery to more effectively address the needs of this population.

The report is the result of a study conducted by task force members over a five-month period in 1985. The limited time and resources available to the task force prevented the systematic collection of new data and necessitated restricting the focus of the study to serious health problems having high prevalence among Native Hawaiians, specifically health problems associated with pregnancy and infant morbidity, diabetes, hypertension, heart disease and cancer. Furthermore, the field interviews were confined to health care programs on the Island of Oahu.

Within these limitations, the study undertook the following tasks: 1) to analyze existing data sets in order to compare the health status of Native Hawaiians with other ethnic groups in Hawaii; 2) to summarize data from existing agency reports regarding the relative prevalence of risk factors for disease among Native Hawaiians; 3) to summarize data from existing agency reports regarding the utilization of health services by Native Hawaiians; 4) to interview administrators and health workers in selected programs regarding apparent barriers to health services experienced by Native Hawaiians; 5) to describe the health

needs of Native Hawaiians within a comprehensive conceptual framework; and 6) to develop recommendations based on the study for improving health services delivery to Native Hawaiians.

Conceptual Orientation

The Medical Task Force Report begins with a recognition that the health problems of Native Hawaiians reflect in large measure the social situation of contemporary Native Hawaiians. Native Hawaiians during the past 200 years have faced traumatic social changes. These changes have resulted in the loss of many traditions and have raised serious questions about the survival of Native Hawaiians as a distinctive people. Furthermore, the political and economic transformations of Hawaii, culminating with statehood and a modern commercial and service economy, have had the consequences of the loss of control over land and the loss of political power. Native Hawaiians currently are socioeconomically disadvantaged compared with the ethnic groups who have entered the Islands during the past 200 years. The combination of disculturation and low socioeconomic status is reflected in high rates of many social problems, a life expectancy about 6 years lower than the state average, and a high prevalence of many health problems in the contemporary Native Hawaiian population.

There is a tendency today to blame low status groups who experience health problems on improper behavior, and to approach improving health through efforts at controlling "undesirable" behavior, such as overweight, drinking, and smoking. There can be no question about the fact that these behaviors underlie health problems. However, many of these behaviors are themselves the product of stressful social conditions and a lack of resources

with which to pursue alternative satisfactions in society. Rather than blaming the victim, the pursuit of better health necessitates social changes which would improve the life situation of the Native Hawaiian. In this sense, any steps taken to empower this group, to increase the level of self-efficacy, and to improve their economic situation, must be regarded as important to the promotion of health.

Nevertheless, while the Medical Task Force recognizes the above as an essential orientation, addressing the present health problems of Native Hawaiians cannot wait for more general socioeconomic change. Therefore, the report focuses more narrowly on describing the nature of Native Hawaiian health problems and on recommending immediate and direct strategies for reducing health problems through altering the delivery of health services. The report acknowledges, however, that there will be only limited success so long as Native Hawaiians continue to experience the current social and cultural deprivations.

The report does not approach the assessment of health needs as simply producing a list of health problems or statistical distributions of diseases. Health care includes all those activities which preserve well-being and prevent disease, in addition to treatments aimed at curing or controlling illness. Consequently, the report approaches the task of assessing health needs within a framework of the delivery of a broad range of health services, including health education, health promotion, screening and referral, and medical treatment programs.

Three criteria of health service delivery are defined and used throughout the report: 1) the availability of services refers to

the allocation of resources into health programs and the distribution of health services in relation to Native Hawaiians; 2) the accessibility of services refers to the costs to the client in using services, such as financial expense, travel time and distance, and conflict between hours of service and work schedules; and 3) the acceptability of services refers to level of satisfaction or dissatisfaction Native Hawaiians experience because of the compatibility of health care services with Hawaiian culture and interpersonal style.

Organization of the Report

The report is organized into eight chapters. Chapter 1 provides a general framework for analyzing the health needs of Native Hawaiians. The criteria of availability, accessibility and acceptability of health services are defined, and an overview of health delivery to the Native Hawaiian population is presented in terms of these criteria. Chapter 2 describes the data sources available for the study, the definitions of variables used in the analysis, the procedures used in analyzing the data, and the methodological limitations of the study. Chapter 3 presents an overview comparing Native Hawaiians with other ethnic groups in the state of Hawaii in regard to causes of death, acute illnesses, chronic illnesses, and levels of disability. Chapters 4 through 7 present a detailed examination of specific health problems among Native Hawaiians, including epidemiological data and health care utilization information. Chapter 4 focuses on fertility, vital indicators and pregnancy outcomes. Chapter 5 focuses on diabetes. Chapter 6 focuses on hypertension and heart disease. Chapter 7 focuses on cancer. Finally, Chapter 8 provides

a general summary of the findings and offers recommendations.

Summary of the Findings

In general, Native Hawaiians experience a lower life expectancy than other ethnic groups in Hawaii. This higher mortality is due both to a higher rate of accidental deaths as well as a greater risk of significant illnesses. Infant mortality rates of Native Hawaiians are higher than other groups, as are congenital abnormalities and underweight infants. Native Hawaiians, furthermore, suffer disproportionately from the most significant chronic diseases which underlie disability and mortality in later life, such as diabetes, heart disease, hypertension, and cancer. Native Hawaiians have higher cancer rates than other groups for cancers of the stomach, lung, and female breast and cervix. Furthermore, Native Hawaiians have a poorer survival rate from cancer compared with persons from other ethnic groups diagnosed at the same stage of disease. Based on age-standardized rates, the report concludes that Hawaiians have the greatest risk of diabetes, heart disease, and some forms of cancer, while Part-Hawaiians are somewhat more likely to suffer from hypertension. The evidence suggests that Native Hawaiians, furthermore, experience heart disease and hypertension at earlier ages than other groups, having higher rates even in the young adult population.

Evidence suggests that Native Hawaiians rank high on risk factors for many diseases. Native Hawaiians have higher rates of teen pregnancy and illegitimate births than other groups. Furthermore, pregnant Native Hawaiian women rank highest in having late or no prenatal care, in smoking and alcohol consumption during pregnancy, in toxemia and urinary tract infections during

pregnancy, and in complications of pregnancy among the over 35 age group.

Surveys of health awareness in regard to cancer show that Native Hawaiians are less knowledgeable about symptoms and risk factors for cancer. What evidence is available also suggests that Native Hawaiians engage in behaviors which are high risk for developing diabetes, heart disease, hypertension, and cancer. For these diseases, high fat and salt consumption in the diet, being overweight, smoking, and heavy alcohol consumption, and for some diseases, a lack of sufficient exercise, create a greater risk of developing the disease. In all of these respects, Native Hawaiians tend to be at higher risk than other ethnic groups in Hawaii.

Although systematic evidence about the utilization of health services is sparse, the limited evidence reviewed in this report also suggests that Native Hawaiians receive fewer health services. Native Hawaiians appear to participate less than other groups in health education, health promotion, and screening and referral programs, even when these programs have been intentionally made available to communities where a high proportion of Native Hawaiians live and are offered free of charge. Furthermore, Native Hawaiians are reported to enter medical treatment at the late stages of disease, only when self-care and traditional practices have not brought sufficient relief.

The major problem does not seem to be the lack of available health services resources, since nearly all areas of the state are now served by some form of health services. Therefore, the reasons for under-utilization probably rest on lack of accessibility

due to financial barriers, and even more importantly, on the lack of acceptability of services to Native Hawaiians due to cultural differences. The principle recommendations of this report, therefore, are aimed at addressing the need to alter the manner in which health services are delivered.

Basic Principles Underlying the Recommendations

The recommendations of this report have been developed out of a set of basic principles regarding conditions which promote effective health service delivery and how changes can be introduced into a community. These principles are as follows:

1. The under-utilization of health education, health promotion, health screening, and medical treatment services by Native Hawaiians cannot be addressed if we begin with the premise that Native Hawaiians lack concern about their physical health. Rather, under-utilization is a problem in developing a suitable mode of health service delivery for this population.
2. Effective health services will be developed and implemented for the Native Hawaiian population if Native Hawaiians participate in their creation, serve on the boards which oversee their implementation, and be in the health care professions which deliver the services.
3. Native Hawaiians have a special status in the population of Hawaii as Native Americans. Many of the health problems of this population stem directly from the negative impact other groups have had on their physical, social and cultural life. Therefore, there is a rationale to specifically target this population for programs designed to address their needs. The U.S. Federal government as well as the Hawaii State government have special

obligations to provide financial resources and programs to the Native Hawaiian community as Native Americans.

4. Health services will be culturally acceptable to Native Hawaiians to the extent that they are compatible with Hawaiian culture and interpersonal styles. Therefore, modes of service delivery need to be adapted in so far as possible to the cultural concerns of Native Hawaiians. The following are three important components of Hawaiian culture which have direct implications for health services:

- a. Spiritual values. The traditional culture of Native Hawaiians emphasizes the spiritual unity of the individual with the environment and the spiritual significance of events such as illness. Moreover, there is a rich tradition of health practices and rituals and respect for traditional healers among Native Hawaiians. Health services will be more effective if they respect these traditional values and concerns of Native Hawaiians.
- b. Minimization of risk. The Hawaiian culture emphasizes the preservation of harmony. Individuals have a tendency to minimize the importance of experiences which set them apart from others or which threaten to disrupt the group. The "ain't no big thing" coping strategy can result in efforts at normalizing symptoms of illness and delay in seeking health care. For this reason, a system of active outreach is needed rather than reliance upon individual initiative to seek out services, particularly for prevention and early care.

- c. Interpersonal Style. Hawaiian culture has been described as centrally focused on affiliation, the development of close bonds between peers and the reliance upon personal networks in coping with problems. Native Hawaiians are uncomfortable with impersonal, bureaucratically organized services and with reliance upon expert authorities. Therefore, health services will be most effective if they utilize the natural social relationships existing among Native Hawaiians.
5. Native Hawaiians experience a disproportionate risk of many serious health problems, and the current mode of health service delivery is inadequately serving this population. In order to address the health needs of Native Hawaiians, a number of general structural changes and innovations are needed.

Recommendations

The following summarizes the general recommendations developed from the above principles:

(Structural)

1. That funds should be made available from the U.S. Public Health Service and other agencies of the Federal government in order to develop and implement needed changes in the health delivery system. These funds ought to be in the form of special contracts to accomplish specific purposes and in the form of seed money, with a gradual phase-out schedule, to modify or develop programs targeted for the Native Hawaiian population.
2. That the State of Hawaii, and specifically the branches of the Department of Health, reallocate resources to give priority to

Native Hawaiian health problems.

3. That existing public as well as private health care organizations include qualified Native Hawaiians on their boards.
4. That an umbrella agency consisting of Native Hawaiians involved in health care be established for the purpose of monitoring Native Hawaiian health needs, planning health programs, and implementing the recommendations of this report.
5. That Native Hawaiian parity in the health professions be targeted through scholarship programs and academic support measures to provide for the education and training of Native Hawaiian youth for all levels of health professions.
6. That a system of Native Hawaiian community health workers be developed to provide outreach services, including health education, screening, referral, and follow-up care, on behalf of health programs serving Native Hawaiians. These community health workers should be Native Hawaiians who are personally familiar with the neighborhoods they serve and who therefore are able to serve as a cultural bridge between the community and health services.
7. That health education, screening and health promotion programs be provided through natural community groups having high Native Hawaiian membership. Providing services to individuals within the context of familiar social groups is more likely to be effective than individual-oriented approaches.
8. That health-related organizations serving Native Hawaiian communities, especially in rural areas, develop programs which integrate Western and traditional Hawaiian approaches to health

care and medical treatment.

(Health Promotion and Education)

9. That health promotion programs be developed to focus on life style changes within the framework of traditional Hawaiian culture to address the problems of alcohol abuse, tobacco and drug abuse, obesity, nutrition, and stress-management.
10. That health promotion programs and health screening be provided through natural social networks where individuals can experience social support from peers, such as in churches, civic clubs, canoe clubs and other community organizations having a high Native Hawaiian membership.
11. That state support be provided for targeting Native Hawaiians by agencies providing health education programs and screening and referral programs, especially in regard to cancer, diabetes, hypertension, and pre-natal and early infant care.
12. That more resources be provided to public schools to implement a comprehensive health education curriculum.
13. That family planning services be maintained to promote pregnancy planning consistent with the health needs of parents and children.
14. That the statewide perinatal health care system specifically focus on the Native Hawaiian need for education regarding the risk factors associated with congenital anomalies and low birth weight, and regarding proper infant care, breast feeding, and parenting behaviors.
15. That support be given to developing preventive and screening programs for cancers in Native Hawaiians.
16. That statewide screening programs for diabetes and hypertension

be modified to target the Native Hawaiian population.

17. That screening programs for Native Hawaiians include systematic referral and follow-up, preferably using Native Hawaiian community health workers.

(Access to Medical Care)

18. That a fund be established by the State of Hawaii to provide medical care for medically indigent persons who do not qualify for Medicare or Medicaid programs.
19. That the state initiate measures to solve the malpractice insurance crisis, which impacts especially on the availability of medical care in rural areas where many Native Hawaiians reside.
20. That a review be undertaken of health programs, such as Queens Hospital and Lunalilo Home, which were established to provide care for Native Hawaiians, in order to determine whether or not these organizations are fulfilling their obligations.
21. That active outreach efforts be incorporated into every major health center in Honolulu and into clinics serving rural Native Hawaiian populations, using Native Hawaiian community health workers.

(Medical Care)

22. That a cultural training program be developed for physicians working in Hawaii regarding traditional Hawaiian beliefs, attitudes and practices of health care.
23. That health providers be educated about Hawaiian styles of seeking help and relating to others and that modes of service delivery be developed which are culturally compatible with Hawaiian culture.

24. That cooperation be fostered between traditional Hawaiian healers and physicians, perhaps using community health workers as a bridge, in order that the health needs of Hawaiians can be more effectively served by both.
25. That traditional Hawaiian remedies be incorporated into the care of Native Hawaiians whenever medically feasible.

(Research Needs)

26. That additional research be undertaken to investigate the etiological factors which account for higher disease rates among Native Hawaiians, such as higher rates of birth abnormalities, diabetes, hypertension, heart disease and cancer.
27. That research be undertaken to assess the prevalence and incidence of socio-environmental health problems among Native Hawaiians, including possibly greater exposure to pesticides, occupational hazards, social stress, and other noxious social and physical conditions.
28. That research be undertaken to focus on the level of health knowledge, attitudes towards health services, and cultural values which affect participating in health programs and using medical services.
29. That utilization data be systematically collected by all health programs and organizations in order to be able to determine the extent to which Native Hawaiians are receiving health services.
30. That evaluation studies be done of all health and related programs which target Native Hawaiians in order to ascertain their effectiveness.
31. That ongoing health surveillance of the Native Hawaiians be undertaken in order to determine trends in health status and

current needs for health programs.

Conclusion

The report concludes that there are many critical health needs among Native Hawaiians which are not adequately addressed by the current health programs in Hawaii. In order to remedy this situation, recommendations are directed towards many different audiences, including the Federal government, agencies of the State government, health care providers, and the community of Native Hawaiians. New resources are required -- to believe otherwise is only wishful thinking. However, new resources in themselves are not the answer. The recommendations of this report focus on the need to change the mode of health delivery in order to improve its accessibility and its acceptability to Native Hawaiians. Change will only be possible with a sincere commitment to improve the well-being of Native Hawaiians and flexibility on the part of the many involved parties, including Native Hawaiians themselves.

Improving the health status of a population involves effort on many fronts, and not all the necessary changes can occur in a short time frame. Nevertheless, the Medical Task Force believes that now is the time to begin a process which requires the good will and cooperation of nearly every sector of our community.

Chapter I

INTRODUCTION: THE GENERAL FRAMEWORK FOR ANALYZING THE HEALTH NEEDS OF NATIVE HAWAIIANS

I. INTRODUCTION: THE GENERAL FRAMEWORK FOR ANALYZING THE HEALTH NEEDS OF NATIVE HAWAIIANS

The evidence from written accounts, archeology and oral history is consistent in noting that prior to contact with outsiders the Native Hawaiian people were a physically robust population, without many of the diseases prevalent in the rest of the world. Contact with the western world, however, precipitated a catastrophic series of epidemics which reduced the population to a small fraction of its previous size within 100 years. Rapid social change has characterized the history of the Hawaiian Islands, and many of these changes have worked to the disadvantage of Native Hawaiians (Cf. Report of the Cultural/Historical Task Force).

Contemporary social indicators show that Native Hawaiians are socio-economically disadvantaged compared with other groups and experience a disproportionate number of social, psychological and physical problems. Systematic medical information on the population of Hawaii is available since the early 20th century. At the present time, the life expectancy of Native Hawaiians is about 5 years less than the average for the state (Gardner, 1984). Studies have consistently shown Native Hawaiians to have higher infant mortality rates and higher rates of many diseases. Thus, clear evidence has existed for a long time that Native Hawaiians are a high risk population for many serious health problems. Unfortunately, there is no evidence that any systematic attempt has been made to design health programs aimed at addressing the health problems of this population.

This report summarizes current information about the health

problems of Native Hawaiians and examines what we know about the delivery of health services to this population. The purpose of the report is to provide a background for making recommendations for health programs especially targeted for Native Hawaiians. The recommendations will be addressed to many different parties, including Native Hawaiian organizations, agencies of the Federal government, agencies of the Hawaii state government, and the health care organizations and professionals who serve Native Hawaiians. Further recommendations will suggest where more knowledge is needed, requiring additional research by investigators from the University of Hawaii in cooperation with the communities of Native Hawaiians and the organizations which serve these communities.

Certain limitations of this report should be noted at the outset. First, the five month period given to accomplish the aims of this report has been too short for a complete analysis of all the possible data sources and programs. Second, resources have not been sufficient to undertake independent data collection nor to examine health programs on islands other than Oahu. Third, there are many limitations of existing data sets: in the samples, in the definition and coding of variables, and in the lack of information about many important items of information. The possible effects of these limitations will be noted throughout the various sections of this report.

In order to make the charge of the Task Force manageable, a decision was made to focus our effort on what previous research suggests are the most significant health problems experienced among Native Hawaiians. While this report will provide a general

overview, separate chapters are devoted to the following problems which have been selected for more intensive investigation: the health problems associated with pregnancy and diseases of early infancy, diabetes, hypertension and heart disease, and cancer.

Thus, this report is best viewed as a beginning rather than as a complete overview of the health needs of Native Hawaiians. The Medical Task Force intends to continue this effort at investigating the health problems of Native Hawaiians and discovering information about barriers to effective health care for this population. Towards this end, we will present here a framework for analyzing health care which takes a broad rather than a narrow perspective on the nature of health needs and the appropriate provision of health care services.

A. TYPES OF HEALTH CARE

Health care is perceived by many persons primarily as an activity of physicians providing treatment to patients. The Medical Model underlying this perception is one which places the primary responsibility for good health in the hands of professionals, which conceives of health care principally as the treatment of illnesses, and which equates good health care with a high rate of utilizing medical services. During the past decade, there has been a growing recognition that this perspective on health care is clearly inadequate, particularly in relation to the most significant health problems of our society.

Today, the principal causes of death are heart disease, cancer, and strokes, which are difficult and expensive to treat. Diabetes and hypertension, furthermore, contribute to deaths by these causes as well as to renal failure. Thus, a concern with

effective health care must include not only curative treatments, but also services aimed at the prevention of disease and the control of chronic conditions which can produce disabilities and more serious disease. Therefore, this report undertakes to describe health care as encompassing four different types of services: 1) health education, 2) health promotion programs, 3) health screening programs, and 4) medical treatment programs.

Health Education Programs

Health education programs provide information about the nature of risk factors for disease; symptoms of illness; the nature, course and prognosis of specific diseases; and available health care services. These programs may be specifically aimed at persons with a disease, at groups of persons identified as at high risk for a disease, or at the general community.

Naturally, such varied activities serve a number of different purposes. Health education for the general public enables individuals to prevent disease, to recognize early symptoms and therefore, to know when to seek care for themselves. Health education for persons with disease is important in providing information helpful in controlling their condition, including the importance of maintaining their medical regimens and knowledge about how to deal with the possible side-effects of medical treatment.

Health Promotion Programs

Health promotion programs, sometimes called Wellness Programs, are an expanding type of health service oriented to helping individuals develop individual life-styles which promote their well-being and prevent illness. There are several reasons

why health promotion programs are gaining recognition as an important component of health care. First, scientific knowledge of the chronic degenerative diseases, which are the principal health problems of our modern society, points increasingly to the significance of behaviors and stresses as etiological factors in disease. Second, these etiological factors are amenable to change, whereas nothing at present can be done to affect genetic inheritance or biological aging. Third, health is no longer defined as the absence of a manifest disease, but as the general state of well-being of the individual. Health care consequently has shifted from an exclusive focus on pathology and the extension of life, to helping individuals prolong a vigorous and satisfying life.

Health promotion as an activity can still be described as at an experimental level. These programs go beyond traditional health education approaches, in that their purpose is not only to transmit knowledge to the public but to help individuals adopt new behavioral patterns. Health promotion programs focus on behaviors which are major risk factors for disease, such as weight-control, smoking cessation, dietary changes, aerobic exercise, and stress-management.

Providing information to individuals, whether from physicians, the mass media, or by any other means, is often not sufficient to change behavior. Certainly there is a general awareness in the population that such behaviors as excessive drinking, smoking, or being overweight, are detrimental to health. The behavior of individuals, however, is strongly controlled by the social norms of the groups to which they belong. Changing

behavior, therefore, is usually successful only when such changes are supported and reinforced by social groups. The principles of group dynamics often serve as the basis for health promotion programs. More specifically, the group methods employed often emulate those which have been found to be successful in alcohol treatment programs such as Alcoholics Anonymous.

Health promotion programs may be provided through specially constructed groups of persons seeking help, such as Weight-Watchers, or through programs provided to natural social groups, such as churches, employer organizations, neighborhoods, and other social organizations. Ultimately, the responsibility for health-promotive social norms rests upon the local community, including family and friendship groups. Little success can be expected of life-style changes which do not receive the approval and support of the social environment of the individual. We will return to this point when considering the responsibility for health promotion programs for Native Hawaiians.

Health Screening Programs

These programs provide free screening to the public in order to discover undiagnosed illness and to refer the affected individuals to medical services where appropriate treatment can be prescribed. Many important health problems are relatively asymptomatic at their early stages or can easily be overlooked by an affected person. Health screening is an important component of a health care system, since the discovery of disease at an early stage may mean more successful treatment, before complications or irreversible damage has occurred. Health screening programs exist primarily for conditions where relatively simple and inexpensive

diagnostic procedures are possible. Screening for high blood pressure, diabetes, tuberculosis, and some forms of cancer (particularly breast cancer and cervical cancer) are most common.

Since these programs are intended to reach individuals who are unaware of possible illness, screening programs are usually conducted in public spaces such as shopping centers, health fairs, schools, and places of employment. The success of screening programs depends: 1) upon their ability to attract those individuals who may be at risk for a disease and 2) upon the ability to refer persons found to have positive tests to a physician or other source of care. A system of follow-up, therefore, is also an important aspect of health screening programs.

Medical Treatment Services

Medical treatment of the ill is the traditional focus of any health care system. Individuals with health problems need access to physicians and other experts in order to benefit from the current state of knowledge in medical science regarding their disorders. Medical treatments vary considerably along a dimension of self-control versus professional control. Surgery, for example, is performed by the physician with the patient in a passive-dependent role. On the other hand, many important chronic health problems, such as diabetes, hypertension and heart disease, require the patient to follow a prescribed regimen in his or her daily life, possibly including the taking of medications, dietary restrictions, stress-reduction and activity limitations. Whether or not the treatment is followed depends not so much upon the technical medical skills of the physicians, but rather on the

interpersonal ability to adequately educate and motivate the patient.

Summary

In summary, this report of the health needs of Hawaiians will attempt to address this question using a comprehensive perspective. The information currently available will not enable us to describe with equal degree of completeness each of these components. Nevertheless, this report will concern itself with the adequacy of health education programs, health promotion programs, health screening programs and medical treatment programs.

B. CRITERIA FOR EXAMINING HEALTH CARE SERVICES

How can the adequacy of health care resources for Native Hawaiians be described? This report will be concerned with three dimensions of adequacy: the availability of services, the accessibility of services, and the acceptability of services. In this section we will define each of these concepts and explain their relevance to the delivery of health care services.

The Availability of Health Services

By availability is meant the presence of health care resources in a community, such as trained professionals and health care programs. Educational and training programs for physicians, nurses and other health care professionals affect the available labor force for providing services. Some health care services, such as physicians in private practice, are allocated according to the demands of the marketplace. However, political and administrative priorities also are important in determining the distribution of health care resources across different kinds of

activities and in relation to different geographic communities. Through contracts, subsidies and other incentives, furthermore, public policies can affect the activities of services in the private sector. Thus, the availability of health services can be significantly affected through the development of public policy.

A few general points should be noted about the availability of health services in Hawaii. First, Hawaii as an island state faces special difficulties in providing comprehensive health services to the whole population. About three-fourths of the approximately one million residents live on the Island of Oahu, and most health resources are located in Honolulu and serve this portion of the population. The Neighbor Islands have substantially fewer health care providers and programs. Some of their population live in remote, rural areas, where it is not economically or administratively feasible to maintain an elaborate structure of specialized programs and services. Alternative ways of meeting the needs of these persons may be needed.

Second, the relatively small size of the state of Hawaii has meant that many functions are administered statewide rather than by local and county units. Thus, the Hawaii State Department of Health is responsible for many health programs which might in other states be the responsibility of local governments. Poorer, rural communities have benefitted from this arrangement in one sense, since they are served by state resources and do not have to depend upon their own economic base for health services. State ownership of small hospitals in rural areas is but one example. On the other hand, programs developed by the state may not always be tailored to the particular needs and cultural sensitivities of

people in smaller communities, particularly on the Neighbor Islands.

Third, although the State Department of Health recognizes the Native Hawaiian population as at high risk for many kinds of health disorders, programs are not targeted specifically to any single ethnic group. There are two grounds for this position: 1) Residential patterns in the islands are ethnically mixed, such that even in those areas with high concentrations of Native Hawaiians, there are also many persons of other ethnic backgrounds. It is not administratively feasible to operate separate programs for each ethnic group. 2) Democratic principles of equal access to public services, paid for by general tax revenues, require that health programs be made available to any citizen in need without regard to ethnic background.

The consequence of this position is a paradox and a dilemma. On the one hand, Native Hawaiians are recognized as a high risk group, and on the other hand public policies mitigate against the development of specific programs designed to address the needs of this population within the particular framework of Hawaiian culture. A second problem is the fact that neither public nor private health care providers keep records based on ethnicity. There is, therefore, a general ignorance regarding the effectiveness of programs in serving Native Hawaiians. The lack of systematic knowledge about Native Hawaiian utilization, compliance, and dropping out of health programs, will be a recurring problem throughout this report.

Accessibility of Health Care Services

A second criterion for examining health care services is

their accessibility. Accessibility is defined in terms of the relative costs incurred in their use, including financial expense, time and travel distance required, and other factors affecting convenience and comfort in their use. Health programs may be available in the community, but a variety of barriers may effectively operate to exclude certain segments of the community from receiving those services. While Hawaii as a state has a rich environment of health services, the Native Hawaiian population is generally perceived to have low rates of participation in these programs. It is, therefore, important to examine possible factors which limit accessibility.

Some aspects of accessibility are under the control of the policies of the programs or agencies providing the services -- such as the hours of operation and the cost and method of payment. On the other hand, insurance plans control the definition of services eligible for reimbursement, and the Federal and State governments define what is included under Medicare and Medicaid programs.

Accessibility is also highly dependent upon geography. As noted in the discussion of availability above, health care facilities and programs are not as fully developed in the rural areas and the Neighbor Islands. Individuals may have long distances to travel to receive medical care, and the time and distance costs probably function as a barrier to utilization. In such instances, individuals are most likely to use services only when they perceive a health problem as a crisis, and they are not likely to make routine visits for preventive services or for the monitoring of conditions.

Financial barriers also continue to be a problem for some segments of the population. Hawaii is unique among the states, furthermore, in that employers must provide health insurance to all employees working over 20 hours per week. For this reason, it is estimated that approximately 95% of the population is covered by some form of either private insurance or government health care program. Unfortunately, none of the insurance systems or medical centers have data available for different ethnic groups in Hawaii. However, given the low socioeconomic status of many Native Hawaiians, it seems likely that they are disproportionately without insurance due to unemployment, part-time employment, or marginal self-employment in agriculture, fishing and other pursuits.

The Acceptability of Health Services

A third criterion for examining health services is their acceptability to the population. Acceptability occurs where services are provided in a manner which conforms with the cultural beliefs, values and practices of a group and through helping relationships in which mutual respect and trust prevail between the helper and client. For a variety of historical, cultural, and bureaucratic reasons, many Native Hawaiians apparently resist health care provided through the typical service structure. Thus, even in instances where programs, such as health education and screening, are offered free and during extended hours, the response has often been found to be unexpectedly low. Making services available and accessible, while important first steps, will not necessarily succeed unless those services are provided in a culturally accepted manner.

The report of the Historical and Cultural Task Force provides a detailed background of Native Hawaiian culture. In order to be able to discuss the acceptability dimension of health care services in this report, a few important ideas will be summarized here.

Some important perspectives on the role of Hawaiian culture are suggested by systematic anthropological research conducted during the late 1960's and early 1970's (Howard, 1974; Heighton, 1968; Gallimore et. al., 1974). These studies employed a variety of methodologies to examine coping strategies and problem-solving techniques among Native Hawaiians and suggested how these reflected Hawaiian culture. One problem encountered in any such attempt, however, is the diversity among Native Hawaiians stemming from high levels of intermarriage and the assimilation of the dominant American culture, especially among urban, more affluent individuals. Measures were developed to determine the extent to which individuals were most integrated into traditional Hawaiian culture. Below are some of the cultural patterns reported in these studies which may be important in understanding the response of Native Hawaiians to health care services. These patterns were found to be most typical of those who were culturally most Hawaiian.

First, Native Hawaiians are oriented towards a supernatural understanding of the world and of their experiences, including illness. There is a culturally rich tradition of rituals and health practices which are relied upon in preference to the culture of scientific medicine.

Second, Native Hawaiians were found to be high in external

control versus internal control. This distinction refers to the tendency to view events as beyond the control of the individual versus a belief by individuals that they can influence what happens to them. External control is generally typical of persons with lower levels of education and lower socioeconomic status. An orientation towards external control reflects a sense of powerlessness, a feeling among Native Hawaiians explained by their historical and contemporary social situation. One possible consequence of high external control is a tendency to accept illness symptoms fatalistically rather than to take individual initiative in seeking help.

Third, Native Hawaiians tend to rely upon the minimization of risk as a coping strategy, a tendency to resist disrupting social relationships and to define situations as "ain't no big thing." One consequence of this orientation may be a willingness to live with illness symptoms, to adjust to them and postpone seeking professional help.

Fourth, Native Hawaiians prefer to rely upon immediate personal relationships for problem-solving. The culture has been characterized as having a core value on affiliation, where the experience of social intimacy and acceptance among family and peers is more important than individual achievement or individual self-sufficiency. Thus, Native Hawaiians tend to be bound together in personal ties involving reciprocal obligations. As a consequence, health problems are more likely to be handled within the family or by reliance upon trusted individuals in the Hawaiian community; there is a distrust of impersonal, bureaucratic services, and a discomfort in unequal authority relationships

based on scientific expertise rather than spiritual knowledge and personal relationships.

Finally, Hawaiian culture emphasizes confrontation-avoidance rather than confrontation. Public agencies and impersonal authority relations are avoided because of their potential to be embarrassing or to lead to confrontation. Thus, individuals found to avoid confrontation were also found less likely to have had a recent physical examination from a physician (Heighon, 1968). Furthermore, when in an impersonal authority situation, Native Hawaiians are likely to avoid confrontation by accepting decisions and not raising questions. One consequence is that the Native Hawaiian patient may feel that physician advice is unsatisfactory but be unwilling to raise objections or ask for clarifications. Avoiding such situations altogether is a more culturally acceptable solution to conflict or embarrassment.

A second consequence of confrontation-avoidance should also be noted. Despite the disproportionate rates of illness among Native Hawaiians, there is a long history of poor availability, accessibility and acceptability of services. Yet, there have not been public expressions and demands made that suitable services be developed. Instead, Native Hawaiians have kept their complaints to themselves and have relied upon their own cultural and community resources to manage their health problems. The undertaking of this report, of course, is premised on the belief that there are some practical limitations to the effectiveness of this strategy, and that health services should be designed to be suitable to the Native Hawaiian community.

The position reflected in the analysis presented throughout

this report is that the cultural orientations of Native Hawaiians must be respected, and that health care services will fail to be effective unless they are culturally acceptable to the population.

C. AN OVERVIEW OF TYPES OF HEALTH CARE SERVICES

This section will provide a general discussion of the availability, accessibility, and acceptability of the different types of health care services in Hawaii, including health education, health promotion, health screening and referral, and medical treatment services. This general overview of the current situation is based on the information which we have been able to obtain in the short time frame of this research. There is no attempt at a comprehensive catalogue of health services, but rather the intent is to examine the general situation and, based on information from a selected set of programs, to comment on the general issues of availability, accessibility and acceptability of services to Native Hawaiians. The purpose and focus of the discussion is to identify the nature of the problems which Native Hawaiians experience in obtaining adequate health care. Additional material regarding the services for specific conditions will be presented in the subsequent chapters of this report.

Health Education

Availability. Health education is available in Hawaii through many different channels. The mass media provide health messages as a public service aimed at informing the public about many risk factors associated with disease and early symptoms of disease. Information is also provided about local health resources, such as treatment programs, health education programs, and referral agencies. Both major newspapers in Honolulu feature

weekly special health pages which provide indepth reporting about various health problems, advances in medical knowledge, and the nature of local health services. Thus, the general level of health-related information available to the residents in Hawaii seems to be adequate.

Health education programs are also provided through specific organizations which reach individuals in similar circumstances. Among the most important of these programs is the health education curriculum in the schools. Providing health information and developing good health attitudes in children may be the most effective long-range strategy for promoting healthier living patterns. A curriculum for health education has been developed for the public schools. However, there have been many problems over the years, apparently due to problems in clarifying responsibilities between the Department of Education and the Department of Health.

The general impression given by persons interviewed in the Department of Health, is that the curriculum is not effectively implemented. The views expressed in interviews suggested that teachers lack sufficient health education themselves, the curriculum is not kept current, and most importantly health education is accorded a low level of priority by the schools. Physical education requirements are minimal and viewed by most teachers as simply serving as a recreational break rather than an opportunity for learning concepts of health and the development of physical skills.

Two special programs have been conducted for grades 7 - 12 in Leilehua High School in Central Oahu and in Kona by the Lifestyle

Promotion-Risk Reduction Project of the Health Promotion and Education Branch of the State Department of Health. Financial support was provided by Federal block grant money and the March of Dimes to provide a program aimed at reducing cigarette and marijuana smoking and alcohol consumption. An evaluation of these projects shows that they are succeeding in having an impact, particularly on the younger-aged youth. However, the lack of financial resources prevents a state-wide program of this nature.

The Public Health Nursing Branch, the Chronic Disease Branch, and the Health Education Branch of the Hawaii State Department of Health are all involved in providing health education to the general population through various activities, such as health fairs, special programs arranged for organizations, and senior citizen groups which meet at the various community health centers throughout the islands. Native Hawaiians do participate in these activities, though no specific data are available. There are no health education activities by these agencies specifically directed towards the Native Hawaiian population.

Private health organizations, e.g. American Heart Association, American Lung Association, and American Cancer Society, sponsor important health education programs concerning specific diseases. The Lifestyle Promotion-Risk Reduction Project has published a catalogue of health resources, and the Oahu catalogue lists 15 pages of organizations which offer health education. In most instances, however, these programs offer information only to those seeking help and do not aggressively undertake to better educate the general public.

Special mention should be made of maternal and child health

programs aimed at providing prenatal care and educating expectant mothers about the proper care of infants. At the present time there are an extensive set of services provided through state public health clinics, the hospitals and medical centers, as well as special programs such as Project KEEP sponsored by Kamehameha Schools. According to the director of the Maternal and Child Health Branch, there are currently enough resources available for the need of the population, but the problem is a lack of systematic organization of these resources. There is much duplication and a lack of knowledge of parallel services. A plan has been developed to organize a regionalized perinatal health care system which should be more effective in reaching the population and in providing continuity of services from prenatal through well-baby care.

Physicians individually provide health education to their patients, and many of the major medical centers in Honolulu operate health education programs which are open to the general public. The Hawaii Medical Association supports a telephone information service (Tel-Med) whereby individuals can confidentially receive health care information over the phone.

Nevertheless, a number of questions remain as to whether health care information is adequately provided to those who need it most. Research has generally shown significant socioeconomic differences in familiarity with symptoms of illness and knowledge of health resources, though systematic data are lacking for the population in Hawaii. No systematic data are available regarding the level of health information among Native Hawaiians nor the particular channels which are most effective in reaching this

population.

Accessibility. Health education occurs through certain limited channels which do not reach the entire population. Programs provided in the public schools in principle would be equally accessible to all groups, but even in this instance there is no certainty that the programs are implemented similarly in all schools. Health education provided through newspaper features and through public television programs is more likely to reach persons with college educations and is probably less effective in reaching segments of the population, including most Native Hawaiians, which have a lower level of formal education.

On the other hand, Native Hawaiians seem to participate in the senior citizen clubs where public health nurses provide services, and many Native Hawaiians receive services from physicians and major medical centers which have active programs of health education. Unfortunately, there are no actual data available regarding the ethnic background of persons who receive health education from these sources. Also, it is unclear whether the health problems of Native Hawaiians reflect a lack of information about good health practices.

Acceptability. Cultural barriers no doubt also play an important part in explaining the lack of appeal and acceptability of present health education efforts. Because Native Hawaiians have a lower level of education and because of the cultural emphasis on social solidarity, written materials and impersonal presentations in large groups are probably not effective means of communicating with this population.

In addition, the content of health education programs is not

based on knowledge of the Hawaiian culture. The existing health education programs, such as those sponsored by the State Department of Health, the major medical centers, and private special disease organizations, reflect standardized approaches often developed for the American population as a whole. The special language, world view, and health practices of Native Hawaiians are ignored.

Health Promotion Programs

Availability. Health promotion programs are closely related to and often combined with health education; but rather than merely dispensing information, they are aimed at helping individuals adopt new, healthier behaviors. These programs typically focus on weight reduction, exercise, stopping smoking, stress-management, and the control of specific health conditions such as diabetes and hypertension.

The Lifestyle Promotion-Risk Reduction Project, funded through the Federal block grant to the state, is participating in a project sponsored by the Center for Health Promotion and Health Education of the Center for Disease Control (Hawaii State Department of Health, 1985). A statewide sample of 1002 residents was interviewed in 1984 regarding such risk factors as not using automobile seatbelts, inadequate exercise, high fat and salt in the diet, smoking, heavy drinking, chronic drinking, and drinking and driving. Native Hawaiians were found to be at higher risk than other ethnic groups in all of these respects, especially in being overweight, heavy drinking, chronic drinking, and drinking while driving. These findings suggest the importance of developing effective health promotion programs which address the

high risk behaviors of Native Hawaiians.

The Lifestyle Promotion-Risk Reduction Project will continue to monitor these health-related behaviors in the population and to mail the results to physicians and other health care providers. In this sense, the purpose of the project is seen as increasing the sensitivity of health care providers to possible behavioral risk factors experienced by their patients. However, the project has no resources to undertake more direct efforts to develop suitable programs to alter these risk behaviors.

During the past decade there has been an expansion of health promotion programs through privately formed "wellness" organizations as well as through the health education programs of the major medical centers in Honolulu. However, health promotion programs are generally market-oriented, requiring out-of-pocket payment by the client and a large enough population base to be economically self-sufficient. As a consequence, such programs are mostly confined to the major urban areas, principally Honolulu, and are not yet included in the health services available in smaller, rural communities.

Some employers have been developing "wellness" or health promotion programs for their employees. The results of studies conducted in other areas of the country have shown that there are benefits in reduced employee absenteeism, higher productivity and morale. On this basis, the Health Promotion and Education Office of the Department of Health developed a "wellness" program to market to employers in Hawaii. The state of Hawaii adopted the program for its own employees. The Kaiser Permanente Medical Care Program also adopted the program and subsequently has marketed it

out to its own health care subscribers and to other employers. However, there is an impression that employers in Hawaii have not yet shown much interest in such programs.

In summary, health promotion activities are at the growing edge of health services, but at present the availability of programs is limited. There is as yet no consensus as to who should bear the responsibility and costs of mounting such programs, and so consequently they exist primarily where there is enough market demand for them to be self-supporting.

Accessibility. As already noted, health promotion programs are not equally available to all communities. They have developed primarily in the urban, affluent areas which have been able to support them. Consequently, these programs are not generally accessible to Native Hawaiians except for those living within convenient commuting distance of the major medical centers in Honolulu. Castle Hospital in Kailua operates a quit-smoking program which serves the Windward side of Oahu, but there are few such programs outside Honolulu.

