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STEVENSON, Bill Lee, 1933-
HEALTH NEEDS AND HEALTH SERVICES
AVAILABLE FOR EMPLOYEES IN A LARGE
INDUSTRIAL INSTALLATION.

The University of Oklahoma, Ph.D., 1968
Health Sciences, public health

University Microfilms, Inc., Ann Arbor, Michigan

THE UNIVERSITY OF OKLAHOMA
GRADUATE COLLEGE

HEALTH NEEDS AND HEALTH SERVICES AVAILABLE
FOR EMPLOYEES IN A LARGE INDUSTRIAL
INSTALLATION

A DISSERTATION
SUBMITTED TO THE GRADUATE FACULTY
in partial fulfillment of the requirements for the
degree of
DOCTOR OF PHILOSOPHY

BY
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Oklahoma City, Oklahoma

1968

HEALTH NEEDS AND HEALTH SERVICES AVAILABLE
FOR EMPLOYEES IN A LARGE INDUSTRIAL
INSTALLATION

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ACKNOWLEDGMENTS

My debts are great, as is my gratitude, for the generous help proffered from many sources during my doctoral study at the University of Oklahoma School of Medicine, and specifically, during the preparation of this dissertation. My debt to my chairman, Dr. Carl A. Nau, I can hope to express but inadequately. I shall ever be grateful to him for all his scholarly suggestions, for his patience and cooperation, and for his rare combination of competence and kindness.

I am deeply grateful to Dr. Robert C. Duncan, Bio-statistics Department, for guidance, encouragement, for painstaking and perceptive criticism, and for the benefit of previous scholarship in my area of interest during the preparation of this dissertation. His help has been invaluable.

To the members of my committee: Dr. Wilson D. Steen, Assistant Professor, Preventive Medicine and Public Health Department; Dr. G. V. Rice, Director, Cleveland County Health Department; and Dr. John Bruce, School of Pharmacy, I am grateful for helpful suggestions, competent guidance, and cooperation throughout this study.

Particular appreciation is extended to Mr. Jack Griffith for giving so generously of his time and helpful advice during this period of

graduate study.

I wish to express grateful appreciation for the complete cooperation extended by Colonel John R. Grunwell, Jr., Director, Base Medical Services, and the Oklahoma City Air Materiel Area. Without such cooperative support, this study would not have been possible. Special thanks must go to Mr. John Mott, the OCAMA coordinator for this study, for his counsel and untiring efforts at every stage of this study.

To my brother, Mr. L. M. Stevenson, Jr., I wish to express my gratitude for his unfailing assistance, understanding, and support through what were many trying times.

My greatest debt for interest and encouragement goes to my family--my parents, sisters, and brothers. Finally, to my wonderful children and, above all, to my wife, Joyce, I am eternally grateful for spiritual and material contributions, and her ability to tolerate and survive a significant level of anxiety generated by the author during the writing of this dissertation.

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CHAPTER I

INTRODUCTION

Industrial medicine has been defined as "the practice of medical supervision, preventive medicine and public health within the confines of an industry (1);" "the practice of medicine applied to the prevention and alleviation of sickness, injury, and physical deterioration among industrial workers (2);" " a science which deals with prevention, cure and alleviation of disease as it affects gainfully employed individuals (3);" and, "the contribution of medicine to the industrial life of the country, and as such is concerned with the study and control of the inherent and environmental factors affecting the health and well-being of persons at their place of work (4)."

The recognition of industrial health needs has existed since Hippocrates (460-377 B.C.) demonstrated that diseases had natural causes and recognized dangers of certain crafts and practices. Galen (A. D. 130-200), as well as Hippocrates, observed that certain occu-

pations and trades were detrimental to good health, and cited diseases common to miners, tanners, fullers, bearers of burdens, gladiators, sailors, soldiers, chemists, and professional men (5).

Paracelsus published Von der Bergsucht or Mountain Consumption in 1519. It is considered to be the first great primer in industrial medicine and gives weight to the claim that Paracelsus was the true founder of industrial medicine (6).

Bernardino Ramazzini (1633-1714), generally thought to be the Father of Industrial Medicine, published a text, in two editions, entitled De Morbis Artificum Diatriba ("On the Disease of Artificers, Which by Their Particular Calling They are Most Liable To"). The text, in 1705, was printed in English under the title of A Treatise of the Diseases of Tradesmen. The inclusive nature of Ramazzini's writings is reflected in his treatment of the effects of opiate laudanum on apothecary workers. "This," he stated, "is due to the tenuous atoms given off by such things in the process of pounding, for these atoms enter the internal organs of the body by open passages." He wrote also of the diseases of sedentary life (7), perhaps directing his remarks toward management.

Benjamin Franklin, in 1776, described the "West India gripes," or "dry gripes," a lead colic due to drinking rum prepared in stills with lead apparatus. The Commonwealth of Massachusetts then promptly banned the use of lead for this purpose (8). The malady

also was common among printers, plumbers, painters and others who worked with lead. Often, failure to wash before eating led to contamination.

William J. Middleton, the first Plant Surgeon of record, was employed by Pennsylvania Steel in 1884. The Crane Company, of Chicago, appointed Andrew M. Harvey (1868-1949) as the first known Medical Director in the United States. Robert T. Legge acted in a similar capacity for the McCloud Lumber Company, California, in 1899 as the second known Medical Director (9). Legge believed industrial medicine during the first half of the twentieth century consisted of sewing up cuts and caring for injuries as a result of trauma in hazardous occupations such as railroading, mining, and lumbering (10).

The preventive concept of industrial medicine made significant progress in the United States, particularly after World War I, bringing with it many new medical problems of modern industrial operations. The following, in chronological order, are some of the landmarks in the growth of industrial medicine in America prior to and following World War I (11):

- 1895 Nurses were first employed by an industrial organization (Proctor, Vermont)
- 1910 The First American Congress on Industrial Diseases. Workmen's Compensation Law in New York State

- 1911 Compulsory reporting of occupational diseases by California, New York, soon adopted by ten other states
- 1914 United States Public Health Service established an office on Industrial Hygiene and sanitation
- 1915 The American Association of Industrial Physicians and Surgeons, now the Industrial Medical Association, was organized
- 1916 Shipping in interstate commerce of goods produced by children was forbidden by the Keating-Owen Act
- 1917 World War I. The Working Conditions Service of the Department of Labor was established as a cooperative activity with the U. S. Public Health Service Office of Industrial Hygiene and Sanitation
- 1918 Establishment of industrial hygiene instruction in several leading University Medical Schools at the end of World War I
- 1919 Dr. Alice Hamilton, the first woman industrial hygienist and also the first woman faculty member appointed at Harvard University. Wisconsin passed a law making occupational diseases compensable.
- 1920 President Wilson signed the Smith-Fess Act establishing The Vocational Rehabilitation Program
- 1923 The Section on Preventive and Industrial Medicine and Public Health of the American Medical Association was formed
- 1924 The death of 18-20 employees among watch dial painters in New Jersey prompted studies of health hazards of the radium watch-dial industry

- 1926 The American College of Surgeons appointed a Committee on Industrial Medicine and Traumatic Surgery and later adopted the Minimum Standards for Medical Service in Industry
- 1928 The International Commission on Radiation Protection was established
- 1935 The Industrial Hygiene Foundation of America was founded.
- 1937 The American Medical Association established a Council on Industrial Health
- 1938 The American Conference of Governmental Industrial Hygienists was organized to provide sound administration of governmental industrial hygiene activities
- 1941 The start of World War II resulted in increased pressure on industry with a concomitant growth in occupational health needs
- 1950 The American Foundation of Occupational Health agreed to carry on the program of evaluation and certification of medical services in industry previously conducted by the American College of Surgeons
- 1953 President Eisenhower created the Department of Health, Education and Welfare, giving it cabinet status
- 1963 The Clean Air Act was passed, providing grants to states and localities to partially cover the cost of air pollution control
- 1964 The American Public Health Association added a Section on Radiation Health
- 1965 The U. S. Government issued a statement on Mission "Safety-70," aimed at reducing by 30 per cent the frequency of work injuries to Federal civilian employees by 1970.

1967 Hospital and community screening programs of automated procedures, using computer analysis of EKG's, spirogram, brain waves, heart sounds, serum protein abnormalities, cardiac output, exercise electrocardiograms, and throat smears, are now available

The utilization of medical staff in industrial installations appears progressively closer to sound economic sense than to philanthropy. Industry is beginning to examine and evaluate its medical services. Collisson states that an industrial health program must be evaluated from the standpoint of profit and loss in the same manner any other industrial operation would be examined (12). Industrial physicians, statisticians, and business executives experience mixed views on industrial health program cost. Some feel that only economic justification is warranted; others believe that industrial relations factors are sufficient for justification of the investment; and still others implement both appraisals in their evaluations (13).

Factors influencing cost are:

1. Type of service (basic needs, type of industry)
2. Conceptions of personnel
3. Prevailing market (salaries, equipment, supplies)
4. Administrative methods
5. Number of employees

The type of service rendered certainly should be a factor in the cost of a program. An industry, for example, which manufactures

precision instruments needs an extensive industrial vision service. Some other plant may require an extensive toxicological program. In any case, specialized services will increase the cost of the program.

Conceptions of the organization's personnel may differ. The executive may think that a certain type of service is justified only if it is less expensive than another. The professional personnel may hold different opinions. The physician, nurse, and, in some instances, the personnel directors and safety supervisors, may feel they have important ideas regarding the kind and extent of services to be rendered.

The prevailing market for salaries of professional personnel and for prices of equipment and supplies controls the cost of these items.

Administrative methods may affect the cost of an industrial health program by utilizing centralized systems, such as buying supplies on a wholesale basis with distribution from central points. Unit cost of equipment and supplies may be reduced, over that which is obtained in decentralized groups, when the local medical officer can order, with some limitations, what he chooses.

The cost of the service is not always directly proportional to the number of employees. Some small industries have a unit cost per person per year considerably above the cost in larger industries with well-administered services.

Gehrman, as quoted in Fleming, et al (14), developed a plan

for plant managers to evaluate medical services and provide a better understanding of what they can and should accomplish. Section I of the twofold plan consists of questions covering the plant physician's qualifications and functions. Section II contains questions for the plant manager concerning his organization's attitude toward medical service and its financial support of the program.

CHAPTER II

HISTORY

To understand the environment in which the occupational health program, upon which this study is based, is to function, it is appropriate to view the background of Tinker Air Force Base and its Occupational Medicine Branch (15).

Background

Tinker was activated on March 1, 1942. During World War II, its industrial plant repaired B-24 and B-17 bombers and fitted B-29's for combat. The first aircraft to drop an atomic bomb on an enemy target was modified at Tinker. Throughout the Korean conflict, Tinker continued its output--keeping the planes flying and shipping supplies to the Far East. The base played an important role also in the Berlin and Cuban crises as it does now in the Vietnam conflict. Today, Tinker is Oklahoma's largest air force base and is one of America's ten most active in aircraft traffic. Perhaps even more important is Tinker's role in national defense, i. e., providing logistical support to the strategic, tactical, and air defense elements of our aerospace forces.

Mission

The principal responsibility of Tinker is the Oklahoma Air Material Area mission (OCAMA). OCAMA is one of the eight air material areas in the United States. These area commands and specialized depots report directly to Headquarters Air Force Logistic Command (AFLC)--the logistic arm of the Air Force.

AFLC supplies and maintains aerospace weapons and ground equipment required for the Air Force throughout the world. AFLC has named different air material areas as system support managers for specific weapons. OCAMA is the system manager for bomber and tanker aircraft produced at the Boeing Aircraft Company. Other prime OCAMA responsibilities include jet engines manufactured by Allison, General Electric, Pratt and Whitney, Westinghouse, and certain accessories and guided missiles produced by McDonnell Aircraft Company, and the North American Aviation Corporation.

As part of its prime responsibilities, OCAMA has been assigned certain property classes. It is responsible for computing requirements for quantity and type of items needed; for their procurement and production; for controlling their distribution; and for arranging for their periodic overhaul and reconditioning at some air material area depot or contractor overhaul agency.

Organizational Structure

There are thirty-seven separate organizational entities at

Tinker and each performs a separate function. OCAMA is the largest of these organizations as its mission is the primary reason for the existence of the base. OCAMA operates the Civilian Personnel Office which administers to some 20,861 civilian workers: 19,848 work in direct support of the OCAMA mission; 1,013 are assigned to non-OCAMA organizations. Assigned personnel by organization is shown in Table 1.

TABLE 1
ASSIGNED PERSONNEL^a

Commander	3
Personnel and Administration	458
Staff Judge Advocate	14
Plans and Management Office	84
Safety Office	12
Office of Information	9
Comptroller	922
Directorate of Material Management	3,057
Directorate of Maintenance	9,668
Directorate of Supply and Transportation	3,523
Directorate of Procurement	547
Base Commander	1,525
Maintenance Engineering Process Application	2
USAF Home Town News Center	24
OCAMA totals	19,848
Non-OCAMA totals	1,013
Grand Total	20,861

^aCivilian Personnel Strength and Allotment Report RCS, OCAMA-E201-1, 17 January 1967

Industrial Complex

Tinker, Oklahoma's largest single industry, employs approxi-

mately five times as many civilian as military personnel. There are approximately 20,000 civilian employees; 12,000 are white-collar and 8,000 are blue-collar workers. Fifty-seven per cent are veterans of military service and 21 per cent are women.

The base communication system, recreational facilities, and utilities are larger than those for a city of 30,000 persons. The base requires about \$200,000,000 per year and a complex computer center to keep it operating.

Tinker's highly automated jet engine overhaul facility is the largest in the world. The air freight terminal can process an estimated 15,000,000 pounds of cargo each month. A completely integrated intercommunication network, including closed circuit television, tele-talk, and other modern communication systems, insures effective management of the terminal. In view of the complexity of modern aircraft and highly technical supporting systems, maintenance has become scientific, much in contrast to the "tool kit" maintenance of former years. Approximately 400,000 different items are stocked in the supply system, occupying over 2,000,000 square feet of storage space in eighty storage stockrooms and four open, hard stand areas. This inventory has an estimated value of approximately \$2,000,000,000. The Procurement and Production Branch awards contracts amounting to approximately \$600,000,000 annually to large and small business firms throughout the United States. Oklahoma firms are awarded contracts amounting to approximately \$50,000,000 annually.

Tinker is a modern industrial complex, and in this respect it is somewhat unique among Air Force installations. Its work environment is more related to a large private industrial corporation than is found in most military installations. The main feature distinguishing it from corporations is its non-profit nature. On the other hand, it is probably more concerned with economy than most industrial corporations.

The Occupational Medicine Branch
of the Base Medical Service

It is the responsibility of the base commander to insure the health and well-being of both military and civilian personnel. This responsibility is delegated to the Surgeon who commands the base hospital. Its medical and dental staffs are reserved for the care of military personnel and dependents, while the Preventive Medicine and Occupational Health Services Branch is maintained for civilian employees.

The Occupational Health Service performs pre-employment physical examinations as well as periodic follow-up examinations. It provides complete medical and surgical service to personnel who become ill or are injured as a result of their occupational duties. Also, the medical and nursing staff assures emergency care of non-occupational illness or injury. In addition to its main dispensary, the Section maintains three first-aid stations in the industrial areas which

are staffed by qualified industrial nurses. Finally, the branch provides instruction for employees through its Health Education Section.

Another agency of this branch, the Sanitary and Industrial Hygiene Engineering Section, has as its function the control of the workers' environment for the prevention of occupational disease or illness. It is staffed with qualified professional engineers and two preventive medicine technicians. They conduct surveys of occupational health hazards and investigate and maintain data pertaining thereto. Some of the problems they confront include exposure to toxic chemicals, excessive noise, fumes, dusts, vapors, radioactive materials, and matters of general industrial hygiene.

CHAPTER III

PURPOSES AND DESIGN

What are the health needs and health services available to employees of large industrial firms? This is an important question and yet difficult to answer. A model industrial health program defies description because programs vary with each industry, according to size, product, location, and environment.

The objectives of occupational health programs are varied. The major goal is to secure from industry mutual respect, confidence, and good will by methods consistent with sound ethics while maintaining adequate occupational health standards. Therein is the basis for more specific objectives.

Business executives and the medical profession agree that occupational health is an accepted discipline and an integral part of management. Therefore, evaluation of medical department performance has become a management function of the medical director or his administrative assistant (16). It is their responsibility to examine the medical program periodically in order to review and appraise the health unit. This is done in terms of the activities of the health program.

The Current Need

An example would be the initiation of a medical program so designed that those persons working under hazardous conditions within an organization may have preventive as well as curative medical care.

Extent of Applicability

This area involves the determination of the effectiveness of the entire health program as it relates to those needs and conditions found to exist upon proper evaluation.

Productivity of Different Projects in the Existing Program

This activity concerns the positive and/or negative results of existing projects within the entire program design (glaucoma screening, safety glasses, etc.).

Planning Procedures

This area involves the evaluation of the medical program planning process, its success in meeting the medical needs, current and future, of the organization.

A Presidential directive issued on June 18, 1965, requires businesses with government contracts or Federal employees to provide an adequate, up-to-date occupational health program offering certain protective, preventive, and therapeutic medical services to employees. This directive can be the basis for an appraisal method of services

provided by large industrial installations in occupational medicine, industrial hygiene, health physics, and comparable engineering control programs.