As a further barrier to participation, health promotion programs fall under the category of preventive services, which are not reimbursed by insurance programs. No doubt the financial cost of participating in these programs is an important barrier for low income persons including many Native Hawaiians. In fact, the persons who most likely participate in weight-reduction, stop-smoking, exercise, stress-management and other "wellness" programs are primarily middle class persons from other ethnic backgrounds.

It is perhaps true that being concerned with promoting

"wellness" is a luxury of the affluent who don't have more immediate financial and survival problems in maintaining their lives and the stability of their families. A number of individuals involved with health promotion programs noted that Native Hawaiians seemed to lack interest in these programs, perhaps in part because they were experiencing many more pressing problems in their lives.

The Kaiser Permanente Lifestyle Program, which received a "Certificate of Excellence" from the Center for Disease Control in Atlanta, possibly illustrates these types of barriers for Native Hawaiians. Their program includes classes in assertion training, stress-management, time-management, quit smoking, pre-menstrual syndrome, Kaiserobics, and prenatal, postpartum exercise, in addition to health education classes focusing on hypertension, diabetes, heart disease, and other chronic conditions. Most of these programs are offered, however, only in Waikiki and there is a charge for all but the quit smoking and pre-menstrual syndrome programs. No data are available regarding the composition of participants, but Native Hawaiians are believed to be underrepresented.

Thus, we can conclude that the apparent low participation of Native Hawaiians in health promotion programs rests at least in part on financial and time-travel distance barriers. Unfortunately, the population which could perhaps benefit most from programs aimed at reducing risks to disease, is the least likely to be served by those programs.

Acceptability. Because of the limited availability and accessibility of health promotion programs to low income Native

Hawaiians, it is probably incorrect to conclude that Native Hawaiians have no interest in preventive approaches to health care. Furthermore, there are several other important reasons which perhaps account for their low participation in these programs to date.

Many high risk behaviors, such as smoking and excessive drinking and eating, also can be viewed as stress-management behaviors. They are perhaps a direct consequence of the socio-economic problems, institutional oppression, and cultural-conflicts which constitute the social situation of many Native Hawaiians. A valid question can be raised as to whether it is realistic to expect individuals to give up their psychological releases unless the strains presented by their social situation are first resolved. The health problems of Native Hawaiians cannot be fully addressed unless also accompanied by significant social changes which improve their opportunities and living conditions.

Health promotion programs, however, entail important issues of cultural conflict and cultural domination. The purpose of these programs is, after all, to change behavior. What may be deemed a high risk behavior from the standpoint of health care, may also be highly significant in the cultural and social patterns to which people may be attached. For example, heavy drinking is characteristic of the social occasions which are so important in the value system of Native Hawaiians, and many of the ethnic foods have a high fat and high salt content. Indeed, there is a highly sentimental attachment to "local culture" among traditional low income groups in Hawaii with many of these same characteristics.

To be identified with "local culture" gives an individual a prized identity, setting him or her apart from the rest of the world. Any attempt to change behaviors which are the basis for a valued personal identity as well as social acceptance among one's peers, is not difficult.

Furthermore, the method of presenting health promotion activities no doubt also undermines their acceptability. Native Hawaiians are not interested in "missionaries" telling them which of their behaviors are not acceptable and giving them a better way to live. For historical reasons, there is a strong resentment towards outsiders who try to change their culture and behaviors. Health care providers cannot assume that their expertise is enough to convince Native Hawaiians to abandon a part of their traditional and valued lifestyle.

Perhaps some of these difficulties are reflected in the low participation of Native Hawaiians in the Kaiser Lifestyle Program. None of the staff in the program are of Native Hawaiian ethnic background. The programs are offered in large classes which consist of strangers, which is not conducive to the personal, informal style preferred by Native Hawaiians. There is no deliberate outreach to Native Hawaiians to participate. Admission is principally by self-referral.

In conclusion, health promotion activities are clearly needed as indicated by the high incidence of high risk behaviors among Native Hawaiians. However, health promotion programs are not yet available and easily accessible to this population. Even more importantly, these programs are designed by outsiders and are easily perceived as another form of cultural imperialism. When

formulating recommendations, the emphasis will be on the importance of Native Hawaiians themselves addressing the need for health promotion activities. No culture is entirely static, but the Native Hawaiian community will need to work out its own way of adapting its lifestyle to our current knowledge of health risks; . and the job of implementing programs aimed at behavioral and cultural change will have to be undertaken by Native Hawaiians themselves.

Health Screening and Referral

Availability. The State Department of Health operates an extensive program of health screening and referral for diabetes and hypertension. These diseases are "silent" in the sense of having no manifest symptoms. It is estimated that the proportion of the population with the disease is twice as large as the proportion diagnosed. Public health nurses provide monthly screening at various community health centers. In the case of positive test results, the client is told to seek treatment from his or her physician and a letter is sent to the physician. There is some question, however, as to whether or not follow-up and referral procedures are properly implemented. Apparently follow-up has been hampered by inadequate staffing of the public health nursing program.

Health screening by public health nurses is also provided to organizations who request it. The American Heart Association, the American Diabetes Association, and other special disease organizations cooperate in mounting screening programs in this manner. In addition, the fire stations on all islands, except for Kauai, provide free high blood pressure screening.

The Hypertension Project, located at Diamond Head Health Center, is also operated by the Department of Health and is financed by a grant from the Federal government. The purpose of this project is to provide extensive follow-up of persons on Oahu who are diagnosed with hypertension. However, this program is restricted to the Island of Oahu due to funding.

A special program, the Northern Koolau Health Education Project, is operated by St. Francis Hospital, with financial support from the state, to provide hypertension and diabetes screening as well as other health education programs and referral services to residents of the Windward Coast from Kahaluu to Kahuku, about half of whom are Native Hawaiians. The program operates out of Hauula Shopping Center, which is centrally located on the main highway along the coast, next to the post office, a pharmacy and other retail services which residents regularly patronize. This program is one of the few efforts specifically targeting Native Hawaiians. Its geographic limitation, however, means it is available to only a portion of this population.

Cancer screening programs are much less common. However, in the past there have been breast cancer screening and cervical cancer screening, specifically targeted for areas with a large Hawaiian population. Continuation of this program is currently under review, along with the possibility of instituting screening for colon-rectal cancer.

In summary, screening programs for certain important chronic diseases have been widely available, at least on the Island of Oahu. In a few instances, these programs have targeted the Native Hawaiian population. Follow-up of clients from these programs,

however, is limited; and there is no guarantee that individuals who are diagnosed receive treatment.

Accessibility. As just described, screening programs are generally offered free to the public in shopping centers, through organizations, or at health centers. The current availability of blood pressure screening at fire stations is another step to overcome barriers to accessibility. At least on the Island of Oahu, there seem to be few problems of accessibility to screening for hypertension and diabetes.

On the other hand, screening for other disorders may involve substantial financial cost to individuals. Most insurance will not cover screening as a preventive service, and so individuals must pay out-of-pocket for general physical examinations, including electrocardiograms and screening for colon-rectal cancer. These costs can be substantial from the standpoint of all but the upper middle class. Thus, the restrictive reimbursement policies of most insurance plans, based on a very narrow conception of health care, result in financial barriers for low income persons such as many Native Hawaiians.

Acceptability. Nevertheless, even when screening and referral programs are offered free and are easily accessible, as in the case of hypertension and diabetes screening, Native Hawaiians are perceived as less likely to participate. Because the incidence of breast cancer and cervical cancer is higher among Native Hawaiian women and they also tend to come into treatment at more advanced stages of disease, a special cancer screening program was developed for the Waianae area by the Department of Health and the Cancer Center of Hawaii. Nevertheless, relatively

few Native Hawaiian women participated in the program compared to women of other ethnic groups. These experiences suggest that an effective health care program must not only be accessible, but also be acceptable within the cultural framework of the population.

Staff working in the screening programs offered by the state or by the major medical centers explain the low rate of participation of Native Hawaiians as due to cultural indifference to preventive health services. Native Hawaiians are perceived as having so many other problems, that they are unlikely to use medical services unless they are feeling ill and believe their condition might be very serious.

While there may be some validity to this view, it is also a perspective which tends to justify inaction, blaming the Native Hawaiian rather than examining the mode of service delivery. As already described, Native Hawaiians prefer to seek help within personal networks and from individuals who are sensitive to their culture and life-style. Rather than expecting the client to take the initiative to seek out a program, programs need to develop effective methods of outreach.

Programs such as the Northern Koolau Health Education Project are an attempt at overcoming this problem in a rural area. This program will be described here in order to illustrate a relatively successful effort at providing health education, screening and referral services to Native Hawaiians in a rural area. The program is conveniently located in a shopping center on the Windward Coast. Its purpose is health education and screening, monitoring and referral of individuals with health problems. They

have helped to organize the Koolauloa Community Council, which links their program with the primary care physicians and other health and social services serving this population.

The Project is committed to addressing the special needs of its catchment area and doing so through a mode of delivery which fits the local life-style. Rather than offering classes in their office, the emphasis is on outreach. They reach people through various community groups, such as senior citizens groups, childrens groups, parent groups, and religious groups. This approach has proven more successful than waiting for individuals to take the initiative to come to their office.

Also, their location in the local shopping center does facilitate contact with the public. Eye-catching window displays, free gifts, a free weight scale, and the availability of films are used as means to attract people. In addition, the staff encourage individuals to stop in just to "talk story." Such informal contacts enable the staff to check on blood pressures and to check on the condition of not only that individual, but also family members and friends.

All of the staff live in the local community, including one Native Hawaiian who is active in Hawaiian cultural organizations. The staff know the families in the area by face and name. They cultivate a spirit of "ohana" or family-ness between the Project and the community. The staff credit their success to the social bonds they have with individuals, which is in contrast to the usual professional-client roles in other programs.

Medical Treatment

Availability. The State of Hawaii is generally recognized

as having an above average number of physicians and other health resources for its population (Hawaii Department of Budget and Finance, 1982). A 1979 report of the Manpower Task Force reported that there were no underserved areas in the state of Hawaii, except for Hanalei, Kauai, and Milolii in South Kona, Hawaii (SHPDA, 1979: 43-44). The graduating classes of locally produced physicians from the John Burns School of Medicine of the University of Hawaii at Manoa, have no doubt contributed to eliminating much of the problem of underserved areas.

Nevertheless, four problems affect the availability of medical treatment for Native Hawaiians. First there are considerable disparities in the geographic distribution of physicians, particularly in specialized services. The major medical centers are still located in Honolulu, while many Native Hawaiians continue to live on the Neighbor Islands and in rural areas.

The availability of medical services in rural areas, furthermore, is being further reduced by the current malpractice insurance crisis. Because physicians in these areas serve fewer patients and less affluent patients, many are unable to pay the greatly increased premiums for insurance. Some rural physicians have left practice, and others are no longer willing to perform some services, such as delivering babies. These reductions in services impact especially on the Native Hawaiian population.

Second, there are still relatively few Native Hawaiian physicians, probably no more than 20, practicing in Hawaii, and Native Hawaiians are also underrepresented in the other health professions. Thus, relatively few Native Hawaiians have access

to a Native Hawaiian physician, and the low profile of Native Hawaiians in the medical profession perhaps also accounts for the lack of focus on the particular needs of Native Hawaiians in medical care programs.

Third, certain health facilities were established by estates of the Hawaiian Royalty specifically to provide for the care of Native Hawaiians. Current circumstances, however, limit their contemporary relevance for the Native Hawaiian population. Queens Hospital, for example, has evolved into a community hospital serving the general public and with no recognizable commitment to providing medical care to Native Hawaiians. A question has been raised as to whether this hospital ought to be providing free care to medically indigent Native Hawaiians. Lunalilo Home, a nursing home for the frail elderly, continues to serve Native Hawaiians. However, questions have been raised as to whether the trust is adequate to maintain this institution at a standard of acceptable quality. There may be other special health facilities available to Native Hawaiians, but they apparently are either not very visible in the community or have deviated from their original mission of serving this population.

Finally, many Native Hawaiians still rely upon traditional Hawaiian health practices because existing medical programs do not incorporate their cultural understanding of illness. For a more detailed description of Hawaiian traditional medicine, see the Report of the Historical and Cultural Task Force. The following is only a brief summary of the current availability of traditional health resources.

Following the arrival of foreigners and the introduction of

Christianity, traditional Hawaiian medicine was forced underground due to the abolition of kapu, native gods and the religious hierarchy. Much of the medical knowledge and beliefs of the kahuna (native healers) were associated with the native religion, and therefore, many practices were abandoned and much knowledge lost to the traditional healers of today.

Nevertheless, a community survey on the Waianae Coast (White, 1982) revealed that residents were generally acquainted with a variety of non-professional, informal sources of care (natural healers, community care-givers, and traditional healers). Of 653 respondents, 52% indicated that they know spiritual helpers and 22% knew of kahuna. In another survey of 100 clients of healers, 90% had first consulted a physician, including all instances of such major illnesses as diabetes, high blood pressure, and cancer. Traditional health practices were supplementary to those recommended by the physician.

In describing the available health resources in Hawaii, the Department of Geography of the University of Hawaii at Manoa (1973), has estimated that there are less than 100 native healers in Hawaii, and they are concentrated in rural areas where large populations of Native Hawaiians live. Recent evidence (White, 1982) also indicates that kahuna have continued to be trained, although in smaller numbers.

From the standpoint of providing medical treatment, the problem rests in the lack of integration of traditional Hawaiian practices with medical care, and consequently traditional Hawaiian practices often displace the use of appropriate medical services. At the present time there is no program for medical care similar

to the Hale Ola program in mental health, where Western and Hawaiian practices are combined to provide a culturally compatible approach to service delivery.

Two medical clinics on Oahu which serve both Native Hawaiians and non-Hawaiians stand out in their effort to provide services in previously underserved areas having a high number of low income families. These programs do not combine Western and traditional Hawaiian health practices, but they have made an effort to adapt the mode of delivery to the cultural and interpersonal styles of the populations they service.

The Kalihi-Palama Health Clinic was begun at Kaumakapili Church by the Hawaii Conference of the United Church of Christ to provide primary medical services to low income individuals who could not receive care elsewhere due to economic, cultural or language barriers. At the present time, the clinic is an independent, non-profit charitable organization, which continues to receive church support but also receives support from other private and public agencies. The clinic has also expanded its services to include family planning, dental services, and the Women, Infants and Children Special Supplementary Food Program (WIC). The majority of their clients do not have insurance and do not qualify for government health care programs. Most of the clinics services are provided free or on a sliding fee schedule, and extended payments can also be arranged. Foreign immigrants are the major target group of the clinic, but about 8% of their clientele are Native Hawaiian, including over 600 for the year 1984 (Kalihi-Palama Health Clinic, 1985).

The Waianae Coast Comprehensive Health Center (WCCHC) was

founded in a rural area of low income families which was previously without health care resources. Approximately 61% of the families are below the Federal poverty level, and about 75% of the patients of the clinic are Native Hawaiians. The clinic provides a wide range of medical services, including a number of specialties, as well as mental health, family planning, the WIC nutritional program, health education and health promotion classes.

The WCCHC has tried to adapt its medical service delivery to the needs of the local population. The Board of the clinic is elected from the local community and includes a number of Native Hawaiians. Nearly 80% of the staff live in the catchment area and a high proportion of the staff are Native Hawaiians. Because many families have low incomes and many are uninsured, a sliding fee schedule is used depending upon family size and income; and some individuals without resources are provided services without charge. The Aloha United Way provides supplementary support to the clinic.

In conclusion, the state of Hawaii has a wealth of health care resources. Nevertheless, three problems have continued to limit the availability of services to Native Hawaiians: first, the rural nature of the living patterns of Native Hawaiians; second, the lack of adequate numbers of Native Hawaiians in the health care professions; and third, the lack of programs which integrate traditional Hawaiian values, beliefs, and practices with medical care. Two special programs have been described which have addressed these problems in some measure.

Accessibility. Household interviews have recently shown

that health care ranks just below economic and employment concerns of Native Hawaiians (Johnson, 1985). Of those who indicated that they needed health care, 16.7% indicated that they relied only upon themselves rather than on any organization. Dental care and acute medical care were the most frequently cited needs, but 40% indicated financial cost as the reason for not receiving the service. Since many adults lack dental insurance, it is difficult to draw any definite conclusion about how many Native Hawaiians experience a financial barrier to other types of medical services.

Nevertheless, financial barriers still exist and disproportionately affect Native Hawaiians. Many insurance plans have deductible and coinsurance provisions which discourage usage among low income persons. Medicare has in recent years substantially increased in cost to the elderly, and many elderly persons now resist seeking treatment because of the out-of-pocket expense. Only the more affluent members of the community carry supplemental insurance which cover these deductible and coinsurance charges.

Furthermore, there are still individuals in Hawaii who do not have insurance and are not covered by Medicaid. ALU LIKE, Inc. (1980), in comparing elderly Native Hawaiians with non-Hawaiian elderly, found that Native Hawaiians were slightly less likely to be covered by Medicare. Although ethnic breakdown of statistics is unavailable, Native Hawaiians are apparently more likely to be without any health insurance. Persons who are part-time employees or are self-employed, such as farmers and fishermen, are not legally required to carry insurance. Often these individuals have marginal incomes and, therefore, cannot afford to purchase private

plans. The Waiānae Coast Comprehensive Health Center, which serves a area with approximately 50% Native Hawaiians, estimates that one-third of its patients have neither private insurance nor qualify for Medicaid or Medicare.

Certain health facilities were established by estates of the Hawaiian Royalty specifically to provide for the care of Native Hawaiians. As noted above, a question has been raised as to whether Queens Hosptial ought to be providing free care to medically indigent Native Hawaiians. Perhaps the legacy of Hawaiian Royalty providing for the Hawaiian people is resource which can be pursued further in the contemporary situation.

Geographic distance and lack of transportation also are a barrier to services for some individuals. The Island of Oahu is served by an extensive bus system in addition to a Handivan service for the disabled, and thus, access to medical care is reasonably good for this population. However, public transportation is either lacking or highly limited on the Neighbor Islands. Individuals, especially the elderly and disabled in rural areas, may have a difficult time reaching medical services. No exact figures can be given regarding how Native Hawaiians are affected by this factor, but no doubt it plays some role in limiting access to medical care.

Unfortunately, neither the medical centers nor the insurance plans have any information about utilization by ethnicity. It is therefore difficult to analyze in any further detail whether Native Hawaiians use more or less medical services than other groups.

In summary, utilization data are not available which would

permit a detailed picture of the extent to which Native Hawaiians receive medical treatment in comparison with other groups. Nevertheless, it appears likely that both financial as well as geographic and transportation barriers disproportionately limit medical care for Native Hawaiians. The Kalihi-Palama Health Clinic and Waianae Coast Comprehensive Health Center are examples of programs which have reduced these barriers to specific communities.

Acceptability. There are many indications that Native Hawaiians feel uncomfortable and threatened in the medical situation. It is a situation in which they feel powerless and surrounded by a strange culture. Since Native Hawaiians are seldom working in medical settings, patients do not perceive that staff understand their Hawaiian cultural heritage and interpersonal style. The preference for traditional practitioners reflects their desire for a care-giver who is empathic to the wide range of emotional and traditional values associated with Hawaiian views of illness, childbearing and death.

Communication styles between Native Hawaiians and physicians from other ethnic backgrounds also differs, not only in terms of obvious differences in language structure and vocabulary, but also in the meanings of both verbal and non-verbal exchanges. For example, Native Hawaiians show their respect for authority by signs of compliance and agreement. Physicians may mistake such indications as meaning understanding and an intention to comply with advice. Instead, the patient may simply be engaging in culturally prescribed-confrontation avoidance by not asking questions or raising objections.

One example of a treatment program which is more satisfactory to Native Hawaiians is the health care clinic at the Kaumakapili Church. Here the practitioners know the clients by name and face and the style of interaction is informal. Individuals are encouraged to stop by to "talk story"; while waiting, patients engage in such past-times as singing. Some of the consultation and monitoring occurs during the course of informal interchanges rather than as task-oriented interactions which divide individuals into professionals and clients. The informal style is similar to what is found in the Northern Koolau Community Health Education Project already described.

The Waianae Coast Comprehensive Health Center also has tried to adapt its mode of service delivery to the culture of Native Hawaiians. One aspect of this approach is to provide medical care to the family as a whole; in fact, encouraging the entire family to seek consultation at the same time. In this way, the family members become involved in the health care of one another, and there is an understanding of the needs of individuals who should follow a particular regimen, such as taking medications and restricting diet.

In conclusion, the standard context of medical care has many features which are alien to the culture of Native Hawaiians. One reason that many Native Hawaiians avoid medical services except for the most severe conditions and after diseases have progressed to advanced stages, may not be that they are indifferent to maintaining their health, but that the manner in which services are provided are so alien to their culture.

D. CONCLUSION

The purpose of this chapter has been to establish a framework for assessing health care for Native Hawaiians. We have noted that the health problems of Native Hawaiians must be understood in the context of the socio-cultural situation of a people who have faced many disturbances to their traditional culture and have been dispossessed of their land. The contemporary situation is one which finds a large number of Native Hawaiians in lower socioeconomic circumstances and experiencing many of the problems which accompany a lack of resources as well as rapid social change which threatens the integrity of their traditions.

This report takes a broad view of health care as including health education, health promotion programs, health screening and referral programs, and medical treatment services. Each of these activities is critical to the prevention and control of the important chronic illnesses which disproportionately affect the Native Hawaiian population.

Finally, we have noted that health care programs can be examined in terms of their availability, accessibility and acceptability to Native Hawaiians. After defining these criteria, we have described in general terms the situation regarding the availability, accessibility and acceptability of health education, health promotion programs, screening and referral programs and medical treatment services for the Native Hawaiian population.

The chapters which follow will examine how Native Hawaiians are affected by specific health problems and will discuss in more detail the inadequacies of current health care service delivery in preventing and controlling these problems. Many of the issues

raised in this introductory chapter will recur throughout the analysis and will provide the background for developing recommendations in the final chapter.

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Chapter II

AN OVERVIEW OF AVAILABLE DATA SOURCES, METHODOLOGICAL PROCEDURES AND THEIR LIMITATIONS

II. AN OVERVIEW OF AVAILABLE DATA SOURCES, METHODOLOGICAL PROCEDURES AND THEIR LIMITATIONS

A. THE HEALTH SURVEILLANCE PROGRAM DATA SET

The Health Surveillance Program, as is the Vital Statistics Program, is part of the Research and Statistics Office of the Hawaii State Department of Health. The Health Surveillance Program is responsible for conducting an ongoing Health Survey of the entire State.

Sample Frame, Sample Design, Methods of Sampling and Generating Population Estimates

The Health Surveillance Program (HSP) maintains a listing of all non-institutional households in the State. Excluded are military barracks, long-term care facilities such as nursing homes, and mental hospitals. It also excludes school dormitories and prisons as well as the transient tourist hotels. The excluded population amounts to some 2-3% of the entire resident population.

The sample design is a simple random sample of households within thirteen geographic strata. These strata include island and subisland areas. Oftentimes the tabulated and published reports do not show all of the geographic strata because of the small sample size within some strata, e.g. Lanai island is usually aggregated to Maui County. The purpose of selecting the sample by small areas is to oversample some of the areas of the State with small populations. The estimates for these small areas when inflated are much more reliable because the estimates from these areas are based upon a larger sample.

The HSP draws a representative sample of the entire list each quarter. Thus, quarterly estimates are possible; however, in fact yearly estimates are made from the aggregate of quarterly samples

within each year. Each year approximately 5,000 to 6,000 households are selected for the sample. This means that some 15,000-20,000 persons are included in the sample each year. In order to increase the reliability of the estimates, several years can be aggregated then averaged. This is particularly helpful when studying rare illnesses since single yearly samples are often too small to make reliable estimates. In the data found in this report from the Health Survey, the data has been aggregated for five years and then averaged in order to produce the numerators. The denominators, or population estimates are also generated from the same survey.

The estimates of the total population are made in conjunction with the State and County estimates of population prepared by the State Department of Planning and Economic Development (DPED) and the U.S. Bureau of Census. The HSP inflates its sample to these overall County totals by age and sex, making the assumption that they are the most reliable estimates of the total population. This procedure also adjusts the estimates for any biases introduced by non-response. The inflated estimates, however, do not include the institutional and non-resident population. The age, sex, ethnic distribution of the population, averaged for the five-year period 1980-84 appears in Table I of the Appendices. This table is used as the denominator table for all of the morbidity and mortality rates contained in Chapters III, V, and VI of this report.

Definitions of Ethnic/Racial Groups Including Native Hawaiian, Hawaiian and Part-Hawaiian

The HSP obtains information in the Health Survey about each person's parentage by asking what races or combination of races their mother is and their father is. They assign two race codes for each parent. If the person is a "pure" race then these four codes

will be identical. If the person is "mixed" then there will be some variability in the codes. If any of the person's parents has "Hawaiian" reported then that person is considered "Native Hawaiian". If all four of the race codes, two for each parent, are Hawaiian then that person is "pure" Hawaiian and is classified as "Hawaiian". If the person has a mixture of Hawaiian with other races then that person is classified "Part-Hawaiian". Thus, Native Hawaiian includes both Hawaiian and Part-Hawaiian. For other non-Hawaiian ethnic groups they are classified as a member of that group only if both parents report that group only. If there is any mixture of groups of either parent or between parents then the person is classified as "Other". Thus, the "Other" category includes various non-Hawaiian racial mixtures.

Available Variables and Their Limitations: Health, Demographic, Socioeconomic and Service Utilization

The HSP Health Survey collects information on a variety of topics. The basic survey obtains information about the composition of each sample household, such as the number of persons, their relationships, marital status, family income and area of residence. In addition, information about the age, gender, completed years of education, occupation, and employment status are obtained for each person.

The major focus of the Health Survey is to obtain information on the morbidity experience of each person. This is done by asking each person if they have had any illnesses, accidents or injuries in the past two weeks. They are also shown a list of some 35 chronic illnesses and impairments and asked if they ever had any of them and if they are currently bothered by them. For each condition reported they are asked detailed questions about the date of onset, or when

the accident or injury occurred and the kinds of symptoms they experience and how the illness affects them. This information permits the HSP office to assign a medical code to the condition. These codes are based upon the International Classification of Disease Codes. Even though a medical code can be assigned, the data reflect the person's self report of the illness. This may be a problem where the condition was not medically attended. For most conditions, the person has seen a medical practitioner, particularly for chronic conditions and so it is generally reliable. For some illnesses, particularly acute illnesses where the person has not received a diagnosis from a medical practitioner, the assignment of a medical code is more problematic. In some instances persons may have illness conditions which they are not aware of and thus go unreported. Thus, it is felt that the Health Survey data provide an under (conservative) estimate of the incidence and prevalence of morbidity.

Measures of impact of illness are obtained by asking how the reported illness or injury affects them. If it causes them to cut down on any of their usual activities or if it limits them in doing their major activity or if they had to stay in bed because of it, and if so how many days they had to cut down, stay home from work or school and stay in bed because of it during the past year.

In order to measure service utilization they are also asked if they ever saw a doctor about the condition and how long ago their most recent doctor visit was. They are also asked whether they had any hospital stays during the past year and what conditions caused them to go and if and what kind of operations were performed during the stay. They are also asked how long they remained in the

hospital for each stay. Since the incidence of hospitalization is quite rare, particularly for the non-institutional population, the number of cases in the sample is often too small to do an adequate analysis of hospitalizations.

It is possible, therefore, to study the relationships of various combinations of factors which might be associated with morbidity. For example, it is possible to look at morbidity by different ethnicity, age, and gender groups, and also to look at the association of completed education and morbidity. One might also look at the relationship of seeing a doctor and morbidity. It is also possible to study the the kinds of illness which affect their ability to perform their major activities, or cause them to lose work days or school days or to remain in bed, and how many days of work, school loss or bed days they experienced due to illness during the year. These different relationships are discussed in some of the other chapters of this report.

The major advantages of the Health Survey lie in its ability to generate population estimates. The limitations of these estimates have to do with the nature of sampling and associated sample errors. This becomes a problem when trying to study illness conditions which are relatively rare, such as rheumatic heart disease. Another problem with sampling error arises when the specific characteristic we wish to study is rare, for example the detailed characteristics of persons living in Lanai. These estimates are based upon such a small sample that they are unreliable. Therefore, we have chosen to group the data in such a way as to generally assure an adequate sample size, however, there may be specific table cells which still remain small. It is wise, therefore, when looking at a table to

consider the characteristics which occur less frequently as less reliable than those which occur more frequently. For example, the data on Hawaiians are less reliable than on Part-Hawaiians because the Hawaiian category is very small.

One other major consideration which affects the data from the Health Survey is that the illnesses are self reported. This is a potential problem where persons have not consulted with a medical practitioner about the condition. Because of this problem the HSP does not publish data on detailed disease categories, especially on acute conditions. However, most of the conditions have been medically attended, especially the chronic conditions, and the person has received a diagnosis which is reported in response to the Health Survey questions. Therefore, in terms of general disease categories, the data do not present any problem.

Denominator Data

The Health Survey is designed to obtain data on illness conditions or numerator data as well as on population characteristics, which are denominators. The denominator or population data are inflated, as described above, according to the State and County annual estimates of population (see Table I in Appendix A). These denominators have been used in calculating the incidence and prevalence rates in this report. This is convenient particularly with respect to the morbidity rates; however, when used with the mortality data there is a problem in that ethnicity is defined slightly differently for the mortality data. This will be discussed in more detail in the following section on Mortality Data.

Method of Computing Incidence/Prevalence Rates and Age Adjusting These Rates

The incidence and prevalence rates were computed by obtaining

the aggregate number of events during the 1980-84 period and dividing by five to obtain the average number of annual events occurring during that period. For the denominators the average number of persons in each category was obtained by the same method. The numerators were divided by the denominators and multiplied by 1000 to obtain the average rate per 1000 population for the 1980-84 period. Because of this averaging, there may be some rounding errors in the rates.

In order to compute the age-adjusted rates, the direct method was used as described by Bogue (Bogue 1969, p.123). This method uses the age specific rates to multiply by the standard population (the total State population by age, sex and ethnicity) to generate estimates of total events by age, sex and ethnicity. These estimated total events are summed and divided by the denominator (total ages) to obtain the age adjusted rate for each sex and ethnic group. This is the simplest and most direct way of doing age adjusting where reliable age specific rates are available for the subpopulations.

It was felt that some of the age specific data might be unreliable due to small sample sizes, and consequently larger rounding errors. For this reason the age detail was collapsed into four categories, i.e., under 17, 17-44, 45-64 and 65+ rather than the traditional five-year age categories. Also, only the larger racial groups appear separately. The smaller groups appear within the "Other" category. Some of the geographic detail was limited also, i.e. Lanai could not be tabulated separately. With all of this combining/collapsing of categories, the resulting sample size for the age specific data were considered to be adequate to do the

direct method of age adjusting, otherwise an indirect method (which will not be discussed here) could have been applied, but would yield less satisfactory results.

B. MORTALITY DATA

The mortality data are obtained from the death certificates which are collected and tabulated by the Vital Statistics Office of the Hawaii State Department of Health. The death registration obtains information on the various characteristics of the deceased including the principal cause of death, place of residence, age at death, race and sex.

Cause of Death

The cause of death may be the principal cause or one or more contributing/underlying causes. The cause of death utilized in this report is the principal cause of death. The principal cause of death is assigned an ICDA code, which is defined the same as for the morbidity data discussed above. Only the general categories are tabulated for this report since many of the detailed causes occur with very low frequency.

Definition of Ethnicity/Race

The racial/ethnic classification differs from that used by the Health Survey (See description above). The racial/ethnic identity of the deceased person's father is assigned on the death certificate. This means that the numerators for the death rates utilize a different system for assigning race than do the denominators (which come from the Health Survey). This is a problem for assigning race for non-Hawaiians. For Hawaiians, however, it was not a problem since if both parents were Hawaiian, then the person is considered "Hawaiian" and if only one parent was Hawaiian

and the other was non-Hawaiian, the person was considered "Part-Hawaiian". Non-Hawaiians were a residual category derived by subtracting Native Hawaiians (Hawaiians + Part-Hawaiians) from the total population. By using only four ethnic categories, i.e. Native Hawaiian, Hawiian, Part-Hawaiian, and Non-Hawaiian there were no discrepancies between the numerators (mortality events) and the denominators (number of persons in the population).

Strengths and Weaknesses of Mortality Data

Some of the above classification factors must be considered when discussing strengths and weaknesses. Also, mortality data for small populations, even though it includes the total number of events and therefore, does not have any sample error, might be unreliable since there is considerable variability from year to year. For this reason this report has chosen to utilize data for five years instead of only one year. By computing the five year average for both the numerator and denominator, more reliable rates are produced. There are some rounding errors associated with averaging and so there may be minor inconsistencies in the data particularly where the number of events in the numerator is small.

In terms of using the mortality data as an indicator of health status or morbidity, there are some advantages and disadvantages. There are some kinds of illness conditions which are quite prevalent such as upper respiratory conditions, but which rarely cause death. Thus, mortality data may be a poor estimate of these prevalent yet less serious illnesses, but for more serious illnesses, mortality present a good picture of the prevalence of the illness. Also, morbidity surveys may miss some of the undiagnosed conditions which people may have but may not be aware of it, however, mortality data

is a good measure of impact on the effect of illness; it indicates how serious the condition is, i.e., if persons are dying from it. Some measures of mortality also indicate the survival of persons who have specific illnesses. Mortality reporting in Hawaii is complete and, even though there may be some inaccuracy in the reporting of cause of death, it is generally reliable, and certainly useable where general categories of cause are used.

Survival and Life Expectancy

Another important use of mortality data is found in the computation of survival rates by cause of death and also in computing life expectancy or life tables. Life tables have been computed for Hawaii (Gardner 1984, Park, Nordyke, Gardiner 1979). Differences in life expectancy illustrate the overall impact of morbidity upon different age, sex and racial groups, and are reported in other Chapters of this report.

Age Specific and Age-Adjusted Rates

As with morbidity rates, the mortality rates are computed in a similar fashion. The numerators, however, are a complete count of events as compared with the morbidity data where the numerators are estimates of total events derived from a sample. In both cases the events are accumulated over five years and averaged. Likewise the denominators are also accumulated over five years (1980-84) and averaged. For mortality, the ratio of events to population is multiplied by 100,000 to produce rates per 100,000. This is done because of the much lower frequency of mortality than morbidity in the population. The age adjusting is done in the same way as for the morbidity data, by the direct method, using the total State population age, sex, ethnicity distribution as the standard

population to which the subpopulations are adjusted (see description of age-adjusting above).

C. SPECIFIC DATA SETS: ABORTION DATA AND TUMOR REGISTRY

Abortion Data

The Hawaii Abortion Study data was obtained from women receiving pregnancy and delivery services in Hawaii over a period of many years. Some subsamples of this universe were followed over a period of ten years to obtain longitudinal data on pregnancy history and related factors. The information about the characteristics of pregnant women, women having normal deliveries, and women having abortions, spontaneous and induced, is the best and most complete available for Hawaii, even though it is now somewhat dated. The ten-year follow-up study is also useful for looking at life events and various factors which contribute to various pregnancy outcomes. This report utilizes a portion of the available data. One of the major problems with the data on Hawaiian women was the small sample size, although for very crude comparisons it was sufficient. Considerably more data are available from this study, although considerable effort is required for users to become familiar with the complexities of the study and data files. It is believed, however, that the data are reliable and reasonably well documented. Dr. Steinhoff of the University of Hawaii's Department of Sociology is the Principal Investigator.

Tumor Registry

The Hawaii Tumor Registry is located in the Cancer Research Center of Hawaii. It is funded by State and Federal funds. It supports a tumor reporting system in which all benign and non-benign neoplasms are reported from all physicians and facilities in the

State. Persons who appear in the registry are followed and data obtained on any change in the tumor or any procedures for treatment and/or surgical removal. Detailed information on the age, sex and racial characteristics of patients is recorded and can be utilized by researchers to conduct studies on the relationships of these factors and the prevalence and progress of these neoplasms. In addition to the Tumor Registry, the Cancer Center does a number of ongoing studies in the community, including special supplements to the HSP Health Survey, in-depth studies of specific sub-groups of the population who are at high-risk, as well as prospective and retrospective studies. The data appearing in the Chapter on Cancer comes from all of these sources.

D. HEALTH SERVICE AND UTILIZATION DATA

There are a number of sources of health service and utilization data in Hawaii. Some of the best sources are the most inaccessible. All of the health care providers collect data on patient characteristics and utilization of services. These data can be found not only in individual patient records in physician's offices but in health insurance billing files, inpatient records and the like. Inpatient facilities all do PAS or patient abstracts from patient records which obtain data on patient characteristics as well as diagnostic categories and treatment. These data are considered proprietary and very difficult to obtain for outside researchers. In addition, health insurance billing files contain some patient characteristics as well as diagnostic groupings and service uses. These data have no ethnic detail although they do have zip codes which can facilitate patient origin-destination studies. Again, these data are inaccessible to outside researchers. The Department

of Health service utilization data are obtained for different services they provide and are available, albeit with some restriction, costs and time delays. The Department of Health publishes an annual yearbook which summarizes much of this data, although it generally has no ethnic detail. Thus, even though there is a lot of data on service utilization, much of it has no ethnic detail and much of it is unavailable, because of its proprietary nature.

This report, therefore, has little if any of this kind of data included. Efforts to obtain this kind of data would indeed make a major contribution to the understanding of how Native Hawaiians, as well as others, are utilizing services and in identifying service gaps. One of the areas of need identified in the recent Office of Hawaiian Affairs' Population and Needs Assessment Survey (Johnson, 1985) was the need for medical/health services in general, and the reason for not receiving these services was in large part due to not having insurance coverage either through a job or through the Medicaid or Medicare programs.

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Chapter III

AN OVERVIEW OF ETHNIC COMPARISONS IN HAWAII

CHAPTER III. AN OVERVIEW OF ETHNIC COMPARISONS IN HAWAII

This chapter provides an overview of the Morbidity and Mortality experience among Native Hawaiians, including Hawaiians (who have pure ancestry) and Part-Hawaiians (those who have mixed ancestry).

The purpose of this chapter is to describe the incidence and prevalence of Morbidity and Mortality by cause in order to make some inferences about the health status and the health needs of Native Hawaiians. Comparisons of Native Hawaiians will be made with the other major ethnic groups in Hawaii in order to provide some perspective and in order to evaluate and interpret the Native Hawaiian morbidity and mortality experience. Other sections of this report will focus on specific conditions, such as cancer, hypertension, and diabetes which are among the more serious conditions Native Hawaiians experience. This chapter will identify other serious conditions which need attention, and even though a detailed discussion of these additional conditions will not be made, some evaluation of the importance of these conditions will be given.

The tables which present the data refer to three different categories of persons with Hawaiian ancestry. Hawaiians are those who are not mixed with other ethnicity. Part-Hawaiians are those who have Hawaiian ancestry mixed with some other ethnicity. The term Native Hawaiians refers to the combination of these two categories. Other ethnic categories in the data include those who report parentage only from that ethnicity, except for the "Other/Unknown" category which includes all the minor ethnicities and those who have mixed parentage, except for those mixed with Native Hawaiian. If we are to compare Native Hawaiians with other

ethnicities, it is most appropriate to compare the "Hawaiian" or pure category with the other groups since they too include only those who have one ethnicity. However, it is estimated that among Native Hawaiians (Johnson, 1983) only 9,000 persons in the State are pure Hawaiian while some 50,000 persons in the State have at least half Hawaiian blood. The other 130,000 persons with Hawaiian ancestry have less than half Hawaiian blood. This report will maintain the distinction between two sub-categories of Native Hawaiians: Hawaiians (pure Hawaiian ancestry), and Part-Hawaiians (mixed Hawaiian ancestry) in order to facilitate the explanation and evaluation of the mortality and morbidity experience of Native Hawaiians (both groups combined).

A. MORTALITY

Mortality is an important indicator of health in a population. The causes of mortality provide a picture of the kinds of medical and non-medical reasons for death. These are important since they provide an indication of the kinds of problems which lead to death and which might be areas of concern. Death caused by accidents or suicide or some other preventable illness condition might be averted with appropriate intervention. This section provides a picture of the kinds of causes which contribute to death, as well as the distribution of deaths by ethnicity, age and gender. The ethnic comparisons are valuable in showing how Native Hawaiians fare mortality-wise and provide clues for improvement of the mortality situation among Native Hawaiians.

The causes of mortality are those utilized by the national and state vital reports. Definitions of these causes can be obtained from the reports published by the Hawaii State Department of

Health's, Vital Statistics Office.

Registration of death has been practiced in Hawaii since 1908. In reviewing the mortality trends since 1910, Native Hawaiians have experienced the highest age-sex standardized mortality rates of any major ethnic group in Hawaii (Table 6, Research and Statistics Report #2), with a downward trend experienced for all ethnic groups (Figure 1, Research and Statistics Report #38).