As a general guideline for scope and content of activities and necessary organization of medical department staff and facilities for an occupational health program, the policy statement of the Council on Occupational Health of the American Medical Association provided the basis for this present study (17). This guideline has definite merit since it states clearly the types of services deemed necessary in a modern occupational medical program without specifying details -- such as frequency of examinations and types of procedures -- to prevent necessary flexibility from one program to another.

Various types of industrial operations employed in various areas call for use of different types and techniques of medical examination. Although emphasis in projects, methods, and procedures used also varies according to the needs of the special situation, there is a minimal service that must be rendered in an occupational health program. This basic minimum differentiates the occupational health program from a first-aid only service and from a program designed only to assist a personnel department to select the medically qualified applicants for employment.

In developing this study, designed to evaluate comprehensive occupational health programs within industrial environments, four

objectives have been recognized. These are:

1. To define the scope of an up-to-date occupational health program.
2. To develop a basis of evaluation whereby the occupational health program provided by different industries might be significantly compared.
3. To provide information necessary for the up-dating of the occupational health program.
4. To encourage "self-appraisal" within an occupational health program in order to promote proper planning and secure re-direction of activities when necessary to conduct a satisfactory program.

The purpose of this study is not to ascertain the quality of performance of an individual physician, nurse, or other staff member giving service, but to make an attempt to identify the value and pertinency of the medical activities and therefore the effectiveness of the medical program as a whole.

The Types of Information Desired

Stein (18) gives these examples of the types of facts which an occupational health section might need in order to appraise what should be done to increase employee understanding and support:

1. Is the subject matter of the occupational health section familiar to employees?
2. In what sections of the industrial population lie the greatest actual or potential reservoir of antagonism or enthusiasm and support?

3. Are people coming to you mistakenly for types of services you do not offer, or failing to come for services you do perform?
4. What are your relations with other professional groups in your own field and in allied fields?
5. What are your relations with organized groups in your community?
6. What publicity was undertaken over the last several years--house organ articles, booklets, annual reports, etc.--and what would the employees have learned from this publicity about the occupational health section?

In addition to these, it is even more important that management know what employees desire from the occupational health section.

There are three essential parts to the data gathering portion of this study. The first part, Personnel Information and Welfare Benefits, is directed to a description of the characteristics of the plant population eligible for service, of the physical and socio-economic aspects of the plant environment, and of the administrative regulations concerning those in the plant population who receive service.

The second part of the study, Health Program Activities, describes the medical program itself, its organizational structure, facilities, services rendered, productivity, administrative costs, and the inter-relationships existing between the medical directors and other management, and between the medical program and allied disciplines and activities.

The third part of the study consists of a questionnaire designed to provide information given by employees during personal interview which can give insight into existing health conditions and the awareness and attitude of the employee toward the occupational health program.

Before attempting any investigation, one must determine whether the persons to be questioned possess sufficient information. Employee apathy or ignorance may lead to inconclusive results. If these characteristics are high, the survey should be terminated.

Furthermore, care must be exercised in selection of employees to be interviewed; an outspoken minority, for example, might obscure the responses of a diametrically opposed majority.

Methods of Investigation

Several of the methods of investigating employee opinion are formal polls, informal surveys, suggestion boxes, advisory committees, observation of house organ (industry newspaper), records of requests and complaints, "gripe" sessions, consultations of labor unions, and staff meetings. Very rarely would a single method indicate a constructive opinion of an occupational health program. Instead, an industry should select several complementary methods to provide a more complete picture.

It is sometimes difficult to determine where an informal survey ends and a formal poll begins. The two have much in common, but the distinguishing characteristic is accuracy. The formal poll

attempts to achieve a high degree of accuracy by refinements in technique. Accuracy is sacrificed in the informal survey for economy of time, effort, and money. A formal poll is extensive (covers many people to insure validity) and intensive (attempts deeper measurement).

Accuracy in a survey or poll depends upon (19):

1. Having questions with easily evaluated answers.
2. Polling a sample carefully selected to be representative and of sufficient size to be valid.
3. Using interviewers who are trained to avoid prejudice by appearance, uniform, side comments, or manner.
4. Using great care in interpreting the data.

The Literary Digest's ill-fated poll of the 1936 national election shows the difficulty in obtaining an accurate picture (20). A sufficiently large sample did not alter the fact that all respondents were selected from telephone directories and that the portion of the population that could afford telephones were more pro-Republican at the time. Consequently, the poll indicated that the Republican candidate was preferred by the majority of voters.

In conducting informal surveys, one must prepare questions carefully and decide how to obtain representative coverage. It is not necessary to cover each group in proportion to their number; however, each group concerned should be included and weighted. Informal surveys are of great value because they are inexpensive, can

be made rapidly, and do not require trained personnel to administer them. Accuracy is sacrificed but trends are usually clear.

The Preparation of Questions

Knowing what facts are desired is not enough. The facts must be obtained. In most types of investigation, the facts are obtained by the use of questions. Questions in occupational health investigations must be very carefully prepared to obtain unbiased answers. This is true in preparing oral or written questions regardless of the method of investigation (whether poll, panel, or interview). Ambiguous, slanted, and unintelligible questions do not fulfill this basic purpose.

A good question should have the following essential characteristics

(21):

1. Uses words that are understood by the group being questioned.
2. Uses correct and simple grammatical construction.
3. Avoids prejudicial words.
4. States as clearly as possible what is meant to be said.
5. Avoids misleading generalities.
6. Avoids suggesting a particular answer.

A pilot survey will permit elimination or revision of questions which produce confused, slanted, or meaningless answers (22).

Questions are of three basic types (23): direct, open-end and

limited response. The direct question may be answered only with "yes," or "no," or "undecided." Therefore, results are easily tabulated. Direct questions are used most frequently on written questionnaires, since it is difficult to obtain simple negative or affirmative answers from an oral interview. The interviewer, however, may evaluate the oral answer and then assign a "yes" or "no" on the basis of the statement. This type of question does not measure intensity of feeling, nor does it reflect reasons for the opinion. In addition, individuals cannot qualify their recorded answers.

The open-end question cannot be answered by "yes" or "no," but requires a detailed response. It indicates the subject's reasoning, intensity of feeling, and qualifications of his answer. This type of question requires a more highly trained interviewer and is more time consuming and therefore costly. A problem arises also as to how the responses will be recorded--by direct recording, by notation, or from memory. The results are difficult to place in concise form. Evaluation may become more complicated if care is not taken to avoid prompting answers by the manner of questioning.

The limited response question combines many of the best features of the direct and open-end types. It provides the respondent with a series of answers from which to choose, thereby reflecting varying shades of feeling or different viewpoints. Because of the simplified structure results are easily tabulated. The limited response still cannot give an indication of the respondents' reasoning or

give an accurate account of the intensity of feeling or qualifying comments.

Any type of question may be slanted by the sequence of its parts, wording, and the circumstances under which the answer was obtained (such as the race, uniform, or appearance of the interviewer).

An attempt was made to take into consideration the problems listed above in the design of the sample survey questionnaire, which may be found in the Appendix.

Description of the Survey Sampling Plan

The survey made during this study must be classified as informal. It was controlled to the point that different sized directorates were represented in proportion to their number.

Due to the limitations of time and available resources, a maximum of 250 interviews could be conducted adequately in this study.

A proportional stratified sampling plan was chosen to insure a representative sample. The total population available for study numbered approximately 24,000; a one per cent sample would provide sufficient information in view of aforementioned limitations. This type of sampling plan may also be termed the self-weighting plan (24). It is adequate as a purely descriptive medium.

The purpose of this study was not to test any a priori hypothesis. Furthermore, no previous knowledge of group totals or variances for the variables investigated were available; therefore, consideration

was given to the view that this type of sampling approach would furnish baseline information for those planning more extensive surveys of the same population.

Sampling Plan

A stratified random sample was selected from a punched card list of all Tinker Air Force Base employees. The thirteen primary sampling units were directorates (groups) appearing on the personnel organization chart. The sample size for each stratum was one per cent of the population in each directorate having more than 100 employees. All directorates having less than 100 employees were combined and then a one per cent sample was selected from the combined groups.

The actual selection of the sample was accomplished by determining the number of people to be obtained from each stratum and then using a table of random numbers (25) to select positions in the stratum list. The list of positions was then programmed into the IBM 1701 computer and the sample was collected directly from the punched card list of employees.

Date Collection

Personal interviews with each of the 248 employees selected in the sample were conducted during July, 1967. Interviews were conducted during each of the three work shifts to comply with respond-

ents' regular working hours. In order to insure contact with interviewees and to reduce time away from the job, the interviews were held at locations convenient to the employees' work place.

The questionnaires were filled out by the author directly from responses of the interviewees. The completed questionnaires were used as the source documents in the subsequent tabulations and analysis of the data.