Part-Hawaiians have experienced mortality rates somewhat similar to non-Hawaiians, with Hawaiians experiencing much higher rates than other groups. The mortality rates for cancer and heart disease have increased over time with mortality caused by infectious diseases on the decline (p.4, Research and Statistics Report #38). Mortality from hypertension, heart disease, arteriosclerosis and diabetes have increased markedly between 1920 and 1960 with a decline since that time. For mortality caused by cancer, Native Hawaiian males were the highest of all groups and were among the highest for cancer of the stomach, with the lowest survival rate from colon cancer. Native Hawaiian females had the highest mortality rates for cancer of the breast and cervix. The sums of rankings of age-standardized mortality from all cancer sites in 1968-72 and 1978-80 were highest among Native Hawaiians.

Another indicator of mortality is life expectancy, historically Native Hawaiians have had among the lowest life expectancy at birth, ranging from five to ten years less than the overall population average during the period from 1910 through 1970 (Table 1, Research and Statistics Report #26). The most recent life tables for 1980 show Native Hawaiian life expectancy at birth about five years less than the total population of the State (p.5, Research and Statistics

Report #47).

In recent years (1980-84) Native Hawaiians are experiencing higher death rates than non-Hawaiians. Part-Hawaiians, while higher than non-Hawaiians, have lower mortality overall than Hawaiians, even after adjusting for age (see Table III-1).

Accidental deaths are highest for Hawaiians (46.3 per 100,000) than for Part-Hawaiians (30.1 per 100,000) who in turn are higher than non-Hawaiians (27.8 per 100,000). Motor Vehicle accidents comprise the vast majority of accidental deaths for Native Hawaiians, even a higher proportion than for non-Hawaiians. The next most frequent kind of accidental death is from drowning, particularly for the younger Native Hawaiians (see Appendix A, Table IVA on Deaths by Cause, Age and Ethnicity).

Other kinds of non-medical causes of death are suicide and homicide. While these two causes of death were relatively infrequent, Hawaiians had higher rates of death from Suicide than non-Hawaiians and Native Hawaiians had higher rates of death from homicide than non-Hawaiians (see Table III-1).

Table III-2 shows the rankings of the top ten causes of death within each ethnic category. Overall, the diseases of the heart ranked the highest; however, diabetes was ranked highest for Part-Hawaiians and non-Hawaiians. Hypertensive heart disease was the second highest cause of death for Part-Hawaiians and non-Hawaiians. Ischemic heart disease was the highest and other heart diseases were the next to highest cause of death for Hawaiians and Native Hawaiians.

Other diseases were ranked third and fourth. This category includes a number of different diseases, each of which alone would

not be an important cause of death.

While diabetes was the most frequent cause of death for Part-Hawaiians and non-Hawaiians, it ranked ninth for Native Hawaiians and seventh for Hawaiians and an overall ranking of sixth.

Malignant neoplasms (cancer) was another important cause of death. Cancer of the digestive organs (such as stomach, bowel, etc.) ranked fourth and fifth. Cancer of the respiratory system (such as lungs) was ranked fifth through eighth overall. Leukemia was ranked fifth overall and other kinds of cancer were ranked ninth overall.

In looking at the rankings for Native Hawaiians and non-Hawaiians we can see that between heart disease, cerebrovascular disease, hypertension, cancer and diabetes which were the highest ranking causes of death there is a general congruence. Diseases of the circulatory system are generally the highest, then cancer, then diabetes. There are some differences when focusing upon specific diseases and upon sub-categories of Native Hawaiians. This kind of ranking allows us to see the order of importance of different causes of death within each ethnic category or sub-category.

Table III-3 shows the rankings of different ethnic categories on each cause of death. Overall, there is a lot of consistency, with Hawaiians having the highest ranking (meaning the highest age-adjusted rates) and Native Hawaiians second, Part-Hawaiians third and non-Hawaiians fourth. Non-Hawaiians rank higher than Hawaiians only on hypertension. Within the category of Native Hawaiian, Part-Hawaiians rank higher than Hawaiians on hypertension, leukemia, diabetes and hypertensive heart disease. Hawaiians ranked higher than Part-Hawaiians on all other causes of death. These

rankings are based upon age-adjusted mortality rates for each ethnic group and so differences in the age distribution of the different ethnic categories have no effect on these rankings. Thus, these findings are considered to be a reliable indication of the most important causes of death and how Native Hawaiians compare with non-Hawaiians.

B. MORBIDITY

Morbidity is the presence of acute or chronic illness, accidents and injuries. This section will show the distribution of morbidity within the Native Hawaiian population and between Native Hawaiians and other ethnic groups living in Hawaii. The sections on acute and chronic morbidity will summarize the available data over time with emphasis upon the recent period. Detailed tables of the recent data are available in Appendix A, Tables II, III and V series.

Acute Conditions

Acute conditions differ from chronic conditions in terms of type and duration. For our purposes acute conditions are those whose duration is less than three months and chronic conditions are those whose duration is greater than three months. The general types of acute conditions are infectious and parasitic, respiratory, digestive, and injuries. Respiratory conditions can be either acute or chronic, depending upon duration. This is also true of digestive conditions. Injuries are generally acute, whereas impairments are oftentimes the chronic effects of injuries or accidents.

Tables III-4 and III-5 illustrate the rates of acute conditions for different ethnic groups. In order to summarize these rates, Tables III-6 and III-7 show rankings of these rates. Table III-6

shows how the acute condition rates are ranked within each ethnic group. There is considerable agreement among the different ethnic groups regarding these rankings. For example, upper respiratory conditions are ranked as number one, meaning that they have the highest incidence. Second are "other" acute conditions, third is influenza for most groups, fourth are injuries, although there is less agreement, fifth are infectious and parasitic conditions, sixth are "other" respiratory and seventh, with complete agreement, are digestive conditions.

Within the Native Hawaiian categories there are only two conditions which are ranked differently for Hawaiians and Part-Hawaiians and they are influenza and injuries. Influenza is ranked higher (3) for Part-Hawaiian compared with fourth for Hawaiians. Injuries are ranked higher for Hawaiians (3) compared to fourth for Part-Hawaiians. Overall, Native Hawaiians do not appear to differ from other ethnic groups nor do subgroups of Native Hawaiians differ from the overall Native Hawaiian group regarding the distribution of acute conditions. It appears that upper respiratory conditions are overwhelmingly high for all ethnic groups in Hawaii. This is consistent with the high prevalence rates for hayfever, asthma, and bronchitis in the chronic conditions discussed below.

In Table III-7 the rankings are made of the acute condition rates across each ethnic group for each condition separately. Where rates are identical the rankings are shared. Generally, Part-Hawaiians have higher rankings than average and Hawaiians have lower rankings than average. Part-Hawaiians are highest on respiratory conditions compared to Hawaiians who were low on all but the "other" category of acute conditions. This finding contrasts

with the prevalence rates for Hawaiians and Part-Hawaiians, in which Hawaiian prevalence rates were generally higher than for Part-Hawaiians (for most conditions). Acute conditions generally affect younger populations more and chronic conditions generally affect older populations more. Hawaiians, being generally older, experience higher prevalence of chronic conditions and Part-Hawaiians, being generally younger, experience higher incidence of acute conditions.

In addition to the above observations, Table III-5 illustrates the distribution of acute condition rates within the subgroups and genders for Native Hawaiians. As indicated in the previous discussion, Part-Hawaiians generally have higher incidence rates than Hawaiians. Also, females generally have higher rates than males. The latter observation is true for all acute conditions except for "other" respiratory, digestive conditions, and injuries. In these latter conditions, male rates are higher than female rates for "other respiratory" and digestive conditions among Hawaiians and for injuries among Part-Hawaiians.

Chronic Conditions

As mentioned above, chronic morbidity refers to long term illness and impairments. Data on chronic morbidity show that over the past two decades Native Hawaiians have experienced higher rates of chronic illness than have other groups. In terms of hospitalization and days spent in bed due to illness, Native Hawaiians were higher than other groups.

Specifically, a 1972 and a 1980 report show an inverse relationship between income and chronic illness and hospitalization and that Native Hawaiians have among the highest rates of chronic

illness and hospitalization (Research and Statistics Reports #19 and #31). A 1978 study shows higher than expected age-sex standardized rates of heart disease, hypertension and cerebrovascular disease. Chinese, Filipinos and Japanese have lower than expected rates (Research and Statistics Report #23, Tables 3 and 4). This same report shows that Native Hawaiians have the highest ranking of any group on selected chronic conditions, number of days spent in bed due to illness and number of hospital nights. A 1982 study shows that Native Hawaiians have the highest mortality (Research and Statistics Reports, #38).

Current Morbidity Among Native Hawaiians

In looking at the age-specific rates of some twenty chronic conditions in Appendix A, Table IIB, we can observe that among Native Hawaiians and for each gender group (males/females) those who are older have higher prevalence than those who are younger. This is also true for all other ethnic groups in the State.

Age is an important factor in determining the kinds and frequency of illness, i.e., older ages have more chronic conditions than do younger ages. When comparing the incidence and prevalence of morbidity among different groups it is important to consider the differences in the age distributions. For this reason the prevalence rates of some twenty chronic conditions have been standardized to the overall State age distribution, permitting a more meaningful comparison of their rates between Native Hawaiians and the other ethnic groups. This comparison is shown in Appendix A, Table IIB.

It is important to understand the age-specific unadjusted rates

for the different Native Hawaiian categories in order to appreciate the effects of the age distribution and age-standardization upon the rates. Table III-8 shows the unadjusted and adjusted prevalence rates of the eleven most prevalent chronic conditions (also see Appendix A, Table IIB). As mentioned above, older ages have higher prevalence rates than do younger ages. Also, Hawaiians have higher overall rates (795.0 per 1000) than do Part-Hawaiians (510.7 per 1000). Within each of these categories, females have higher rates than do males, i.e., Hawaiian females (808.0), Hawaiian males (781.5); Part-Hawaiian females (524.2), Part-Hawaiian males (497.3).

Impairments are suffered more by Native Hawaiian males than females, whereas arthritis and rheumatism are suffered more by females than males. Respiratory conditions such as asthma, hayfever, sinusitis and bronchitis/emphysema are suffered more by females than males. Heart conditions are suffered more by males than females. high blood pressure and diabetes are higher among Hawaiian males and lower among Part-Hawaiian males.

Hawaiians

When looking at specific illness conditions we see that high blood pressure (120.9), heart conditions (71.8), diabetes (69.2), arthritis and rheumatism (50.5), and impairment of back and spine (50.0) are the most prevalent for Hawaiians. When comparing males and females within this category we can see that both genders are highest on high blood pressure (Males=117.3, Females=124.3), with females having a higher prevalence than do males. Next are heart conditions (75.2), diabetes (71.1), impairment of back and spine (63.0) and hearing impairments (61.1) for males. In contrast, females have a much higher prevalence of arthritis and rheumatism

(77.7), and asthma (70.0); with heart conditions (68.6) and diabetes (67.4) lower than males.

Looking at the effects of age-adjustment of the Hawaiian rates, the age-adjusted rates show high blood pressure (82.1 compared to 120.9 unadjusted), heart conditions (49.4 compared to 71.8 unadjusted), diabetes (44.2 compared to 69.2 unadjusted), asthma (42.6 compared to 41.6 unadjusted) and impairment of back and spine (41.8 compared to 50.0 unadjusted) to be the highest for Hawaiians. For males it changes slightly to high blood pressure (83.4 compared to 117.3 unadjusted), heart conditions (55.7 compared to 75.2 unadjusted), impairment of back and spine (50.2 compared to 63.0 unadjusted), diabetes (47.7 compared to 71.1 unadjusted) and hearing impairments (38.2 compared to 61.1 unadjusted). For females it changes to asthma (80.5 compared to 70.0 unadjusted, high blood pressure (79.0 compared to 124.3 unadjusted), arthritis and rheumatism (42.4 compared to 77.7 unadjusted), heart conditions (41.7 compared to 68.6 unadjusted), and diabetes (40.4 compared to 67.4 unadjusted).

The age-adjustment generally lowered the prevalence rates for Hawaiians, meaning that Hawaiians, being older than the average for the Native Hawaiian population, generally have higher rates than the Part-Hawaiian group which have a younger population. In some instances the effect of controlling the age distribution are higher, rather than lower rates. For instance asthma and impairments of back and spine rates. This might mean that these two conditions are more prevalent in younger populations and when age-adjusting the rates for Hawaiians who are older to the age distribution of the total population, it had the effect of increasing the Hawaiian

rates. The important thing to remember about age-adjustment is that it enables a comparison of different groups/categories of the population, because it erases or controls for the effect of differences in age. Now let us look at the prevalence rates for the Part-Hawaiian group.

Part-Hawaiians

Part-Hawaiians experience their highest prevalence with asthma (57.9 per 1000), high blood pressure (51.7), hayfever (42.2) and impairment of back and spine (38.1). Males have asthma (53.4), high blood pressure (50.4), impairment of back and spine (43.7), and hayfever (35.3). Females have asthma (62.4), high blood pressure (53.0), hayfever (49.1) and impairment of back and spine (32.4). Thus, Part-Hawaiians have a different set of high prevalence conditions than Hawaiians, due in part to the difference in their age distribution. Within the Part-Hawaiian group, male and female rates are high for similar conditions, although female rates are higher for asthma, high blood pressure, and hayfever and lower for impairment of back and spine. The higher rates for impairment of back and spine among males is probably due to differences in major activity (i.e., occupation). Now we will see how the control of differences in age distribution affect the prevalence rates.

The age-adjusted rates for Part-Hawaiians show high blood pressure (87.6 compared to 51.7 unadjusted), asthma (54.0 compared to 57.9 unadjusted), impairment of back and spine (49.5 compared to 38.1 unadjusted), and hayfever (43.7 compared to 42.2 unadjusted). Thus, the effects of the control of age are mixed with the age-adjusted rates for high blood pressure, impairment of back and

spine and hayfever increasing and asthma decreasing. This indicates that Part-Hawaiians, having a slightly younger than average population, have fewer illnesses associated with aging and more illnesses associated with younger ages.

The effects of controlling for age produced some changes in the rates for females: high blood pressure (90.6 compared to 53.0 unadjusted), asthma (62.8 compared to 62.4 unadjusted), hayfever (53.3 compared to 49.1 unadjusted), impairment of back and spine (40.2 compared to 32.4 unadjusted) and arthritis (36.4 compared to 20.6 unadjusted). Generally the effect was to reduce the rate, meaning that when Part-Hawaiian females age is the same as for the total population, their rates of chronic conditions is lowered.

The effects of controlling for age also produced some changes in the rates for males: high blood pressure (84.1 compared to 50.4 unadjusted), impairments of back and spine (58.9 compared to 43.7 unadjusted), asthma (45.0 compared to 53.4 unadjusted), hayfever (33.9 compared to 35.3 unadjusted) and heart conditions (32.1 compared to 18.2 unadjusted). For three of these five conditions, i.e. high blood pressure, impairment of back and spine and heart conditions, the effect of age-adjustment was to reduce the rate. For the other two conditions, i.e. asthma and hayfever, the effect was to increase the rate.

Comparison of Native Hawaiians With Other Ethnicities

In addition to understanding the distribution of chronic morbidity within the different genders and subgroups of Native Hawaiians it is important to compare Native Hawaiians with non-Hawaiian ethnicities. This allows an evaluation of the age-adjusted chronic morbidity rates for Native Hawaiians. Tables

III-9 and III-10 have been summarized from Appendix A, Table IIB. Instead of using rates, these tables utilize rankings of the age-adjusted rates from Appendix A, Table IIB. The rankings in Table III-9 run vertically within some 20 chronic conditions, showing for each ethnic category which chronic condition has the highest rate (rank 1) all the way to that which has the lowest rate (rank 20). Where two conditions have the same rate, they share the same rank.

In general, high blood pressure is ranked number 1 for all but one ethnic group, i.e., Caucasians. Hayfever is ranked overall number 2, with impairment of back and spine number 3, then asthma (4), hearing impairments (5), arthritis (6), chronic allergic skin condition (7), chronic sinusitis (8), heart conditions (9) and diabetes (10). For Native Hawaiians there is agreement with the top ranked condition, however second ranked is asthma, then impairment of back and spine (same as overall), hayfever (4), diabetes (5), heart conditions (6), hearing impairments (7), arthritis (8), chronic allergic skin condition (9) and bronchitis (10). Thus, heart conditions, asthma and diabetes are ranked higher for Native Hawaiians than for the overall population. This is an indication that these conditions may be a greater problem among Native Hawaiians than among non-Hawaiians.

When comparing Hawaiians with Part-Hawaiians we see that both subgroups share high blood pressure as the highest ranked condition. Hawaiians then differ with heart conditions (2), diabetes (3), asthma (4), impairment of back and spine (5), arthritis and rheumatism (6), hearing impairment (7), hayfever (8), bronchitis/emphysema (9) and gout (10). Part-Hawaiians, being much

larger in number, were similar to the Native Hawaiian category. As we can see from these differences in rankings, Hawaiians have higher rates of problems associated with older ages than do Part-Hawaiians. Hawaiians for the more part seem to have high rankings in conditions which are associated with diet, such as high blood pressure, diabetes, gout, and heart conditions. In addition, Hawaiians appear to be high in impairments of back and spine and in hearing. Some of the chronic respiratory conditions appear to affect the Hawaiian population heavily, such as asthma, hayfever and bronchitis/emphysema.

Table III-10 contrasts with Table III-9 in that it illustrates the relative importance of each chronic condition across the spectrum of ethnic groups, rather than within each ethnic group. From Table III-10 we can expect to discover which conditions are comparatively high, medium or low in prevalence for the Native Hawaiian groups. In order to facilitate this, the rightmost column of Table III-10 summarizes the relative prevalence of each condition listed in the Table for the Native Hawaiian groups as a whole.

Those chronic conditions which are "high" compared to the other ethnicities are heart conditions, high blood pressure, asthma, diabetes, and gout. In addition, those chronic conditions which are "high/medium" are malignant neoplasms, bronchitis/emphysema, and varicose veins. This list of chronic conditions overlaps the list obtained from Table III-9, thus, verifying their greater importance for Native Hawaiians than for other non-Hawaiian ethnic groups. This does not mean that other groups should not be concerned about them, it simply means that Native Hawaiians are justified in being more concerned than other groups since the prevalence of these

conditions is higher among Native Hawaiians than others.

By contrast, Native Hawaiians need not be as concerned about those chronic conditions which are evaluated "low", such as stomach ulcer, hemorrhoids, etc. Other groups might indeed find these conditions of greater concern than Native Hawaiians.

Within the Native Hawaiian groups, it appears that Hawaiians have a higher ranking than Part-Hawaiians on heart conditions, diabetes, malignant neoplasms, goiter and varicose veins. Part-Hawaiians, by contrast, have higher rankings on impairment of back or spine, high blood pressure, hearing impairments, asthma, bronchitis/emphysema, and gout. Part-Hawaiians seem to have higher prevalence of impairments and respiratory conditions. Hawaiians have higher prevalence of chronic conditions associated with age. Both have a high prevalence of conditions associated with diet, such as diabetes, high blood pressure, and gout.

C. EFFECTS OF MORBIDITY

Previous discussion has been primarily concerned with the incidence and prevalence of chronic and acute morbidity conditions in the Native Hawaiian population which provides a picture of the distribution and extent of morbidity. Another dimension of morbidity is that of its impact upon the Native Hawaiian population in terms of limiting the kinds or amount of activities usually engaged in, that is, activity limitation (see Table III-11). Another indicator of this dimension is whether or not a specific condition is limiting a person's ability to engage in their usual activities (see Tables III-12 and III-13). This is important since in many instances where a person is limited in his/her usual activities there may be more than one condition present. It is

useful to know which of those conditions cause the limitation. A third indicator of the impact of morbidity might be the number of days persons stay away from school (for children), or work (for working ages) due to illness. A fourth indicator is the number of days persons must remain in bed all or most of the day due to illness. These latter indicators have not been associated with any specific illness or morbidity conditions (see Table III-14).

Table III-11 illustrates the extent of activity limitation by chronic condition for Native Hawaiians. There are four categories of limitation, the most severe limitation is, "Unable to carry on major activity", which means that the person cannot work, go to school or keep house or do any of the other major activities they normally would be able to do. The second most severe category of limitation is when the person is, "Limited in the amount or type of major activity" which means that they can still perform a major activity but are restricted in the kind of activity or in the extent of their participation in it. The third most severe category of limitation indicates a reduction in limitation since the person is, "Limited but not in major activity", which means they can perform any major activity they want, such as work, keep house, etc., but they nevertheless suffer some restriction in what they can do otherwise. The least severe limitation is "No limitation of activity".

For our discussion here we have taken the most severe category of limitation, "Unable to carry on major activity" and show the percentages for the total population and for each category of Native Hawaiians in the first part of Table III-11. The second part of the Table shows the least severe limitation category, "No Limitation of

Activity" for each chronic condition and for the total population and for each category of Native Hawaiians.

In looking at the total population, first we can see that the highest percentages in the "Unable" category are malignant neoplasms (17.1%), then visual impairments (13.3%), heart conditions (11.6%), mental and nervous conditions (11.2%), other (9.5%), arthritis and rheumatism (8.3%), diabetes (7.9%), hearing impairments (6.9%) and bronchitis/emphysema (6.7%). Overall, among all chronic conditions, some 6.2% report being unable to carry on a major activity.

As we know from previous discussion, some of these conditions are not as prevalent as others which are less limiting. This means that while some chronic illnesses are rather common, they do not limit a person's usual activity in a serious way. For example, we can see that some 83.6% of persons with high blood pressure have no limitation at all, even though this is the most common chronic condition. Another common condition is hayfever and yet 92.4% of those who have this condition report no limitation. For persons with impairment of back or spine, some 73.0% say they have no limitation. For persons with hearing impairments, some 74.0% have no limitation. For persons with asthma, some 86.6% say they have no limitation. In fact, overall for all chronic conditions combined, some 75.7% report no limitation.

When comparing Native Hawaiians with the total population we can see that for all conditions combined there is little difference in the percentages who are unable to carry on their major activity. However, we can see that Hawaiians have some 12.3% who are unable as compared to only 5.6% of Part-Hawaiians. This is due in part to the differences in age and in the types of chronic conditions these two

subgroups of Native Hawaiians experience.

In looking at specific conditions, malignant neoplasm is the condition which has the highest percentage of severe limitation for Hawaiians (44.4%) and Part-Hawaiians (19.1%). More Hawaiians are unable to carry on their major activity probably due to their older age as a group, as compared with Part-Hawaiians. For Hawaiians, the next most limiting conditions are visual impairments (35.6%), mental and nervous condition (32.3%), other (21.3%), varicose veins (14.2%), arthritis and rheumatism (13.6%), heart conditions (13.5%), gout (13.5%), and hearing impairments (13.2%). Part-Hawaiians differ in that their next most limiting conditions are mental and nervous conditions (14.6%), visual impairments (12.5%), arthritis and rheumatism (12.4%), diabetes (10.9%), heart conditions (9.8%), and other (8.4%). Although there is considerable overlap in the kinds of conditions causing severe limitation of activity, the major finding is that the percentages of persons with severe limitation is much higher for Hawaiians than for Part-Hawaiian.

Now that it has been shown that a greater proportion of Hawaiians suffer severe limitation than Part-Hawaiians from a similar set of chronic conditions, we will now discuss the opposite end of the limitation spectrum, i.e., "No limitation" for each of the chronic conditions listed in the second part of Table III-11. As mentioned earlier, some 75.7% of the total population suffer "no limitation" of usual activity as a result of chronic conditions they have. Native Hawaiians and Part-Hawaiians have nearly the same percentages who suffer no limitation due to their chronic conditions. Hawaiians by contrast have a lower percentage (63.3%) who suffer no limitation. This means that chronic conditions

overall create greater or more severe limitation of activity among Hawaiians than for Part-Hawaiians, Native Hawaiians or for the total population.

In looking at specific chronic conditions we can see that some of the most prevalent conditions are also the least limiting (i.e., have the highest percentage of no limitation). For Hawaiians the least limiting conditions are benign and unspecified neoplasms (95.4%), chronic sinusitis (92.1%), hayfever (86.3%), high blood pressure (85.7%), and chronic and allergic skin condition (81.5%). Part-Hawaiians by contrast have the following conditions which are least limiting: hayfever (92.8%), chronic and allergic skin condition (87.2%), asthma (87.1%), goiter (85.3%), hemorrhoids (82.3%), high blood pressure (82.0%) and bronchitis/emphysema (82.0%).

In summary, Hawaiians have much higher percentages of persons suffering from chronic conditions and reporting severe limitation of activity than do Part-Hawaiians or the general population. The specific conditions which Native Hawaiians, both subgroups, most frequently report as causing severe limitation are heart conditions, visual impairments, arthritis and rheumatism, mental and nervous disorders. In addition, Hawaiians suffer severe limitation from varicose veins and gout and Part-Hawaiians from diabetes. These are the chronic conditions which appear to be most debilitating and which have the greatest negative effects for Native Hawaiians.

In addition to Table III-11 which illustrates the percentages of Native Hawaiians with chronic conditions who have "severe" and "no" limitation of usual activity, it is useful to consider the

concept of causation of limitation. Table III-12 shows the percentages of persons within each ethnic group who claim that a specific chronic condition causes their limitation of activity. This is in contrast to Table III-11 where there may be overlapping conditions responsible for the activity limitation. Table III-12 also provides us with a comparison of different ethnic groups as a way of indicating the differences and similarities of Native Hawaiians with others in the population.

Native Hawaiians in general, and Hawaiians in particular, have the highest percentages of persons reporting chronic conditions as a cause of their limitation of activity. In order to make the comparisons easier, Table III-13 shows the ranking of percentages across each condition. Table III-13 shows which ethnic group has the highest percentage of limitation for each condition. Hawaiians are ranked number one on seven of the twenty chronic conditions and Part-Hawaiians are ranked number one on an additional six, meaning that between the two groups of Native Hawaiians thirteen out of twenty chronic conditions are ranked the highest in terms of the percentages reporting that those conditions are the cause of their activity limitation.

The specific conditions which Hawaiians report as causing their limitations are heart conditions, mental and nervous conditions, visual impairments, hayfever, hemorrhoids, and gout. The specific conditions which Part-Hawaiians report highest as causing their limitations are arthritis and rheumatism, hearing impairments, chronic and allergic skin conditions, chronic sinusitis, stomach ulcer and benign and unspecified neoplasm. Some of this list repeat those reported in Table III-11, i.e., heart conditions, mental and

nervous conditions, visual impairments, arthritis and rheumatism, hearing impairments, and gout. Diabetes which was also ranked high in Table III-11 is ranked second for Hawaiians and fourth for Part-Hawaiians. Stomach ulcer, benign & unspecified neoplasm were ranked higher in Table III-12 than in Table III-13.

It appears that by looking at the effects of chronic conditions upon the usual activities of Native Hawaiians that the greatest or most severe limitation is caused by heart conditions, mental and nervous conditions, visual impairments, hayfever, hemorrhoids, gout, arthritis and rheumatism, hearing impairments, chronic and allergic skin conditions, and diabetes. In addition, high blood pressure, malignant neoplasms, impairment of back or spine, asthma and bronchitis/emphysema are also very prevalent (higher than in other groups) even though their effect in terms of limitation of usual activity are not as severe.

The previous discussion has focused upon limitation of usual activity as an indicator of the severity of effects of chronic conditions. Next will be a consideration of a different kind of effect which is not associated with any specific illness conditions, but rather with illness or morbidity in general. This concept is restriction from going to school for school children, restriction from going to work for those who work, and spending time in bed all or most of the day due to illness. Table III-14 facilitates our discussion of these measures of effect. School loss days and work loss days were obtained by asking respondents how many days they stayed home from school or from work during a specific period of time due to illness. These data were used to estimate the total number of days per year, and the data in Table III-14 show the

average number of days per year a person stayed home from school, for children, from work, for workers. Bed days were obtained in a similar manner, with persons asked to indicate how many days they had to stay in bed all or most of the day due to illness during a given period.

Bed days is an indicator of more severe impact than a school loss day or work loss day, since most persons who stay home from school or work due to illness are not confined to bed all or most of the day. Table III-14 illustrates across the different ethnic groups which ones had more school and work loss days and bed days due to illness, thus indicating degree of impact of illness.

In comparing Native Hawaiians with other groups, it appears that Native Hawaiians have the greatest average number of days lost from school and from work due to illness as compared with other groups. Within the Native Hawaiian category, Hawaiians have more work loss days (4.3/year) than Part-Hawaiians (3.2). Conversely, Hawaiians had fewer school loss days per year (2.1) than Part-Hawaiians (2.5). Thus, based upon these two indicators of severity of effects of illness Native Hawaiians appear to suffer more from the effects of illness than do other groups.

In looking at the average number of days spent in bed due to illness, Native Hawaiians as a group are second only to Caucasians. However, Hawaiians, within the Native Hawaiian category, are much higher than any other group with an average of 8.5 bed days per person per year due to illness. This is twice the number of days spent in bed for the population as a whole (4.3 days). Part-Hawaiians exceeded the average by a small margin (4.9 days). From this indicator we might conclude that Hawaiians suffer a

greater impact from illness conditions than does any other group, since the number of days in bed is the indicator of greatest severity. This is due perhaps to the kinds of illnesses Hawaiians suffer and also due to their overall older population as compared with the other groups.

D. SUMMARY

Native Hawaiians have higher prevalence rates than non-Hawaiians on many chronic conditions. Within the Native Hawaiian group, Hawaiians have the highest rates for heart conditions, diabetes, malignant neoplasms, goiter and varicose veins. Part-Hawaiians have the highest rates on: impairment of back or spine, high blood pressure, hearing impairments, asthma, bronchitis/emphysema, and gout. Hawaiians, being older as a group, experience high rates of morbidity conditions associated with aging compared with Part-Hawaiians, who are generally younger as a group, who experience higher rates of respiratory conditions and impairments. Both categories experience high rates of conditions associated with diet/nutrition.

Native Hawaiian males generally have lower prevalence rates for chronic conditions than do females. For Hawaiians, both genders experience high rates of high blood pressure. Males have higher rates for heart conditons, diabetes, impairment of back or spine and hearing. Females have higher rates on arthrtitis/rheumatism, and asthma. For Part-Hawaiian males, impairments of back or spine are, high as compared with females who have higher rates on asthma, high blood pressure and hayfever. Thus, males appear to have more impairments and degenerative conditions and females experience more respiratory conditions. Both genders have high rates on dietary

related conditions, such as diabetes and high blood pressure.

Thus, for Native Hawaiians, high blood pressure, heart conditons, hayfever, asthma, impairments of back or spine and hearing, diabetes, bronchitis/emphysema, malignant neoplasms, gout, varicose veins and goiter are the most prevalent chronic conditions.

For acute conditions, by far the most common are upper respiratory conditions. This is also the most common acute conditon for other major ethnic groups in Hawaii. For upper respiratory conditions, Part-Hawaiians experience the highest incidence as compared with Hawaiians and other ethnic groups. Overall, Native Hawaiian rates for acute conditions were intermediate compared with those for other ethnic groups. Female rates are higher than male rates.

Mortality is higher among Native Hawaiians than non-Hawaiians and among Hawaiians than Part-Hawaiians. Even when controlling for age differences among Hawaiians and Part-Hawaiians, the Hawaiians have higher mortality. Life expectancy is about five years less for Native Hawaiians than for the population in general. The causes of death which contribute most to mortality of Native Hawaiians are diseases of the heart, malignant neoplasms, hypertension, cerebrovascular disease, diabetes and motor vehicle accidents.

As a rule, Native Hawaiians experience greater activity limitation and restriction of activity due to illness than non-Hawaiians. Hawaiians experience more severe effects of morbidity than do Part-Hawaiians. Malignant neoplasms, visual impairments, mental and nervous conditions, heart conditions, arthritis and rheumatism, diabetes, hearing impairments, varicose veins and gout are the chronic conditions responsible for the

severest level of activity limitation among Native Hawaiians.

Restricted activity days such as school loss or work loss days and days spent in bed are higher for Native Hawaiians than non-Hawaiians. Hawaiians have more work loss and bed days due to illness and Part-Hawaiians have more school loss days due to illness among Native Hawaiians. The effect of morbidity among Native Hawaiians is to prevent or limit their participation in their major daily activities and to restrict their activities by keeping them at home or in bed, thus limiting their productivity and participation in their usual activities.

The kinds of morbid conditions found most commonly among Native Hawaiians and which are responsible for mortality, limitation and restriction of their usual activities might be grouped into four general categories: those which reflect dietary/nutritional problems, those which reflect lifestyle/environmental problems, those which are due to aging, and those which come from accidents or injuries. Hawaiians tend to have problems associated with aging. The Part-Hawaiians, who are younger, have problems with accidents and injuries as well as life style/environmental problems. Native Hawaiians share equally in problems associated with diet and nutrition. Programs for prevention and treatment must consider the underlying factors associated with mortality and morbidity conditions in order to be effective. It is also of importance that sub-groups of Native Hawaiians be identified with respect to those problems of importance to their specific group.

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TABLE III-1, AGE ADJ'D DEATH RATES BY CAUSE, ETHNICITY HAWAII 1980-84

(Rates per 100,000) CAUSE OF DEATH	TOTAL	NATIVE HAW'N	HAW'N	PART- HAW'N	NON- HAW'N
INFLUENZA & PNEUMONIA	19.0	19.3	38.5	14.2	18.9
BRONCHITIS EMPH ASTHMA	5.7	6.9	6.8	5.3	5.5
PEPTIC ULCER	1.8	1.1	0.0	1.4	1.8
CIRRHOSIS OF LIVER	7.2	6.6	6.2	6.3	7.3
NEPHRITIS & NEPHROSIS	4.5	5.4	12.5	3.7	4.3
PREG CHILDBIRTH & PEUR	0.1	0.0	0.0	0.0	0.1
CONGENTIAL ANOMALIES	7.3	7.1	0.0	7.3	7.4
PERINATAL CONDITIONS	8.3	9.8	0.0	10.0	7.6
ILL DEFINED CONDITIONS	5.0	5.0	6.2	5.1	4.9
OTHER DISEASES	50.4	61.5	110.4	56.2	48.6
ACCIDENTAL DEATHS	28.9	34.3	46.3	30.1	27.8
MOTOR VEHICLE	16.3	21.7	46.3	20.6	15.0
OTHER TRANSPORTATION	1.8	0.6	0.0	0.6	2.1
POISONING	0.4	0.0	0.0	0.0	0.4
FALLS	3.3	3.7	0.0	2.0	3.6
FIRES	0.5	0.0	0.0	0.0	0.5
DROWNING SUBMERSIONS	3.7	4.2	0.0	4.7	3.5
FIREARMS MISSILES	0.2	0.0	0.0	0.0	0.1
ADVERSE EFFECTS	0.0	0.0	0.0	0.0	0.0
OTHER ACCIDENTS	2.7	2.0	0.0	2.2	2.7
SUICIDE	10.7	9.9	13.2	9.9	10.7
HOMICIDE LEGAL INTERV	4.7	6.7	20.0	5.6	4.4
OTHER EXTERNAL CAUSES	4.0	3.0	0.0	3.1	3.9

SOURCE: Vital Statistics, Hawaii State Dept of Health

TABLE III-1, AGE ADJ'D DEATH RATES BY CAUSE, ETHNICITY HAWAII 1980-84

(Rates per 100,000) CAUSE OF DEATH	TOTAL	NATIVE HAW'N	HAW'N	PART- HAW'N	NON- HAW'N
ALL CAUSES	541.2	763.6	1427.3	653.4	511.3
PRESUMPTIVE	0.3	0.0	0.0	0.0	0.3
TUBERCULOSIS	1.0	1.1	0.0	0.0	1.0
SYPHILIS	0.1	0.0	0.0	0.0	0.0
OTHER INFECT and PARA DIS	5.5	9.2	12.5	7.1	5.1
MALIGNANT NEOPLASMS	130.5	185.1	324.2	160.5	123.4
DIGESTIVE ORGANS	44.4	56.3	110.2	47.8	42.9
RESPIRATORY SYSTEM	31.4	50.8	97.5	42.1	28.8
BREAST	8.7	17.3	32.5	16.5	7.7
GENITAL ORGANS	11.7	15.0	25.5	12.9	11.1
URINARY ORGANS	5.0	6.9	6.2	6.6	4.6
LEUKEMIA	23.8	6.9	6.2	30.2	23.8
OTHER	13.5	32.0	45.4	24.1	11.2
DIABETES MELLITUS	228.8	31.3	84.7	296.7	213.0
CIRCULATORY DISEASES	174.1	355.1	688.6	242.0	160.1
HEART DISEASES	173.8	286.9	561.0	240.5	159.9
RHEUMATIC	6.5	4.8	26.2	10.2	5.6
HYPERTENSIVE	119.3	13.6	19.3	165.4	110.2
ISCHEMIC	46.0	193.0	341.5	60.9	42.1
OTHER	2.0	76.7	160.6	2.4	1.7
HYPERTENSION	41.2	3.1	6.2	37.0	40.3
CEREBROVASCULAR	4.5	47.3	89.6	4.1	4.4
ARTERIOSCLEROSIS	7.0	5.6	12.5	9.4	6.4
OTHER CIRCULATORY	0.0	11.0	19.3	0.0	0.0

TABLE III-2, RANKING OF DEATH RATES BY CAUSE, ETHNICITY HAWAII 1980-84

CAUSE OF DEATH	OVER- ALL	NATIVE HAW'N	HAW'N	PART- HAW'N	NON- HAW'N
MALIGNANT NEOPLASMS:					
DIGESTIVE ORGANS	5	4	4	5	4
RESPIRATORY SYSTEM	8	5	5	6	7
LEUKEMIA	5			8	9
OTHER	9	8	9	10	
DIABETES MELLITUS	6	9	7	1	1
HEART DISEASES:					
HYPERTENSIVE	1			2	2
ISCHEMIC	2	1	1	3	5
OTHER	1	2	2		
HYPERTENSION	4			7	6
CEREBROVASCULAR	3	6	6		
INFLUENZA & PNEUMONIA	7		10		10
OTHER DISEASES	4	3	3	4	3
ACCIDENTAL DEATHS	10	7	8	9	8
MOTOR VEHICLE	6	10	8		

SOURCE: Vital Statistics, Hawaii State Dept of Health

TABLE III-3, RANKING OF DEATH RATES, ETHNICITY & CAUSE HAWAII 1980-84

CAUSE OF DEATH	NATIVE HAW'N	HAW'N	PART- HAW'N	NON- HAW'N
OVERALL RANKINGS	2	1	3	4
MALIGNANT NEOPLASMS	2	1	3	4
DIGESTIVE ORGANS	2	1	3	4
RESPIRATORY SYSTEM	2	1	3	4
LEUKEMIA	3	4	1	2
OTHER	2	1	3	4
DIABETES MELLITUS	4	3	1	2
HEART DISEASES	2	1	3	4
HYPERTENSIVE	4	3	1	2
ISCHEMIC	2	1	3	4
OTHER	2	1	3	4
HYPERTENSION	4	3	2	1
CEREBROVASCULAR	2	1	4	3
INFLUENZA & PNEUMONIA	2	1	4	3
OTHER DISEASES	2	1	3	4
ACCIDENTAL DEATHS	2	1	3	4
MOTOR VEHICLE	2	1	3	4

SOURCE: Vital Statistics, Hawaii State Dept of Health

TABLE III-4, INCIDENCE/PREVALENCE OF ACUTE CONDITIONS, HAWAII 1980-84

CONDITION (RATES/1000)	CAUC- ASIAN	JAPAN -ESE	NATIVE HAW'N	HAW'N	PART HAW'N	FILIP -INO	CHIN -ESE	OTHER/ UNKNWN	TOTAL
ALL ACUTE	2407.6	1567.3	2398.9	1547.8	2438.9	1573.3	1459.0	2457.0	2080.8
INFECT/PARASITIC	1797.7	72.8	120.7	58.4	123.7	91.0	105.8	136.2	122.8
ALL RESPIRATORY	1573.7	1151.0	1777.5	1064.7	1811.0	1217.8	1030.1	1794.6	1486.7
UPPER RESPIRATORY	1230.8	971.8	1495.4	896.9	1523.5	980.6	903.1	1490.7	1221.9
INFLUENZA	292.0	139.4	238.1	135.9	242.9	141.4	102.1	237.7	211.2
OTHER RESPIRATORY	50.9	40.3	44.0	31.9	44.5	95.8	24.9	66.3	53.6
DIGESTIVE	46.8	30.2	41.2	25.3	39.2	27.2	15.3	39.0	36.4
INJURIES	286.8	147.1	190.3	157.7	191.8	86.0	139.1	206.7	192.6
OTHER ACUTE	320.5	166.2	271.9	350.0	273.3	151.2	168.8	280.5	242.4

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health

TABLE III-5, ACUTE CONDITIONS OF HAWAIIANS BY GENDER, HAWAII 1980-84

CONDITION (RATES/1000)	NATIVE HAWAIIAN:			HAWAIIAN:			PART HAWAIIAN:		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
ALL ACUTE	2398.9	2269.4	2529.8	1547.8	1270.6	1813.4	2438.9	2315.0	2564.4
INFECT/PARASITIC	120.7	99.2	142.4	58.4	81.8	35.9	123.7	100.0	147.6
ALL RESPIRATORY	1777.5	1685.3	1870.7	1064.7	903.9	1218.6	1811.0	1721.0	1902.1
UPPER RESPIRATORY	1495.4	1415.8	1575.9	896.9	752.5	1035.2	1523.5	1446.0	1602.0
INFLUENZA	238.1	219.2	257.2	135.9	86.2	183.6	242.9	225.3	260.7
OTHER RESPIRATORY	44.0	50.3	37.6	31.9	65.2	0.0	44.5	49.6	39.4
DIGESTIVE	41.2	31.6	45.5	25.3	40.9	10.3	39.2	31.2	47.2
INJURIES	190.3	228.6	151.6	157.7	81.5	230.7	191.8	235.3	147.8
OTHER ACUTE	271.9	224.7	319.5	350.0	162.6	317.7	273.3	227.5	319.6

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health

TABLE III-6, RANKING OF ACUTE CONDITION RATES BY ETHNICITY, HAWAII 1980-84

CONDITION (RATES/1000)	CAUC- ASIAN	JAPAN -ESE	NATIVE HAW'N	HAW'N	PART HAW'N	FILIP -INO	CHIN -ESE	OTHER/ UNKWN	TOTAL
INFECT/PARASITIC	1	5	5	5	5	5	4	5	5
UPPER RESPIRATORY	2	1	1	1	1	1	1	1	1
INFLUENZA	4	4	3	4	3	3	5	3	3
OTHER RESPIRATORY	6	6	6	6	6	4	6	6	6
DIGESTIVE	7	7	7	7	7	7	7	7	7
INJURIES	5	3	4	3	4	6	3	4	4
OTHER ACUTE	3	2	2	2	2	2	2	2	2

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health

TABLE III-7, RANKING OF ETHNIC GROUPS BY ACUTE CONDITIONS, HAWAII 1980-84

CONDITION (RATES/1000)	CAUC- ASIAN	JAPAN -ESE	NATIVE HAW'N	HAW'N	PART HAW'N	FILIP -INO	CHIN -ESE	OTHER/ UNKWN
ALL ACUTE	3	6	4	8	2	5	7	1
INFECT/PARASITIC	1	7	4	8	3	6	5	2
ALL RESPIRATORY	4	6	3	7	1	5	8	2
UPPER RESPIRATORY	4	6	2	8	1	5	7	3
INFLUENZA	1	6	3	7	2	5	8	4
OTHER RESPIRATORY	3	6	5	7	4	1	8	2
DIGESTIVE	1	5	2	7	3	6	8	4
INJURIES	1	6	4	5	3	8	7	2
OTHER ACUTE	2	7	5	1	4	8	6	3

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health

TABLE III-8, COMPARISON OF UNADJUSTED AND AGE-ADJUSTED PREVALENCE
OF CHRONIC CONDITINS AMONG HAWAIIAN GROUPS, HAWAII 1980-1984

(RATES/1000) CONDITION		NATIVE HAWAIIAN:			HAWAIIAN:			PART HAWAIIAN:	
		TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE
ALL COND	U	523.4	509.7	537.2	795.0	781.5	808.0	510.7	497.3
	A	659.2	645.6	672.3	575.6	576.8	573.3	665.6	649.2
HEART	U	19.6	20.7	18.6	71.8	75.2	68.6	17.2	18.2
	A	30.6	33.6	27.8	49.4	55.7	41.7	29.0	32.1
B & S IMP	U	38.7	44.6	32.7	50.0	63.0	37.6	38.1	43.7
	A	48.5	58.0	39.1	41.8	50.2	34.7	49.5	58.9
HBP	U	54.8	53.3	56.3	120.9	117.3	124.3	51.7	50.4
	A	85.5	82.7	87.6	82.1	83.4	79.0	87.6	84.1
ARTHRITIS	U	16.3	9.6	23.2	50.5	22.1	77.7	14.7	9.0
	A	27.5	17.1	37.4	28.8	12.6	42.4	27.2	17.7
HEARING	U	21.8	27.7	15.9	44.1	61.1	27.8	20.8	26.1
	A	28.5	36.5	20.8	25.9	38.2	13.7	27.9	35.2
ASTHMA	U	57.2	51.6	62.8	41.6	11.9	70.0	57.9	53.4
	A	53.7	44.0	63.2	42.6	8.2	80.5	54.0	45.0
DIABETES	U	19.4	18.3	20.4	69.2	71.1	67.4	17.0	15.9
	A	31.6	30.7	32.5	44.2	47.7	40.4	30.4	29.1
ALLER SKIN	U	24.8	22.7	26.8	13.1	22.9	3.7	25.3	22.7
	A	25.4	23.7	27.2	10.5	19.6	1.7	26.1	23.7
SINUSITIS	U	15.7	13.5	17.9	5.6	6.6	4.7	16.2	13.8
	A	17.5	15.1	20.0	4.5	4.9	4.7	18.4	15.5
HAYFEVER	U	41.2	34.5	47.7	17.5	16.5	18.4	42.2	35.3
	A	42.1	33.0	50.9	15.8	18.8	13.2	43.7	33.9
BRONCHITIS	U	16.9	16.2	17.6	18.7	17.0	20.3	16.8	16.2
	A	17.7	17.2	18.5	15.0	11.2	18.9	17.9	17.1

SOURCE: Excerpts from Appendix Table 4, Health Surveillance Program

NOTE: U = Unadjusted rates, A = Age-adjusted rates

TABLE III-9, RANK OF CHRONIC CONDITION AGE-ADJUSTED RATES BY ETHNICITY
HAWAII 1980-1984

CHRONIC CONDITION	CAUC- ASIAN	JAPAN -ESE	NATIVE HAW'N	HAW'N	PART HAW'N	FILIP -INO	CHIN -ESE	OTHER/ UNKNWN	TOTAL
HEART COND	9	10	6	2	6	9	8	10	9
IMP BCK/SPINE	3	3	3	5	3	3	5	2	3
HBP W/O HEART	2	1	1	1	1	1	1	1	1
ARTHRITIS	4	7	8	6	8	4	6	6	6
HEARING IMP	6	4	7	7	7	7	7	8	5
ASTHMA	8	6	2	4	2	2	4	4	4
DIABETES	13	8	5	3	5	6	9	9	10
MENTAL & NERV	11	15	15	14	15	12	14	11	13
VISUAL IMP	14	12	13	11	14	13	13	14	14
MALIGNANT NEO	15	19	18	15	18	18	17	19	18
ALLERG SKIN	7	5	9	13	9	5	3	5	7
CHRONIC SINUS	5	9	11	18	10	10	10	7	8
HAYFEVER	1	2	4	8	4	4	2	3	2
STOMACH ULCER	17	17	17	19	17	11	16	16	17
BRONCHITIS	12	14	10	9	11	14	15	13	12
BENIGN NEO	18	18	20	16	20	15	18	18	19
HEMORROIDS	10	11	14	16	13	13	11	12	11
GOITER	20	20	19	17	19	17	20	20	20
VARICOSE VEIN	16	16	16	12	16	16	19	17	16
GOUT	19	13	12	10	12	8	12	15	15

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health

TABLE III-10, RANKING OF ETHNICITY BY AGE-ADJUSTED CHRONIC CONDITIONS
HAWAII 1980-1984

CHRONIC COND	CAUC- ASIAN	JAPAN -ESE	NATIVE HAW'N	HAW'N	PART HAW'N	FILIP -INO	CHIN -ESE	OTHER/ UNKN	OVERALL HWN RANK
ALL CONDITIONS	1	6	4	5	3	8	7	2	
HEART COND	4	7	2	1	3	8	6	5	HIGH
IMP BCK/SPINE	1	5	4	6	3	8	7	2	MEDIUM
HBP W/O HEART	8	4	2	3	1	5	7	6	HIGH
ARTHRITIS	1	7	4	3	5	8	6	2	MEDIUM
HEARING IMP	1	2	3	5	4	8	7	6	MEDIUM
ASTHMA	6	8	2	3	1	7	5	4	HIGH
DIABETES	7	5	2	1	3	6	6	4	HIGH
MENTAL & NERV	1	7	4	5	3	6	8	2	MEDIUM
VISUAL IMP	2	6	4	5	3	8	7	1	MEDIUM
MALIGNANT NEO	1	6	3	2	5	7	4	3	HI/MED
ALLERG SKIN	1	4	5	8	6	7	2	3	LOW
CHRONIC SINUS	1	3	5	7	4	8	6	2	LOW
HAYFEVER	1	3	6	8	5	7	2	4	LOW
STOMACH ULCER	3	7	5	8	4	2	6	1	LOW
BRONCHITIS	1	6	3	5	2	8	7	4	HI/MED
BENIGN NEO	1	4	6	2	7	8	5	3	MED/LOW
HEMORROIDS	1	5	6	8	4	7	3	2	LOW
GOITER	3	4	5	1	6	8	7	2	MEDIUM
VARICOSE VEIN	1	6	4	2	5	8	7	3	HI/MED
GOUT	8	7	1	4	2	3	5	6	HIGH

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health

TABLE III-11, ACTIVITY LIMITATION BY COND & ETHNICITY, HAWAII 1980-84

PERCENTAGE UNABLE TO CARRY ON MAJOR ACTIVITY DUE TO CONDITION

CHRONIC CONDITION	TOTAL POPULATION	NATIVE HAW'N	HAW'N	PART HAW'N
ALL CONDITIONS	6.2	6.1	12.3	5.6
HEART CONDITIONS	11.6	10.4	13.5	9.8
IMPAIR OF BACK OR SPINE	4.4	4.9	8.5	4.6
HBP W/O HEART INVOLVMENT	3.5	4.5	0.9	4.9
ARTHRITIS & RHEUMATISM	8.3	12.6	13.6	12.4
HEARING IMPAIRMENTS	6.9	5.4	13.2	4.6
ASTHMA	1.6	1.7	4.9	1.7
DIABETES	7.9	10.6	9.1	10.9
MENTAL & NERV CONDITIONS	11.2	15.6	32.3	14.6
VISUAL IMPAIRMENTS	13.3	14.7	35.6	12.5
MALIGNANT NEOPLASMS	17.1	23.2	44.4	19.1
CHRON & ALLERG SKIN COND	2.2	1.0	0.0	1.0
CHRONIC SINUSITIS	1.4	1.9	7.9	1.8
HAYFEVER W/O ASTHMA	0.9	0.6	0.0	0.6
STOMACH ULCER	5.8	2.2	0.0	2.3
BRONCHITIS, EMPHYSEMA	6.7	4.8	5.9	4.7
BENIGN & UNSPEC NEOPLASM	5.1	5.1	4.6	5.2
HEMORRHOIDS	2.5	0.9	0.0	1.0
THYROID GOITER	3.7	2.2	0.0	2.4
VARICOSE VEINS	2.9	4.2	14.2	2.5
GOUT	4.7	5.2	13.5	4.2
OTHER	9.5	9.1	21.3	8.4

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health (continued)

(continued)

TABLE III-11, ACTIVITY LIMITATION BY COND & ETHNICITY, HAWAII 1980-84

PERCENTAGE NOT LIMITED IN ACTIVITY DUE TO CONDITION

CHRONIC CONDITION	TOTAL POPULATION	NATIVE HAW'N	HAW'N	PART HAW'N
ALL CONDITIONS	75.7	75.5	63.3	76.4
HEART CONDITIONS	54.9	48.8	38.1	50.8
IMPAIR OF BACK OR SPINE	73.0	72.7	66.1	73.1
HBP W/O HEART INVOLVMENT	83.6	82.4	85.7	82.0
ARTHRITIS & RHEUMATISM	66.0	61.0	63.6	60.6
HEARING IMPAIRMENTS	74.0	75.1	67.8	75.9
ASTHMA	86.6	86.7	76.5	87.1
DIABETES	73.5	67.2	73.7	65.9
MENTAL & NERV CONDITIONS	65.2	60.1	50.5	60.6
VISUAL IMPAIRMENTS	57.2	58.5	42.7	60.2
MALIGNANT NEOPLASMS	58.4	49.2	36.5	51.7
CHRON & ALLERG SKIN COND	87.8	87.1	81.5	87.2
CHRONIC SINUSITIS	89.2	91.7	92.1	91.7
HAYFEVER W/O ASTHMA	92.4	92.7	86.3	92.8
STOMACH ULCER	77.8	80.9	75.1	81.2
BRONCHITIS, EMPHYSEMA	76.7	81.5	72.1	82.0
BENIGN & UNSPEC NEOPLASM	80.8	80.9	95.4	79.6
HEMORROIDS	85.3	81.0	44.3	82.3
THYROID GOITER	84.2	81.8	52.7	85.3
VARICOSE VEINS	78.7	77.5	77.8	77.5
GOUT	78.6	75.7	58.3	77.9
OTHER	67.9	67.6	47.7	68.8

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health

TABLE III-12, PERCENT OF CONDITIONS CAUSING LIMITATION OF ACTIVITY, BY ETH, HAWAII 1980-4

CHRONIC CONDITION	TOTAL	CAUC -ASIAN	JAPAN -ESE	NATIVE HAW'N	HAW'N	PART HAW'N	FILI -PINO	CHIN -ESE	OTHER & UNKNOWN
ALL CONDITIONS	45.8	42.7	42.7	50.6	51.3	50.5	47.7	42.9	45.2
HEART CONDITIONS	70.9	69.3	69.3	75.4	83.2	73.5	75.7	71.0	63.2
IMPAIR OF BACK OR SPINE	76.9	77.8	77.8	74.9	64.1	75.7	79.6	65.3	80.1
HBP W/O HEART INVOLVMENT	21.9	19.1	19.1	23.2	27.3	22.8	20.1	33.7	21.5
ARTHRITIS & RHEUMATISM	52.2	51.0	51.0	63.8	57.7	64.6	51.0	43.6	44.6
HEARING IMPAIRMENTS	15.5	13.4	13.4	25.8	0.0	29.6	21.0	3.6	11.5
ASTHMA	47.2	50.2	50.2	51.4	43.7	51.8	54.5	46.0	35.4
DIABETES	26.0	29.9	29.9	28.1	29.5	27.9	33.9	13.0	27.3
MENTAL & NERV CONDITIONS	49.7	44.8	44.8	65.9	69.6	65.5	35.6	42.3	48.4
VISUAL IMPAIRMENTS	46.6	45.2	45.2	49.2	82.6	44.4	41.4	49.5	42.3
MALIGNANT NEOPLASMS	54.9	43.0	43.0	50.6	30.8	55.6	82.8	68.5	69.2
CHRON & ALLERG SKIN COND	16.6	12.6	12.6	22.9	0.0	24.4	10.6	9.4	17.9
CHRONIC SINUSITIS	13.3	12.1	12.1	23.4	0.0	25.0	31.3	0.0	13.7
HAYFEVER W/O ASTHMA	17.3	16.0	16.0	13.6	100.0	11.1	8.3	13.0	28.9
STOMACH ULCER	24.7	18.6	18.6	43.7	28.9	45.8	27.1	0.0	20.4
BRONCHITIS, EMPHYSEMA	37.2	40.3	40.3	38.0	6.0	41.1	30.5	56.1	26.8
BENIGN & UNSPEC NEOPLASM	27.7	21.5	21.5	51.2	0.0	55.9	24.0	0.0	21.4
HEMORROIDS	3.8	1.9	1.9	7.3	23.5	5.7	4.2	21.3	6.6
THYROID GOITER	14.0	4.5	4.5	11.9	0.0	16.4	33.9	100.0	25.6
VARICOSE VEINS	16.8	21.4	21.4	12.7	6.8	14.1	11.8	0.0	25.2
GOUT	31.7	38.8	38.8	39.7	67.8	33.7	38.5	11.1	26.4
OTHER	54.6	48.3	48.3	59.5	60.6	59.4	55.9	51.1	55.1

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health

TABLE III-13, RANKING OF PERCENTAGE CAUSING LIMITATION OF ACT, BY ETH, HAWAII 1980-4

CHRONIC CONDITION	CAUC -ASIAN	JAPAN -ESE	NATIVE HAW'N	HAW'N	PART HAW'N	FILI -PINO	CHIN -ESE	OTHER & UNKWN
ALL CONDITIONS	7	7	2	1	3	4	6	5
HEART CONDITIONS	6	6	3	1	4	2	5	7
IMPAIR OF BACK OR SPINE	3	3	5	7	4	2	6	1
HBP W/O HEART INVOLVMENT	7	7	3	2	4	6	1	5
ARTHRITIS & RHEUMATISM	4	4	2	3	1	4	6	5
HEARING IMPAIRMENTS	4	4	2	7	1	3	6	5
ASTHMA	4	4	3	6	2	1	5	7
DIABETES	1	1	3	2	4	6	7	5
MENTAL & NERV CONDITIONS	5	5	2	1	3	7	6	4
VISUAL IMPAIRMENTS	4	4	3	1	5	7	2	6
MALIGNANT NEOPLASMS	6	6	5	7	4	1	2	3
CHRON & ALLERG SKIN COND	4	4	2	7	1	5	6	3
CHRONIC SINUSITIS	5	5	3	6	1	2	6	4
HAYFEVER W/O ASTHMA	3	3	4	1	6	7	5	2
STOMACH ULCER	5	5	2	3	1	4	7	6
BRONCHITIS, EMPHYSEMA	3	3	4	7	2	5	1	6
BENIGN & UNSPEC NEOPLASM	4	4	2	6	1	3	6	5
HEMORROIDS	7	7	3	1	5	6	2	4
THYROID GOITER	6	6	5	7	4	2	1	3
VARICOSE VEINS	2	2	4	6	3	5	7	1
GOUT	3	3	2	1	5	4	7	6
OTHER	7	7	2	1	3	4	6	5

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health

TABLE III-14, SCHOOL LOSS, WORK LOSS AND BED DAYS DUE TO ILLNESS BY ETH, HAWAII 1980-4

TYPE OF DAYS LOST (Days per person per Yr)	CAUC- ASIAN	JAPAN -ESE	NATIVE HAW'N	HAW'N	PART HAW'N	FILIP -INO	CHIN -ESE	OTHER/ UNKNOWN	TOTAL
SCHOOL LOSS DAYS(UND 17)	1.9	1.6	2.5	2.1	2.5	1.5	2.0	1.9	2.0
WORK LOSS DAYS(AGE 17-64)	3.2	2.5	3.3	4.3	3.2	2.8	1.7	2.6	2.8
BED DAYS(ALL AGES)	5.5	3.3	5.0	8.5	4.9	3.6	2.2	4.2	4.3

SOURCE: Health Surveillance Survey, Hawaii State Dept of Health

Chapter IV

FERTILITY, VITAL INDICATORS AND PREGNANCY OUTCOMES

IV. FERTILITY, VITAL INDICATORS AND PREGNANCY OUTCOMES

A. FERTILITY AND REPRODUCTIVE EVENTS

The analysis of recent birth trends of persons of Hawaiian background reflects the changing population definition and composition of this unique ethnic group. Of the total 18,129 births recorded in the State of Hawaii in 1980, there were 4,004 births to persons of Hawaiian blood, or 22.1 percent of the total births. Refined fertility rates show a decline in births by Native Hawaiians that resembles the pattern of reduced fertility achieved in the State of Hawaii during the past decade.

Certain demographic characteristics of the Native Hawaiian population should be recognized. As a young and expanding heterogeneous population, this group has a balanced sex ratio and a lower age composition than the general population of the State. Its relationship to cultural practice is multivaried, reflecting social change that results from high rates of intermarriage. These factors may contribute to higher fertility than may be found in other older and more homogeneous groups like the Japanese and Chinese who demonstrate recent marked suppression of births.

Fertility

A careful examination of 1970-1980 data reveals significant variations in fertility rates dependent upon population denominators determined by definitions used by the United States Census or by the Hawaii State Department of Health ongoing State Health Survey. Rates that use figures from the United States Census, which counted only 118,251 Native Hawaiians in 1980, would be expected to be higher than calculations using figures from the State Health Survey,

that recorded 175,909 Native Hawaiians at that time.

On the assumption that figures from the State Health Survey more accurately reflect actual fertility practice, the crude birth rate of 22.7 births per 1,000 persons in the Native Hawaiian population in 1980 is higher than the State crude birth rate of 18.8. The general fertility rate and the total fertility rate for Native Hawaiians also exceed the State average. The number of children under 5 years of age per 1,000 women age 15-44 has dropped from 728 in 1970 to 496 in 1980, indicating utilization of birth control practices. (Table IV-1)

However, looking at the 1980 Census figures, the differences for the various rates were much more pronounced, indicating that the more realistic fertility pattern may lie somewhere between these two sets of rates.

Reproductive Events

Table IV-2 shows reproductive events ranked by neighborhood, which can be the basis for service need projections for clinical and educational services. Waiānae, with more than half its population being Native Hawaiian, ranked first in rates of reproductive events in the state for all pregnancies, teen pregnancies, and teen births. Generally, rural neighborhoods ranked higher in these pregnancy categories than urban.

B. VITAL INDICATORS FOR MATERNAL AND CHILD HEALTH

Data for this section were extracted from the publication, "A Geographic and Ethnic Group Analysis of Vital Indicators for Maternal and Child Health in Hawaii 1975-1979," published by the Research and Statistics Office, Hawaii State Department of Health, in 1981.

This report makes available vital data reflecting maternal and child health for ethnic groups in Hawaii; it presents numbers of natality events, rates, and rankings of ethnic groups. Nineteen indicators of maternal and child health related to pregnancy and birth have been calculated for seven ethnic groups in reports of induced termination of pregnancy compiled for 1975 through 1979. The definitions of the vital indicators used in this report are provided in Table IV-3. All indicators are defined in terms of events in one year. Birth and pregnancy rates are calculated per 1,000 population. Other indicators are expressed in relation to the number of live births. The ethnic group of the woman recorded on the birth or fetal death certificate or on the report of induced termination of pregnancy was used to determine indicator levels by ethnicity.

Findings

Tables IV-4 to IV-6 are summary tables containing average annual numbers of natality events, rates, and ranks by ethnicity. Table IV-4 presents the number of events by ethnicity. The average rates, which measure the relative levels of vital indicators, are provided for ethnic groups in Table IV-5. Table IV-6 presents the rank on each vital indicator of each ethnic group. The data show that Native Hawaiians are a high-risk target population for maternal and child health programs. Late or no prenatal care rates among Native Hawaiian women are very high, suggesting they would benefit from more concerted outreach work. Also, Native Hawaiian teenagers have the highest illegitimacy ratio, as well as higher pregnancy and birth rates, suggesting a need for family planning education and services. In addition, since Native Hawaiians rank highest in

congenital anomaly rate and infant mortality rate, identification of specific risk factors in this group would be necessary to plan special programs targeted to their needs.

A more recent study, "Analysis of Infant Mortality Data, 1980 Through 1984, State of Hawaii," was done in 1985 as a fieldwork project for the Maternal and Child Health Branch of the Department of Health. In this study, three major causes of infant deaths are identified: immaturity, Sudden Infant Death Syndrome, and congenital anomalies. These major causes are then linked to other variables for analyses, including ethnicity and geographic areas.

Findings show that Native Hawaiians have the highest (5.5 per 1,000) death rate from immaturity among the five major ethnic groups. Native Hawaiians also have the highest incidence of Sudden Infant Death Syndrome (1.5 per 1,000). Another finding is the high death rate from congenital anomalies in the island of Molokai, where more than 60% of the population are Native Hawaiians. Based on these vital indicators, the general state of health of Native Hawaiian infants are shown to be worst when compared to the other major ethnic groups.

Recommendations

In addition to identifying target groups in need of services, these data can be used to evaluate the effectiveness of services which are expected to impact on the specific health indices such as incidence of teenage pregnancy or neonatal mortality. These data can also lead to more realistic planning by assisting planners to consider whether the services provided to obtain certain objectives are truly capable of doing so. For example, health services alone may not be capable of reducing the high incidence of low birth

weight in Native Hawaiians.

The study of these vital indicators is not enough if it is confined to statistics only. Such study must also be accompanied with information on socioeconomic data, medical and health care facilities, personnel, programs and their allocation to the population. In looking into the data, consideration in the accuracy and adequacy of reporting and identification on causes of these negative vital indicators must also be taken into account.

Finally, the data as displayed represent a continuum of measures related to all phases of the reproductive cycle. Intuitively one feels that characteristic events of one phase of the life cycle must bear a relationship to the occurrence of characteristic events in another phase. A women's experience in family planning or in education for family life will relate to her experience during pregnancy and to its eventual outcome. The nature of these relationships can be a subject for future research.

C. A SURVEY OF PREGNANCY OUTCOMES

Introduction

Data for this analysis were originally collected for a study of women's health and fertility under a contract from the National Institute of Child Health and Human Development. A stratified random sample of 815 women known to have had a pregnancy between 1974 and 1979 were interviewed in 1979 and 1980 about all pregnancies they had experienced during the previous decade. Women who experienced an induced abortion during the decade were overrepresented in the sample to alter the actual 1:4 ratio of abortions to births to approximately 1:1. The initial sampling was designed to reflect the ethnic and age distribution of pregnant

women in the state in 1970-80, and small deviations due to location and response bias are corrected by weighting in the analysis.

The interview centered on a time-line on which events in the areas of marital and work life, smoking and drinking, sexual activity, contraceptive behavior, fertility and general health during 1970-1980 were recorded. Separate instruments were used to take a general demographic and health inventory, and to collect detailed information for each pregnancy reported.

The present analysis pools all pregnancies for which data were available. Although this may introduce some potential bias, it is not a significant problem for a preliminary comparison of ethnic groups. The over-sampling of abortions is handled by reporting results by pregnancy outcome. Many women, of course, reported both an abortion and one or more births during the decade, and are thus represented in both outcome groups.

In this analysis, the independent effects of socio-economic and medical differences between Hawaiians/Part-Hawaiians (Native Hawaiians), Caucasians, Filipinos and Chinese/Japanese women who have given birth during the years 1970 to 1980 are investigated. These findings are based on the substantively meaningful and statistically significant differences found between these four ethnic groups. The ethnic differences are further analyzed in terms of the women's age, that is, women under the age of 18 years through the ages of 35 and older are classified according to five year age groups to help explain the independent effects upon the ethnic differentials.

Background

A majority of the total sample were born in the State of

Hawaii. As expected, almost all the Native Hawaiian women (98.3%) were born in the State while most of the Caucasian women were born out-of-state. (Table IV-7)

Over 90% of the women had their first sexual experience by the age of 24; however, 15% of the women reported their age at first intercourse to be 15 years and younger, and another 27% at the ages of 16 and 17 years. Native Hawaiian and Caucasian women had the largest percentages that experienced their first sexual intercourse at the youngest age groups and Filipino and Chinese/Japanese tended to delay intercourse until they were over 30 years of age. (Table IV-8)

Socio-economic Indicators

Six independent variables are included in the analysis of family socio-economic indicators during the pregnancy of the women. These indicators are (1) father's occupation and education, (2) mother's occupation, (3) the husbands' education, (4) occupation, (5) employment status and (6) the age of the women's husbands/partners at time of pregnancy.

Most of the women in this study reported their fathers to be in blue collar occupations such as transport/laboring and farming, this finding is characteristic of the Native Hawaiian and Filipino women. Caucasian and Chinese/Japanese women tend to have fathers who are predominately in white collar occupations such as management/administration relative to the other ethnic groups. Caucasian fathers have the highest proportion who are in professional/technical occupations. (Table IV-9)

Approximately 40% of women's mothers are housewives regardless of ethnic group, and another 20% are service workers. Only 7% of

the mothers are in the professional/technical occupations, this is a proportion similar to the women's fathers. Caucasian mothers are overrepresented in the professional/technical jobs and the least likely to be in service, crafts and laboring jobs. Native Hawaiian mothers tend to be similar to the occupational groupings of the other ethnic groups, that is, between 30 and 40 percent of their mothers are found in service and craft occupations. (Table IV-10)

Over 70% of the women have parents with only elementary or high school education. Native Hawaiian and Filipino parents are overrepresented in the less than high school educational groups and Caucasian parents are the largest percentage group with either a college or post-graduate degree. (Tables IV-11 and IV-12)

Seventy percent of the husbands were reported to have high school or college education. Native Hawaiian women have the lowest percentage of husbands with a college education, while Caucasian and Chinese/Japanese women have husbands with the highest percentages with post-graduate education. As one would expect, as a woman's age increases, the proportion of husbands with higher levels of education also increases. For example, of those women under the age of 18 years, 42% of their husbands are of high school education, conversely, of those women aged 30 to 34 years, 42% of the husbands have a college education and 5% have a post-graduate degree. (Table IV-13)

Most of the husbands are in craftsmen occupations, employed and have either high school or college education. Approximately 70% of the women have husbands who are employed in either full or part time jobs and only 3% are not employed or retired. Filipino husbands are the most likely to be employed and Caucasians are the least likely.

However, Caucasian and Chinese/Japanese husbands are the most likely to be in professional/technical jobs and have post-graduate education, while Native Hawaiian and Filipino husbands tend to have blue collar jobs with high school education. (Tables IV-14 and IV-15)

The most common ages for the women's partners at conception is between 25 to 29 years. Native Hawaiian women have the largest proportion of youngest aged partners, that is, 41% of Native Hawaiian partners are under the age of 24 years, whereas only 23% and 19% of Caucasian and Filipino partners, respectively, are of the same age. (Table IV-16)

Medical Family History

The following variables were examined for ethnic differentials and the age of the women is used as a control factor: (a) chronic illness, (b) diabetes and (c) allergies.

Approximately 85% of the women have no chronic health problems. Of those who have, Native Hawaiian women have the highest proportion who have experienced chronic illnesses. (Table IV-17)

Native Hawaiians are more likely to be diabetics and receive diabetic treatment than any other ethnic group. Moreover, the percentage of Native Hawaiians who become diabetics increases with the age of the women. The largest percentage of Native Hawaiian women experience the onset of diabetes at 30 years of age and over. (Tables IV-18 and IV-19)

Although less than half of the women do not experience allergies, the percentages of women who do experience allergies increases with age. Those under 18 years are the least likely to report such a medical condition. (Table IV-20)

Medical Condition During Pregnancy

Over 60% of the women who became pregnant did not experience toxemia or urinary tract infections. Native Hawaiian women were the most likely to develop toxemia and urinary tract infections and Filipinos the least likely. There is a tendency for the youngest and oldest age groups to have higher percentages of women who do develop the above medical conditions during pregnancy. (Tables IV-21 and IV-22)

Prenatal Care

Of those women who had no prenatal care, the women between 18 to 19 and over 30 years of age had the highest percentages. Within the youngest age groups, the Native Hawaiian women were more likely to be without prenatal care and Caucasians and Filipinos in the oldest age groups tended to be in the same situation. (Table IV-23)

Of the approximately 25 percent of the women who did drink alcohol during their pregnancy, the percentage decreases only slightly over the trimesters and there are substantial ethnic differences. Caucasian and Native Hawaiian women are the most likely to drink and the Filipino and Chinese/Japanese are the least likely. Native Hawaiians in the youngest and oldest age groups tended to drink the most in all trimesters and they drank during the entire pregnancy. (Table IV-24)

Of the 20 percent of the women who did smoke during their pregnancy, Native Hawaiian women had substantially higher percentages in every age group for all trimesters. (Table IV-25)

Pregnancy Outcome

Of the total sample, 65% of the women gave birth, while 22% terminated their pregnancy through induced abortion. Filipino and

Native Hawaiian women had higher percentages of births and Caucasian women had the highest percentage of abortions. (Table IV-26)

The majority of the women reported no labor and delivery complications. Differences between age groups when analyzing labor and delivery complications tend not to be significant. Of those women who experienced complications, Caucasians and Filipinos tended to have greater percentages at the three youngest age groups. Women over 35 years who are Caucasian and Native Hawaiian are more likely to experience labor and delivery complications than Filipino and Chinese/Japanese women. (Table IV-27). Women between the ages of 18 and 24 years and those 35 years and over tend to have infants who experience medical problems more than other age groups. (Table IV-28)

Regardless of the pregnancy outcome, most women reported no subsequent effect upon their health, and this finding holds across the four ethnic groups. (Table IV-29). Moreover, most women reported no changes in their use pattern and/or method of contraception after the pregnancy. While there are no significant differences between the age groups, the two youngest age groups are more likely to have experienced an effect on their contraceptive use patterns and change in their method. (Table IV-30)

While most infants are born within the normal birth weight range, controlling for the ethnic differential of the mother, Filipino and Native Hawaiian women tend to have the highest percentage of births in which the infant has a low birth-weight. (Table IV-31).

Summary

In summary, more Native Hawaiian and Filipino women have

parents who are in blue collar occupations and have high school or elementary education, while most Caucasian and Chinese/Japanese women have parents in white collar occupations and college or post-graduate education. The majority of the husbands have high school or college education and their occupational categories tend to follow the women's parental socio-economic status.

Although many women neither drank nor smoked during their pregnancy, strikingly high percentages of Native Hawaiian mothers both drank and smoked during all three trimesters indicating a need for more positive maternal and child health education and the motivation to practice it.

Native Hawaiian mothers also tended to have the highest percentages of diabetes and older ages of diabetic onset than any of the other ethnic groups. This finding is significant for the potential health care issues for Native Hawaiian women and the need for early prenatal care. An interesting research question is why Native Hawaiian mothers tend to be "gestational" diabetics and whether this is due to an obesity factor.

D. RECOMMENDATIONS

Support the implementation of a regional perinatal health system for the State, which is the formal organization of perinatal services, providers and related service agencies into a coordinated, integrated network, so that their relationships and roles are clearly defined and coordinated to ensure that all target groups, especially those with high-risks, have acceptable and available access to culturally appropriate services. Such a coordinated system would enable providers to be better prepared to recognize problems early, to define the problems correctly, to know what

resources are available, to respond in a timely fashion, and to assure that services rendered will be appropriate to the need. Some of the services to be provided, especially for Native Hawaiians, are to -

- Promote education on how to avoid behavior which can cause poor pregnancy outcomes such as smoking, alcohol consumption, drug abuse and improper nutrition.
- Provide information about negative pregnancy outcomes, especially high risk to Native Hawaiian women, such as congenital anomalies and low birth weight, in the form of a "talk-story" fact-book.
- Emphasize public health education so as to initiate self awareness, high compliance and utilization of existing medical and health services.
- Assure that the pregnancy is planned in term of optimal maternal age and interval between pregnancies.
- Provide quality comprehensive prenatal care to detect and prevent complications of pregnancies and labor. This care should include genetic screening and counseling, risk assessment, education of and arrangement for delivery, advice on breast feeding and parenting, enrollment in appropriate programs such as WIC, Medicaid and AFDC, and counseling on family planning.
- Introduce various incentives to pregnant women to engage early in prenatal care. This can be in the form of a monetary reward, maternity leave, job protection for working women, and other forms of benefits.
- Initiate research relating to the substantially higher

incidence of congenital anomalies on the island of Molokai, including environmental factors.

- Continue research to identify specific risk factors in Native Hawaiian women and infants which will be helpful in planning special programs targeted and suitable to their needs.

Table IV-1

Fertility by Total and Ethnic Population in Hawaii, 1970-1980

	1970		1980	
	U.S. Census	Health Survey	U.S. Census	Health Survey
<u>Crude birth rate</u> (per 1,000 persons)				
<u>Total population</u>	21.4	22.3	18.8	18.8
<u>By ethnic population</u> (by race of mother)				
Native Hawaiian	50.9	26.8	34.7	22.7
Black	23.9	37.1	23.4	21.9
Chinese	10.5	17.7	12.5	11.7
Filipino	26.2	42.6	22.7	22.2
Japanese	13.5	14.8	11.1	11.0
Korean	16.5	25.0	22.5	24.3
Samoa	N.A.	N.A.	34.8	37.9
White	20.0	26.1	18.4	20.7
<u>General Fertility Rate</u> (per 1,000 women)				
<u>Total population</u>	96.1	95.8	78.8	80.7
<u>By ethnic population</u>				
Native Hawaiian	221.7	129.5	142.7	91.9
Black	149.3	147.4	126.7	105.1
Chinese	50.4	82.7	53.7	46.2
Filipino	131.4	197.2	94.9	97.8
Japanese	58.3	63.1	50.2	52.2
Korean	67.7	85.2	69.3	71.5
Samoa	N.A.	N.A.	150.9	162.5
White	90.1	101.9	74.2	88.2

Table continued....

	1970		1980	
	U.S. Census	Health Survey	U.S. Census	Health Survey
<hr/>				
<u>Total Fertility</u> Rate (per 1,000 women)				
<u>Total</u> <u>population</u>	2,728.5	2,738.5	2,091.5	2,166.0
<u>By ethnic</u> <u>population</u>				
Native Hawaiian	6,121.5	3,658.0	3,766.5	2,543.5
Black	3,505.5	4,814.0	2,620.5	2,384.0
Chinese	1,636.0	2,551.0	1,463.0	1,321.0
Filipino	3,787.0	5,900.0	2,625.5	2,885.0
Japanese	1,978.5	2,147.0	1,383.5	1,552.0
Korean	2,074.0	3,415.0	1,857.5	1,886.0
Samoaan	N.A.	N.A.	4,123.5	5,200.0
White	2,276.5	2,595.5	1,897.5	2,271.0
 <u>Child Women</u> Ratio (per 1,000 women in age group 15-44)				
<u>Total</u> <u>population</u>	414.3	427.7	338.3	324.7
<u>By ethnic</u> <u>population</u>				
Native Hawaiian	514.1	727.9	463.6	496.2
Black	797.7	445.5	620.5	781.5
Chinese	380.2	201.5	239.8	166.7
Filipino	586.0	416.1	394.7	394.5
Japanese	282.0	230.3	223.2	184.3
Korean	329.9	60.0	201.0	212.9
Samoaan	N.A.	N.A.	664.1	660.1
White	428.5	360.8	314.0	280.6

Source: Nordyke, Eleanor C. The Peopling of Hawaii, Revised Edition, Honolulu, University of Hawaii Press. Forthcoming (1987).

Table IV-2

HAWAII'S NEIGHBORHOODS RANKED BY RATES OF REPRODUCTIVE EVENTS

Ranks	All Pregnancies	Teen Pregnancies	All Abortions	Teen Abortions	Teen Births
→ 1	Maianae A	Maianae A	Maikiki C	Hawaii Kai C	Maianae A
2	Rural Oahu A	Wahiawa/Whitmore A	East Honolulu C	East Honolulu C	Waimanalo A
→ 3	Wahiawa/Whitmore A	Waimanalo A	Makiki/Town C	Makiki/Town C	Wahiawa/Whitmore A
4	Waimanalo A	Rural Oahu A	Palolo C	Kailua C	Rural Oahu A
5	Kalihi-Palama C	Kalihi-Palama C	Hawaii Kai C	Maikiki C	Kona B
6	Aliamanu/Aiea/ Pearlridge A	Hilo B	Kalihi-Palama C	Aliamanu/Aiea/ Pearlridge A	Kalihi-Palama C
7	Maikiki C	Kailua C	Maui B	Military Housing A	Hilo B
8	Maui B	Kona B	Kailua C	Kalihi-Palama C	Maui B
9	Kona B	Maui B	Aliamanu/Aiea/ Pearlridge A	Palolo C	Kauai B
10	Military Housing A	Kauai B	Kauai B	Kona B	Palolo C
11	Kauai B	Maikiki C	Rural Oahu A	Kauai B	Kailua C
12	Hilo B	Palolo/Aliamanu/ Aiea/Pearlridge C/A	Wahiawa/Whitmore A	Hilo B	Maikiki C
13	Makiki/Town C		Waimanalo A	Rural Oahu A	Aliamanu/Aiea/ Pearlridge A
14	Kailua C	Hawaii Kai C	Kona B	Maui B	Military Housing A
15	Hawaii Kai C	Makiki/Town C	Hilo B	Maianae A	Makiki/Town C
16	East Honolulu C	Military Housing A	Maianae A	Waimanalo A	Hawaii Kai C
17	Palolo C	East Honolulu C	Military Housing A	Wahiawa A	East Honolulu C

A = Rural Oahu B = Neighbor Island C = Urban Honolulu

DOH/DFP: Compiled from Research and Statistics Report on Geographic and Ethnic Group Analysis of Vital Indicators for Maternal and Child Health in Hawaii, 1975-79, Department of Health Research and Statistics Office, Issue No. 34, July, 1981.

Source: Annual Report, FY 1984, Hawaii Family Planning Program, Hawaii Department of Health.