CHAPTER IV

RESULTS

Personnel and Environmental Programs Relative to Occupational Medicine (15)

Personnel

One military and four civilian employee physicians are available during the day shift, Monday through Friday, at the main dispensary. Military doctors are available at the base hospital the remaining 16 hours, Monday through Friday, and serve the employee population all shifts on Saturdays, Sundays, and holidays.

Military doctors spend at least 60 hours per month assisting in the operation of the Occupational Medicine Section. Work consists of directing operations (Occupational Medicine Section is under the direction of the Aeromedical Services Branch.), giving physical examinations to civilian employees, and reading x-rays.

Forty to fifty Specialists (physicians) are utilized for treatment and consultation of occupational illnesses and injuries. Other personnel working in the Dispensary are:

19 Nurses

1 Health Education Coordinator
 1 Optometrist
 1 Optometrist Aid
 1 X-ray Technician
 12 Medical Clerks

The base hospital furnishes the following personnel on a part-time basis: laboratory, ambulance service, pharmacy, supply, and custodial services.

Facilities

A. Approximate size of the area occupied by the facility--8,280 sq. ft.

Aid Station A	750 sq. ft.
Aid Station B	650
Aid Station C	340
Main Dispensary	5,990
Optical Clinic	1,550

B. Number and type of equipment in or available to facility

1.	Hospital beds	7
2.	Treatment tables	13
3.	Examining or treatment rooms	9
4.	X-ray machines	1
5.	Dark rooms	1
6.	Laboratories	1
7.	Physical therapy equipment	11
8.	Traction facilities	1
9.	Electrocardiographs	1
10.	Surgical facilities	1
11.	Eye refraction equipment	1
12.	Glaucoma test equipment	3
13.	Pharmacy	1
14.	Audiometers	3
15.	Oxygen equipment	5
16.	Spirometers	10

Services (One Year Period)

A.	Treatment	
	1. Of minor indispositions	40,000
	2. Of occupational illness and injury	13,455
	3. Of non-occupational illness and injury	67,899
	4. Bed rest for short periods	2,000
	5. Administration of medication or treatment prescribed by employee's physician	200
B.	Regular physical examinations	
	1. Pre-employment	2,376
	2. Periodic	0
C.	Mass screening examinations for	
	1. Hearing	9,367
	2. Vision	
	3. Glaucoma	1,200
	4. Chest x-ray	2,776
	5. Diabetes (State Health Department)	6,000
	6. Pap smears	0
D.	Safety and work-environment inspections	2,024
E.	Special examinations for	
	1. Fitness for duty	1,000
	2. Fitness for continued assignment or for re-assignment	2,085
	3. Disability retirement	230
	4. Motor vehicle operator	50
	5. Civil Service Commission, Executive, Courtesy	64
F.	Immunizations	
	1. Influenza	5,450
	2. Polio	2,299
	3. Tetanus	1,710
	4. Smallpox	2,300
	5. Typhoid	500
G.	Health counseling to individual employees	4,000

H. Health information and education program

1.	Articles in house organ	200
2.	Pamphlets	10,000
3.	Film showings	50
4.	Posters	300
5.	Group meetings and training	30

Costs

Distribution of total cost for fiscal year

1.	Personal (excluding administrative overlay)	\$ 193,630
2.	Equipment and supplies	20,000
3.	Other objects	15,000
4.	Total	\$ 228,630

Distribution of total cost for fiscal year, by amounts spent for

1.	Treatment of occupational illness	\$ 94,607
2.	Treatment of non-occupational illness	48,000
3.	Immunizations	8,500
4.	Screening examinations	2,000
5.	Inspection services	27,915
6.	Information and education activity	3,000
7.	Physical examinations	44,600
	Pre-employment physical	18,000
	Fitness for duty	7,000
	Disability retirement	2,300
	Fitness for continued assignment and periodic physical examination	16,628
	Other	480
Total		<u>\$ 228,630</u>

Benefit and Welfare Programs

Federal employees group life insurance. All persons working for Tinker Air Force Base on a full-time basis, and paid from appropriated funds, may purchase term group life insurance at nominal cost. Temporary employees are not eligible for this protection. The

insurance remains in force as long as the worker is employed by the Federal Government regardless of age. This insurance costs employees twenty-five cents per pay period for each thousand dollars of insurance protection. The double indemnity policy also pays certain benefits for the loss of an eye, hand, arm, foot, or leg.

An employee must either take all insurance to which he is entitled or none at all. Should an employee leave his job, he can convert any part or all of his insurance to a standard policy at regular premium rates.

If an employee retires because of disability, or after twelve years of service, he may keep his group life insurance (but without double indemnity and dismemberment features) without further payment of premiums. The policy is de-valued at the rate of 2 per cent per month until it has reached a maximum reduction of 75 per cent of the face value at the time of the employee's retirement. The remaining 25 per cent is retained without cost to the employee as long as he lives. The reduction in face value of the policy begins either when the employee reaches age sixty-five or at the time of retirement.

Group health insurance. On 28 September 1959, the Federal Employees Health Benefits Act became law 1 July 1960. As a result, all employees except those hired on a temporary basis may join one of the group plans offered. The employee has thirty-one days from

time of employment to decide whether or not to enroll in the Health Insurance Program. There are two plans available: the Service Benefit Plan and the Indemnity Benefit Plan. The Government contributes approximately one-half of the total cost toward either plan. This provides hospital room benefits and covers a major portion of the cost of surgery.

Work injury benefits. The Federal Employees Compensation Act provides compensation for death or disability, medical care, and rehabilitation service for all civilian employees and officers of the United States who suffer injuries in performance of their duties. It is administered through the Bureau of Employees Compensation of the U. S. Department of Labor under authority from the Secretary of Labor. The Act has provided relief for injured Federal employees for half a century since its enactment on 7 September 1916.

Injuries at work and diseases resulting from employment are covered, but no benefits may be paid if the injury or death is caused by willful misconduct of the worker with intention to cause the injury or death of himself or another, or if intoxication is the cause of injury or death.

To be eligible for compensation benefits, an employee injured at work must follow regulations of the Bureau of Employees Compensation. The employee's supervisor should inform him of the exact procedure to be followed, instructing him to report every injury

immediately. The supervisor must also arrange for immediate first aid or appropriate medical care at the proper location, i. e. , aid station, dispensary, clinic, or hospital. The employee or his representative should complete a written notice of injury on the appropriate form as soon as practicable. The supervisor is responsible for conducting appropriate inquiries and properly recording facts and circumstances of the case.

If an employee sustains injury at work, he is entitled to first aid and full medical care, including hospitalization if the situation warrants, without cost to him. He must use Government medical facilities and designated private physicians. Should these facilities not be available, other arrangements should be made to insure prompt medical care.

For injuries caused by someone not connected with the Government under circumstances creating a legal liability on that person for payment of damages, the Bureau may require the employee to assign to the Government his right of action to prosecute. If damages are recovered in excess of benefits paid by the Bureau, that excess is retained by the employee.

Compensation is based on the employee's monthly pay at the time of injury. The least amount paid for a month of total disability is \$180 unless monthly wage rates are lower, in which case an amount equal to the monthly wage is paid. The greatest amount

available for a month of total disability is \$525.

In determining the amount of disability compensation, the following methods of compensation usually apply. For the first ninety days of disability beyond the leave period, the daily wage rate is multiplied by two-thirds or by three-fourths if the employee has a dependent. This figure is then multiplied by the number of work days the injured received no pay because of disability.

Every Tinker Air Force Base employee receives instructions concerning his rights under the compensation law as well as the procedures he should follow in the event of injury or disease sustained in the performance of duty.

The statistics on Tinker Air Force Base accident experience shown in Table 2, which were taken from the Personnel Office compensation report for the calendar year 1966, indicate the need for careful attention to safety precautions and dissemination of information concerning compensation procedures.

Bio-Environmental Engineering Section

The Bio-Environmental Engineering Section of Tinker Air Force Base evaluates the working environment to assure that safe and hygienic working conditions will be maintained. This service makes determinations for adequacy of illumination, ventilation, temperature, humidity; takes atmospheric samples and interprets the exposure to toxic materials such as gases, fumes, vapors, dusts,

TABLE 2

COMPENSATION FOR CLAIMS FILED FOR ACCIDENTAL
INJURY, TINKER AIR FORCE BASE, 1966

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Total Claims Filed	85	78	106	63	68	67	71	93	64	92	48	53
Break- down New cases	55	53	81	47	52	45	49	79	52	82	40	43
Recur- rences	30	25	25	16	16	22	22	14	12	10	8	10
Cumu- lative	85	163	269	332	400	467	538	631	695	787	835	888

and mists, and makes appropriate recommendations for the correction or control of unsatisfactory conditions.

Additional inspection service of the water supply, sewage disposal, drinking facilities, swimming pools, insect and rodent control and sanitary measures in general are made.