Table IV-3

DEFINITIONS OF VITAL INDICATORS

INDICATOR	DEFINITION
Standard Fetal Death Ratio	The number of fetal deaths per 1000 live births in a given year.
Abortion Ratio	The number of elective abortions per 1000 live births in a given year.
Birth Rate	The number of live births per 1000 population in a given year.
Pregnancy Rate	The total number of live births, elective abortions, and standard fetal deaths per 1000 population in a given year.
Illegitimacy Ratio	The number of births to unmarried women per 1000 live births.
Abortion Ratio for Unmarried Women	The number of abortions to unmarried women per 1000 live births.
Teenage Abortion Ratio	The number of abortions to females 13-17 years of age per 1000 live births to females 13-17 years of age.
Teenage Birth Rate	The number of births to females 13-17 years of age per 1000 13-17 year old females.
Teenage Pregnancy Rate	The total number of live births, elective abortions, and standard fetal deaths to females 13-17 years of age per 1000 13-17 year old females.
Large Family Rate	The number of births to mothers with three or more live born children per 1000 live births.
Late Prenatal Care Rate	The number of births to mothers getting prenatal care after the first trimester of pregnancy per 1000 live births.
Rate of Births with No Prenatal Care	The number of births to mothers getting no prenatal care per 1000 live births.
Low Birth Weight Rate Among Single Live Births	The percentage of low birth weight babies (babies born weighing 2500 grams, 5 pounds 8 ounces, or less) among single live births. (In Tables 3-8 Low Birth Weight is abbreviated LBW; Single Live Births is abbreviated SLB.)
Teenage Low Birth Weight Rate Among Single Live Births	The percentage of low birth weight babies (babies born weighing 2500 grams, 5 pounds 8 ounces, or less) among single live births to females 13-17 years old.
Postmature Birth Rate	The number of postmature births (babies born at more than 42 weeks of gestation) per 1000 live births.
Non-Hospital Delivery Rate	The number of babies delivered outside a hospital per 1000 live births.
Congenital Anomaly Rate	The number of babies born with congenital malformations per 1000 live births.
Neonatal Mortality Rate	The number of deaths to infants under 28 days of age in a given year per 1000 live births in that year.
Infant Mortality Rate	The number of deaths to infants under one year of age in a given year per 1000 live births in that year.

NOTE: All indicators are defined in terms of events in one year. The tables present five year averages.

Table IV-4

AVERAGE ANNUAL NUMBER OF EVENTS IN 19 VITAL INDICATORS OF MATERNAL AND CHILD HEALTH
BY ETHNICITY OF WOMAN: HAWAII
FISCAL 1975-1979

1975-1978
AVERAGE

Ethnicity of Woman	NUMBER OF EVENTS																		
	Standard Fetal Deaths	Elective Abortions	Live Births	Pregnancies	Births to Unmarried Women	Abortions to Unmarried Women	Teenage Abortions	Teenage Live Births	Teenage Pregnancies	Births to Mothers with 3 or More Live Born Children	Births with Late Prenatal Care	Births with No Prenatal Care	Number of LBM Babies Among Single Live Births	LBM Babies Born to Teenagers Among SLB to Teens	Postmature Births	Non-Hospital Deliveries	Congenital Anomalies	Neonatal Deaths	Infants Deaths
All Ethnic Groups	1587.6	5283.8	16536.2	23407.6	2327.4	3405.6	432.4	644.2	1137.0	1760.2	4401.6	201.6	1089.2	69.4	1867.8	164.8	153.2	145.3	207.8
Caucasian	586.8	1715.4	5266.8	7569.0	512.2	1212.4	132.4	131.4	281.4	358.6	1292.4	50.6	256.8	9.0	605.2	114.2	46.8	38.8	55.3
Japanese	185.2	925.0	2386.2	3496.4	135.0	617.4	77.6	43.4	124.4	103.8	324.6	23.2	167.6	4.6	241.0	6.4	17.4	17.5	25.3
Hawaiian-Part Hawaiian	264.8	764.4	3532.2	4561.4	1004.2	545.2	109.0	277.4	409.6	627.0	1170.8	56.4	252.8	29.6	469.0	19.4	37.4	32.3	46.0
Filipino	232.6	698.4	2866.4	3797.4	338.8	340.2	63.4	117.0	189.4	342.2	845.2	28.8	2822.2	116.2	258.0	8.8	29.0	27.3	34.5
Chinese	45.2	211.4	611.4	868.0	27.8	118.6	11.6	6.2	18.2	40.6	87.6	3.8	33.2	.8	65.4	3.4	5.4	2.8	4.0
Korean	36.8	262.8	301.8	601.4	16.0	122.4	5.2	4.0	9.2	13.4	79.8	3.4	17.6	.4	34.0	1.0	3.2	2.8	3.3
Samoa	27.2	94.0	434.8	556.0	99.6	62.4	6.0	18.8	25.6	130.8	232.4	17.8	13.0	.4	59.6	2.0	4.2	4.0	4.5

Table IV-5

AVERAGE ANNUAL RATES OF 19 VITAL INDICATORS OF MATERIAL AND CHILD HEALTH
BY ETHNICITY OF WOMAN: HAWAII
FISCAL 1975-1979

1975-1978
AVERAGE

Ethnicity of Woman	Standard Fetal Death Ratios	Abortion Ratios	Birth Rates	Pregnancy Rates	Legitimacy Ratios	Abortion Ratios for Unmarried Women	Teenage Abortion Ratios	Teenage Birth Rates	Teenage Pregnancy Rates	Large Family Rates	Late Prenatal Care Rates	Rates of Birth with No Prenatal Care	LBM Rates Among Single Live Births	Teenage LBM Rates Among SLB to Teens	Birth Postmature Rates	Non-Hospital Delivery Rates	Congenital Anomaly Rates	Neonatal Mortality Rates	Infant Mortality Rates
All Ethnic Groups	96.0	319.5	18.5	26.1	140.7	205.9	671.2	15.1	26.7	106.4	266.2	12.2	6.7	10.9	113.0	10.0	9.3	8.8	12.6
Caucasian	111.4	325.7	21.9	31.5	97.3	230.2	1007.6	11.5	24.6	68.1	245.4	9.6	5.2	6.9	114.9	21.7	8.9	7.4	10.5
Japanese	77.6	387.6	10.3	15.1	56.6	258.7	1788.0	3.9	11.3	43.5	136.0	9.7	7.1	10.6	101.0	2.7	7.3	7.3	10.6
Hawaiian - Part Hawaiian	75.0	216.4	20.9	27.0	284.3	154.4	392.9	34.5	51.0	177.5	331.5	16.0	7.3	10.8	132.8	5.5	10.6	9.1	13.0
Filipino	81.1	243.7	32.4	42.9	118.2	113.7	541.9	27.8	45.0	119.4	294.9	10.0	9.1	15.5	90.0	3.1	10.1	9.5	12.0
Chinese	73.9	345.8	16.2	22.9	45.5	194.0	1871.0	3.5	10.1	66.4	143.3	6.2	5.5	12.9	107.0	5.6	8.8	4.6	6.5
Korean	121.9	870.8	29.5	58.7	53.0	405.6	1300.0	8.2	18.9	44.4	264.4	11.3	5.9	10.0	112.7	3.3	10.6	9.3	10.9
Samoa	62.6	216.2	66.8	85.4	229.1	143.5	319.1	60.8	82.8	300.8	534.5	40.9	3.0	2.3	137.1	4.6	9.7	9.2	10.3

Table IV-6

AVERAGE RANK OF 7 ETHNIC GROUPS OF HAWAII ACCORDING TO 19 VITAL INDICATORS
OF MATERNAL AND CHILD HEALTH
FISCAL 1975-1979
RANKING (HIGH TO LOW)

Ethnicity of Woman	1975-1978 AVERAGE																		
	Standard Fetal Death Ratios	Abortion Ratios	Birth Rates	Pregnancy Rates	Illegitimacy Ratios	Abortion Ratios for Unmarried Women	Teenage Abortion Ratios	Teenage Birth Rates	Teenage Pregnancy Rates	Large Family Rates	Late Prenatal Care Rates	Rates of Birth with No Prenatal Care	LBM Rates Among Single Live Births	Teenage LBM Rates Among SLB to Teens	Postmature Birth Rates	Non-Hospital Delivery Rates	Congenital Anomaly Rates	Neonatal Mortality Rates	Infant Mortality Rates
Caucasian	2	4	4	4	4	3	4	4	4	4	5	6	6	6	3	1	5	5	5
Japanese	4	2	7	7	5	2	2	6	6	7	7	5	3	4	5	7	7	6	4
Hawaiian - Part Hawaiian	5	6	5	5	1	5	6	2	2	2	2	2	2	3	2	3	1.5	4	1
Filipino	3	5	2	3	3	7	5	3	3	3	3	4	1	1	7	6	3	1	2
Chinese	6	3	6	6	7	4	1	7	7	5	6	7	5	2	5	2	6	7	7
Korean	1	1	3	2	6	1	3	5	5	6	4	3	4	5	4	5	1.5	2	3
Samoa	7	7	1	1	2	6	7	1	1	1	1	1	7	7	1	4	4	3	6

TABLE IV-7

BIRTH PLACE BY ETHNICITY

BIRTHPLACE	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
HAWAII	115	20.7	638	92.7	154	45.7	830	98.3
OTHER STATE/ COUNTRY	436	78.6	48	7.0	183	54.3	14	1.7
NOT STATED	4	0.7	2	0.3	--	--	--	--
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0
							2981	100.0

TABLE IV-8
INTERCOURSE AGE BY ETHNICITY

AGE OF INTERCOURSE	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
15 YRS & UNDER	72	13.0	47	6.8	27	8.0	167	19.8
16 TO 17 YRS	145	26.1	167	24.3	65	19.3	272	32.2
18 TO 19 YRS	179	32.3	134	19.5	68	20.2	257	30.5
20 TO 24 YRS	135	24.3	257	37.4	120	35.6	94	11.1
25 YRS & OLDER	24	4.3	83	12.1	57	16.9	54	6.4
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0
							2981	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-9

FATHER'S JOB BY ETHNICITY

FATHER'S OCCUPATION	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
TRANS/LABOR FARM	78	14.1	136	19.8	230	68.2	368	43.6
CRAFTSMAN	173	31.2	272	39.5	97	28.8	213	25.2
SALES/CLERICAL	57	10.3	81	11.8	7	2.1	74	8.8
MANAGER/ADMIN	126	22.7	157	22.8	3	0.9	78	9.2
PROF/TECH	100	18.0	42	6.1	--	--	71	8.4
NOT STATED	21	3.8	--	--	--	--	40	4.7
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0
							2981	100.0

TABLE IV-10
MOTHER'S JOB BY ETHNICITY

MOTHER'S OCCUPATION	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
HOUSEHOLD	263	47.4	212	30.8	173	51.3	346	41.0
SERVICE	29	5.2	141	20.5	63	18.7	185	21.9
CRAFT/TRANS/LABOR	23	4.1	128	18.6	42	12.5	115	13.6
SALES/CLERICAL	105	18.9	144	20.9	36	10.7	81	9.6
MANAGERS/ADMIN	39	7.0	56	8.1	--	--	50	5.9
PROF/TECH	81	14.6	7	1.0	23	6.8	44	5.2
NOT STATED	15	2.7	--	--	--	--	23	2.7
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0
							2981	100.0

TABLE IV-11

FATHER'S EDUCATION BY ETHNICITY

FATHER'S EDUCATION	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
ELEMENTARY	109	19.6	241	35.0	202	59.9	299	35.4
HIGH SCHOOL	228	41.1	315	45.8	50	14.8	353	41.8
COLLEGE	137	24.7	81	11.8	34	10.1	63	7.5
POST GRADUATE	49	8.8	13	1.9	--	--	9	1.1
NOT STATED	32	5.8	38	5.5	51	15.1	120	14.2
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0
							2981	100.0

TABLE IV-12

MOTHER'S EDUCATION BY ETHNICITY

MOTHER'S EDUCATION	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
ELEMENTARY	90	16.2	282	41.0	202	59.9	342	40.5
HIGH SCHOOL	255	45.9	314	45.6	83	24.6	365	43.2
COLLEGE	179	32.3	54	7.8	25	7.4	58	6.9
POST GRADUATE	16	2.9	4	0.6	--	--	6	0.7
NOT STATED	15	2.7	34	4.9	27	8.0	73	8.6
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0
							2981	100.0

TABLE IV-13

EDUCATION OF HUSBAND AT PREGNANCY BY ETHNICITY

EDUCATION OF HUSBAND	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
ELEMENTARY	8	2.1	1	0.2	14	6.5	22	4.2
HIGH SCHOOL	85	22.0	117	25.0	98	45.6	250	47.9
COLLEGE	143	37.0	220	47.0	79	36.7	120	22.9
POST GRADUATE	26	6.7	29	6.2	--	--	3	0.6
NOT HUSBAND	125	32.3	101	21.6	24	11.2	129	24.6
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-14

EMPLOYMENT STATUS OF HUSBAND AT PREGNANCY BY ETHNICITY

EMPLOYMENT STATUS OF HUSBAND	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
NOT EMPLOYED	6	1.6	15	3.2	3	1.4	23	4.4
PART-TIME	7	1.8	2	0.4	1	0.5	5	1.0
FULL TIME	248	64.1	353	75.4	185	86.0	363	69.3
RETIRED	4	1.0	--	--	4	1.9	--	--
NOT HUSBAND	122	31.5	98	20.9	22	10.2	133	25.4
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0
							1990	100.0

TABLE IV-15

OCCUPATION OF HUSBAND AT PREGNANCY BY ETHNICITY

OCCUPATION OF HUSBAND	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
SERVICE	24	6.2	24	5.1	33	15.3	37	7.1
LABORER/FARMER	31	8.0	14	3.0	36	16.7	54	10.3
OPERATIVES	10	2.6	23	4.9	30	14.0	67	12.8
CRAFTSMAN	71	18.3	109	23.3	49	22.8	141	26.9
SALES/CLERICAL	24	6.2	31	6.6	11	5.1	19	3.6
MANAGER/ADMIN	27	7.0	53	11.3	16	7.4	30	5.7
PROF/TECH	72	18.6	104	22.2	13	6.0	27	5.2
NOT HUSBAND	128	33.1	110	23.5	27	12.6	149	28.4
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0
							1990	100.0

TABLE IV-16

AGE OF PARTNER BY ETHNICITY

AGE OF PARTNER	ETHNIC GROUP									
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN		TOTAL	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
17 & UNDER	6	1.6	8	1.7	1	0.5	16	3.1	46	2.3
18 TO 19	11	2.8	29	6.2	10	4.7	39	7.4	107	5.4
20 TO 24	74	19.1	92	19.7	30	14.0	153	29.2	451	22.7
25 TO 29	126	32.6	150	32.1	71	33.0	159	30.3	624	31.4
30 TO 34	97	25.1	115	24.6	51	23.7	91	17.4	438	22.0
35 TO 39	32	8.3	36	7.7	25	11.6	30	5.7	149	7.5
40 & OLDER	30	7.8	26	5.6	25	11.6	26	5.0	127	6.4
UNKNOWN	11	2.8	12	2.6	2	0.9	10	1.9	48	2.4
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0	1990	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-17

CHRONIC HEALTH PROBLEMS BY ETHNICITY

CHRONIC HEALTH PROBLEMS	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
NO ILLNESS	447	80.5	591	85.9	328	97.3	677	80.2
ILLNESS	108	19.5	97	14.1	9	2.7	167	19.8
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-18
DIABETES ONSET-AGE BY ETHNICITY

DIABETES ONSET	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
19 & UNDER	4	0.7	6	0.9	3	0.9	6	0.7
20 TO 24	4	0.7	--	--	7	2.1	20	2.4
25 TO 29	--	--	8	1.2	9	2.7	14	1.7
30 & OLDER	3	0.5	3	0.4	6	1.8	44	5.2
NOT DIABETIC	544	98.0	671	97.5	312	92.6	760	90.0
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0
							2816	94.5
							2981	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-19
DIABETES TREATMENT BY ETHNICITY

DIABETES TREATMENT	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
	TOTAL		TOTAL		TOTAL		TOTAL	
NOT NEEDED	539	97.1	671	97.5	312	92.6	769	91.1
RECEIVE TREATMENT	16	2.9	17	2.5	25	7.4	75	8.9
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-20

ALLERGIES BY ETHNICITY

ALLERGIES	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
NO ALLERGIES	332	59.8	400	58.1	233	69.1	523	62.0
HAVE ALLERGIES	223	40.2	285	41.4	104	30.9	321	38.0
NOT STATED	--	--	3	0.4	--	--	--	--
TOTAL	555	100.0	688	100.0	337	100.0	844	100.0
							1829	61.4
							1137	38.1
							15	0.5
							2981	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-21
TOXEMIA BY ETHNICITY

TOXEMIA	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
NO TOXEMIA	212	54.8	287	61.3	174	80.9	329	62.8
DEVELOPED TOXEMIA	8	2.1	16	3.4	3	1.4	23	4.4
PREGNANCY TERMINATED	167	43.2	165	35.3	38	17.7	172	32.8
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0
							1990	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-22
URINARY TRACT INFECTION BY ETHNICITY

URINARY TRACT INFECTION	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
NO INFECTION	204	52.7	284	60.7	173	80.5	320	61.1
DEVELOPED INFECTION	16	4.1	19	4.1	4	1.9	32	6.1
PREGNANCY TERMINATED	167	43.2	165	35.3	38	17.7	172	32.8
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0
							1990	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-23
PRENATAL CARE BY ETHNICITY

PRENATAL CARE	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
NO PRENATAL CARE	15	3.9	13	2.8	9	4.2	28	5.3
BEGAN 1ST TRIMESTER	204	52.7	290	62.0	153	71.2	310	59.2
BEGAN 2ND TRIMESTER	26	6.7	27	5.8	25	11.6	58	11.1
BEGAN 3RD TRIMESTER	4	1.0	5	1.1	2	0.9	14	2.7
DON'T KNOW	4	1.0	1	0.2	4	1.9	14	2.7
NOT STATED	134	34.6	132	28.2	22	10.2	100	19.1
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0
							1990	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-24
ALCOHOL CONSUMPTION BY ETHNICITY

ALCOHOL CONSUMPTION	ETHNIC GROUP									
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN		TOTAL	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
IN 1ST TRIMESTER										
DID NOT DRINK	138	35.7	263	56.2	160	74.4	251	49.8	1033	51.9
DID DRINK	113	29.2	75	16.0	33	15.3	162	30.9	466	23.4
PREGNANCY TERMINATED	136	35.1	130	27.8	22	10.2	101	19.3	491	24.7
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0	1990	100.0
IN 2ND TRIMESTER										
DID NOT DRINK	127	32.8	249	53.2	156	72.6	242	46.2	986	49.5
DID DRINK	101	26.1	60	12.8	25	11.6	128	24.4	369	18.5
PREGNANCY TERMINATED	159	41.1	159	34.0	34	15.8	154	29.4	635	31.9
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0	1990	100.0
IN 3RD TRIMESTER										
DID NOT DRINK	124	32.0	249	53.2	154	71.6	241	46.0	977	49.1
DID DRINK	96	24.8	56	12.0	24	11.2	112	21.4	338	17.0
PREGNANCY TERMINATED	167	43.2	163	34.8	37	17.2	171	32.6	675	33.9
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0	1990	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-25
SMOKING BY ETHNICITY

SMOKING	ETHNIC GROUP									
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN		TOTAL	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
IN 1ST TRIMESTER										
DID NOT SMOKE	184	47.5	257	54.9	163	75.8	275	52.5	1064	53.5
DID SMOKE	67	17.3	82	17.5	30	14.0	150	28.6	440	22.1
PREGNANCY TERMINATED	136	35.1	129	27.6	22	10.2	99	18.9	485	24.4
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0	1990	100.0
IN 2ND TRIMESTER										
DID NOT SMOKE	173	44.7	238	50.9	153	71.2	236	45.0	982	49.3
DID SMOKE	55	14.2	71	15.2	28	13.0	136	26.0	378	19.0
PREGNANCY TERMINATED	159	41.1	159	34.0	34	15.8	152	29.0	630	31.7
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0	1990	100.0
IN 3RD TRIMESTER										
DID NOT SMOKE	171	44.2	235	50.2	150	69.8	228	43.5	950	48.2
DID SMOKE	50	12.9	70	15.0	28	13.0	127	24.2	360	18.1
PREGNANCY TERMINATED	166	42.9	163	34.8	37	17.2	169	32.3	670	33.7
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0	1990	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-26
PREGNANCY OUTCOME BY ETHNICITY

OUTCOME OF PREGNANCY	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
BIRTH	218	56.3	296	63.2	172	80.0	349	66.6
ABORTIONS	126	32.6	119	25.4	19	8.8	89	17.0
OTHER	43	11.1	53	11.3	24	11.2	86	16.4
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0
							1292	64.9
							442	22.2
							256	12.9
							1990	100.0

TABLE IV-27
LABOR & DELIVERY COMPLICATIONS BY ETHNICITY

LABOR & DELIVERY COMPLICATIONS	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
	TOTAL		TOTAL		TOTAL		TOTAL	
NO COMPLICATIONS	163	42.1	243	51.9	136	63.3	270	51.5
COMPLICATIONS	57	14.7	60	12.8	41	19.1	82	15.6
NOT STATED	167	43.2	165	35.3	38	17.7	172	32.8
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-28

MEDICAL PROBLEMS OF INFANT BY ETHNICITY

MEDICAL PROBLEMS OF INFANT	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
NO PROBLEMS	170	43.9	224	47.9	128	59.5	269	51.3
INFANT PROBLEMS	50	12.9	77	16.5	48	22.3	83	15.8
PREGNANCY TERMINATED	167	43.2	167	35.7	39	18.1	172	32.8
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-29

EFFECT ON PHYSICAL HEALTH OF MOTHER BY ETHNICITY

EFFECT ON PHYSICAL HEALTH	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
NO	308	79.6	371	79.3	169	78.6	399	76.1
YES, A LITTLE	40	10.3	42	9.0	23	10.7	63	12.0
YES, SOME	14	3.6	21	4.5	13	6.0	22	4.2
YES, A LOT	10	2.6	20	4.3	4	1.9	28	5.3
NOT STATED	15	3.9	14	3.0	6	2.8	12	2.3
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0
							1990	100.0

TABLE IV-30
EFFECT ON CONTRACEPTION OF PARENTS BY ETHNICITY

EFFECT ON CONTRACEPTION	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
YES, IMPROVED USE	71	18.3	84	17.9	34	15.8	92	17.6
NO	157	40.6	210	44.9	94	43.7	259	49.4
YES, MADE USE	7	1.8	3	0.6	2	0.9	11	2.1
YES, CHANGED METHOD	114	29.5	137	29.3	72	33.5	121	23.1
YES, SAME METHOD	21	5.4	18	3.8	4	1.9	21	4.0
NOT STATED	17	4.4	16	3.4	9	4.2	20	3.8
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0
							1990	100.0

Note: Tables by five-year age groups from "less than 18" to "35 and over" are presented in the Appendices.

TABLE IV-31
BIRTH WEIGHT BY ETHNICITY OF MOTHER

WEIGHT LEVEL	ETHNIC GROUP							
	CAUCASIAN		CHINESE/ JAPANESE		FILIPINO		NATIVE HAWAIIAN	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
LOW BIRTH WEIGHT	6	1.6	14	3.0	14	6.5	30	5.7
NORMAL	213	55.0	286	61.1	159	74.0	320	61.1
OTHER OUTCOMES	168	43.4	168	35.9	42	19.5	174	33.2
TOTAL	387	100.0	468	100.0	215	100.0	524	100.0
							1594	100.0

Chapter V

DIABETES: EPIDEMIOLOGY AND HEALTH CARE

V. DIABETES: EPIDEMIOLOGY AND HEALTH CARE

A. EPIDEMIOLOGY OF DIABETES

Prevalence of Morbidity

As presented in Chapter III of this report on the prevalence and distribution of diabetes in the general population, it is one of the most prevalent chronic conditions. In fact in Table III-9 in Chapter III, which shows the rankings of age-adjusted rates of different chronic conditions, diabetes is ranked tenth overall. For Native Hawaiians, however, it was ranked fifth most prevalent. If we look at the subgroups of Native Hawaiians, we see that for Hawaiians it is the third most prevalent chronic condition as compared to fifth for Part-Hawaiians. Thus, diabetes is one of the most prevalent chronic conditions in the population. For Native Hawaiians it is even more prevalent than for the general population of the state. Within the Native Hawaiian group, Hawaiians suffer from diabetes much more frequently than Part-Hawaiians.

If we compare specific ethnic/racial groups in Table III-10 in Chapter III, we see that diabetes is ranked high overall in terms of prevalence. Hawaiians are ranked number one, Native Hawaiians number two, and Part-Hawaiians number three in age-adjusted prevalence rates. Thus, compared to other ethnic/racial groups, Native Hawaiians and the sub-categories: Hawaiians and Part-Hawaiians, have the highest prevalence of any other groups. The above findings are valid for the most recent years, 1980-84, for which prevalence data are available.

If we look at the age and sex distribution of diabetes within the Native Hawaiians (see Table III-8, in Chapter III) we see that as

the age increases, the prevalence rates for diabetes increase. For Part-Hawaiians, female prevalence is higher than male, but for Hawaiians male prevalence is higher than female prevalence. For Native Hawaiians, which includes both Hawaiian and Part-Hawaiian, female prevalence is higher than male. For the general population, females are higher than males and older persons higher than younger persons in prevalence of diabetes. Thus, the overall findings for Native Hawaiians is similar to the general population in this respect.

A study of diabetes during the period 1974-76 indicates that, "...increased frequency of diabetes appears to be associated with age over 45, Hawaiian ethnicity, residing in a rural area, and, if a woman, coming from a lower income family" (Varney, 1979). This agrees with the 1980-84 findings in Tables V-1 and V-2 which show diabetes prevalence rates by geographic area and education for each ethnic group. Table V-1 shows that overall rural residents have higher rates of diabetes than urban. This is true for Hawaiians as a rule; however, for Part-Hawaiians there are urban areas such as Honolulu where the diabetes rates are higher than for rural areas. The rates in this table have not been age-adjusted and, therefore, may reflect the differences in age between the rural and urban populations. For example, rural populations are generally younger than urban populations and since diabetes affects the older population more, one might expect the urban population to have higher rates. This is so for Honolulu. Molokai is rural and the rates are lower there for Part-Hawaiians. The Hawaiian group is generally older than the Part-Hawaiian group and overall has higher rates of diabetes and also generally has higher rates in the rural areas than

urban areas.

The relationship between diabetes and education shows that those with less than 12 years of completed education have higher rates of diabetes than those with more education. Diabetes appears to be a disease of those who have less education. This is true for Native Hawaiians as well as for other ethnic groups.

Table V-3 shows those who have diabetes are most likely to have seen a doctor within the past 6 months.

In addition, the annual statistics from the Chronic Disease Branch of the Hawaii State Department of Health (Department of Health Annual Report, 1968 through 1984) indicate that Native Hawaiians have historically been among the highest groups in terms of the proportion of screenees who test positive on diabetes tests, and among the highest groups in terms of percentage of new diabetics of those screened. Even though the screenings are not a representative sample of the total population, it does indicate that Native Hawaiians, wherever they participate in diabetes screening, do test positive more often than most other groups.

In addition to the above socio-demographic factors associated with prevalence of diabetes, some of the Hawaii State Department of Health and Diabetes Association literature on diabetes indicate that diet and body weight are important factors in diabetes, although the actual causes of diabetes are unclear.

Mortality Caused by Diabetes

In addition to consideration of the prevalence and distribution of diabetes within the general population and among Native Hawaiians, it is also important to consider diabetes as a cause of death. As indicated above, however, diabetes mortality rates may

underestimate its true effect since it may contribute to other conditions such as arteriosclerosis and renal failure from which the person is more likely to die and which would be recorded as the principal cause of death rather than diabetes. Thus, its true impact on mortality statistics is understated when considering it only as the principal or immediate cause of death. Even so, as we will see below, diabetes as a principal cause of death is among the top causes of death for the population as a whole and among Native Hawaiians (see Tables III-1 and III-2). In fact, for Part-Hawaiians it is the most important cause of death, as it is for non-Hawaiians. In comparing diabetes as a cause of death among Native Hawaiians, it is a more important cause of death for Part-Hawaiians than for Hawaiians (see Table III-3). Part-Hawaiians have higher age-adjusted mortality from diabetes than do other non-Hawaiian groups.

A recent study done on historical trends in diabetes mortality in Hawaii shows that since 1910 Native Hawaiians have had the highest mortality from diabetes as compared with other non-Hawaiians (Look, 1982). This study indicated that in 1910, within the Native Hawaiian category, Hawaiians were more numerous and Part-Hawaiians less numerous. Since then, Part-Hawaiians are more numerous than Hawaiians by a ratio of 1 to 20. Figure V-1 was taken from the Look study, mentioned above. It shows the trends in mortality rates from diabetes from 1910 to 1980. As we can see, the overall trends were increasing until 1960 and decreasing from 1960 to 1980. For Hawaiians, the trends show a sharp increase from 1910 to 1960 and then a leveling off from 1960 to 1970 and then a decline from 1970 to 1980. The Part-Hawaiian trends rose from 1910 to 1920 then fell

sharply from 1920 to 1930, then increased moderately from 1930 to 1950 and have declined moderately from 1950 to 1980. In 1980 the Hawaiians' diabetes mortality was twice the rates for Part-Hawaiians, and Part-Hawaiians in turn were twice the rates of the general population, even though overall rates in 1980 were lower than they had been since the 1950-1960 period.

Limitation of Activity

The extent to which a chronic condition limits the amount or kinds of activity a person may engage in, particularly when it prevents the person from engaging in major activity, is an important indicator of the effect of the condition upon the person's quality of life. This contrasts with mortality which is an indicator of the length of life. The HSP Health Survey obtains information on the extent to which a reported illness limits the person's amount or kind of usual activities. It also obtains information on the person's major activity, be it work, keeping house, going to school and the like. The person is asked if diabetes (if they report that they have diabetes) prevents them from engaging in their major activity. The responses to this question are summarized by ethnicity in Table III-11. Of those who have diabetes, 7.9% say that it limits their ability to engage in their major activity. For Native Hawaiians 10.6%, Hawaiians 9.1% and Part-Hawaiians 10.9%. Thus, diabetes is more limiting for Native Hawaiians than for non-Hawaiians and for Part-Hawaiians than Hawaiians.

In terms of limitation of activity in general (including major activity), some 26% of the general population find that diabetes causes them to cut down on the things they usually do (see Table III-12). Some 28.1% of Native Hawaiians, 27.9% of Part-Hawaiians

and 29.5% of Hawaiians who have diabetes say it causes them to cut down on the things they usually do. This means that, compared to the general population, a greater proportion of Native Hawaiians have to cut down on their usual activities due to diabetes. Since Hawaiians are generally older than Part-Hawaiians as a group, it is natural to expect that diabetes would tend to limit their activities more. However, as shown above, the Part-Hawaiians experienced a greater percentage of not being able to engage in their major activity compared to Hawaiians. This may be due to the fact that more Part-Hawaiians, being younger, consider their major activity to be work. Thus, diabetes would tend to prevent them from working more than for the older group of Hawaiians who may not work as much.

In ranking diabetes on the percentage of persons who report the condition as causing them to limit their usual activities, Table III-13 shows for Native Hawaiians that diabetes is third, Hawaiians are second and Part-Hawaiians are fourth. Caucasians and Japanese experience more limitation than the Hawaiian groups. Other groups such as Filipino and Chinese and "Other" have less limitation due to diabetes than do the Native Hawaiians. These findings are supported by a study of diabetes for 1974-76 (Varney, 1979), where Hawaiians ranked second only to Caucasians in percentage activity limitation due to diabetes.

Diabetes, therefore, causes some limitation of usual activity and prevents some from working or engaging in their major activity. Hawaiians, overall, suffer more from these limitations or effects of diabetes than does the population in general.

Literature from research, control and treatment organizations

for heart and kidney disease indicate that some of the secondary conditions arising out of diabetes are renal failure, arteriosclerosis, retinopathy and problems with circulation in the extremities and healing of wounds.

Unfortunately, information on the incidence of diabetic shock, hospitalization, physician office visits, and other indicators of impact or effects of diabetes are not readily available. These are areas which require additional consideration in further research on diabetes.

Implications of Epidemiological Findings for Locating a Target Population for Services

As indicated above, Native Hawaiians have the highest diabetes rates of any group in Hawaii, and therefore are a prime target group for additional study and for planning services. Subpopulations of Native Hawaiians are also identified as being targets for services and these persons are women, older population, rural residents and persons with low income. These identify the characteristics of high risk persons and the more of these characteristics a person has, the greater the risk of them either having diabetes or in eventually having it. Therefore, it seems that screening programs might focus on Native Hawaiians who have these high risk characteristics in an attempt to identify persons who already have undetected diabetes. In addition, prevention programs should focus on Native Hawaiians, particularly those who have these characteristics, in an attempt to educate them in their health practices, diet, and in how to identify early symptoms and where to seek diagnostic and treatment services in their communities. There can be an effort to assure adequate treatment services in areas where Native Hawaiians live and to educate providers of care to be alert to symptoms among the high

risk groups and to do screening of these groups on a routine basis when these persons come in for routine physical examinations or when they come in for other services.

B. HEALTH SERVICES: AVAILABILITY, ACCESSABILITY AND ACCEPTABILITY

Availability of health services for diabetes patients is determined by the distribution of professional medical practitioners and facilities. Accessability is a function of location, time and payment for services. Acceptability of services is determined in part by cultural attitudes toward services.

There is some indication in some chronic illnesses such as cancer and diabetes that oftentimes Native Hawaiians are diagnosed with these illnesses at later stages, when the illness has progressed to a point where it is difficult to treat. This is due at least in part to either resistance in seeking treatment even when some morbid symptoms exist. It may also be due to lack of services or inconvenience in terms of time, distance or cost in getting diagnostic and treatment services. Where a person lives in remote areas, does not have health insurance, or may not feel the necessity of having regular medical check-ups or in participating in screening programs, then it is likely that they will not discover the presence of a morbid condition until the symptoms become pronounced and perhaps debilitating.

For example, with many patients the gradual loss of eyesight motivates the search for eye care, whereupon the practitioner finds the person has had a history of diabetic symptoms and now is suffering from some of the effects of a severe eye disorder called diabetic retinopathy. Had the diabetes been diagnosed and treated early, it could have been arrested and there would have been no loss

of eye function. Oftentimes, when retinopathy has been diagnosed, it has progressed to the point where some or all of the person's eyesight is in jeopardy.

In order to prevent such examples, it is important to have health education and promotion programs as well as screening and referral programs for diabetes. The Diabetes Association and the Chronic Disease Branch of the Hawaii State Department of Health are two organizations dedicated to health education and prevention of diabetes. These two organizations conduct diabetes screening and referral at different sites throughout the State. The statistics on the characteristics of persons they screen and the results of the screening are published in the Department of Health Annual Report. The screening program has been expanded to include 10,000 persons during 1985. This screening will probably include only some 800-1000 Native Hawaiians at most. Therefore, it is inadequate as a tool for screening the Native Hawaiians since, if one were to include the high risk Native Hawaiians, one should attempt to screen all women age 45 and over, particularly those living in low income and rural areas. Oftentimes these are the very areas which are excluded from typical screening programs because of inaccessability and cost.

Another aspect of treatment of diabetes is the willingness of patients to follow a strict diet and to observe a strict schedule of medication and monitoring. This requires that the patient be motivated and that members of the family be supportive. It also requires some adjustment in the patient's working, social, family and other daily activities. If a patient has been reluctant to observe preventive measures or in seeking diagnostic and treatment

services then it is unlikely that once, they are diagnosed with diabetes, they will willingly comply to the diet and medication schedules required of diabetics.

Compliance is one of the most difficult problems of diabetics and requires constant monitoring by health providers as well as constant support of the patient's family. There is some evidence that Native Hawaiians find compliance a particular challenge since it violates many cultural practices. If this is true, special educational and motivational efforts must be available to Native Hawaiians in order to facilitate the prevention, diagnosis and treatment of diabetes.

C. SUMMARY

The above description of the epidemiology of diabetes among Native Hawaiians has shown that, in terms of morbidity and mortality, Native Hawaiians experience higher rates than the general population, if not higher rates than any other racial/ethnic groups in Hawaii. Among Native Hawaiians, females, rural residents, low income and those over age 45 are at highest risk of having diabetes.

In terms of the effects of diabetes upon Native Hawaiians there appears to be greater activity limitation than that suffered by the population in general. Native Hawaiians are typically diagnosed with diabetes at later stages of the illness and, therefore, suffer more severe effects such as renal failure, arteriosclerosis, loss of circulation in the extremities and retinopathy, more so than other groups who seek diagnostic and treatment services earlier.

There needs to be an effort to provide education, screening, diagnosis and treatment programs for diabetes for Native Hawaiians in culturally acceptable ways within local communities and within

groups with which Native Hawaiians are affiliated. Providers of care should be aware of the high risks of Native Hawaiians and routinely provide screening and prevention for those at risk in a culturally appropriate manner. Treatment must address the problems associated with compliance with diet and medication requirements of diabetes among Native Hawaiians.

D. RECOMMENDATIONS

The first recommendation would be to augment the existing screening programs for diabetes done by the Diabetes Association and the Chronic Disease Branch of the Hawaii State Department of Health to include subpopulations of Native Hawaiians who suffer high risk of diabetes. This of course will require funding beyond the level now available. It will require additional staffing to do the screening and to assure adequate follow-up to make sure that positive screenees receive treatment.

Additional educational programs by the Health Promotion and Education Office of the Department of Health in conjunction with various Hawaiian organizations in local areas can be implemented and perhaps coordinated with the screening program to publicize the need for prevention and for regular check-ups and screening. It might be possible to conduct some screening on site at various locations where Native Hawaiians gather, or within the context of specific Hawaiian organizations such as civic clubs, churches, etc.

The providers of medical care in the community need to be motivated to be sensitive to Hawaiian culture in dealing with Native Hawaiian patients and also be alert to those who are at risk to carefully check reports of symptoms of early stages of diabetes, and also to provide diagnostic and screening tests along with routine

visits and check-ups of high risk persons. Providers must also be sensitive to Hawaiian culture in trying to motivate patients who have diabetes to comply with diet and medication regimens. This may require working with the families as well as with community leaders.

One of the most effective ways of implementing screening, diagnosis and treatment programs among Native Hawaiians for diabetes might be through community public health workers who live with and may, in fact, be Native Hawaiians themselves. These persons can work with Hawaiian leaders, kahunas, kapunas, and the ohanas to gain confidence and knowledge of their situation and to become aware of various health problems and to encourage them to be aware of, and observe, healthful practices consistent with Hawaiian culture and to utilize the western medical and health system to prevent as well as diagnose illness, specifically illnesses such as diabetes. They can also perform some of the education on prevention and screening and some initial or follow-up treatment and encouragement to observe dietary and medicinal regimens.

The creation of such a cadre of public health workers will require considerable seed money to select and educate them and then to pay them. Such resources could initially be provided by Federal funding with some State matching funds. This ratio could shift over a period of five to ten years with a greater load assumed by state and private local funds as the program takes hold. The evaluation of the effectiveness of such a program could be done annually to determine its ability to achieve the stated objectives. The program can be implemented for diabetes as well as all other high prevalence illnesses of Native Hawaiians.

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TABLE V-1, RATES (PER 1000) OF SELECTED CHRONIC CONDITIONS BY AREA AND ETHNICITY, HAWAII 1980-84

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DIABETES AREA	TOTAL	CAUC- ASIAN	JAPAN- ESE	NATIVE HAW'N	HAW- IIAN	PART HAW'N	FILI- PINO	CHIN- ESE	OTHER/ UNKNOWN
STATE	20.5	15.3	31.5	19.3	69.3	17.0	20.3	31.9	11.8
OAHU	19.1	13.7	28.0	20.0	59.2	18.3	18.1	30.9	11.4
HONOLULU	24.6	18.0	33.4	28.8	51.9	27.6	18.7	29.2	13.3
CENTRAL OAHU	13.9	8.7	21.8	10.9	56.7	9.8	16.7	42.1	9.3
MAIANAE	19.6	36.5	20.1	15.7	68.3	11.2	21.7	0.0	15.4
WINDWARD	17.3	13.2	20.8	22.2	68.2	21.0	27.2	22.3	12.2
HAWAII COUNTY	23.1	22.2	32.1	17.0	88.8	12.5	28.1	51.7	15.8
KAUAI COUNTY	30.7	25.2	58.6	20.7	127.6	17.1	26.1	42.0	12.1
MAUI COUNTY	25.8	18.6	52.7	17.7	72.5	14.2	25.1	61.9	11.5
MAUI	25.1	18.2	52.3	17.3	85.2	13.6	21.8	64.7	9.3
MOLOKAI	20.5	23.3	43.1	19.2	44.6	16.5	18.7	66.7	7.0
LANAI	64.1	48.9	69.6	29.9	0.0	31.4	64.6	0.0	95.4

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SOURCE: Health Surveillance Program, State Department of Health

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TABLE V-2, RATES(PER 1000) OF SELECTED CONDITIONS BY EDUCATION AND ETHNICITY, HAWAII 1980-84

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DIABETES EDUCATION	TOTAL	CAUC- ASIAN	JAPAN- ESE	NATIVE HAW'N	HAW- IIAN	PART HAW'N	FILI- PINO	CHIN- ESE	OTHER/ UNKNWN
NONE	3.8	0.1	9.2	0.5	29.8	0.1	15.7	29.3	1.4
1 - 11 YRS	80.0	66.4	131.1	64.9	201.9	56.3	86.1	105.7	45.3
HIGH 12 YEARS	23.9	15.9	35.5	23.2	61.3	20.9	20.5	39.3	17.1
VOCATIONAL	25.7	18.0	28.6	24.8	0.0	26.2	21.2	76.0	13.1
COLLEGE 13-15 YRS	13.5	11.2	19.6	16.4	0.0	17.0	6.3	21.6	7.7
COLLEGE 16 YEARS	15.3	14.7	13.8	15.8	68.5	13.3	20.1	17.8	15.6
POST GRADUATE	16.4	14.4	17.6	14.1	100.0	11.8	23.1	15.1	24.0
UNKNOWN	23.6	26.4	32.5	42.4	144.4	29.5	13.7	52.9	0.9
TOTAL	20.5	14.1	31.5	19.3	69.3	17.0	20.3	31.9	11.8

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SOURCE: Health Surveillance Program, State Department of Health

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TABLE V-3, RATES(PER 1000) OF CONDITIONS BY TIME SINCE SAW DOCTOR AND ETHNICITY, HAWAII 1980-84

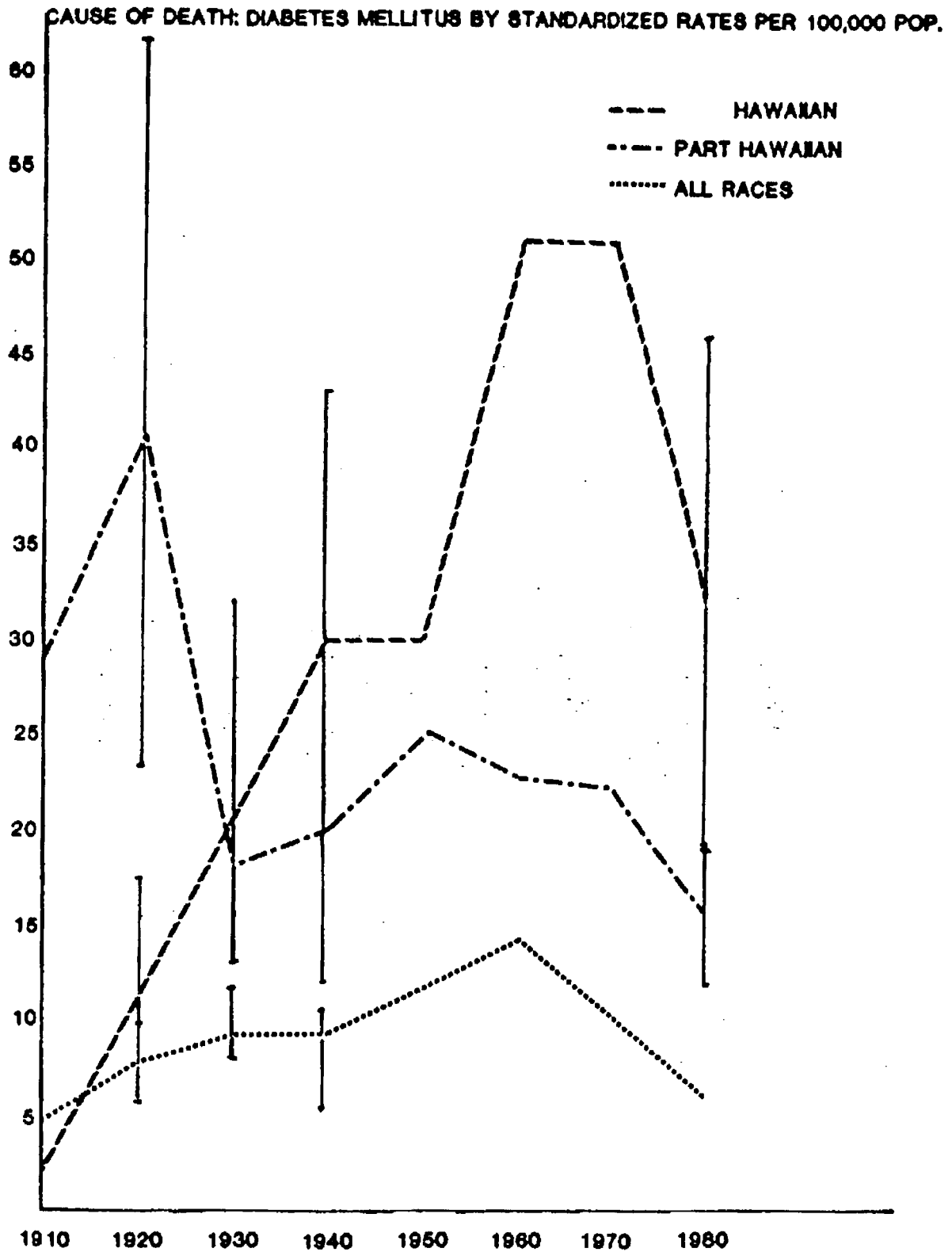
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DIABETES TIME SINCE SAW DR	TOTAL	CAUC- ASIAN	JAPAN- ESE	NATIVE HAW'N	HAW- IIAN	PART HAW'N	FILI- PINO	CHIN- ESE	OTHER/ UNKNWN
NONE	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.7	0.1
WITHIN 6 MONTHS	18.1	13.1	28.3	17.4	388.5	3.0	24.6	42.9	7.5
6 MONTHS & OVER	2.2	1.9	3.0	1.8	6.1	1.6	2.8	4.0	0.9
UNKNOWN	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1
TOTAL	20.5	15.3	31.5	19.3	69.3	17.0	20.3	31.8	11.8

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SOURCE: Health Surveillance Program, State Department of Health

Figure V-1



Source: "A Mortality Study of the Hawaiian People," by Mele A. Look, Student, Department of American Studies, University of Hawaii, R & S Report Issue #38, February 1982.

Chapter VI

HYPERTENSION AND HEART DISEASE: EPIDEMIOLOGY AND HEALTH CARE SERVICES

VI. HYPERTENSION AND HEART DISEASE: EPIDEMIOLOGY AND HEALTH CARE SERVICES

A. INTRODUCTION

Diseases of the circulatory system are generally found to be the principal cause of death in the developed countries of the world. Mortality statistics show that in the early twentieth century, heart disease was insignificant in Hawaii as a cause of death compared to infectious diseases for all ethnic groups. However, by 1930, arteriosclerotic heart disease was the leading cause of death, and it continues to be the most important cause of death to the present time.

Native Hawaiians, particularly Full Hawaiians, have significantly higher rates of heart disease than other ethnic groups. To illustrate this change, in 1920 the mortality rate from arteriosclerotic disease among Native Hawaiians was 3.4 per 100,000 population, but by 1960 it was 287.2 per 100,000, twice as high as the combined rate for other racial groups. Furthermore, in 1910 there was only one death due to hypertensive heart disease, but this rate also increased steadily until 1950, with Native Hawaiians being significantly more adversely affected than other ethnic groups (Look, 1982).

Hypertension is recognized as one of the most serious and prevalent chronic diseases in the American population. Its importance is greatly understated by mortality statistics, since untreated it is associated with the occurrence of heart disease, strokes, kidney failure, blindness, and other serious disease. A 1984 Risk Factor Reduction (HERR) Project of the Health Promotion and Education Office of the Department of Health reported that 24%

of adults in Hawaii had been told at some time that they experienced high blood pressure (Hawaii Department of Health, 1985: p. 8). A telephone survey of Hawaii residents (Health Promotion and Education Office, 1985) found that Native Hawaiians reported a higher rate of hypertension than other ethnic groups, confirming earlier research showing Native Hawaiians with an age-sex standardized rate of hypertension of 71.8 per 1000 persons, compared to the state rate of 56.9 (Burch, 1978: Table 3). Thus, Native Hawaiians appear to be similar to other disadvantaged American groups, such as Blacks, in being more vulnerable to hypertension.

Hypertension is a particularly important condition to focus on in any effort to improve the health status of a population. Diagnosis is simple and inexpensive, and treatment through medication is effective. Furthermore, non-medical measures, such as weight-control, dietary changes, exercise programs, and stress-management, are believed to be necessary to control hypertension as well as important in controlling the development of arteriosclerosis, the underlying cause for many heart and other circulatory diseases. Hypertension is a product of many of the same causes as heart disease as well as being a condition which leads to heart disease.

This chapter will examine hypertension as well as heart disease among Native Hawaiians. First, the epidemiology of heart disease and hypertension will be presented. Second, the situational and risk factors associated with hypertension and heart disease among Native Hawaiians will be discussed. Third, the effectiveness of health care services will be examined in

regard to the prevention and control of hypertension and heart disease, including health education, health promotion programs, health screening and referral programs, and medical treatment. Finally, the chapter will conclude with recommendations for improving the delivery of health care services to Native Hawaiians in order to reduce health problems associated with hypertension and heart disease.

B. AN OVERVIEW OF METHODOLOGY

Before presenting the analysis, a few comments are necessary regarding the data sources, indicators, and methods employed in this chapter. A detailed discussion of the general data sources and procedures followed in this Task Force Report is provided in Chapter II. This section will provide only an overview of some of the important points, with special attention to issues relating to the information regarding hypertension and heart disease.

Research Data Sources

Three principal sources of data are utilized in this analysis: 1) The Hawaii Health Surveillance Program; 2) Mortality data from the Vital Statistics of the State of Hawaii; 3) information obtained from various programs of the Hawaii State Department of Health and from a number of private health care provider organizations, including interviews, published reports and some quantitative data.

The Hawaii Health Surveillance Program. The major source of data available for epidemiological research on hypertension and heart disease is the Hawaii Health Surveillance Program, which surveys a stratified probability sample of approximately 6000 households per year in the state of Hawaii. A detailed discussion of the

sample design, data collection procedures and method of analysis employed in this program is described in Chapter V.

The principal advantage of the Health Surveillance data is that the information is obtained regularly from a representative sample of the non-institutional residents of the state. However, there are three disadvantages with this source for the purpose of studying the epidemiology of circulatory diseases:

First, the fact that the data is obtained from a sample means that the actual population parameters must be estimated based on a weighting procedure. Since at any one point in time, only a small proportion of the population reports having a disease, the actual number of such individuals falling in a sample can be too small for a reliable estimate of the rate in the population. In view of this problem, sample data for five years, 1980-84, have been combined in order to provide a large enough sample to enable detailed statistical comparisons among the different ethnic groups. Nevertheless, the actual number of cases in some categories of the analysis are still too small, and so the results presented here should be interpreted only as suggesting patterns rather than as definitive evidence.

Second, the data are based on self-reported information by the respondents and therefore do not reflect the undiagnosed cases in a population. Hypertension as well as many other heart conditions may be asymptomatic in their early stages, and for this reason a relatively high proportion of cases are undetected. The most certain method of obtaining a reliable estimate of the prevalence of disease is to obtain direct clinical evidence from a systematic sample of a population, using standard diagnostic

procedures. However, this method is costly and time-consuming.

Self-reports may also be inaccurate because lay individuals misreport their conditions or report them in ambiguous language. Physicians do not always use technical medical terms in communicating with their patients. Thus rates based on self-reported information probably underestimate the extent of pathology. It is extremely problematic to judge the extent of this error or how it may bias statistical relationships with other variables.

A third problem with the Health Surveillance Program data concerns limitations in the information collected. The Health Surveillance Survey obtains very little information about health service utilization or treatment. For example the data contain no information about current blood pressure levels or whether or not medications are being taken. Thus, it is impossible from the health survey data to evaluate whether or not the individual has obtained appropriate treatment and the extent to which the hypertension is in fact under successful control. Such information is critical in determining the need for further health care services. Information is also lacking about many of the life-style behaviors and social stresses which may be important in understanding the etiology of disease and in designing health promotion programs.

Mortality Data from Vital Statistics. Information is available from the vital statistics for the state of Hawaii regarding circulatory and heart diseases as recorded cause of death. These data are obtained from death certificates, which record both principal as well as secondary causes of death. Mortality statistics have the advantage of being based on medical

evidence rather than the subjective awareness of disease by the patient. Furthermore, mortality statistics are based on the entire population rather than a sample.

Nevertheless, there are problems of interpreting the principal cause of death in cases where multiple factors may be involved. For example, heart failure may accompany trauma from an accident, surgery, or the presence of other diseases. Thus, the cause of death as recorded on the death certificate is a professional judgement rather than an objective fact.

Mortality data, moreover, have limitations in providing information about the prevalence of a health condition in a population. Individuals with a disease such as hypertension may die of other causes, e.g., accidents, which are unrelated to the disease. Hypertension, furthermore, may be the basis for other conditions leading to death, such as renal disease and cerebrovascular accidents or strokes. For these reasons mortality statistics for hypertension probably seriously underestimate the prevalence in the population.

On the other hand, mortality statistics may provide the most reliable indication of the pattern of heart disease in a population. In contrast with hypertension, heart disease is not easily diagnosed. Individuals may unknowingly have a heart condition even though they have regular physical check-ups with their physicians. Self-reported information about heart disease, therefore, is likely to be even more inaccurate than for hypertension. For this reason, the analysis of heart disease will rely on mortality statistics to a greater degree than the analysis of hypertension.

Information Regarding Health Services. Systematic information regarding the utilization of health services is lacking. The problem is complicated further by the fact that neither the state nor private health care providers routinely collect information about the ethnic background of their clients. Thus, the analysis in this report rests upon a few limited statistics and the subjective perceptions of persons interviewed.

Information about health services has been obtained through interviews with a few individuals in selected health care settings on the Island of Oahu. The limited time and resources available to complete this analysis have precluded the possibility of a more systematic and comprehensive effort. One problem with this procedure is the difficulty of generalizing to the entire state from a few selective programs. A second problem, is that interviews with staff of health care agencies provide only a limited perspective. The perspective of Native Hawaiian clients or potential clients may be very different from those who work in the programs and agencies. There are several alternative perspectives which emerged concerning such issues as the role of cultural values, mode of service delivery, financial costs, and geographic accessibility in explaining the use and effectiveness of health services with the Native Hawaiian population. Thus the evaluations of health care services offered in this report must be interpreted as suggested hypotheses to be investigated further rather than as definitive conclusions.

Definitions of Indicators and Variables

A large number of disease conditions of the heart and circulatory system have been identified. In order to provide a

manageable set of categories for the analysis in this report, conditions have been grouped according to ICDA codes. Table VI-1 presents these categories along with the ICDA codes and the number of cases in the state as estimated from the combined samples of the 1980 through 1984 Health Surveillance Program.

These categories represent to some degree identifiably different pathological conditions involving somewhat different etiological processes. It should be noted that arteriosclerosis may underly other conditions and is not easy to diagnose by itself. Therefore, the estimated rates for this disease is no doubt too low. The figures in this table show that hypertensive disease has by far the greatest prevalence, and therefore this report will focus primarily on this condition. More detailed statistical analysis will be possible for this condition because of the larger numbers of cases. As noted in the introduction, furthermore, present knowledge suggests effective preventive and maintenance interventions which can be undertaken in regard to hypertension.

Two types of statistics will be reported, unadjusted and age-adjusted rates. The survey data will be reported in rates per 1000 population, and the death rates will be presented as rates per 100,000 population. Each of these rates has practical significance. An unadjusted rate represents the rate of actual cases in a population or in a category of the population and thus signifies the magnitude of the health problem or service need. The age-adjusted rate is useful in comparing the relative risk of populations or subgroups with different age distributions in experiencing a health problem. This statistic is useful in

suggesting the relative importance of developing preventive programs for a particular subpopulation and is also useful in studying possible etiological factors associated with the occurrence of the disease.

In the case of rates based on the Health Surveillance Program, state estimates are computed by extrapolating from weighted rates for different subcategories of the combined stratified probability samples for five years of household surveys. Age-adjusted rates are computed by using the statewide population as the standard, and by calculating expected rates for the age categories 1) under 17, 2) 17-44, 3) 45-64 and 4) 65 and over. Computing rates for separate ethnic groups based on sample survey data results in numbers too small to permit a more refined set of computations. The age-adjusted death rates have also been computed using these same age categories.

The standard demographic variables of age, sex and ethnicity are defined in the general introduction to this study. In this report, Native Hawaiians are divided into Full-Hawaiian and Part-Hawaiian following the guidelines utilized by the State Department of Health in the Hawaii Health Surveillance Program. See Chapter II for a more detailed discussion of this distinction. Additional variables will be defined as they are introduced in the analysis.

C. THE EPIDEMIOLOGICAL ANALYSIS

The purpose of this epidemiological analysis is threefold: 1) to estimate the general prevalence of hypertension and heart disease among Native Hawaiians in order to judge the relative magnitude of these health problems for this population; 2) to

describe the distribution of these diseases among subgroups of Native Hawaiians as an aid in identifying specific high risk groups; and 3) to discover social conditions associated with the occurrence of hypertension or heart disease in order to suggest possible factors in their etiology.

The existing literature presents a somewhat confusing picture of the relative prevalence of hypertension and heart disease among Hawaiians. Burch (1978) reported from data for the period 1974-76, that compared to the total state population rate of 56.9, the Native Hawaiian population had an age-sex standardized rate of hypertension of 71.8 per 1000 population, the highest of any ethnic group in the state. The corresponding rate for heart disease was 19.7, compared to a total rate of 17.0 for the state. In contrast, Native Hawaiians had a rate of cerebro-vascular disease of 2.9 per 1000, the same as the total state rate of 2.9. In contrast, Burch and Kawaguchi (1980) reported that the age-standardized rate for hypertension for the years 1972-74 was 43.9 per 1000, the lowest of any group in Hawaii. Similarly, they reported a rate of 11.9 for heart disease and a rate of 1.7 for cerebrovascular disease, also the lowest rates in the state of Hawaii.

These studies were based on self-reported data from household interviews in the Health Surveillance Program, which is also the major source of data for this report. These inconsistencies, therefore, cannot be attributed to methods of sampling or other methodological differences. Perhaps rates estimated from three years of household samples are unreliable because the numbers of cases in some age-sex-ethnic categories are too small. The

present report uses data from five years of surveys. Perhaps the larger numbers will produce more reliable statistics. On the other hand, the inconsistencies between various data sets may reflect the unreliability of self-reports of these health conditions. Therefore, caution is required in interpreting the results of the analyses presented below.

Hypertension without Heart Involvement

Ethnic Comparisons. Estimates of hypertension from self-reported data from surveys are problematic because of the relatively high proportion of undiagnosed cases of this condition. Furthermore, these rates also have ambiguous implications since they do not indicate whether or not the condition is under control through effective treatment. Nevertheless, Table VI-2 reports the best statewide estimates available for Hawaii based on survey results from 1980 through 1984.

First, compared with the Caucasian population, all other ethnic groups in Hawaii appear to have relatively high age-adjusted rates of hypertension. The rate for Native Hawaiian women is the highest in the state, and the rate for Native Hawaiian men is only slightly lower than the rate for Japanese men. Thus, hypertension appears to be an important health problem in general for the non-Caucasian population of Hawaii, with Native Hawaiians having among the highest rates.

Second, the unadjusted rates for Full Hawaiians are more than double the rates for Part-Hawaiians. This finding shows that the highest proportion of cases exist among the Full Hawaiians. Therefore, treatment efforts should be targeted at this population in order to control the blood pressure levels of both men and

women affected in this group.

Third, the age-adjusted rates for Part-Hawaiians are higher than the rates for Full Hawaiians. The difference in the pattern between unadjusted and age-adjusted rates reflects the fact that the Full Hawaiian population is much older than the Part-Hawaiian population and, indeed, than the state's population in general. Because the Full Hawaiian population is older, it has higher rates of illness, but that does not mean that these individuals have a greater risk of illness if you compare them with individuals of the same age in other groups. This same difference between unadjusted and age-adjusted rates can be found throughout this report because of the difference in age distributions in the different populations.

The high age-adjusted rates for Part-Hawaiians suggests that this group is actually more at risk than Full-Hawaiians to develop hypertension. Therefore, further study is required to understand the social conditions of Part-Hawaiians associated with the occurrence of this disease, particularly for Part-Hawaiian women. Of all the ethnic groups in the state, it is only among Part-Hawaiians that women have higher rates than men. Preventive programs are needed to reduce the risk for hypertension, and screening programs should target the Part-Hawaiian population in order to succeed at early diagnosis and control of the condition.

Table VI-3 presents death rates as a second method of estimating the significance of hypertension for the Native Hawaiian population. The death rates per 100,000 population due to hypertension and due to cerebrovascular disease, often due to hypertension, are presented for Native Hawaiians and non-

Hawaiians. In this table, rates are presented separately for the age categories of 45 through 64 years and 65 years and over, since these diseases tend to result in deaths only among the oldest age categories.

The results show that deaths due to hypertension are higher among all categories of Native Hawaiians compared to non-Hawaiians. The high rate for Part-Hawaiian males in the 45-64 age category is particularly noteworthy. The figures for cerebrovascular disease are even more important for two reasons. First, they show that all categories of Native Hawaiians have higher death rates than others in the 45-64 age category. The rates are higher for both Full as well as Part-Hawaiians. Second, these rates are based on a larger number of deaths and therefore are likely to be statistically more reliable as an indicator of the prevalence of this disorder.

The findings in Table VI-3, therefore, support the previous results showing that Native Hawaiians experience a disproportionate risk of hypertension. The importance of this data is that it is based on cause of death as recorded on death certificates and is therefore an independent estimate from the rates computed from the health survey data. The small numbers of cases may mean that the numbers are not precise estimates, but the overall general pattern conforms to the survey results and therefore provides additional support for the conclusions.

Age and Sex. Table VI-4 presents age-specific rates of hypertension for the different ethnic groups based on survey data. The results show that the rate of hypertension indicates a strong increase at each older age category. From this table, we can

conclude that the ethnic patterns found in earlier tables are evident even among persons in the 17-44 age category. Native Hawaiians and Japanese have higher rates of hypertension even at this relatively young age. Furthermore, the Full Hawaiians have the highest rate of all the ethnic categories.

The sex pattern among Part-Hawaiians is also noteworthy. Table VI-2 showed that, among Part-Hawaiians, women had higher rates of hypertension than men. In Table VI-3, we see that men have higher rates than women in the 17-44 category; but after this age, the rates for women increase more rapidly, such that in the oldest category, Part-Hawaiian women have a much higher rate of hypertension than men. Thus the exceptionally high risk for developing hypertension among Part-Hawaiian women appears to occur after the age of 45.

Nevertheless, the overall results show that Native Hawaiians experience a disproportionate rate of hypertension even in young adulthood. Thus, health care services such as prevention, screening and treatment programs should not be aimed exclusively at the middle aged or elderly population. The conditions which underly this disorder are apparently present throughout the life cycle.

Geographic Area. The geographic pattern of hypertension is presented in Table VI-5. Because the population is sparsely settled in many of these areas, some of the rates in this table are based on very small numbers and cannot be considered reliable estimates. Furthermore, the rates are not adjusted for age, and so some of the geographic differences may reflect the fact that the populations of different areas differ in their age

distributions. Nevertheless, this table can be used to suggest where the greatest risk for hypertension may occur and where health care services are needed by the greatest proportion of the population.

The results show that Native Hawaiian rates of hypertension are highest in Honolulu, relatively high on the Island of Maui, and lowest on the Island of Molokai. Perhaps rural living or living in relative isolation from other ethnic groups is protective in regard to hypertension for Native Hawaiians. It is interesting to note, however, that the highest rates of hypertension for the Japanese occur on the Neighbor Islands, and so the possible dynamics are not the same for different groups.

Nevertheless, given the limitations of the data, conclusions are difficult to draw. However, these rates do seem to indicate that hypertension prevalence rates among Native Hawaiians are higher in Honolulu. These rates provide important implications for where health care services should be targeted.

Level of Education. Finally, Table VI-6 presents the rate of hypertension by level of education for the different ethnic populations in Hawaii. This variable was selected as the best available indicator of socioeconomic level. Unfortunately the number of cases in the survey data are too small to permit the computation of age-specific or age-adjusted rates. This limitation is important since the average level of education is much higher among younger age categories of the adult population. Thus, we can expect that the rates of disease for individuals in the higher education categories will be understated due to their younger average age.

The results show that Native Hawaiians with less than 12 years of education have the highest rate of hypertension. Native Hawaiians with 12 years of education and with vocational education, moreover, have higher rates than those with some college or those with four years of college. These patterns, furthermore, are similar for all ethnic groups.

Bearing in mind the limitations noted above, these results suggest that hypertension is possibly associated with lower socioeconomic status position for Native Hawaiians. Furthermore a relatively large number of Native Hawaiians are concentrated in the lower socioeconomic level of society. It may be necessary to address the overall socioeconomic situation of Native Hawaiians if the conditions underlying the development of hypertension are to be significantly altered. Further research is needed to understand what factors in the life situation of lower status Native Hawaiians play a role in increasing their vulnerability to the development of hypertension.

Conclusion. In conclusion, this analysis has shown that Native Hawaiians have a disproportionate rate of hypertension compared with other ethnic groups in Hawaii. Furthermore, a higher rate of disease begins to manifest itself in early adulthood among both males and females. The rate of disease accelerates for Part-Hawaiian women after the age of 45 faster than for other groups. A higher proportion of Full Hawaiians report hypertension due to the greater number of elderly persons in this population; whereas the Part-Hawaiian population apparently experiences the greatest risk of the disease.

Perhaps Part-Hawaiians are more vulnerable because they are

subjected to greater cultural conflicts and pressures to assimilate in the larger society. Consistent with this possibility, the results also suggested that hypertension was associated with urban residence. Lower levels of educational attainment are also possibly associated with higher rates of disease among Native Hawaiians. Hypertension may in part be a manifestation of the tensions produced by low socioeconomic status. Clearly, more research is needed to examine these suggestions and to clarify the role of various factors in the etiology of hypertension among Native Hawaiians.

Heart Disease

Ethnic Comparisons. Heart disease is the major cause of death in the population and is also disproportionately experienced by the Native Hawaiian population. This section reports the epidemiology of heart disease using the same data sources as the previous analysis of hypertension. Table VI-7 compares estimates of rates of heart disease among the major ethnic groups in the state of Hawaii based on data from the Health Surveillance Program. Four major results are evident in this table:

First, Native Hawaiians have the highest age-adjusted rates of heart disease, a rate of 32.1 for men and 26.5 for women compared with the respective rates of 27.9 and 24.6 for the whole state. Among women, the rates for Caucasians are nearly as high as those of Native Hawaiians, particularly Part-Hawaiians; while among men, Native Hawaiian rates are considerably above all other groups. Thus, Native Hawaiians seem clearly to have the greatest risk of heart disease among the ethnic groups in Hawaii.

Second, the age-adjusted rates for Full Hawaiians are considerably higher than for Part-Hawaiians. Native Hawaiians have an age-adjusted rate which is double the state rate for men and almost as high for women. The rate for Part-Hawaiians, however, is also high, especially for men.

Third, the unadjusted rates for Full Hawaiians are considerably higher than the age-adjusted rates, once again reflecting the fact that this population is older than the state population in general. In contrast, the Part-Hawaiian population is younger than the state population, and therefore the unadjusted rates are lower than the adjusted rates. This pattern means that Full Hawaiians have both a greater amount of the disease and a greater risk of the disease than Part-Hawaiians, but the risk of heart disease is greater among Part-Hawaiians than is reflected in the unadjusted rates or the proportion of that population currently reporting the condition.

Fourth, rates of heart disease for Full Hawaiian and Part-Hawaiian men are greater than the respective rates for women.

Table VI-8 compares rates of death due to heart disease between Native Hawaiians and non-Hawaiians. The results in this table demonstrate even more clearly than the self-reported survey data that Native Hawaiians have a greater risk of heart disease. The age-adjusted death rate for Native Hawaiian men is 73% higher than for non-Hawaiian men, and the age-adjusted rate for Native Hawaiian women is 88% higher than for non-Hawaiian women.

The age-adjusted death rates due to heart disease for Full Hawaiians are even more extreme, the rate for men being 283% higher than non-Hawaiian men and for women being 188% higher than

non-Hawaiian women. This table also shows that Full Hawaiian men have nearly twice as high an age-adjusted death rate due to heart disease than Full Hawaiian women; whereas the rates for Part-Hawaiian men are nearly the same as for women.

Specific Diseases of the Heart. The general category of heart disease includes a large number of distinct pathologies. It is not possible to examine each specific disorder due to the small number of cases of each ethnic group reporting any one condition. Nevertheless, Table VI-9 reports the age-adjusted rates of a selected number of disorders for the different ethnic groups based on the Health Surveillance data. The self-reported nature of this information may mean that it is not completely accurate, and so these rates must be viewed with caution.

The rates reported by Native Hawaiian men exceed the rates for the state in the case of Rheumatic, Hypertensive and Other diseases of the heart, while Native Hawaiian women report disproportionately high rates of Hypertensive and Other heart disorders. Only in the case of Ischemic heart disease do Native Hawaiians in general seem to have a similar rate to non-Hawaiians.

The rate of Rheumatic heart disease is especially high among Full Hawaiians. The disproportionate level of this condition probably reflects a lack of general primary medical care for this population, since anti-biotics can effectively prevent the development of rheumatic fever. Full Hawaiian men also have higher rates of Hypertensive heart disease, Ischemic heart disease and other heart conditions, compared with Part-Hawaiian men. Both Part-Hawaiian men and women have higher rates of Hypertensive heart disease than non-Hawaiians based on a comparison with the

state average.

Table VI-10 presents age-adjusted death rates per 100,000 population due to specific heart conditions. The pattern differs in a number of respects and may be a better indicator of the pattern of disease than the survey results presented in Table VI-9. The rates for Ischemic heart disease, for example, are significantly greater than for the other conditions.

The rates for all conditions are significantly higher for all categories of Native Hawaiians compared with non-Hawaiians. Death rates due to all conditions for Native Hawaiian men are around twice as high as for non-Hawaiian men, while the disadvantage is not as great for Native Hawaiian women. The death rates for Full Hawaiians are much higher than for Part-Hawaiians, but even the rates for Part-Hawaiians are considerably higher than those of non-Hawaiians. A comparison of the death rates between Part-Hawaiian men and women shows that they are nearly the same; however, Full Hawaiian women have considerably lower age-adjusted death rates from Ischemic heart disease and "Other conditions" than Full Hawaiian men.

Age and Sex. Based on the health survey data, Table VI-11 reports the rate of heart disease for specific age groups for each ethnic group. The rate increases directly as a function of age, especially after age 44. The Native Hawaiian rates of disease are not especially different from the state average except in the oldest age category. However, Full Hawaiian men and women have a much higher rate of disease in the young adult years than other groups. The young age of onset of heart disease is consistent with the high death rates reported in Table VI-8 for this

population. Similar age-specific rates exist for Full Hawaiian men and women, as well as between Part-Hawaiian men and women.

Table VI-12 presents the age-adjusted death rates due to heart disease. The rates in this table show that both Native Hawaiian men and women have more than twice the rate of deaths in the 17-44 age group than non-Hawaiians. While the rates are substantially higher for Full Hawaiians, even Part-Hawaiians are several times more likely to die from heart disease as young adults than non-Hawaiians. In contrast with Table VI-11, Table VI-12 shows that there are substantial sex differences. Full Hawaiian men die from heart disease at a substantially higher rate than Full Hawaiian women. Similarly in the 17-64 adult age categories, Part-Hawaiian men have much higher death rates than women from heart disease.

Geographic Area. Table VI-13 presents the rate of heart disease reported by residents in different geographic areas of the state. The results show that the highest rate for Native Hawaiians is in Honolulu, while the lowest rate is in Central Oahu. Relatively low rates are reported by Native Hawaiians on the Neighbor Islands. These data, however, are only suggestive because of the small number of cases in many areas and the inability to age-adjust the rates and present them separately for men and women.

Level of Education. Table VI-14 presents the rate of self-reported heart disease by level of education of the respondents in the Health Surveillance sample. Native Hawaiians with less than 12 years of education appear to have the highest rate of heart disease. No other clear pattern is evident from

these data. Because these rates are not age-adjusted, the higher rate for those with low education may simply reflect a higher proportion of elderly persons in this educational category. On the other hand, this result may also suggest that heart disease is associated with lower socioeconomic status.

These results clearly indicate that the Native Hawaiian population suffers disproportionately from heart disease in comparison with other ethnic groups. Indeed, both Full Hawaiians and Part-Hawaiians were shown to have substantially higher age-adjusted death rates from heart disease than non-Hawaiians; and while the rates for women are somewhat less than for men, Native Hawaiians of both sexes have substantially higher rates than non-Hawaiians. The mortality data also revealed that Native Hawaiians begin to manifest higher rates of heart disease than non-Hawaiians in early adulthood. Based on this finding, it is clear that preventive programs aimed at reducing the risk of heart disease should begin early in life. The highest rates of heart disease were found for the Islands of Hawaii and Molokai, where a relatively high proportion of Native Hawaiians live. The rates were also higher for Part-Hawaiians with higher levels of education. The implications of these findings are not clear.

Conclusion

The epidemiological analysis of hypertension and heart disease presented above has clearly shown that Native Hawaiians experience disproportionately high rates of these disorders compared with other ethnic groups in Hawaii. This result is evident both from self-reported data from health surveys as well as from an analysis of mortality statistics. The following

general conclusions seem apparent from this analysis:

1. Both Full Hawaiians as well as Part-Hawaiians have higher rates of hypertension and heart disease than non-Hawaiians in general in the state.
2. Hypertension and hypertensive heart conditions appear to be the most prevalent circulatory diseases, and the death rate for ischemic heart disease is highest. Native Hawaiians were found to have disproportionately high rates for all the conditions examined.
3. The disproportionate level of rheumatic heart disease among Native Hawaiians probably reflects a general lack of adequate primary medical care, since anti-biotics can effectively prevent the development of rheumatic fever.
4. The age-adjusted rates of hypertension are higher for Part-Hawaiians than for Full Hawaiians; but the reverse is true for heart disease, where Full Hawaiians have substantially higher rates than Part-Hawaiians.
5. Native Hawaiian men have higher rates of hypertension and heart disease than Native Hawaiian women. Nevertheless, Part-Hawaiian women stand out as having exceptionally high rates of hypertension, especially in the older age category. While the survey results suggest that rates of heart disease for Part-Hawaiian women are not very different from those of Part-Hawaiian men, the mortality data show that men are considerably more likely than women to die of heart disease.
6. For both hypertension and heart disease, the discrepancy between Native Hawaiian rates and non-Hawaiian rates are evident even in early adulthood. This finding suggests that

the etiological processes underlying these diseases begin early in life and that preventive programs should therefore be aimed at young Native Hawaiians. Furthermore, screening and referral programs should be targeted at young adults in order to identify these conditions at their early stages when they can be most successfully treated.

D. AN ANALYSIS OF BEHAVIORAL RISK FACTORS

A number of factors are known to be associated with the occurrence of hypertension and arteriosclerosis, though their precise roles in the etiology of disease are still unknown. These factors include genetic inheritance and numerous factors associated with life style and social situation, such as social stresses, dietary intake of sodium and cholesterol, obesity, smoking, alcohol consumption, and exercise patterns.

There are few systematic studies of ethnic differences in regard to these risk factors. The Report of the Task Force on Nutrition and Dental Health summarizes what is known about the dietary intake of Native Hawaiians. In comparison with other ethnic groups, Native Hawaiians have a high rate of fat intake, including cholesterol, and have a higher rate of obesity. Native Hawaiians report being under more stress than individuals of other ethnic groups, and stress is also related to the development of hypertension and heart disease. They also have higher rates of diabetes, a condition associated with heart disease (for a recent overview, see Lichton, et al., 1983).

The Life-Style Promotion, Risk-Reduction Project of the Hawaii State Department of Health recently carried out telephone interviews with a random sample of households in the state of

Hawaii (Lipsher, 1985). Native Hawaiians reported the highest rates of the high-risk behaviors being studied, including smoking, heavy alcohol use, and lack of exercise.

Conclusion. These findings conform to the subjective perceptions of individuals who provide health care services to Native Hawaiians. The conclusion seems clear that the life-style of Native Hawaiians involves a high rate of behaviors which are associated with the development of circulatory diseases. Thus there is an apparent need for health promotion programs which would facilitate the reduction of some of these risks.

E. HEALTH SERVICES FOR HYPERTENSION AND HEART DISEASE

An effective program of intervention requires a multi-faceted approach, including 1) health education programs, 2) health promotion programs, 3) improving access to diagnostic screening, 4) improving access to appropriate medical treatment, and 5) developing culturally acceptable modes of medical treatment.

Health Education

Health education occurs through many channels in Hawaii, including the mass media, the various branches of the State Department of Health, the major medical centers, the public schools, and special programs of the organizations established for special diseases, such as the American Heart Association. Furthermore, public health nurses provide health education in medical clinics in every region of the state.

There is no information available regarding the knowledge of Native Hawaiians about hypertension and heart disease or their understanding of the risk factors for developing these diseases. Nor are there data regarding the particular channels of

communication through which Native Hawaiians are most likely to receive health information. In the absence of this knowledge, it is difficult to assess the extent to which a lack of health information exists and to suggest which would be the most appropriate means of providing health education.

Conclusion. There seems to be a high level of availability of health education in the state of Hawaii, and there seem to be few barriers to obtaining health information. Nevertheless, given the high rates of disease and the high risk nature of some of the activities in the Native Hawaiian life-style, it appears that health education has not been effective in reaching and/or influencing this population. The following recommendations can be offered which might increase the acceptability of health information to Native Hawaiians:

1. Health education should begin in school, since it is easier to influence the behavior of children and youth than to change adult patterns.
2. Native Hawaiians should be provided health education through their natural social groups, where there might be social support for new ideas.
3. The use of Native Hawaiians to provide health information would also give the information more credibility as appropriate to Hawaiian culture.
4. Health education programs should incorporate concepts of health and familiar elements of the culture of Native Hawaiians.

Health Promotion Programs

Health promotion programs aim to change the behavior and life-styles of individuals in order to provide a greater level of

well-being. Health promotion programs are not available everywhere in the state, although they have been increasing. These programs tend to be concentrated in the urban areas, and many of them charge for their services. Health insurance does not cover their expenses. Since Native Hawaiians tend to live in rural areas and many are of lower socioeconomic status, these characteristics constitute barriers to participation. Any effort to advocate change in behavior, furthermore, raises sensitive issues, since Native Hawaiians fear the loss of their culture and are resentful of outsiders who try to impose different life-styles on them.

It is therefore not surprising that health promotion programs do not attract many Native Hawaiians. The Malama Ola program of the Waianae Coast Comprehensive Health Center seems to be having some success, though they also report difficulty recruiting individuals into their program. Perhaps one reason for their success is the fact that many of the staff are Native Hawaiian and also many of the participants. Therefore, individuals can undertake a program to change behaviors, such as dieting to lose weight or taking up exercise, without feeling that they are abandoning their cultural identity. On the other hand, this program has not addressed the problems of smoking and heavy alcohol consumption because of a perception that these behaviors are too important as psychological releases to their clients.

Conclusion. Health promotion programs have not been available or accessible to many Native Hawaiian individuals. Even so, there seems to be a lack of interest and perhaps a resistance to participating in programs aimed at changing behaviors.

Nevertheless, there are important negative consequences of smoking, heavy drinking, high fat in the diet, obesity, and a lack of exercise, for the development of hypertension and heart disease. Health promotion programs are needed which will address the need for reducing these high risk behaviors and conditions and yet which will do so within a framework which does not violate traditional Hawaiian culture. The following are recommendations:

1. Health promotion activities should be designed by Native Hawaiians so that they incorporate elements of the traditional culture and provide an acceptable level of adaptation of customary dietary and social patterns.
2. Health promotion activities should be provided to natural groups of Native Hawaiians, such as Hawaiian Civic Clubs, Hawaiian churches, canoe clubs, and other social groupings. In this manner, behavioral changes can be encouraged by the group as a whole in a manner which is supportive of the individuals involved.
3. Life-style changes should be introduced incrementally rather than all at once. Resentment and frustration is likely to accompany a program which undertakes to eliminate smoking, reduce obesity, change dietary patterns, reduce alcohol consumption, and increase exercise all at once.

Health Screening and Referral Services

Hypertension is easily and inexpensively diagnosed through the taking of blood pressure. Screening programs for hypertension are widely available in Hawaii. In fact, all the fire stations, except on the Island of Kauai, provide free blood pressure screening. In addition, screening is provided by public health

nurses for many different organizations, at community health centers, and at health fairs.

The Hypertension Project of the Public Health Nursing Branch of the State Department of Health, which is funded by the federal government, keeps track of participation in the various screening programs and provides follow-up services. At the time of screening individuals are asked to list their primary care physicians, and in the event of a positive outcome, a letter is sent to the primary care physician informing him or her of the need for further examination of the patient.

Data from the Hypertension Project show that while Native Hawaiians constitute about 20 percent of the state's population, only 8.6 percent of those screened in 1983-84 were Native Hawaiians. Since the rate of hypertension is in fact highest among the Native Hawaiian population, the need for additional screening programs targeting this population is apparent.

The Northern Koolau Community Health Program represents a successful program of screening and referral, with a population which has a high proportion of Native Hawaiians. This program operates through active outreach, rather than waiting for individuals to take the initiative to come to their office. NKCH Program staff go to the various social clubs, churches, and organizations where people gather and provide health education and screening. Furthermore, the staff live in the community and know individuals personally. The style of interaction is informal rather than professional. Clients are encouraged to drop by the program office in order to "talk story," and during such informal exchanges, the staff are able to administer blood pressure checks

and to learn about whether or not treatments are being followed.