Health Physics

The Bio-Environmental Engineering group at Tinker Air Force Base plans and conducts a comprehensive program with the objective of minimizing or eliminating exposure of personnel and the surrounding community to ionizing radiation or radioactive materials.

Periodic surveys of radiation areas are conducted in order

to detect, measure, and evaluate the nature and extent of ionizing radiation or radioactive materials to which the worker could potentially be exposed.

The amount of radiation to which personnel are exposed is measured by means of devices worn by workers. The degree of exposure or dosage of ionizing radiation received by the worker during the course of his normal duties is documented and recorded in the individual's medical records.

Research and special studies in methods of evaluating and measuring potentially harmful quantities of ionizing radiation and radioactive materials is conducted in novel research and development situations.

In accordance with appropriate AEC and ICC standards, proper collection, packaging and periodic disposal of gaseous, liquid and solid radioactive wastes is maintained.

The Bio-Environmental Engineering group, in association with the Training Branch, conducts formal and informal training in the hazards of ionizing radiation and methods of evaluation. In addition to training, the Bio Environmental Engineering group develops and disseminates promotional and educational material among personnel engaged in work with ionizing radiation and radioactive materials.

Control of radioactive materials by Bio-Environmental Engineering personnel is one of the most important functions of this group. It is their responsibility to conduct, in coordination with the Radio-

isotopes Committee, a continuing, accurate inventory control and records system of all radioisotopes (by-product material) to insure that the base does not exceed its authorized maximum quantities as specified in the AEC By-Product Material license.

Safety

The responsibility for the Tinker Air Force Base safety program rests with every person on the base, from the Commanding General to the line employee, but more specifically safety is the responsibility of four broad elements:

1. Ground Safety Officer
2. The Employee
3. Top Level Management
4. The Supervisor

The Ground Safety Officer is responsible for the establishment and direction of the base Accident Prevention Program. Safety technicians from this office conduct continuous inspections to insure that working conditions, tools, and equipment are made as safe as possible. Ground Safety is also available to supervisory personnel at all times to render any assistance pertaining to safety that a supervisor may need, such as supplying materials for use in safety meetings and advising as to proper types of safety equipment. Aid in setting up an organized safety program and providing technical assistance in engineering problems to insure safe mechanical equip-

ment is another responsibility of Ground Safety.

In addition to the duties listed above, assistance is given in the investigation and corrective action in the event of an injury or damage to government property. Ground Safety personnel also insure that proper safety clothing and other protective devices are provided and used when necessary. Industrial vision conservation is an important part of this program and is aimed at evaluating vision requirements, preventing eye injuries, improving job-related visual efficiency, early detection of eye diseases, and promoting good eye hygiene.

The employee is responsible for maintaining his work area in a safe condition so as to prevent injury to himself or others.

The responsibility of management personnel is to insure that employees have safe working conditions which include proper and adequate tools, protective safety equipment, and in general, safe operational facilities.

The immediate supervisors' greatest responsibility at Tinker Air Force Base is that of maintaining adequately safe conditions and safe practices. His knowledge of the job, his know-how as to its requirements and purpose, tools, equipment, and methods is ideally situated for the prevention of accident. The safety of his employees is a basic responsibility of any supervisor and one in which he is in the best position to insure at all times. He is the key to efficient and safe operations. Studies throughout the Air Force program indi-

cate that the success of any accident prevention program depends almost entirely upon the help and cooperation the program receives from supervisory personnel at the working level.

Safety is important to Tinker Air Force Base in that sound safety measures are tied in with all the factors which, in combination, create a high level of production. A basic demand at Tinker Air Force Base is the maintenance of high quality production. The safety program at Tinker Air Force Base strives to achieve the following benefits:

1. To improve working conditions
2. Reduce costs of production and save money for other activities
3. Allow more work to be completed
4. Reduce human suffering
5. Reduce personal worries of employees, both on and off the job
6. Improve job security
7. Build better employee morale and better employee-management relations
8. Reduce damage to equipment and materials
9. Prevent short-handed crews

The need for a good safety program can be demonstrated by statistics in terms of dollars and cents as well as man hours lost. In 1966, there was a total of 107 non-disabling injuries and 4,688 disabling injuries at Tinker Air Force Base, a cost of \$264,956.00 and

9,024 man hours lost or \$11.65 per capita per annum.

Health Program Activities

Health Education

Many cases of occupational disease and accident are due only to ignorance on the part of the worker. In this area, management has an opportunity and obligation to assist the employee (26). The health education program at Tinker Air Force Base, authorized by the Air Technical Service Command, is not confined to ordinarily accepted procedures in this field. Instead, it is an all-inclusive program covering every condition and activity that either directly or indirectly influences or affects the mental and physical well-being of the employee. It includes problems of transportation; housing, living conditions; working conditions; any personal, family, job, or supervisory maladjustment; mental attitude; morale; home sanitation; plant sanitation; individual health; family health; group health; correct living and right thinking (15). Its purpose is to develop a healthier and happier employee through an activation of his knowledge and experience in right thinking and right living.

In addition to individual employee problems, the health education program includes the promotion and maintenance of amicable relations between various departments, in particular, between the Medical Department and others. In this connection, the Health

Educator acts in a liaison capacity between the Medical Department and all other departments. The office of health education is an interested and impartial clearing house to which both employees and management can take problems involving individual or collective physical health or mental attitudes.

Based on this broad interpretation of health education, the Health Educator is charged with certain responsibilities. Among these are the maintenance of permanent records of absence due to sickness and the specific sickness responsible; computation of facts and figures based on these records; presentation of these facts to appropriate persons; formulating and distributing remedial measures; providing instruction designed to correct contributing causes; and training food handling personnel responsible for feeding employees. An additional responsibility is directing or assisting in the organization and presentation of any program affecting morale, absenteeism, special health hazards, or any other subject or condition not falling within the specific purview of some other established department or authority.

The Tinker Air Force Base health education program is established in the aerospace medicine service (or aero-medical service) for military personnel, dependents of military personnel, and civilian personnel. Health education is a primary function of all personnel assigned to the Aerospace Medical Service. All medical service personnel assist in dissemination of health information by

considering every patient or professional contact as an educational opportunity.

The Health Educator maintains full cognizance of health education activities of personnel under the direction of base medical services including well-baby, prenatal, and adult health clinics and food handler training.

Health education in hazardous work areas represents another part of the program. Precise instructions outlining work procedures, with emphasis on health and safety measures, is given to each employee before he is assigned to such jobs. Hazardous work areas are closely monitored from a health teaching standpoint to determine future training requirements based on such factors as:

1. A change in work procedures
2. New health and safety rule concepts
3. Injury or illness that might be attributed to non-adherence to established health and safety rules

In addition to the health education policies already described there are also mandatory health courses: new employee medical orientation, management-supervisory safety area, and food handler training courses.

Each new employee must understand the medical services provided and the rules to be followed in order to realize fully the benefits of the medical program. Points emphasized in orientation are:

1. Brief outline of the medical unit
2. Health education
3. Reporting illnesses and injuries
4. Observance of health and safety rules
5. Reporting unhealthy or unsafe working conditions
6. Calling the Health Educator when necessary

Still another method of health education employed by the Health Educator is the more direct method of individual health counseling which involves specific advice to individuals.

General health programs coordinated by the Health Educator include:

A. Immunization

1. For occupational hazards: Rocky Mountain Fever, tetanus, etc.
2. For official international travel: smallpox, tetanus, typhoid, paratyphoid, cholera, typhus
3. For possible epidemics among the employee population: influenza
4. For prevention and eradication of disease: smallpox and polio
5. For prevention of diseases due to injury: tetanus

B. Mass Screening Programs

1. Vision testing
2. Glaucoma detection

3. Diabetes screening
 4. Cancer detection
- C. Health Education Publicity
1. Regular house organ articles
 2. Special bulletins and leaflets
 3. Lectures and group conferences on health subjects
 4. Health posters
- D. Training Occupational Medicine Section Personnel
1. Tours on and off base
 2. Films
- E. Visiting Nurse Activities
1. Visiting cases of sickness in the home
- F. Special Requirements
1. Red Cross first aid courses
 2. Closed chest heart massage
 3. Remedial driving
- G. Health Education Courses Presented to Employees and Family
1. Prevention of Cardiopulmonary disease
 2. Weight control and physical fitness
 3. Summer health hazards
 4. Health in retirement

Physical Examinations

Pre-employment examinations. Physicians in the Occupational Medicine Section at Tinker Air Force Base are responsible for evaluation of the health and physical capacity for work of both current employees and applicants for employment. Selective job placement is the keynote to effective utilization of manpower. It is founded primarily on two principles: First, the physical requirements of the job; and second, the physical capacity of the individual. The first principle may be determined by either thorough job analysis or utilization of the supervisor's evaluation of the job at the time of each placement. The second may be determined only by a thorough medical examination. Job placement is always considered when pre-placement examinations are made.

Rejections. The rate of rejections of job applicants for medical reasons has declined steadily for many years (15). In 1941 the rejection was in the 6-10 per cent range, but has been reduced steadily to the present 0-5 per cent range. This reflects the progress made in matching applicant to job on the basis of its physical demands. There is increasing awareness of the fact that "handicap" is merely a term of degree. When a handicapped applicant is matched to a job for which he is suited, the handicap no longer exists in terms of employment. The Annual Report on the Program for Employment of the

Handicapped (15) bears out this point fully. Statistics compiled by the Personnel and Administrative Office indicate that 4,669 handicapped persons are currently employed at Tinker Air Force Base. This figure represents approximately 24 per cent of the civilian work force.

A breakdown of the types of handicaps was as follows:

Amputation	43
Deformity or impaired function--	
upper or lower extremity	1,128
Vision handicaps	955
Hearing handicaps	89
Controlled Diabetes	34
Controlled Epilepsy	15
History of emotional or behavioral	
problems	121
Mentally retarded	5
Other (including allergy or other re-	
curring or chronic condition not	
listed)	2,128

Periodic health examination. While the periodic physical examination was previously rare, it presently is considered to be an integral part of a complete health program.

At Tinker Air Force Base, the periodic program of examinations or tests at suitable intervals is intended to detect evidence of ill health related to employment conditions and to evaluate the health status of the individual in relation to his job assignment. Examinations are required of any person, military or civilian, who is placed on flying status as a non-crewmember to perform testing and research duties or who is otherwise assigned to duty which requires frequent and regular aerial flights; who are not on flying status but

whose duties routinely involve aircraft operation on the ground or water, including towing of aircraft; missile duty personnel, food handlers, civilian motor vehicle operators, overseas TDY members, and individuals engaged in work with radioactive material.

Many industries feel that a program should include a complete physical examination annually for all employees, more frequently for those in the older age groups as well as those with previously diagnosed or suspected abnormalities. Industry officials encourage periodic physicals, realizing that tomorrow's management is often supplied from lower echelon personnel.

Physical examinations upon return from sickness. In addition to pre-employment and periodic examinations, Tinker Air Force Base employees are required to report to the dispensary for examination upon returning from sickness in excess of three days. The objectives of such examinations are:

1. To protect the worker from the consequences of a premature return to work and to assure that his physical capacities continue to be adequate for job demands
2. To protect the health and safety of the employee's co-workers

Physical examinations upon return after accident. Objectives of this type of examination are identical with that of the sickness return examination, but with the added purpose of obtaining a medical

record for possible injury compensation cases. Regardless of the duration of his absence, and prior to his return to work, any employee who has been absent due to occupational injury or occupational illness is to report to the occupational medicine dispensary for interview and/or examination.

In the event of injury to an individual employed only on a temporary basis, he is to report to the occupational medicine dispensary upon his return to Tinker Air Force Base. He is then directed to the compensation clerk in the central civilian personnel office where he reports the industrial illness or injury and provides a copy of any pertinent statements furnished him by the attending medical authority.

Tests included in physical examinations. Major types of tests given in routine physical examinations are:

1. Annual magnetic particle and penetrant inspection (vision)
2. Annual audiograms
3. Bone conduction on all class C hearing impairments
4. Exit audiograms (given at the time of employment termination for comparison with pre-employment physical audiogram)
5. Pulmonary function
6. Visual acuity (orthorator)
7. Laboratory tests
 - Urinalysis
 - Hematology

Standard tests for syphilis
Electrocardiogram
Chest x-ray
Tuberculin skin tests

If any of the tests are positive, the examinee is requested to revisit the occupational medicine dispensary for a conference with the Medical Officer.

Sick Absence

Sick leave is authorized under the Annual and Sick Leave Act of 1951 as amended (27). Use of sick leave for bona fide illness or injury serves to protect the health of the employee and encourages the employee to remove himself from his job environment when he becomes a hazard either to himself or to others. Medical and dental appointments are also to be encouraged. This applies to optical appointments and to the fitting of prostheses.

Sick leave may be granted when the employee is required to remain at home to care for a family member suffering from a contagious disease or when the presence of the employee would jeopardize the health of his fellow employees. This implies a quarantinable disease which may vary slightly in various localities, depending upon the local public health practices.

In certain circumstances, sick leave may be granted in lieu of compensation. The employee will find this to his advantage because he receives full pay during the period covered by accrued sick

leave but may obtain only $66\frac{2}{3}$ per cent of pay during his absence on a compensation status.

The use of accrued sick leave is authorized also during the period immediately preceding a disability retirement.

The Tinker Air Force Base Payroll Branch paid in excess of two million dollars to employees for sick leave used during the year 1966. This amount represents 1,402,604 man hours, although an analysis of the sick leave data showed that 15.4 per cent of the employees took fewer than 4 hours of sick leave during the year.

The median number of days of sick leave used by all employees is 5 days for salaried and 6 for hourly. In turn, the median for males is below that of females for both salaried and hourly employees. The median is three days for salaried males and seven for salaried females. Hourly females represented the largest median of nine days absence.

Sick leave used by medical reasons, 0-3 days. The largest single cause of 0-3 day sick leave during the year 1966 was respiratory disorders such as colds, sore throat, flu, sinusitis, and bronchitis. The rates for days lost per 1,000 work days ranged from 2.0 to 8.5 and averaged 6.5 overall. The ratio for these illnesses to total 0-3 day leave was 42.7 per cent.

The second largest cause of 0-3 day sick leave was gastrointestinal disorders such as intestinal flu, diarrhea, nausea, vom-

iting, constipation, ulcers, colitis, gall bladder trouble, and appendicitis. The rates for days lost per 1,000 work days ranged from 1.86 to 7.52 and averaged 2.70. The ratio of these illnesses to total 0-3 day leave was 17.9 per cent.

Together these maladies accounted for 60.6 per cent of all 0-3 day sick leave.

Sick leave used by medical reasons, over three days. Sick leave in excess of three days was taken most frequently by the group awaiting disability retirement action. The rates for days lost per 1,000 work days was from 3.59 to 7.85 for an average of 5.7.

Employees sustaining muscle, bone and joint disorders, such as fractures, dislocations, amputations, sprains, strains, arthritis, rheumatism, bursitis, and tendonitis took sick leave at rates varying from 2.22 to 6.58 days with an average of 4.20. These two groups of workers accounted for 36.7 per cent of the over-three-day leave.

Sick leave used by age groups. As the age level of employees increases, the amount of short duration sick leave decreases while long duration sick leave becomes more extensive. The decrease in 0-3 day leave is probably due to the increasing awareness of the value of the sick leave privilege as the employee increases in age and maturity. The sharp increase in over three day leave after age sixty is due primarily to sick leave used while awaiting disability retirement.

Sick leave used by grade groups. Usage of 0-3 day and over-three-day sick leave generally decreases as the grade level increases. Individuals occupying the higher graded positions possibly possess a greater sense of responsibility to their jobs and more fully realize the impact of not being on the job when they should be. This trend might be termed an awareness of job essentiality. The narrowing of the number of personnel toward the top of the grade level pyramid removes the feeling of anonymity found in broader groups of lower grades and thus focuses increasing supervisory attention on personal characteristics and attitudes of the fewer numbers in each succeeding group. An unknown factor in this respect is the possibility that higher graded persons may perhaps be charging short periods of medical absences to their annual leave. Normally, these persons are in higher annual leave accumulation categories and realize that such action reflects more favorably on their organization's sick leave rate. They then forfeit annual leave at the end of the year.

Sick leave used by work shift. The average number of hours of 0-3 day leave per shift was 4.76 for the graveyard shift, 1.57 for the swing shift, and 2.13 for the day shift. Total sick leave for the three groups followed a similar pattern: 9.11, 3.36, and 6.22 respectively. The low usage rate by the swing shift and the high usage rate by the graveyard shift is considered significant, but reasons for the extreme variation may be detected only through further research.

Medical absence rates by division. The three highest usage rates were found to be in the Divisions of Transportation Operations, Material Facilities and Base Support. These divisions are involved primarily in direct labor. They do have high exposure rates to the weather and temperature extremes, which are considered to be major causes of colds and flu as well as muscle, bone and joint disorders.

Medical, dental and optical appointments. Sick leave for such appointments accounted for 13.6 per cent of the 0-3 day hours used, equivalent to a usage rate of two days per 1,000 available work days. With approximately 253 work days per year, this averages about four hours per employee per year.

Inferences gathered from sick leave usage. Analysis of sick leave usage provided results adequate to infer that age, grade, sex, and work shift significantly affect sick leave usage.