Conclusion. The availability and accessibility of screening for hypertension is outstanding in Hawaii. Nevertheless, Native Hawaiians tend not to participate in screening programs, even though they are at greater risk for disease. The problem seems to be to develop a more acceptable mode of service delivery, such as has occurred in the Northern Koolau Community Health Program. The following can be recommended:

1. Screening programs should be provided to Native Hawaiians in natural social groups rather than expecting individuals to take the initiative to seek out a program.
2. Screening programs should be provided by individuals known in the community rather than by outsiders. In fact, the senior citizens group at the Kaneohe Health Center has a program where friends regularly take one another's blood pressure.
3. Effective referral and follow-up is needed to ensure that individuals identified with hypertension receive effective treatment.

Medical Treatment Services

Medical treatment services are also generally available to the population in Hawaii. Native Hawaiians, however, sometimes experience geographic and financial barriers to using medical services. Nevertheless, an even bigger problem is the cultural gap between medical services and Hawaiian culture.

The Hypertension Project estimates that only about 40 percent of the individuals who have been identified as having hypertension successfully control their blood pressure. Many studies have shown that compliance with medical regimens for chronic diseases

is poor. Similarly, health care professionals report that Native Hawaiians have a tendency to discontinue treatment in the absence of immediate symptoms.

Conclusion. The problem of providing adequate medical treatment of Native Hawaiians with hypertension and heart disease has many facets. Many of the recommendations for improving this situation appear in the final chapter of this report. Some suggestions which are especially relevant to the control of hypertension are as follows:

1. Native Hawaiians who experience financial problems in purchasing medications or lack insurance to pay for medical treatment should be provided free treatment for hypertension. Treatment is relatively inexpensive for a medical care provider, whereas the consequences of high blood pressure can lead to very serious and expensive health disorders.
2. A system of active outreach and follow-up should be instituted by medical services who treat Native Hawaiians in order to ensure that there is continuity of care and to encourage a consistent effort to follow the treatment.
3. Wherever possible, medical treatments should include traditional Hawaiian medical practices and remedies, some of which are effective in controlling hypertension.

F. CONCLUSIONS AND RECOMMENDATIONS

The results of the epidemiological analysis presented in this chapter show that Native Hawaiians experience disproportionately high rates of heart disease and hypertension compared with other ethnic groups in Hawaii. In many instances these rates are particularly high for Full Hawaiians. These epidemiological

findings have the following programmatic implications:

- 1) More epidemiological research is required in order to develop a more satisfactory understanding of some of the life conditions and behaviors which may be associated with the greater risk to Native Hawaiians of developing heart disease and hypertension.
- 2) Health education and health promotion programs should be developed and implemented which are adapted to the cultural values and social norms of the Native Hawaiian population. A great deal is known about risk factors in heart disease and hypertension. Modifications in diet, smoking behavior, exercise patterns, stress-management, and alcohol consumption, as well as control of diabetes and hypertension can have positive preventive results. Incidentally, the same behaviors which prevent circulatory diseases in most instances are known also to reduce the risk of cancer. Therefore a program of health promotion interventions could be developed for the Native Hawaiian community which addresses multiple needs.
- 3) Screening programs should be targeted for the Native Hawaiian population in order to discover early symptoms of hypertension and heart disease. Screening for high blood pressure is simple and inexpensive. A mode of service delivery is needed which emphasizes active outreach and programs aimed at people in natural social groups. It is important that such programs also have linkages to treatment and that systematic referral and follow-up mechanisms be implemented.
- 4) Treatment for persons with hypertension and high blood pressure requires modification of life-styles and often taking medications. Studies of compliance with such treatment show

that only a minority of persons follow such regimens in the long run. Programs are needed to train professionals in appropriate skills for communicating and adapting treatments to the life situations and culture of Native Hawaiians.

Conclusion

In conclusion, this report has documented the serious disadvantage of Native Hawaiians in experiencing circulatory diseases. This situation justifies the commitment of resources to understand more fully the underlying conditions for these problems and to develop intervention programs to effectively address the current need. This report has provided some detail about the general nature of the need and has outlined the direction of work which remains to be undertaken in the months and years ahead.

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Table VI-1

Disease Categories According to ICDA Codes
and Estimated Prevalence Rate and Death Rate
for Each Condition, State of Hawaii 1980-84

Disease Category	ICDA Codes	Prevalence 1000 Pop.	Death Rate Population

Diseases of the Heart		26.2	173.8
Rheumatic Heart Disease	(390-398)	2.0	6.5
Hypertensive Disease	(402, 404)	4.8	119.3
Ischemic Heart Disease	(410-414)	3.9	46.0
Other Heart Disease	(415-17, 420-29)	13.5	1.9
Hypertension Without Heart Disease	(401, 403)	84.0	41.2
Cerebrovascular Disease	(430-438)	4.3	4.4
Arteriosclerosis	(404)	.9	7.0
Other Circulatory Disorders	(441-53, 457-9)	1.9	0.0

Sources: Estimated prevalence rates from the Health Surveillance Program and death rates from Vital Statistics, Hawaii State Department of Health.

Table VI-2

Ethnic Comparisons of Rates of Hypertension
(Without Heart Involvement), Hawaii 1980-84

Rates per 1000:	Males		Females	
	Unadj.	Age-Adj.	Unadj.	Age-Adj.

Ethnicity:				
Native Hawaiian	52.9	81.9	56.0	86.7
Full Hawaiian	115.8	82.7	121.1	75.9
Part-Hawaiian	50.1	83.3	52.8	89.8
Caucasian	60.0	57.3	67.5	65.2
Japanese	118.7	84.6	118.7	78.0
Filipino	81.2	68.2	68.7	76.6
Chinese	110.5	71.8	99.0	59.2
Other/Unknown	34.1	68.2	272.5	36.2
State Total	82.6	83.2	84.8	84.8

Source: Health Surveillance Survey, Hawaii State Department of Health.

Table VI-3

Ethnic Comparisons of Death Rates
Due to Hypertension Without Heart Involvement
and Cerebrovascular Disease, by Selected
Age Groups and Sex, Hawaii, 1980-84

	Males		Females	
	Age 45-64	65 & Over	45-64	65 & Over
<hr/>				
<u>Hypertension</u>	<u>Death Rates per 100,000 Population</u>			
Ethnicity:				
Native Hawaiian	7.5	30.1	5.3	31.1
Full Hawaiian	0.0	117.0	28.9	51.7
Part-Hawaiian	8.7	14.2	2.0	26.0
Non-Hawaiian	1.6	19.0	0.7	16.5
Total State	2.3	19.9	1.3	18.0
<hr/>				
<u>Cerebrovascular Disease</u>				
Ethnicity:				
Native Hawaiian	73.4	421.6	54.6	410.0
Full Hawaiian	185.1	1130.6	86.6	594.3
Part-Hawaiian	56.4	292.0	50.1	363.6
Non-Hawaiians	42.0	393.1	27.6	414.9
Total State	45.8	395.5	30.9	414.4
<hr/>				

Source: Vital Statistics, 1980-84, Hawaii State Department of Health.

Table VI-4

Age Specific Rates of Hypertension
by Ethnicity and Sex, Hawaii 1980-84

Age Categories:	Under 17	17-44	45-64	65 & Over
<hr/>				
<u>Males</u>	<u>Rates per 1000 Population</u>			
<hr/>				
Ethnic Groups:				
Native Hawaiian	.8	41.8	240.9	231.9
Full Hawaiian	33.8	44.0	199.3	206.6
Part-Hawaiian	.3	41.8	247.2	236.5
Caucasian	.1	26.6	166.6	182.6
Japanese	.2	40.6	230.3	297.6
Filipino	3.8	32.8	166.7	269.0
Chinese	0.0	21.9	208.3	293.2
Other/Unknown	1.3	26.8	161.6	320.8
State Total	1.3	40.3	229.4	279.3
<hr/>				
<u>Females</u>				
<hr/>				
Ethnic Groups:				
Native Hawaiian	1.4	31.0	230.0	340.8
Full Hawaiian	0.0	44.7	189.8	230.0
Part-Hawaiian	1.5	30.4	235.6	368.5
Caucasian	1.0	22.7	158.7	295.1
Japanese	1.0	31.6	181.7	349.5
Filipino	.2	25.4	197.1	331.5
Chinese	0.0	7.1	165.8	295.0
Other/Unknown	1.4	26.0	185.5	272.5
State Total	1.5	32.0	210.8	358.4
<hr/>				

Source: Health Surveillance Survey, Hawaii Department of Health.

Table VI-5

Rates of Hypertension by Geographic Area
and Ethnicity, Hawaii 1980-84

Ethnicity:	Total	Native Haw'n	Full Haw'n	Part- Haw'n	Cauca- sian	Japan- ese	Fili- pino	Chin- ese	Other/ Unkn'n
<u>Unadjusted Rates per 1000 Population</u>									
Oahu	68.5	55.5	125.2	52.6	58.6	108.7	65.6	103.4	33.9
Honolulu	86.3	71.4	127.4	68.3	82.8	119.5	64.2	104.1	39.8
Central Oahu	53.2	42.7	51.6	42.4	35.3	97.0	64.4	86.8	29.7
Maianaē	58.5	49.5	176.2	38.6	69.7	115.2	90.5	60.6	32.2
Windward	61.3	54.2	128.7	52.3	60.6	90.3	66.5	146.7	33.8
Hawaii County	83.4	48.0	119.1	43.5	80.9	146.8	93.7	119.6	43.5
Kauai County	99.3	57.2	120.7	55.1	81.0	173.8	115.5	126.0	30.0
Maui County	85.9	56.4	99.2	53.7	70.5	163.5	92.5	162.5	38.3
Maui	88.3	61.0	115.2	58.1	70.5	164.7	91.8	178.6	39.0
Molokai	53.4	34.7	61.3	32.1	55.0	132.0	91.3	88.9	28.0
Lanai	106.4	77.8	125.0	75.5	125.0	155.4	100.1	0.0	29.0
State Total	72.7	54.6	120.1	51.5	62.5	119.5	74.7	104.7	34.8

Source: Health Surveillance Program, Hawaii State Department of Health.

Table VI-6

Rates of Hypertension by Level of
Education and Ethnicity, Hawaii 1980-84

Ethnicity:	Total	Native Haw'n	Full Haw'n	Part- Haw'n	Cauca- sian	Japan- ese	Fili- pino	Chin- ese	Other/ Unkn'n
<hr/>									
<u>Years of</u> <u>Education:</u>	<u>Unadjusted Rates per 1000 Population</u>								
None	10.0	2.0	73.6	0.9	0.4	27.1	41.8	41.9	4.7
1 - 11	237.6	136.9	376.4	121.9	205.4	447.4	314.5	302.0	101.8
12	91.5	84.0	102.2	83.0	63.0	146.7	70.8	164.0	53.2
Vocational	96.4	92.1	69.5	93.4	79.3	104.8	70.8	164.0	53.2
Some College	56.8	51.6	17.4	52.7	64.8	64.9	43.5	50.5	36.6
College Grad	59.5	54.6	0.0	57.2	56.2	62.9	57.4	76.4	48.9
Post Grad	88.4	96.3	57.1	97.8	85.9	89.4	147.0	87.4	69.7
Unknown	82.4	93.9	157.3	34.1	72.2	29.5	100.4	16.9	29.4
State Total	72.7	57.7	119.5	54.6	120.1	51.5	74.7	104.7	34.8

Source: Health Surveillance Program, Hawaii State Department of Health.

Table VI-7

Ethnic Comparisons of Prevalence and Age-Adjusted
Rates of Heart Disease by Sex, Hawaii 1980-84

Rates per 1000:	Males		Females	
	Unadj.	Age-Adj.	Unadj.	Age-Adj.

Ethnicity:				
Native Hawaiian	19.5	32.1	17.4	26.5
Full Hawaiian	74.7	55.4	67.6	41.3
Part-Hawaiian	16.9	30.5	15.0	24.7
Caucasian	25.0	24.9	25.3	23.9
Japanese	30.7	20.8	21.7	14.6
Filipino	20.0	16.1	11.2	13.1
Chinese	38.1	24.5	33.9	14.9
Other/Unknown	7.7	15.6	199.6	11.0
State Total	26.1	27.9	22.7	24.6

Source: Health Surveillance Survey, Hawaii State Department
of Health.

Table VI-8

Ethnic Comparisons of Unadjusted and
Age-Adjusted Death Rates Due to Heart Disease
by Sex, Hawaii 1980-84

Rates per 100,000 Population:	Males		Females	
	Unadj.	Age-Adj.	Unadj.	Age-Adj.
Native Hawaiians	178.0	324.5	134.1	236.1
Full Hawaiians	1250.9	716.6	723.0	361.0
Part-Hawaiians	129.0	256.7	105.7	212.6
Non-Hawaiians	217.8	187.2	139.0	125.4
State Total	210.0	201.1	138.2	138.1

Source: Hawaii State Vital Statistics.

Table VI-9

**Age Specific Rates of Hypertension
by Ethnicity and Sex, Hawaii 1980-84**

Heart Conditions With ICDA Codes:	Rheumatic Heart (390-398)	Hyperten- sive (402, 404)	Ischemic Heart (410-414)	Other (415-17, 420-29)
<hr/>				
<u>Males</u>	<u>Age-Adjusted Rates per 1000 Population</u>			
Native Hawaiian	2.4	8.6	4.0	17.1
Full Hawaiian	11.1	13.8	6.1	24.9
Part-Hawaiian	2.0	8.5	3.7	16.5
Caucasian	1.4	3.2	7.7	12.8
Japanese	1.2	2.5	5.0	12.1
Filipino	.7	3.2	2.0	10.2
Chinese	.8	3.7	6.4	13.5
Other/Unknown	.4	3.1	2.8	9.4
State Total	1.7	4.4	5.4	14.6
<hr/>				
<u>Females</u>				
Native Hawaiian	2.4	7.6	2.3	14.3
Full Hawaiian	12.5	6.9	.8	20.8
Part-Hawaiian	1.9	7.3	2.5	13.0
Caucasian	3.2	4.8	3.7	12.2
Japanese	1.0	3.1	1.2	9.3
Filipino	.7	3.4	1.3	7.7
Chinese	1.3	3.2	2.3	8.1
Other/Unknown	1.0	2.1	1.7	6.1
State Total	2.4	5.1	2.3	12.3
<hr/>				

Source: Health Surveillance Survey, Hawaii State Department of Health.

Table VI-10

Ethnic Comparisons of Age-Adjusted
Death Rates for Specific Heart Conditions
by Sex, Hawaii 1980-84

Heart Conditions With ICDA Codes:	Rheumatic Heart (390-398)	Hyperten- sive (402, 404)	Ischemic Heart (410-414)	Other (415-17, 420-29)
<hr/>				
<u>Males</u>	Age-Adjusted Rates per 100,000 Population			
Native Hawaiian	3.6	12.2	228.6	80.1
Full Hawaiian	8.4	21.7	495.7	190.9
Part-Hawaiian	2.8	10.5	182.5	60.8
Non-Hawaiian	1.2	5.4	135.2	45.5
State Total	1.5	6.0	144.8	48.8
<u>Females</u>				
Native Hawaiian	4.8	13.7	148.8	68.8
Full Hawaiian	12.1	26.5	196.7	125.6
Part-Hawaiian	3.9	11.6	139.2	58.0
Non-Hawaiian	2.3	6.0	80.6	36.4
State Total	2.6	6.9	88.4	40.3
<hr/>				

Source: Hawaii State Vital Statistics.

Table VI-11

**Age Specific Rates of Heart Disease
by Ethnicity and Sex, Hawaii 1980-84**

Age Categories:	Under 17	17-44	45-64	65 & Over
<hr/>				
<u>Males</u>	<u>Rates per 1000 Population</u>			
Native Hawaiian	3.8	10.5	61.2	185.5
Full Hawaiian	0.0	54.9	86.1	185.2
Part-Hawaiian	3.8	8.5	57.4	185.5
Caucasian	2.2	5.3	58.9	136.8
Japanese	1.5	5.8	54.5	96.0
Filipino	2.1	4.4	40.0	75.8
Chinese	0.0	6.2	72.3	103.6
Other/Unknown	2.6	2.4	40.6	77.4
State Total	4.2	9.6	60.9	137.7
<hr/>				
<u>Females</u>				
Native Hawaiian	2.9	9.7	47.5	151.8
Full Hawaiian	0.0	36.7	28.1	242.9
Part-Hawaiian	2.9	8.5	50.2	128.9
Caucasian	1.3	10.6	40.5	136.4
Japanese	2.7	5.4	27.3	76.1
Filipino	4.6	4.7	19.8	74.0
Chinese	0.0	7.9	14.9	106.9
Other/Unknown	.9	4.6	39.7	199.6
State Total	4.1	9.3	42.6	137.2
<hr/>				

Source: Health Surveillance Survey, Hawaii Department of Health.

Table VI-12

Age-Specific Rates of Death
Due to Heart Disease, by Ethnicity
and Sex, Hawaii 1980-84

Age Categories:	Under 17	17-44	45-64	65 & Over
<hr/>				
<u>Males</u>	<u>Rates per 100,000 Population</u>			
Native Hawaiian	1.5	39.8	617.1	2589.5
Full Hawaiian	0.0	180.9	1309.6	5847.9
Part-Hawaiian	1.5	33.5	511.6	1994.3
Non-Hawaiian	2.9	15.5	272.0	1675.3
State Total	2.4	19.9	313.8	1752.8
<u>Females</u>				
Native Hawaiian	2.1	18.5	339.8	2029.1
Full Hawaiian	0.0	34.4	634.9	2790.7
Part-Hawaiian	2.1	17.9	298.9	1837.7
Non-Hawaiian	2.0	5.9	84.4	1338.6
State Total	2.0	8.4	115.1	1409.2
<hr/>				

Source: Hawaii State Vital Statistics.

Table VI-13

Rates of Heart Disease by Geographic Area
by Ethnicity, Hawaii 1980-84

Ethnicity:	Total	Native Haw'n	Full Haw'n	Part- Haw'n	Cauca- sian	Japan- ese	Fili- pino	Chin- ese	Other/ Unkn'n
<u>Unadjusted Rates per 1000 Population</u>									
Oahu	20.2	19.6	71.0	17.4	24.5	24.8	14.0	32.7	8.9
Honolulu	26.8	28.0	76.4	25.3	35.0	28.3	12.7	36.1	12.9
Central Oahu	13.5	7.0	0.0	7.2	16.8	22.7	12.9	12.7	5.9
Maianaa	19.7	21.4	81.7	16.2	20.1	11.4	31.4	45.5	8.0
Windward	19.6	23.8	128.7	21.2	21.8	15.5	20.8	46.9	9.0
Hawaii County	27.7	18.1	90.0	13.6	39.2	30.5	32.4	22.9	19.9
Kauai County	31.0	21.8	75.9	20.0	35.8	52.7	26.4	61.1	6.7
Maui County	26.2	20.0	47.5	18.3	33.1	36.8	15.8	65.8	16.3
Maui	27.0	20.0	55.2	18.1	33.2	37.5	15.8	75.9	17.2
Molokai	21.0	19.2	17.9	18.0	40.0	38.1	17.1	0.0	9.3
Lanai	14.7	35.9	0.0	37.7	5.4	19.6	14.0	0.0	0.0
State Total	21.9	19.5	71.4	17.1	27.0	27.4	16.7	33.0	10.1

Source: Health Surveillance Program, Hawaii State Department of Health.

Table VI-14
Rates of Heart Disease by Level of
Education and Ethnicity, Hawaii 1980-84

Ethnicity:	Total	Native Haw'n	Full Haw'n	Part- Haw'n	Cauca- sian	Japan- ese	Fili- pino	Chin- ese	Other/ Unkn'n
<hr/>									
Years of Education:	Unadjusted Rates per 1000 Population								
Unknown	28.2	64.0	188.9	48.9	18.6	37.0	17.6	30.7	11.7
None	7.7	5.4	75.5	4.4	8.1	10.7	20.1	20.3	3.2
1 - 11	79.3	63.8	218.0	54.0	106.3	109.1	81.4	74.1	40.5
12	23.2	19.3	38.0	18.2	26.5	31.3	9.3	44.8	12.6
Vocational	28.3	34.1	0.0	36.1	47.0	22.5	20.2	55.0	8.5
Some College	16.9	14.8	76.1	12.7	23.7	15.0	6.7	26.5	7.3
College Grad	18.6	26.0	91.3	22.9	23.1	14.2	10.0	22.5	12.5
Post Grad	23.0	14.5	0.0	14.9	25.3	20.3	10.9	39.1	9.0
State Total	21.9	19.5	71.4	16.9	24.9	27.4	16.7	33.0	10.1
<hr/>									

Source: Health Surveillance Program, Hawaii State Department of Health.

Chapter VII

CANCER: EPIDEMIOLOGY AND CANCER CONTROL

VII. CANCER: EPIDEMIOLOGY AND CANCER CONTROL

A. CANCER BURDEN OF NATIVE HAWAIIANS:

Cancer Incidence, Survival and Mortality Among Native Hawaiians Compared to Other Ethnic Groups

Comparison of 1973-1981 incidence data from the Hawaii Tumor Registry with those for the U.S. (see Table VII-1) shows that Native Hawaiians have one of the highest cancer rates in the nation. Among the five main ethnic groups living in Hawaii, Native Hawaiians rank second in males and first in females for total cancer incidence (see Table VII-2). Site-specific comparisons (see Table VII-3) indicate that Native Hawaiians have the highest or the second to the highest incidence rate for all but four (colon, rectum, male pancreas and female leukemia) of the 15 most common cancer sites. They are at particular high risk for cancers of the esophagus, stomach, lung, female breast and cervix uteri.

Cancer survival studies in Hawaii have also shown that, for some cancers, Native Hawaiians have a poorer survival rates than patients of other races. As shown in Table VII-4, Native Hawaiians rank last for three (colon, rectum and breast) of the four common cancer sites for which survival rates have been compared among ethnic groups in Hawaii. This prognostic disadvantage is mainly due to the fact that Native Hawaiian patients are often diagnosed at a more advanced stage than patients of other races. However, later diagnosis in the evolution of the disease does not explain all the survival differential since Native Hawaiians still rank last after statistically adjusting survival for stage at diagnosis, as well as after further adjustment for less important prognostic variables, such as age and socioeconomic status (see Table VII-4).

Because of an increased incidence and/or poor survival for several sites, Native Hawaiians have high cancer mortality rates (see Table VII-5). They presently have the highest mortality rates in the state for all malignancies and cancer of the stomach, lung, female breast and cervix, which are among the most common sites. During the past decades, cancer mortality in both sexes was also higher for Native Hawaiians than for the other races, as attested by the mortality data for the period 1920-1970 presented in Figure VII-1. In males, however, this ethnic differential in mortality has increased since the 1950's mainly because the rise in lung cancer mortality, which had started earlier in the century, followed a steeper slope after the 1950's for Native Hawaiians than for the other races (see Figure VII-2).

Social-Demographic Variables Associated With Cancer Among Native Hawaiians

The study of the effects of sociodemographic factors (such as urbanicity, ethnicity and socioeconomic status) on cancer risk among Native Hawaiians is made difficult by the relatively small size of this population group. The few results which are available in this area should, therefore, be interpreted with caution.

A study of cancer incidence rates for the island of Hawaii (LeMarchand et al., 1985) showed a markedly decreased cancer risk for Native Hawaiians living on this island compared to that of their counterparts in the state. Unfortunately, the populations of the islands of Maui and Kauai are too small to allow for similar race-specific comparisons. The island of Hawaii has the largest rural population in the state (Bureau of the Census, 1981) and this decreased cancer risk may be related to a somewhat more traditional lifestyle maintained there by the Native Hawaiians (especially in

terms of diet), because of the greater availability of land and fishing grounds. This finding has limited direct implications since 74% of the Native Hawaiian population in the state was classified as urban (living in places of 2,500 or more inhabitants) in the 1980 Census (Bureau of the Census, 1982) and this proportion is expected to keep increasing. However, this decreased cancer risk on the Big Island suggests that environmental influences are responsible for the unusually high rates of cancer in Native Hawaiians.

A cancer rate comparison among Native Hawaiians by self-reported degree of ethnic purity has suggested that Hawaiians may have higher rates of cancer (in particular, lung, breast, prostate and cervix) than Part-Hawaiians (Burch, 1984). These results were based on the Hawaiian heritage claimed by the subjects and, therefore, more likely reflect differences in lifestyles than in genetic characteristics.

Implications of Epidemiological Findings for Identifying Target Population

The high incidence of cancer among Native Hawaiians indicates that this ethnic group as a whole qualifies as a target population for a cancer control program. Although cancer control programs are, by definition, aimed at different sex and age-groups depending on the cancer site considered (e.g., Pap screening for cervical cancer among women 20-40 years of age), it is difficult to identify within the Native Hawaiian group specific sub-groups at higher risk deserving special attention. As usually observed in populations with high risk of cancer, the rise in incidence observed with age is more pronounced and begins at an earlier age for some cancer sites in Native Hawaiians than in races with lower rates. Clinicians should therefore consider more frequent screening in young women

(especially for breast and cervix cancers) than is usually recommended in general screening guidelines.

Because of the possibility of a greater cancer risk in "pure" Hawaiians, prevention programs should consider focusing their efforts on the Native Hawaiian communities which most strongly identify themselves as Hawaiian.

B. EXPOSURE OF NATIVE HAWAIIANS TO RISK FACTOR FOR CANCER

As a correlate of their increased cancer risk, some of the exposures most strongly associated with cancer are very prevalent among Native Hawaiians. Smoking, which is thought to be responsible for about 30% of all cancers and 80% of all lung cancers (Doll and Peto, 1981) is as frequent in Native Hawaiians as in Caucasians (see Table VII-6). A comparable pattern exists for alcohol consumption (see Table VII-6), which is thought to play a major role (in combination with smoking) in the etiology of cancers of the mouth, pharynx and esophagus (Doll and Peto, 1981). A comparison of risk factors by degree of Hawaiian heritage claimed by the patient (see Table VII-7) suggests that the prevalence of smoking, but not that of drinking, is greater for unmixed Hawaiians. Obesity, which has been associated with a higher risk for cancer of the breast and endometrium in females and possibly cancer of the prostate in males (Lew and Garfinkel, 1979), is more frequent among Native Hawaiians than among the other races in Hawaii, as shown in Table VII-8. Finally, some suspect dietary risk factors for cancer have been identified in Native Hawaiians, such as a high fat intake (Kolonel et al., 1981) and high concentrations of mutagens in some Hawaiian foods (dry/salted fish, kalua pig) (Ichinotsubo and Mower, 1982).

However, the high exposure of the Native Hawaiians to known or

suspected carcinogens does not seem to adequately explain their increased risk for certain cancers. For example, despite similar ethanol consumption, Native Hawaiian males have an esophageal cancer rate which is four times that of Caucasian males. Similarly, Native Hawaiians and Japanese have comparable life-time cigarette use, yet the lung cancer incidence rate is twice as high among the Native Hawaiians. Furthermore, the rise in lung cancer mortality observed in Hawaii in the first half of the century, after the introduction of manufactured cigarettes, occurred a decade earlier for the Native Hawaiians than for the other races (see Figure VII-2), suggesting a greater susceptibility of the Native Hawaiians to the carcinogenic effect of cigarette smoking.

C. USE OF HEALTH SERVICES BY NATIVE HAWAIIANS

In the last two decades it has become apparent that most cancers (possibly as much as 90%) are due to environmental factors and are, therefore, largely avoidable (Doll and Peto, 1981). It is also known today that prevention of the risk factors which cause the greatest number of cancer deaths and which are the most controllable (such as tobacco use, dietary components and exposure to carcinogens in the workplace) can substantially reduce cancer incidence. Wider use of early detection practices and of available state-of-the-art therapies has also been demonstrated to extend patient survival and decrease cancer mortality. The following is an overview, in terms of availability, accessibility and acceptability, of the utilization of health services by Native Hawaiians in the area of cancer prevention and treatment.

Health Education/Promotion

Although health education and health promotion services

regarding cancer prevention have been provided by different public and private institutions in the state, few race-specific data are available to evaluate their accessibility and acceptability by Native Hawaiians.

The Cancer Information Service (CIS) which is a federally-funded telephone "hotline" providing free information about cancer prevention, detection, treatment and rehabilitation has been in operation in Hawaii since 1978. Data on ethnicity are collected from first-callers to the service. An overview of call patterns since 1983 shows that Native Hawaiians constitute 7% of all callers compared to 39% for Caucasians, 12% for Japanese and 2% for Filipinos (Brannon, 1984). Since Native Hawaiians account for approximately 20% of the state population, use of CIS by this ethnic group is disproportionately low.

Surveys conducted in 1978, 1980 and 1982 by the Community Cancer Program of Hawaii among random samples of the state population have provided useful information on knowledge, beliefs and detection practices for the different ethnic groups with regard to breast, lung, colorectal and cervical cancers (Community Cancer Program of Hawaii, 1982a). Table VII-9 shows that Native Hawaiians ranked next-to-the-last by their mean knowledge score (proportion of correct answers to questions on risk factors, symptoms and methods of early detection). As a group, they also had the lowest proportion of women practicing breast self-examination or having had at least one Pap test in the past (see Table VII-10). Native Hawaiians of both sexes also had the lowest proportion of subjects having asked their physician for an examination for colorectal cancer (see Table VII-11). These data suggest that the information

provided by health education programs aimed at the general community does not reach equally the Native Hawaiian population.

Health Screening Programs

Additional information about use of health services by Native Hawaiians are provided by data collected during past screening programs.

The Hawaii arm of the Breast Cancer Detection Demonstration Project (BCDDP), a multicenter study which compared the relative efficacy of two modes of breast cancer detection (mammography and palpation) was conducted from March 1974 to March 1980. Out of the 10,031 women screened, only 7.3% were of Hawaiian origin (Goodman et al., 1982). This underrepresentation of Native Hawaiian women is of special importance because of their high rates of breast cancer.

Other screening programs, such as the statewide cervical cancer screening program conducted by the Hawaii State Department of Health, and the Neighbor Island Breast Cancer Detection Projects conducted by the Community Cancer Program in 1979-1982 on the islands of Maui and Kauai (Community Cancer Program of Hawaii, 1982b), also experienced lower participation from Native Hawaiians than expected and led to similar conclusions (Hall, 1983):

- Native Hawaiian women were difficult to recruit by the usual methods of media campaigns, use of doctors' offices, and centralized screening facilities.

- Proportionate numbers of Native Hawaiian women could eventually be recruited in future programs by special mechanisms such as: 1) Use of Native Hawaiian field workers; 2) Assisting in physical and emotional support for the trip out of the Hawaiian community and into the business or hospital setting of

non-Hawaiians; 3) Shifting recruitment and testing geographically into Native Hawaiian neighborhoods.

Treatment and Rehabilitation

Since the different ethnic groups share the same medical care system and since 90% of the population has some sort of health insurance in Hawaii (Johnson et al., 1981), it is usually assumed that cancer patients of all races receive comparable treatment and rehabilitation care. Limited data are available to substantiate such a claim.

The Hawaii Tumor Registry collects information on the treatments (surgery, chemotherapy, radiotherapy, hormonotherapy) received by the patients within 4 months of initiation of therapy and later. Analysis of these data for breast cancer patients (LeMarchand et al., 1984) showed that patients of the five major ethnic groups (Caucasian, Japanese, Native Hawaiian, Chinese and Filipino) had equal access to therapy. However, these data did not allow for ethnic comparison of: delay between diagnosis and treatment; types, doses and completeness of treatment regimens; recruitment into clinical trials; follow-up care especially in an outpatient setting; and rehabilitation services. It is the belief of some clinicians in the community that Native Hawaiian patients have a poorer compliance to treatment than patients of other races.

D. CONCLUSIONS AND RECOMMENDATIONS

In summary, Native Hawaiians have a high risk for cancer (in particular, cancers of the esophagus, stomach, lung and female breast). Much of this increased risk appears to be due to their high exposure to known environmental risk factors, such as smoking, alcohol consumption and obesity. The observation of a decreased

cancer risk on the Big Island is encouraging in that it supports the contention that risks can be reduced in Native Hawaiians. Successful primary prevention efforts should, therefore, substantially reduce their cancer rates. However, Native Hawaiians have a limited knowledge about cancer risk factors, symptoms and detection practices. Native Hawaiians are diagnosed with cancer at a more advanced stage and have a poorer survival rate than patients of other races. Much of this prognostic difference could be reduced by earlier detection and optimal treatment. However, Native Hawaiians were underrepresented in past community screening programs (probably because of the inadequacy of usual recruitment methods) and their compliance to treatment may be poor. Finally, there is some evidence for a particular susceptibility of the Native Hawaiians for certain cancers (lung and esophagus). This susceptibility could be genetic in origin or could result from associated exposures to some yet unidentified life-style factors.

Recommendations

These findings support the following recommendations:

1. Collect better current information on attitudes, behaviors and exposures that affect cancer risk. Good data on current practices are needed to design health promotion programs. Much of the data cited in this report are several years old and may not reflect current rates or levels.

2. Develop systems for collecting such data on an ongoing basis, so that trends can be identified and monitored, and health education and health promotion programs evaluated.

3. Primary prevention of cancer should be intensified in Hawaiian communities through health promotion efforts integrated

into programs addressing a wide spectrum of chronic conditions.

4. There is also a need for specific health education efforts among Native Hawaiians to increase knowledge of early cancer symptoms and to encourage prompt visits to medical care facilities when these symptoms occur, so as to improve long-term outcomes.

5. Additional epidemiologic and experimental research is required to improve our understanding of the etiology of cancer among Native Hawaiians, in order to explain their increased risk, and to propose new methods of prevention.

6. Research is also needed on the factors affecting participation of Native Hawaiians in prevention programs as well as those affecting delay in seeking medical care and compliance to treatment.

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Table VII-1

Age-Adjusted (1970 U.S. Standard) Overall Cancer Incidence Rates
(per 100,000) by Sex, Race and Diagnosis Period,
U.S., 1973-1981*

<u>Diagnosis Period</u>	<u>Male</u>			<u>Female</u>		
	<u>White</u>	<u>Black</u>	<u>Native Hawaiian</u>	<u>White</u>	<u>Black</u>	<u>Native Hawaiian</u>
1973-1977	375.2	439.1	418.2	304.3	280.6	375.1
1978-1981	391.9	487.9	390.9	303.2	290.3	336.5

*Source: Cancer Incidence and Mortality in the United States,
NCI, NIH Publication No. 85-1837.

Table VII-2

Age-Adjusted (1970 U.S. Standard) Overall Cancer Incidence Rates
(per 100,000) by Sex, Race and Diagnosis Period, Hawaii, 1973-1981*

	<u>1973-1977</u>		<u>1978-1981</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Native Hawaiian	418.2	375.1	390.9	336.5
Caucasian	415.1	331.1	444.9	351.3
Japanese	292.5	216.2	300.4	214.5
Chinese	252.3	252.6	258.9	227.7
Filipino	238.9	199.9	235.2	191.6

*Source: See Table VII-1.

Table VII-3
Age-Adjusted (1970 U.S. Standard) Cancer Incidence Rates (per 100,000)
Hawaii, 1978-1981*

Cancer Site	Male					Female				
	Native Hawaiian	Caucasian	Japanese	Chinese	Filipino	Native Hawaiian	Caucasian	Japanese	Chinese	Filipino
Esophagus	12.6	4.1	4.7	2.1	5.8	1.9	1.8	0.6	0.0	1.4
Stomach	48.3	16.9	41.3	11.6	8.7	21.0	8.5	18.6	9.0	6.3
Colon	20.9	37.4	43.0	30.3	23.6	14.7	30.4	26.7	28.3	13.0
Rectum	19.9	18.5	22.0	17.4	18.9	9.2	9.0	11.3	8.0	5.3
Pancreas	8.6	10.1	9.4	9.5	6.8	10.6	11.5	6.4	10.4	4.7
Lung	100.9	80.2	46.6	45.8	33.5	38.6	38.5	14.0	22.2	20.1
Breast	0.8	0.8	0.4	1.4	0.5	111.1	97.4	52.8	66.1	38.9
Cervix Uteri	--	--	--	--	--	14.1	10.3	7.8	7.7	7.3
Corpus Uteri	--	--	--	--	--	27.1	29.2	18.2	22.6	13.5
Ovary	--	--	--	--	--	13.5	12.0	9.1	9.9	9.5
Prostate	57.9	83.0	46.1	32.4	51.6	--	--	--	--	--
Bladder	10.9	32.3	10.7	17.4	7.2	6.2	4.7	5.4	1.2	6.0
Thyroid	6.8	2.3	6.4	9.2	6.6	11.3	6.2	6.4	5.6	20.1
Lymphomas	12.3	14.4	9.7	9.7	11.5	7.9	11.0	6.9	5.3	7.3
Leukemia	8.0	12.2	5.8	7.4	5.3	4.6	8.8	4.0	4.8	3.0

*Source: See Table VII-1.

Table VII-4

Five-Year Survival Rates* for Cancers of the
Breast, Colon, Rectum and Lung by Race, Hawaii, 1960-1979**

	<u>Native Hawaiian</u>	<u>Filipino</u>	<u>Chinese</u>	<u>Caucasian</u>	<u>Japanese</u>
Female Breast					
Unadjusted	0.64	0.68	0.81	0.79	0.84
Adjusted***	0.77	0.78	0.85	0.86	0.86
Colon					
Unadjusted	0.34	0.40	0.51	0.50	0.61
Adjusted***	0.43	0.45	0.49	0.52	0.58
Rectum					
Unadjusted	0.36	0.35	0.47	0.51	0.62
Adjusted***	0.39	0.41	0.52	0.50	0.58
Lung					
Unadjusted	0.14	0.13	0.21	0.16	0.14
Adjusted***	0.06	0.09	0.11	0.05	0.08

*Estimated with the proportional hazards model.

**Source: Nomura et al., Cancer 1981;48:1265-71; Wegner, et al.,
Cancer 1982;49:2208-16; LeMarchand, et al., JNCI
1984;72:1259-65.

***Adjusted for stage, age, socioeconomic status and sex (when
applicable).

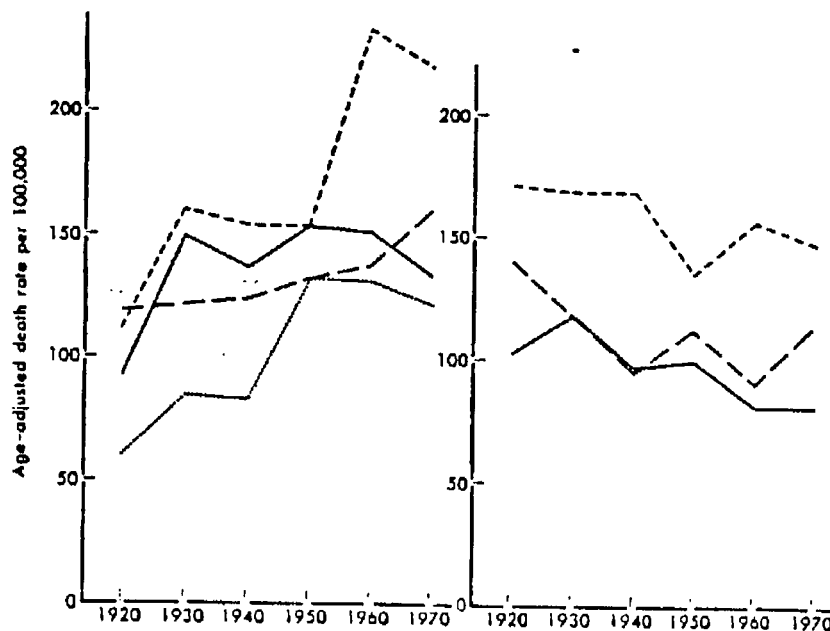
Table VII-5

Age-Adjusted (1970 U.S. Standard) Mortality Rates (per 100,000)
Hawaii, 1978-1981*

	Male					Female				
	<u>Native Hawaiian</u>	<u>Caucasian</u>	<u>Japanese</u>	<u>Filipino</u>	<u>Chinese</u>	<u>Native Hawaiian</u>	<u>Caucasian</u>	<u>Japanese</u>	<u>Filipino</u>	<u>Chinese</u>
Stomach	41.5	10.3	26.6	4.8	10.7	14.5	6.6	13.2	2.7	5.2
Colon	9.9	18.2	20.0	11.4	16.5	12.0	15.5	9.1	5.0	12.3
Rectum	6.3	3.0	5.3	5.8	5.9	1.4	1.9	2.4	2.4	0.7
Lung	88.0	56.7	37.9	28.7	39.8	31.5	26.3	10.8	16.6	15.5
Breast	0.0	0.2	0.0	0.3	0.0	33.0	26.8	8.6	13.3	13.2
Cervix	--	--	--	--	--	4.2	2.3	2.2	1.6	2.9
Prostate	15.5	21.8	9.3	12.7	6.5	--	--	--	--	--
Bladder	1.9	5.4	1.9	3.6	1.6	1.3	2.1	3.1	3.3	0.5
All Sites	253.1	200.6	150.8	123.8	138.3	158.2	145.3	87.8	90.7	85.1

*Source: See Table VII-1.