Certain directorates were influenced more adversely than others due to the use of sick leave while awaiting disability retirement as well as maternity sick leave. These occurrences are beyond management control and tend to penalize those organizations having larger than average usage. The large accumulation of sick leave which was accrued because of good management or good health in the past becomes a handicap to the organization's sick leave record when disability retirement becomes necessary.

Sick absence control. Operating procedures invoked by Tinker Air Force Base to strengthen the control of sick absenteeism under the provisions of existing regulations are (28):

1. Require medical consultation and evaluation by a physician of the Federal Civilian Employees Health Services in cases of selected chronic absentees
2. Require medical certification for sick absences of less than three days duration
3. Require medical clearance of employees returning from sick leave of less than three days duration
4. Use of the Visiting Nurse Service
5. Require certification by personal physician that the employee was incapacitated for duty
6. Utilize Preventive Medical Services available to assist in control of sick absenteeism
7. Control by immediate supervision over-approval of leave.

Retirement

Tinker Air Force Base employees are members of the Civil Service Retirement System. These employees have retirement deductions made from their pay in the amount of 6-1/2 per cent of their base pay. If an employee works for the government less than five years, money paid into the retirement fund is refunded when employment is terminated. Termination after five years entitles the employee to leave his money in the Retirement System and draw an

annuity when he reaches age 62, at which time one-twelfth of the annuity is paid each month. The Retirement System provides annuity benefits for wives and minor children of employees in the event of his death.

Sample Survey

Description of Sample

Of the 248 civilian employees randomly sampled at Tinker Air Force Base, 21 per cent are female. As the following data indicate, the majority of the female employees are salaried. Seventy-nine per cent of the females sampled are salaried and the remaining 21 per cent hourly. The distribution of the 185 male employees between salaried and hourly is 32 per cent and 68 per cent. The composition of the sample by sex and race for (a) entire random sample, (b) salaried employees, and (c) hourly employees is shown in Table 3.

As a check on representativeness of the sample, information was obtained from the personnel department at Tinker Air Force Base about the composition of the work force. A comparison of the sample to personnel records is shown in Table 4.

From these data we may conclude that a reasonably representative sample was obtained.

Of the 248 interviewees in the sample, a total of 36.7 per cent stated that they were not familiar with the services offered by the

TABLE 3

COMPOSITION OF THE RANDOM SAMPLE BY
SEX, RACE AND WAGE TYPE

	Sex		Total	Race		Total
	Male	Female		White	Minority	
Hourly	126	13	139	119	20	139
Salaried	59	50	109	106	3	109
Total	185	63	248	225	23	248

TABLE 4

COMPARISON OF PER CENT COMPOSITION OF RANDOM
SAMPLE TO PERSONNEL RECORDS BY SEX
AND WAGE TYPE

	Male		Female	
	Sample	Personnel Records	Sample	Personnel Records
Hourly	91	93	9	7
Salaried	55	57	45	43
Total	79	79	21	21

Tinker Air Force Base Dispensary. A detailed breakdown of their responses is given in Table 5. The male salaried group appeared to be the most cognizant of the services offered (47.5 per cent).

In order to check the meaningfulness of the data on familiarity, each person was asked if he had knowledge of certain specific services

TABLE 5

FAMILIARITY WITH SERVICES OF THE DISPENSARY
BY SEX AND WAGE TYPE

	Male		Female	
	Hourly	Salaried	Hourly	Salaried
Total in sample	126	59	13	50
Number not familiar with services of the dispensary	43	28	5	15
Per cent	34.1	47.5	38.5	30.0

such as x-ray, hearing examinations and routine services. It was found that each of the specific services named were known to approximately 85 per cent of the sample in all sex and wage groups except for the electrocardiograph service. Only 37.3 per cent of the male employees who are paid on an hourly basis had knowledge of this service while 71.2 per cent of the salaried employees had such knowledge.

Each of the interviewees was asked if he felt that the medical services offered by the Tinker Air Force Base Dispensary were sufficiently identified to the employees at the Tinker Air Force Base. Of those sampled, 30.2 per cent said that they did not feel that the services were sufficiently identified. In order to determine the relationship between unfamiliarity with the services offered by the

Tinker Air Force Base Dispensary and the employees' feelings about the lack of identification of medical services offered, the number of people in the sample who were unfamiliar with the services were enumerated according to whether they felt there was sufficient identification of services.

Of the male employees in the hourly wage group who were unfamiliar with services offered only 39.5 per cent thought that sufficient identification of services existed. The percentages for the male salaried group, the female salaried group, and the female hourly wage group were 57.1, 73.3 and 100 per cent respectively, which indicates a difference in attitude among the employees sampled toward the identification of the medical services offered by the Tinker Air Force Base Dispensary.

Sick Leave Patterns

The usage of sick leave, in terms of days lost for the past year, is shown in Table 6. These data indicate that the largest proportion of the employees sampled used short term sick leave.

The data were grouped to test the hypothesis that the days lost due to sick leave have a different distribution in the group that had at least a high school education as compared to the group that had less than a high school education. The combined data are shown in Table 7.

A chi-square for homogeneity of proportions (29) of 17.60 with

TABLE 6

DAYS LOST DUE TO SICK LEAVE IN THE PAST YEAR
BY EDUCATIONAL LEVEL AND RACE

	Educational Level											Total	
	Post Grad		College Grad		High Sch. Grad		10-11 years		7-9 years		0-6 years		
	W ^a	M ^b	W	M	W	M	W	M	W	M	W		M
0- 1	1	-	2	-	34	-	7	2	7	4	4	-	61
2- 4	-	-	2	-	56	-	14	-	14	-	5	-	91
5- 7	-	-	-	-	25	3	4	3	3	-	-	-	38
8-11	-	-	-	-	9	-	2	-	3	7	-	-	21
12-14	-	-	-	-	7	-	-	-	-	-	-	-	7
15 +	-	-	-	-	22	2	-	-	2	2	2	-	30
Total	1	-	4	-	153	5	27	5	29	13	11	-	248

^aW = White^bM = Minority

TABLE 7

ANALYSIS OF SICK LEAVE USAGE BY
EDUCATIONAL LEVEL

Days Lost	High School or More	Less Than High School	Total
0- 1	37	24	61
2- 4	58	33	91
5- 7	28	10	38
8-11	9	12	21
12-14	7	-	7
15 +	24	6	30
Total	163	85	248

Chi-square = 17.60, 5 degrees of freedom, Probability <.005.

5 degrees of freedom was computed. This value is significant beyond the 0.5 per cent level which indicates that the two groups differ in their proportional usage of sick leave.

It appears that the lower educated group tends to use more sick leave of shorter durations.

The data from Table 6 were combined in white and minority groups of 0-7 days and 8 or more days lost due to sick leave in the past year as shown in Table 8. A corrected chi-square value of 7.801 with 1 degree of freedom, which is significant at the 1 per cent level, was computed. This is evidence that the minority groups tend to use longer periods of sick leave.

The distribution of specified causes for sick leave among those sampled is shown in Table 9. Injuries both at home and on the job

TABLE 8

A COMPARISON OF DURATION OF SICK LEAVE
BETWEEN WHITE AND MINORITY GROUPS

Days Lost	White	Minority	Total
0-7	178	12	190
8 +	47	11	58
Total	225	23	248

contribute the smaller proportion to the specified causes of sick leave, while infection is the greater contributor especially infectious

disease acquired away from the job.

TABLE 9
DISTRIBUTION OF SPECIFIED CAUSES OF SICK
LEAVE BY SEX AND WAGE TYPE

<u>Cause</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>
	<u>Hourly</u>	<u>Salaried</u>	<u>Hourly</u>	<u>Salaried</u>	
Injury on the job	12	-	-	-	12
Infectious disease acquired on the job	4	12	-	-	16
Injury at home	8	-	2	-	10
Infectious disease acquired away from the job	18	5	-	17	40
Total	42	17	2	17	78

The cases of sick leave due to injury were combined with those due to infectious diseases to compute the number of cases per 100 employees. These data are shown in Table 10. The sex-wage-type specific rates appear to be of comparable magnitudes except for the female hourly group which shows a rate approximately one-half that of the other three groups.

Visiting Patterns and Types of Treatment Performed

In order to estimate the degree of contact of the employees with the dispensary, the interviewees in the random sample were asked how long it had been since they had visited the dispensary. The

TABLE 10

SICK LEAVE RATES DUE TO INJURY AND INFECTIOUS
DISEASE BY SEX AND WAGE TYPE

	Male		Female	
	Hourly	Salaried	Hourly	Salaried
Total in sample	126	59	13	50
Total cases of sick leave due to injury or infect- ious disease	42	17	2	17
Cases per 100 employees	33.3	28.8	15.4	34.0

distribution of the times since last visit in years is shown in Table 11.