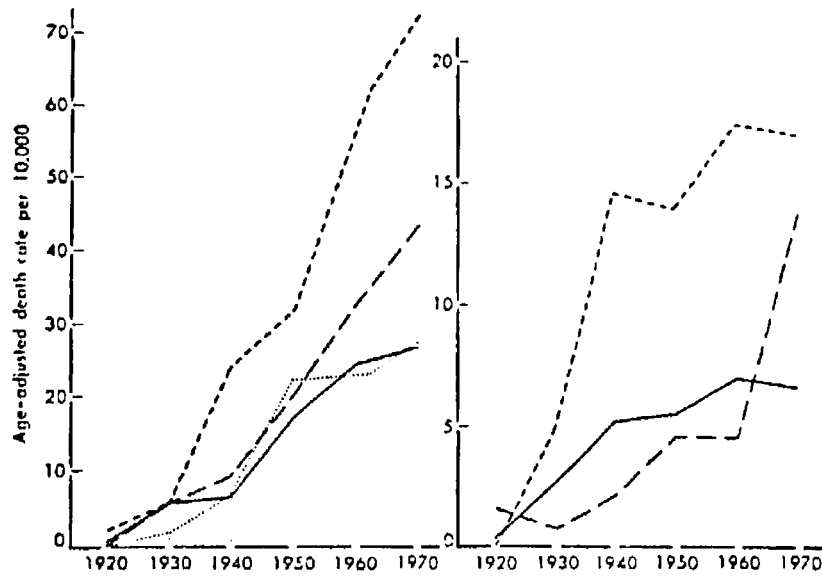
Figure VII-1



Time trends in age-adjusted mortality for all malignancies from 1920 to 1970 among major ethnic groups in Hawaii. Left, male; right, female. — — Caucasian; — Japanese;Chinese; --- Hawaiian.

Source: Hirohata T. Shifts in Cancer Mortality from 1920 to 1970 among various ethnic groups in Hawaii. IN: Genetic and Environmental Factors in Experimental and Human Cancer, H.V. Gelboin, et al. (eds.), Japan Sci. Soc. Press, Tokyo, pp. 341-350, 1980.

Figure VII-2



Time trends in age-adjusted mortality from lung cancer. Left, male; right, female. Symbols are the same as in Figure VII-1.

Source: See Figure VII-1.

Table VII-6

Percent Distribution of the Subjects by Smoking and Drinking
Status, Sex and Race, Hawaii, 1975-1980*

<u>Sex</u>	<u>Smoking</u>	<u>Drinking</u>	<u>Caucasian</u>	<u>Hawaiian</u>	<u>Japanese</u>	<u>Filipino</u>	<u>Chinese</u>
Male	-	-	32.8	40.0	45.1	49.0	61.3
	+	-	17.8	22.2	19.1	25.3	14.8
	-	+	25.2	16.6	18.1	10.4	14.0
	+	+	24.2	21.2	17.7	15.3	9.8
			<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>99.9</u>
Female	-	-	49.5	56.5	79.3	78.0	84.2
	+	-	20.5	29.6	14.9	18.1	9.6
	-	+	17.4	5.2	3.2	1.6	4.9
	+	+	12.6	8.6	2.5	2.3	1.3
			<u>100.0</u>	<u>99.9</u>	<u>99.9</u>	<u>100.0</u>	<u>100.0</u>

*Source: LeMarchand, et al. Alcohol consumption patterns among the five major ethnic groups in Hawaii. Paper presented at the "Epidemiology of Alcohol Use and Abuse among U.S. Minorities Conference", September 11-14, NIAAA, Bethesda, MD.

Table VII-7

Percentage* of Smokers and Drinkers Among Native
Hawaiians by Degree of Self-Reported Ethnic Purity**,
Hawaii, 1975-1980

	<u>Sex</u>	<u>100% Hawaiian</u>	<u>75% Hawaiian</u>	<u>50% Caucasian</u>	<u>50% Chinese</u>
% Smoker***	Male	61.1	56.3	49.2	53.7
	Female	47.1	49.7	45.6	38.2
% Drinker	Male	32.6	36.1	35.7	34.4
	Female	10.2	13.8	16.1	12.8

Source: See Table VII-6 and unpublished.

*Adjusted for age by the direct method to the World Standard Population.

**100% Hawaiian: Subjects of unmixed Hawaiian decent.

75% Hawaiian: One parent unmixed Hawaiian, the other parent of two or more ethnic origins, one being Hawaiian.

50% Caucasian: One parent pure Caucasian, the other parent unmixed Hawaiian.

50% Chinese: One parent pure Chinese, the other parent unmixed Hawaiian.

***Current and ex-smokers.

Table VII-8

Mean Obesity Index ($W/H^2 \times 10,000$)
by Sex and Race, Hawaii, 1975-80*

	<u>Male</u>	<u>Female</u>
Native Hawaiian	26.6	25.4
Caucasian	24.4	22.5
Filipino	23.8	22.5
Japanese	23.6	21.9
Chinese	23.1	21.1

*Source: Lee, et al., Int. J. Obesity
1982;6:233-39.

Table VII-9

Mean* Knowledge Score by Race**

	<u>Breast</u>	<u>Lung</u>	<u>Colorectal</u>	<u>Cervix</u>	<u>N</u>
Caucasian	67.7	66.7	69.3	78.7	1317
Japanese	63.8	67.4	64.8	72.3	1195
Native Hawaiian	59.6	62.3	50.3	67.0	608
Chinese	62.7	67.0	60.7	71.2	216
Filipino	57.4	61.7	48.9	60.8	387

*Weighted average of the mean knowledge scores for the three surveys (1978, 1980, 1982).

**Source: Community Cancer program of Hawaii. Final report to the National Cancer Institute, Health Awareness Survey Reports, 1982.

Table VII-10

Percent* of Female Respondents Having
Had at Least One Pap Test**

<u>Caucasian</u>	<u>Japanese</u>	<u>Native Hawaiian</u>	<u>Chinese</u>	<u>Filipino</u>
79.2	73.2	65.6	72.4	66.9

*, **: See Table VII-9.

Table VII-11

Percent* of Respondents Asking Physicians for
an Examination for Colorectal Cancer**

<u>Caucasian</u>	<u>Japanese</u>	<u>Native Hawaiian</u>	<u>Chinese</u>	<u>Filipino</u>
16.4	19.6	11.0	23.2	11.9

*, **: See Table VII-9.

Chapter VIII

CONCLUSIONS AND RECOMMENDATIONS

VIII. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this report has been to provide an overview of the health problems of Native Hawaiians. A general overview of the health status of Native Hawaiians was provided in Chapter III. Chapters IV through VII have provided a more detailed analysis of several of the most significant diseases from the standpoint of high prevalence, disability and death, including health problems associated with pregnancy and infant morbidity, diabetes, hypertension, heart disease and cancer.

Nevertheless, this report has not defined health needs simply as a list of health problems or statistical distributions of diseases. We have approached the task of assessing health needs within a framework of the delivery of a broad range of health care services, including health education, health promotion, screening and referral, and medical treatment programs.

Three criteria of health service delivery were defined and used throughout the report: 1) the availability of services refers to the allocation of resources into health programs and the distribution of health services in relation to Native Hawaiians; 2) the accessibility of services refers to the costs to the client in using services, such as financial expense, travel time and distance, and conflict between hours of service and work schedules; and 3) the acceptability of services refers to level of satisfaction or dissatisfaction Native Hawaiians experience because of the compatibility of health care services with Hawaiian culture and interpersonal style.

Finally, this report recognizes that the health problems of

Native Hawaiians reflect in large measure the social situation of contemporary Native Hawaiians. As described in the report of the Historical and Cultural Task Force, Native Hawaiians during the past 200 years have faced traumatic social changes. These changes have resulted in the loss of many traditions and have raised serious questions about the survival of Native Hawaiians as a distinctive people. Furthermore, the political and economic transformations of Hawaii, culminating with statehood and a modern commercial and service economy, have had the consequences of the loss of control over land and the loss of political power. Native Hawaiians currently are socioeconomically disadvantaged compared with other ethnic groups who have entered the Islands during the past 200 years. The combination of disculturation and low socioeconomic status is reflected in high rates of many social problems as well as health problems in the contemporary Native Hawaiian population.

There is a tendency today to blame low status groups who experience health problems on improper behavior, and to approach improving health through efforts at controlling "undesirable" behavior, such as overweight, drinking, and smoking. There can be no question about the fact that these behaviors underlie health problems. However, many of these behaviors are themselves the product of stressful social conditions and a lack of resources with which to pursue alternative satisfactions in the society. Rather than blaming the victim, the pursuit of better health necessitates social changes which would improve the life situation of the Native Hawaiian. In this sense, any steps taken to empower this group, to increase the level of self-efficacy, and to improve

their economic situation, must be regarded as important to the promotion of health.

Nevertheless, while the Medical Task Force recognizes the above as an essential orientation, addressing the present health problems of Native Hawaiians cannot wait for more general socio-economic change. Therefore, the recommendations below will focus on those more immediate and direct strategies for reducing health problems through altering the delivery of health care services. These recommendations are made with full awareness that there will be only limited success so long as the current social and cultural deprivations remain.

A. A GENERAL SUMMARY OF THE FINDINGS

Each chapter has concluded with a summary of the findings regarding health needs in relation to the topic of that chapter. There will be no attempt to repeat these detailed summaries here, but instead to note the significant commonalities which provide a direction for making recommendations.

In general, Native Hawaiians experience a lower life expectancy than other ethnic groups in Hawaii. This higher mortality is due both to a higher rate of accidental deaths as well as a greater risk of significant illnesses. Infant mortality rates of Native Hawaiians are higher than other groups, as are congenital abnormalities and underweight infants. Native Hawaiians, furthermore, suffer disproportionately from the most significant chronic diseases which underlie disability and mortality in later life, such as diabetes, heart disease, hypertension, and cancer. Native Hawaiians have higher cancer rates than other groups for cancers of the stomach, lung, and

female breast and cervix. Furthermore, Native Hawaiians have a poorer survival rate from cancer, even when compared with persons from other ethnic groups diagnosed at the same stage of disease. Full Hawaiians have the greatest risk of diabetes, heart disease, and some forms of cancer; while Part-Hawaiians are somewhat more likely to suffer from hypertension. The evidence suggests that Native Hawaiians, furthermore, experience the onset of diabetes, heart disease and hypertension at earlier ages than other groups, even among the young adult population.

Evidence suggests that Native Hawaiians rank high on risk factors for many diseases. Native Hawaiians have higher rates of teen pregnancy and illegitimate births than other groups. Furthermore, pregnant Native Hawaiian women rank highest in having late or no prenatal care, in smoking and alcohol consumption during pregnancy, in toxemia and urinary tract infections during pregnancy, and in complications of pregnancy among the over 35 age group.

Surveys of health awareness in regard to cancer show that Native Hawaiians are less knowledgeable about symptoms and risk factors for cancer. Although systematic data is lacking, perhaps these results suggest a general low level of health and medical knowledge among Native Hawaiians. What evidence is available also suggests that Native Hawaiians engage in behaviors which are high risk for developing diabetes, heart disease, hypertension, and cancer. For these diseases, high fat and salt consumption in the diet, being overweight, smoking, and heavy alcohol consumption and, for some diseases, a lack of sufficient exercise create a greater risk of developing the disease. In all of these respects,

Native Hawaiians tend to be at higher risk than other ethnic groups in Hawaii.

Although systematic evidence about the utilization of health care services is lacking, the limited evidence reviewed in this report also suggests that Native Hawaiians receive fewer health care services. Native Hawaiians appear to participate less than other groups in health education, health promotion, and screening and referral programs, even when these programs have been intentionally made available to communities where a high proportion of Native Hawaiians live. Furthermore, Native Hawaiians are reported to enter medical treatment at the late stages of disease, only when self-care and traditional practices have not brought sufficient relief.

The major problem does not seem to be the lack of available health care resources, since nearly all areas of the state are now served by some form of health services. Therefore, the reasons for underutilization probably rest on lack of accessibility due to geographic or financial barriers, and even more importantly, on the lack of acceptability of services to Native Hawaiians due to cultural differences. The principle recommendations of this report, therefore, are aimed at addressing the need to alter the manner in which health services are delivered.

B. BASIC PRINCIPLES UNDERLYING RECOMMENDATIONS

The recommendations of this report have been developed out of a set of basic principles regarding conditions which promote effective health service delivery and regarding how change can be introduced into a community. These principles are presented in this section.

1. The underutilization of health education, health promotion, health screening, and medical treatment services by Native Hawaiians cannot be addressed if we begin with the premise that Native Hawaiians lack concern about their physical health. Rather, underutilization is a problem in developing a suitable mode of health service delivery for this population.
2. Effective health care services will be developed and implemented for the Native Hawaiian population if Native Hawaiians participate in their creation, on the boards which oversee their implementation, and in the health care professions which deliver the services.
3. Native Hawaiians have a special status in the population of Hawaii as Native Americans. Therefore, there is a rationale to not only recognize Native Hawaiians as a high risk population for many health problems, but also to define them as a special target population for programs specifically designed to address their needs. The U.S. Federal government as well as the Hawaii State government have special obligations to provide financial resources and programs to the Native Hawaiian community.
4. Health care services will be culturally acceptable to Native Hawaiians to the extent that they are compatible with Hawaiian culture and interpersonal styles. Therefore, modes of service delivery need to be adapted in so far as possible to the central cultural concerns of Native Hawaiians. The following are three important components of Hawaiian culture which have direct implications for health care services:
 - a. Spiritual values. The traditional culture of Native

Hawaiians emphasizes the spiritual unity of the individual with the environment and the spiritual significance of events such as illness. Moreover, there is a rich tradition of health care practices and rituals and respect for traditional healers among Native Hawaiians. Health care services will be more effective if they respect these traditional values and concerns of Native Hawaiians.

- b. Minimization of risk. The Hawaiian culture emphasizes the preservation of harmony. Individuals have a tendency to minimize the importance of experiences which set them apart from others or which threaten to disrupt the group. The "ain't no big thing" coping strategy can result in efforts at normalizing symptoms of illness and delay in seeking health care. For this reason, a system of active outreach is needed rather than reliance upon individual initiative to seek out services, particularly for prevention and early care.
- c. Interpersonal Style. Hawaiian culture has been described as centrally focused on affiliation, the development of close bonds between peers and the reliance upon personal networks in coping with problems. Native Hawaiians are uncomfortable with impersonal, bureaucratically organized services and with reliance upon expert authorities. Therefore, health care services will be most effective if they utilize the natural social relationships existing among Native Hawaiians.

C. GENERAL STRUCTURAL RECOMMENDATIONS

The findings of this report show that Native Hawaiians experience a disproportionate risk of many serious health problems and that the current mode of health care service delivery is inadequately serving this population. In order to address the health needs of Native Hawaiians, a number of general structural changes and innovations are needed. Based on the general principles stated above, the following are recommended:

1. Special funds should be made available from the U.S. Public Health Service and other agencies of the Federal government in order to develop and implement needed changes in the health delivery system. These funds ought to be in the form of special contracts to accomplish specific purposes and in the form of seed money, with a gradual phase-out schedule, to modify or develop programs to be targeted for the Native Hawaiian population. These funds could be applied for by existing health care organizations, by Native Hawaiian community organizations focusing on health problems, and by the branches of the Hawaii State Department of Health.
2. The resources of the Hawaii State Department of Health ought to be reallocated to give priority to addressing the health problems of Native Hawaiians, who are already recognized as a high risk population. This recommendation involves a change in the official policy of the DOH, which has resisted the development of programs targeted at specific ethnic groups in order to avoid the appearance of inequity in public services. The grounds for this recommendation are as follows:
 - a. Native Hawaiian are legally recognized as Native Americans

and, therefore, qualify for special treatment with public resources. Historically this special treatment is justified because many of their problems stem from the social and cultural displacement imposed on them by the arrival and eventual dominance by other ethnic groups.

- b. Public services targeted according to need are not in themselves discriminatory. The evidence clearly shows that Native Hawaiians experience a disproportionate number of health problems and currently receive less health services of all kinds.
 - c. The present health care delivery is, in fact, inequitable since it does not satisfy the needs of this population. Providing standard programs which are culturally "blind", in fact, results in programs which are culturally insensitive. Health programs will be effective with Native Hawaiians only in so far as they are designed to be acceptable within the framework of Hawaiian cultural preferences.
3. Existing health care organizations which serve Native Hawaiian populations, including the various branches of public services as well as private health care providers, should include Native Hawaiians on their boards in order to bridge the communication gap between health services and the Native Hawaiian community. In rural communities with relatively self-contained boundaries, election of board members might be considered. In urban areas, where health services are directed to a pluralistic clientele, Native Hawaiian representatives might be nominated by a recognized body of the Native Hawaiian community (see #4 below).

4. A Native Hawaiian umbrella agency needs to be established to monitor the health needs of Native Hawaiians, to oversee the implementation of the recommendations of the Native Hawaiian Health Needs Study, and to make recommendations to health care organizations on behalf of the Native Hawaiian community. The burden of this work is likely to be especially strong during the first five years when there is a need for advocating changes in the structure of health care organizations and for developing new programs for Native Hawaiians. A special federal grant should provide resources to this organization, including salary for a full-time administrator for a period of five years.
5. New efforts must be developed to increase the proportion of Native Hawaiians in the health professions. The extremely low proportion of Native Hawaiians in these professions explains, in part, the relatively low priority given to Native Hawaiian health needs and also the insensitivity to Hawaiian culture in health service programs. This situation can only be resolved in a long time-frame since the proportion of Native Hawaiians reaching higher education must be increased. The University of Hawaii has a few special programs, and the number of Native Hawaiian physicians has increased under these programs.

The following are needed:

- a. An assessment of current programs of recruitment and support for Native Hawaiians in the School of Medicine, School of Public Health and School of Nursing, in order to evaluate their effectiveness and determine whether any modifications would make them more effective.

- b. The development of scholarship programs, involving contracts with clinics serving Native Hawaiian populations, to encourage more individuals to pursue higher education and to involve them directly in the care of Native Hawaiians.
- 6. As an immediate solution to better outreach, a system of Native Hawaiian Community Health Care Workers should be established in neighborhoods and rural communities where there is a concentration of Native Hawaiians. This type of para-professional health care worker proved to be effective in Community Health Centers under the earlier Federal program to develop health services for underserved populations. The following are significant aspects of this recommendation:
 - a. These workers should be recruited from the neighborhoods being served, be of Native Hawaiian ethnic background, and be generally knowledgeable of the families in their catchment area. The purpose of the role is to serve as a bridge between the health services and the Native Hawaiian population in order to overcome cultural and communication barriers.
 - b. They should work for health care organizations, but much of their time should be spent in outreach activities in the community, facilitating health education, participating in screening, and referral to appropriate medical services.
 - c. Financial support to establish a system of Community Health Care Workers should be provided by a Federal grant, at least for a five-year period. After this time, perhaps they could be supported by the health care providers or could be integrated into the public nursing program.

d. Special provision should be made to encourage individuals in the Community Health Care Worker program to return for higher education leading to entrance into one of the health professions.

7. Health care organizations serving Native Hawaiian communities should develop program similar to the Hale Ola program on the Waianae Coast, where traditional Hawaiian health care practices are integrated with western practices. Community Health Care Workers should play a significant role in delivering preventive care and health education through such a program and, in so far as possible, traditional Hawaiian healers should also be included in developing and implementing the program.

a. Programs of this nature are especially important in rural areas where Native Hawaiians have maintained a stronger commitment to traditional Hawaiian health practices and where there is still a relatively strong reliance upon traditional Hawaiian healers.

b. Special Federal grants should be provided to rural health centers to develop such programs. Since these are not technology intensive and primarily use present resources in the community, the cost should be relatively low and the need for outside support should be temporary.

D. SUPPORT OF EXISTING FEDERAL AND STATE PROGRAMS

In the course of our investigation, the Medical Task Force was impressed with the importance of certain federal and state programs to the current health care system and particularly with the potential of these programs for impacting on Native Hawaiians. Therefore, we wish to recommend continued support for certain

programs and, in some instances, expansion in order to more effectively provide for Native Hawaiians. The programs below are perceived as particularly important:

1. Family planning services are important to the health and well-being of the Native Hawaiian population. The Native Hawaiian population has a relatively high birth rate, including a high rate of teenage pregnancy. Optimal family planning can reduce unwanted pregnancy which can interrupt the educational preparation of young adults and place financial strains on families with relatively low resources. In addition, family planning is important in encouraging pregnancy during the period of optimal maternal age and with appropriate intervals between pregnancies to ensure maximum protection of the woman's health and the health of the infant. The current cut-backs in federal support for family planning could have serious negative consequences for Native Hawaiians.
2. The development of a regional perinatal health care system has been proposed by the Maternal and Child Health Branch of the Hawaii State Department of Health. This system would integrate the various health care resources in a particular region and result in improved continuity of care, with a continuous health care record following the individual through pre-natal care, delivery, post-natal care and well-baby care. We urge that this program be supported by funds from the state legislature, and that furthermore, there be a special outreach component developed for those areas having a large number of Native Hawaiian families. The Community Health Care Workers could be integrated into these services. Some seed money to develop

special educational materials should be made available to the program from federal sources.

3. The Life-style Promotion-Risk Reduction Project, under the Health Promotion and Education Branch of the Hawaii DOH, currently is supported by funds from the federal block grant to Hawaii and participates in the national program of monitoring health risk behavior developed by the National Center for Disease Control. Its principal activity is an ongoing telephone survey to ascertain the extent of health risks among the various population groups in Hawaii and to disseminate this information to health care practitioners. We recommend continuing support for this valuable activity, but we also believe that the mandate of this program should be expanded to include developing health promotion programs targeted at the populations which their investigations indicate have the greatest need. Under special grants, this program has developed a life-style program to be implemented in places of employment, and they have carried out a successful program of health education regarding alcohol, tobacco and drug abuse in two schools. Financial resources should be made available from the state to extend these programs.
4. The Hawaii State Department of Education has developed a health education curriculum for the schools. However, health education is given little priority, and so there is suspicion that the implementation of this curriculum is currently inadequate. We recommend that more resources be provided to the Department of Education specifically for health education, including the training of teachers and contracting with outside

programs and health care professionals to participate in this curriculum.

5. The Chronic Disease Branch, Health Promotion and Education Branch, and Public Health Nursing Branch of the Hawaii State DOH provide valuable services in health education and screening and referral services. These services are provided through regional health centers and through many organizations which request their services. Nevertheless, there is also evidence that the financial support for these services is not sufficient to make them effective and to enable them to reach the groups who need them most, including Native Hawaiians. We recommend that greater priority be given to these programs in the allocation of state resources by the legislature and by the chief administrators within the DOH. Resources invested in primary prevention and screening and referral of persons in the early stage of disease, can save large sums of health care costs in the long run.

6. The Hypertension Project, supported by federal funds and located at Diamond Head Health Center, provides needed coordination of information and follow-up for cases identified in hypertension screening programs. Nevertheless, this project is limited to the island of Oahu, We recommend that this project be extended to become statewide.

E. RECOMMENDATIONS REGARDING HEALTH EDUCATION

Health education is an important component of health care in providing the public with knowledge about illness and how to prevent and control illness. While there are many channels of health education currently available in Hawaii, the results of

this investigation reveal that they do not adequately reach the Native Hawaiian population. The Medical Task Force makes the following recommendations:

1. Improve pre-natal health education, especially about the relative risk of congenital anomalies and low birth weight among Native Hawaiian women, and the behaviors which contribute to the risk of these problems. A "talk-story" fact-book should be developed for this purpose. Also include education about breast-feeding, parenting and proper infant care. These services should be encompassed in the regional peri-natal health care system being developed by the state, and special outreach services, including incentives, should be given to Native Hawaiian women in order to maximize their participation. Models for designing programs which are effective with Native Hawaiian women include the Kupulani program and the KEEP program.
2. Federal financial grants are required for the State Department of Health in order to develop special educational materials and train individuals to provide health education to the Native Hawaiian population through existing public programs, including the regional peri-natal health program, and the Life-Style, Risk Reduction program. Special grants from the National Center for Disease Control for this purpose seem appropriate.
3. The State Department of Education should provide more resources and give greater priority to adequate implementation of the health education curriculum in the public schools. The schools can be an important influence in providing basic knowledge about risks to good health and in fostering the adoption of

healthy life styles. Physical education programs should be redefined as an opportunity for learning the principles of health maintenance and the development of skills which promote fitness. Apparently many teachers currently regard physical education merely as a recreational break.

4. Hawaiian culture places a strong value on affiliation with others, and Native Hawaiians prefer to undertake activities with their close friends. Rather than providing health education through impersonal presentations and in settings with large groups of unacquainted individuals, programs are more likely to be effective with Native Hawaiians if they are provided in the context of natural groups and by individuals whom they have close personal contact. For this reason, we recommend that health education programs be aimed at such organizations as Hawaiian Civic Clubs, Hawaiian churches, canoe clubs, neighborhood groups, and organizations in the community of Native Hawaiians. Furthermore, health information should be provided by other Native Hawaiians, including the leaders of these groups, Community Health Workers, or perhaps respected Native Hawaiian entertainers or athletes. We recommend this approach both to the state efforts at health education as well as to private health care providers.

F. RECOMMENDATIONS REGARDING HEALTH PROMOTION PROGRAMS

The task of changing the health status of any population is essentially a matter of social change and behavioral change. These changes include altering existing health service delivery and addressing the pathogenic socioeconomic and environmental conditions experienced by the population. However, the life

styles of individuals also may include behaviors which increase the risk of disease, and so changes are also required in the behaviors of the target population. These changes are the central focus of health promotion programs.

Special difficulty occurs when high risk behaviors are associated with a prized life-style of the population and also contribute to the coping mechanisms whereby individuals manage the socially-based stresses. Many of the high-risk behaviors of Native Hawaiians fall into these categories. Behaviors such as high alcohol consumption and smoking serve as releases from stress and occur in the context of valued social contact with others. Contemporary (but not traditional) Hawaiian ethnic foods involve high fat, high salt and high calorie intake. Obesity is generally acceptable within Polynesian cultures, where large body size is associated with power and respect. The dilemma is how to foster more healthful behaviors and at the same time to avoid the perception that valued cultural practices are being lost. We recommend the following principles be followed in undertaking health promotion programs with Native Hawaiians:

1. The introduction of changes in behavior can only occur within the framework of the existing culture. For example, while changes in dietary patterns may be desirable, new patterns will need to be developed using the foods which are already acceptable alternatives in the diets of Native Hawaiians. Change does not mean the wholesale destruction of the culture, but a gradual adaptation, whereby changes in quantities of certain foods produce a more healthful overall pattern of consumption. Some foods may be limited to special occasions,

such as holidays or rituals associated with life-cycle transitions.

2. Changes in behavior must be introduced by Native Hawaiians who have the general respect of the population, persons who enjoy the status of "opinion leaders." Such behaviors as stopping smoking, limiting alcohol consumption, undertaking regular exercise, and taking medications for the purpose of controlling hypertension or diabetes, will be more likely to be adopted if respected "role models" are used to advocate and to adopt these practices themselves. Native Hawaiians are not likely to respond well to outside "missionaries" who try to tell them how to live, but they are more likely to adopt behaviors which they see as accepted by individuals they respect. In this sense, social change is more effective as a "trickle-down" phenomenon stemming from the action of respected Native Hawaiian leaders.
3. Priority should be given to introducing behavioral changes under conditions which are likely to produce success. Some types of behaviors may be more easily changed than others. A change strategy is likely to fail if it attempts to change too many behaviors at once or if it attempts to change those behaviors which individuals see as most central to their cultural identity. In this sense a gradualist approach is more realistic. Furthermore, some individuals are more open to change than others -- perhaps younger, more educated persons or persons who are most concerned about reducing their risks of disease. Health promotion programs which succeed with some segment of the Native Hawaiian population will set the stage perhaps for more widespread adoption of new behaviors by

developing social support for more healthy life-styles within the Native Hawaiian community.

4. Health promotion programs should take place within the context of natural social groups of Native Hawaiians. As already noted, Hawaiian culture places a strong emphasis on affiliation, and individuals are likely to undertake new behaviors only in so far as those behaviors are adopted and supported by their friends and families. Working with natural groups takes advantage of these social bonds, whereas health promotion programs using outside experts in groups of unacquainted individuals are unlikely to be effective with Native Hawaiians. One example of a successful model is the Kupulani program which fosters healthful behavior among pregnant Native Hawaiian women. Health promotion programs should be developed with the intention of using them in Hawaiian Civic Clubs, Hawaiian churches, canoe clubs, neighborhoods, and other social groups of Native Hawaiians.
5. Federal seed grants should be provided, perhaps through the National Center for Disease Control, for the purpose of developing special approaches and materials for health promotion programs with Native Hawaiians.

G. RECOMMENDATIONS FOR HEALTH SCREENING AND REFERRAL

An important health care activity is the identification of disease at an early stage where treatment can begin before there is major damage or disability and when the treatment is most likely to succeed in controlling the progress of the disease. In the case of cancer, delay in seeking treatment may result in earlier death. Hypertension and diabetes often are symptomless

in their early stages. Both of these diseases have a relatively high prevalence rate, especially among Native Hawaiians.

Untreated they lead to many kinds of serious disabilities and health disorders. The Medical Task Force, therefore, believes that health screening and referral should be improved in the following respects:

1. Legislative support should be given to the implementation of the regional perinatal health care system in order to identify any problems in the progress of the pregnancy and development of the infant when they can be most easily corrected.
2. Continued support for the Cancer Control Department of the Hawaii Cancer Research Center should be given by the state and the Hawaii Congressional delegation in developing a proposal for funding from the National Cancer Institute for a comprehensive program of preventive and screening programs aimed at high risk groups such as Native Hawaiians.
3. Hypertension and diabetes screening should be expanded, especially to work contexts through the cooperation of employers, where previously unrecognized disease may be detected. The relatively low percentage (less than 30%) of new cases uncovered by screening programs conducted by the Public Health Branch of the DOH, probably reflects a high degree of self-selection in participating in these programs. New screening sites should be developed which might broaden the base of participation.
4. Active outreach is needed to provide screening and referral to Native Hawaiians. Previous screening programs appear to have had low participation of Native Hawaiians because of a mode of

delivery which is contrary to Hawaiian cultural practices. Two recommendations which might result in more effective programs are as follows:

- a. The Community Health Workers could play a major role in encouraging participation in screening programs or even in administering simple diagnostic tests such as taking blood pressure. The public health nursing has had some success with asking friends to take one another's blood pressures.
 - b. Screening programs could be provided to natural groups of Native Hawaiians, thereby reaching a broader segment of the population and providing the program in a context in which there is social acceptance of the service. Arrangements could be made, for example, for screening at Hawaiian Civic Clubs, Hawaiian churches, canoe clubs, and other social organizations.
5. Screening programs must include a system of referral and follow-up of individuals found to have signs of disease. Identifying these individuals through screening is of no use unless they are successfully referred and obtain appropriate treatment. While the DOH screening programs have a formal system of referral, there are reports that the system is not always implemented because of shortages in labor. There are a variety of reasons why an individual who is identified as possibly having a disease may not seek treatment, especially where the symptoms are minor or non-existent. Screening programs need to be concerned with addressing the resistance and barriers towards obtaining treatment. Follow-up ought to continue at least until there is evidence that the individual

is actually under the care of a physician. Continuity of care at that point then becomes the responsibility of the medical treatment service.

H. RECOMMENDATIONS REGARDING ACCESS TO MEDICAL CARE

Native Hawaiians experience a variety of geographic and financial barriers to obtaining adequate medical care. The following recommendations address some of the specific problems in making services available and accessible:

1. Financial barriers to medical services continue to exist for many unemployed and low income persons, including Native Hawaiians. All necessary steps should be taken by health care providers and by politicians to remedy this situation without delay. We recommend two forms of action:
 - a. Political pressure should be exerted to ensure adequate financial support for Medicare, Medicaid, Social Security Disability, and other health care financing programs in order to be able to support the services needed for quality health care of Native Hawaiians, including the expenses associated with preventive care and monitoring of chronic conditions.
 - b. Given the present Federal retreat from an adequate national health care insurance system, the legislature of the state of Hawaii should take action to establish a contingency medical care fund to cover the medical care of uninsured individuals, including the unemployed and marginally employed.
2. A review should be undertaken of health care programs, such as Queen's Hospital and Lunalilo Home, which were established to

provide care for Native Hawaiians, in order to determine whether or not these organizations are fulfilling their obligations. In some instances, the existing financial resources may be inadequate to provide satisfactory care and an effort should be made to expand the endowment or find another source of income. In other instances, the original mandate is being overlooked and legal action should be taken to restore entitlements to Native Hawaiians.

3. The state Legislature must undertake to solve the malpractice insurance crisis in medicine. A variety of strategies are possible, including a state insurance fund, restricting the limits of settlements, or adopting a system of mediation to replace litigation. The present crisis is making it impossible for many physicians to continue to practice, particularly in rural areas where many Native Hawaiians reside.
4. Every major health center and clinic should develop an active outreach program to reach Native Hawaiians using Native Hawaiian Community Health Workers. It is not enough to establish health care services. Due to a complex of cultural and historical factors, Native Hawaiians are reluctant to seek help and therefore active outreach, preferably through individuals known within the community, is necessary. Community Health Workers can provide a bridge of communication between physicians and the community and can improve continuity of care by serving the functions of referral and follow-up of patients in the community.

I. RECOMMENDATIONS REGARDING MEDICAL TREATMENT

With effective preventive health care services, much of the

the responsibility for the health of the population is managed outside of traditional medical services and the doctor-patient relationship. Medical treatment by physicians then is focused on providing the appropriate treatment to those persons who are ill. Nevertheless, there is evidence that as high as 30 - 50% of individuals under treatment for chronic disorders such as diabetes and hypertension, do not follow the prescribed medical regimen. Native Hawaiians resist medical treatment, as evidenced by the late stage of seeking the help of physicians. Given the tenuous nature of trust, compliance with physician advice is likely to be poor.

Resistance to medications may be based on a misunderstanding of the need for continuous treatment even if symptoms appear to subside, or on unacceptable side-effects such as dizziness, depression, and impaired sexual performance. Patients often discard drugs for these purposes without consulting their physician, and physicians often fail to inform patients about dealing with side-effects or ask about such difficulties in order to adjust medication. Medical advice about alcohol consumption or dietary changes may not be given in a form which is feasible to carry out within the social context of Native Hawaiians.

The culture of Native Hawaiians emphasizes avoidance rather than confrontation with authority figures. Physicians who assume patients understand instructions or agree to advice just because they do not object or raise questions, are likely to be misled. In order to improve the effectiveness of medical treatment, it is necessary to adapt physician behavior to take into account the culture of Native Hawaiians. The Medical Task Force makes the

following recommendations concerning ways in which the delivery of medical services can be made more effective with Native Hawaiians:

1. The Hawaii Medical Association should develop a professional training program in consultation with Native Hawaiian health practitioners in order to familiarize physicians who have Native Hawaiian patients with the following aspects of Hawaiian culture: 1) traditional beliefs about health and health care, concepts of illness and appropriate rituals and methods of healing; 2) the interpersonal style of Native Hawaiians in order to more effectively communicate with and understand Native Hawaiian patients; 3) the dietary preferences, attitudes towards sexuality, and customary social and recreational patterns; and 4) any other matters which might enable physicians to better communicate and to adapt their advice to the specific cultural preferences of Native Hawaiians.
2. Rural health centers, where there are a large number of Native Hawaiians who still practice traditional Hawaiian medical care, should develop programs designed after the Hale Ola program on the Waianae Coast. These centers should bring together traditional Hawaiian concepts of health care and medical concepts of health care, in order to develop more culturally acceptable forms of treatment and management of disease. Financial support in the form of seed money should be provided through an appropriate agency of the Federal government.
3. Traditional Hawaiian healers should be integrated into the health care of Native Hawaiians, especially in rural areas

where traditional practices are still preferred by many Native Hawaiians. A program should be developed which brings together the traditional healers and medical practitioners serving the same population in order to familiarize one another with their approaches and to build mutual trust and respect. Similar programs have been successfully tried in some other non-Western societies. A cooperative relationship would enable traditional healers to know when to refer a patient to the medical center, and the physicians at the medical center could rely upon traditional healers to provide appropriate spiritual care and traditional medicines.

4. Finally, medical centers need to develop a system of follow-up for individuals identified with chronic conditions. The present system relies upon the individual to take the initiative for follow-up care and monitoring of conditions. The high rate of drop-outs and non-compliance with treatment is an indication that this system does not work, especially with Native Hawaiians. A register of individuals with chronic illnesses should be created for the purpose of systematic follow-up by the medical center and, when appropriate, contact by a Community Health Worker.

J. RECOMMENDATIONS REGARDING DATA COLLECTION AND RESEARCH

The Medical Task Force encountered many limitations in assessing the health needs of Native Hawaiians due to the lack of adequate data and limited knowledge about many aspects of disease etiology and of health care behaviors. The development of programs should be based on sound information and, therefore, we believe it is important to include recommendations regarding the

collection of needed information and research into important problems affecting the health status of Native Hawaiians. Our recommendations are as follows:

1. Research projects should undertake to investigate in more detail the etiological factors which account for higher disease among Native Hawaiians. Examples of needed research include the role of pesticides in perhaps accounting for higher congenital abnormalities among Native Hawaiians; the factors which account for higher birth abnormalities on the island of Molokai; and the role of environmental and genetic factors in explaining the greater susceptibility of Native Hawaiians to heart disease and cancer, and the poorer survival rates from cancer than other ethnic groups.
2. Epidemiological research is needed which focuses more directly on the Native Hawaiian population in order to identify specific socio-environmental conditions which underlie poor health status. Health protective behaviors and traditions among the Native Hawaiians also need to be identified and assessed. The Native Hawaiian population is highly diverse in living circumstances and in degree of assimilation into the larger society. At present, there is little systematic information about the important health consequences of life-style differences among Native Hawaiians.
3. Furthermore, research needs to include clinical assessment through health examination surveys. While it is important to know, for example, that Native Hawaiians report higher rates of hypertension and diabetes, it is more important, from a practical standpoint of designing appropriate services, to know

the following: 1) what proportion of persons have unrecognized disease; 2) what proportion of persons have their disease effectively under control and what proportion are not currently under treatment; and 3) what proportion are failing to comply with the medical regimen of taking drugs and restricting dietary intake.

4. The collection of health service utilization data should be systematic for all state DOH programs and services and should be encouraged among all private health care providers. None of the health service programs apparently collect adequate data about their clients in order for them to be able to assess their services to different segments of the population. At a minimum, systematic records should be kept of the utilization of services by individuals including information about their ethnic background and geographic place of residence. Without such information it is impossible to undertake a credible evaluation of any health care service in terms of whether it is reaching its target population and to identify whether there are underserved areas or segments of the population
5. Utilization research should be regularly undertaken by the various branches of the DOH and by private health care providers as a means of assessing their health care delivery to the population. From the standpoint of public services, such assessment is necessary in providing routine accountability that services are reaching the target populations most in need and thus promoting equitable health status among the population. The effectiveness, or lack of effectiveness, of serving the Native Hawaiian population would thus become a

matter of public record and would encourage greater adaptability of programs to populations. A similar advantage could be experienced by private health care providers in terms of assessing the appeal of their services and increasing the marketability of their programs.

6. Special surveys, focusing on the Native Hawaiian population, are needed in order to assess level of health knowledge, attitudes towards health services, and cultural values which affect their health promotion behaviors. Studies of this nature are needed as background information for knowing how to design more effective programs for the Native Hawaiian population.
7. Evaluation studies should be required in relation to all programs which target the Native Hawaiian population. Such studies should be required by funding agencies as a condition for receiving support. Furthermore, these evaluation studies should reflect state-of-the-art methodology in evaluation research, with systematic measurement and experimental or quasi-experimental designs. It is only through systematic evaluation that the effectiveness of a program can be known and weaknesses discovered which required program change. Evaluation should not be approached as a basis for eliminating programs, but as a necessary process in the incremental adaptation of modes of service delivery to the Native Hawaiian population.

K. CONCLUSION

In conclusion, the health needs of Native Hawaiians reflect a complex set of factors involving the socio-cultural conditions of their lives, as well as shortcomings of our contemporary health

care system, to adequately serve this population. Consequently, there are many avenues of needed response to address these problems. The recommendations in this report, therefore, are aimed at many different agencies and audiences, including the Federal government, agencies of the state government, health care providers, and the community of Native Hawaiians. New resources are required in order to undertake many of these recommendations -- to think it could be otherwise would be wishful thinking. On the other hand, new resources in themselves are not the only answer. The substance of these recommendations has instead focused on the need to change the mode of health care delivery in order to improve its accessibility and its acceptability to Native Hawaiians. Change will only be possible with a sincere commitment to improve the well-being of Native Hawaiians and flexibility on the the part of the many involved parties, including Native Hawaiians themselves.

Improving the health status of a population involves effort on many fronts, and not all the necessary changes can occur in a short time. Nevertheless, the Medical Task Force believes that now is the time to begin a process which requires the good will and cooperation of nearly every sector of our community.