TABLE 11

TIME IN YEARS SINCE LAST VISIT TO DISPENSARY
BY SEX AND WAGE TYPE

Years Since Last Visit	Male		Female	
	Hourly	Salaried	Hourly	Salaried
0-1	93	45	11	41
1+-2	20	--	--	5
2+-3	8	10	--	--
3+-4	--	--	--	--
5+	5	4	2	4

Two things these data show: approximately 77 per cent of the total had visited the dispensary in the past year, which indicates that a large percentage of employees do come in contact with the services offered by Tinker Air Force Base Occupational Medicine facilities.

However, 6 per cent of those sampled indicated that they had not visited the dispensary for at least five years and, in fact, one respondent had not utilized the services of the Occupational Medicine Section any time during the past 21 years.

The distribution by sex and wage type for the treatment of illness or injury among those sampled by the Tinker Air Force Base Occupational Medicine Section is shown in Table 12. Among the male employees there seems to be a striking difference in usage of services offered between hourly and salaried groups. Whereas 60 per cent of the male hourly employees have received treatment in the past year, only 32 per cent of the salaried male employees have done so (corrected Chi-square = 11.61, 1 degree of freedom, probability <0.1). This pattern does not hold true for the female employees sampled (corrected Chi-square 0.062, 1 degree of freedom, not significant).

TABLE 12
PAST TREATMENT FOR ILLNESS OR INJURY
BY SEX AND WAGE TYPE

For treatment of Illness or Injury	Male		Female	
	Hourly	Salaried	Hourly	Salaried
yes	76	19	8	35
no	50	40	5	15

The sample distribution of routine visits to the dispensary is

shown in Table 12. As used in this table the term "routine visits" encompasses all occasions on which the interviewee visited the dispensary with the exception of accidental injury requiring emergency treatment.

Table 13 shows two interesting things. Examinations for continued employment and hearing and eye examinations make up the largest segments of total visits, and that pre-employment physical examinations, immunizations and counseling service are all used about equally, but to a lesser extent.

The most striking aspect of these data is the distribution of visits for salaried females. There were no visits in the fifty salaried females sampled except for continued employment physical examinations, which are mandatory, and for immunizations.

In order to see if employees are using private physicians in place of the Tinker Air Force Base Dispensary for routine services the data shown in Table 14 were tabulated. These data show that 45 per cent of the employees sampled did visit private physicians for this purpose, with a slightly larger amount, 55 per cent, of such visits being made by salaried personnel.

The respondents were also asked if they had used a private physician for the treatment of any accident or injury contracted while on the job. A total of 85 persons had done so for the following reasons: 10.6 per cent for surgery; 17.6 per cent on referrals by Tinker

TABLE 13

ROUTINE VISITS TO THE DISPENSARY IN THE PAST
YEAR BY SEX AND WAGE TYPE

	Male		Female	
	Hourly	Salaried	Hourly	Salaried
Pre-employment				
yes	25	5	3	-
no	101	54	10	50
Continued employment				
yes	34	10	5	8
no	92	49	8	42
Eye examination				
yes	43	19	2	-
no	83	40	11	50
Hearing examination				
yes	45	31	3	-
no	81	28	10	50
Immunizations				
yes	19	19	2	8
no	107	40	11	42
Counseling service				
yes	21	5	-	-
no	105	54	13	50

TABLE 14

ROUTINE VISITS^a TO PRIVATE PHYSICIAN
BY WAGE TYPE

Visited Private Physician During Past Year	Hourly	Salary	Total
yes	50	62	112
no	89	47	136

^aSee text for definition of routine visits.

Air Force Base physicians; 1.2 per cent because a physician was not available in the dispensary; and 70.6 per cent because they preferred their family physician.

There are three types of complaints which constitute the majority of treatment for illnesses by the dispensary; these are dermatitis, gastroenteric disorders, and pulmonary disorders. The distribution of those sampled who received treatment for such complaints are shown in Table 15. These three conditions appear to be uniformly represented in the sample among those who are paid on an hourly scale, with the highest percentage being represented by gastroenteric disorders.

TABLE 15

PER CENT OF SAMPLE RECEIVING TREATMENT FOR
SPECIFIC CAUSES DURING THE PAST YEAR BY
SEX AND WAGE TYPE

Condition Treated	Male		Female	
	Hourly	Salaried	Hourly	Salaried
Dermatitis	15.9	--	15.4	--
Gastroenteric disorder	20.6	16.9	23.1	30.0
Pulmonary disorder	13.5	--	15.4	--

It is significant to note that, among salaried personnel in the sample, only gastroenteric disorders are represented among the treated conditions and that the highest percentage for the whole group

is the treatment for gastroenteric disorders of female salaried employees. Furthermore, all of the male salaried employees and 40 per cent of the female salaried employees with gastroenteric disorders were not treated at the Tinker Air Force Base Dispensary, but instead were treated by private physicians. Altogether, 20.6 per cent of the sample were treated by private physicians for these disorders during the past year.

A comparison of visits per 100 employees per year between injuries and infectious diseases is shown in Table 16. There seems to be a sex difference in visit rates due to specified causes, with females having the highest overall rates due to accidents, and salaried females having by far the highest visit rates due to infectious diseases.

TABLE 16

RATES OF VISITS TO DISPENSARY AS DIRECT RESULT
OF INJURY OR INFECTIOUS DISEASE ACQUIRED
ON THE JOB BY SEX AND WAGE TYPE

	Male		Female	
	Hourly	Salaried	Hourly	Salaried
Total in sample	126	59	13	50
Visits due to injury	89	32	10	35
Cases/100 employees/yr	70.6	54.2	76.9	70.0
Total visits due to infectious disease cases	21	19	4	34
Cases/100 employees	16.7	32.2	30.8	68.0

A comparison of the usage of private physicians to the usage of facilities available at Tinker Air Force Base for physiotherapy treatments among those sampled is shown in Table 17. The greater proportion of physiotherapy treatments received by employees in the sample was in the group which was paid on an hourly basis. Approximately one-half of those from this group who received physiotherapy treatments did so in the care of private physicians, while all of the male salaried employees who received physiotherapy treatments used the resources at the Tinker Air Force Base Dispensary (there were no salaried female employees who received physiotherapy).

TABLE 17

PHYSIOTHERAPY TREATMENTS DURING THE PAST YEAR
BY SOURCE OF TREATMENT, SEX AND WAGE TYPE

<u>Source</u>	<u>Male</u>		<u>Female</u>		<u>Total</u>
	<u>Hourly</u>	<u>Salaried</u>	<u>Hourly</u>	<u>Salaried</u>	
Tinker Air Force Base Dispensary	14	10	3	-	27
Private physician	12	-	2	-	14
Total	26	10	5	-	41

Immunization Levels

The sample distribution of immunizations for various diseases is shown in Table 18. The validity and/or meaningfulness of

these data are somewhat questionable due to age differences in the sample and possibly due to lack of recall of such immunizations. However, it was noted that if the interviewee had received polio vaccine he also tended to have a more complete immunization record.

TABLE 18
LEVELS OF IMMUNIZATION BY SEX AND WAGE TYPE
(PER CENT)

Immunization	Male		Female		Total
	Hourly	Salaried	Hourly	Salaried	
Poliomyelitis	67.5	52.5	46.2	84.0	66.1
Influenza	16.7	32.2	23.1	18.0	21.0
Smallpox (last 4 yrs)	33.3	17.0	46.2	50.0	33.5
Diphtheria (last 4 yrs)	62.7	45.8	38.5	30.0	50.8
Yellow Fever	15.9	8.5	--	--	10.1
Cholera	16.7	8.5	--	--	10.5
Para-typhoid	13.5	8.5	--	--	8.9
Typhus	15.9	8.5	--	--	10.1
Plague	15.1	8.5	--	--	9.7
Malaria	15.9	8.5	--	--	10.1

Safety and Health Training

Of the employees in the sample, 56.5 per cent indicated that they did not attend systematic planned health and safety training sessions. The frequency of such sessions is tabulated in Table 19.

Sixty-one per cent of the employees sampled indicated that they felt that planned systematic health and safety training sessions were conducted frequently enough; however, further analysis of the

data revealed that 80 per cent of this group was salaried, and 46 per cent represented hourly employees, and that the salaried group in general had the most frequent sessions, as shown in Table 19.

TABLE 19
FREQUENCY OF HEALTH AND SAFETY TRAINING
SESSIONS BY WAGE TYPE (PER CENT)

Frequency of Sessions	Hourly	Salaried
Every month	26.6	51.5
Every two months	11.5	5.5
Every three months	29.5	5.5
Other	32.4	37.6

Employee Evaluation of Service

The employees in the sample were asked to give their opinions of the counseling service conducted by medical personnel at the Tinker Air Force Base Dispensary. The opinion that additional counseling service would be of use to the employees was expressed by 58.1 per cent of the total sample. A rating of at least "fair" was given to the counseling service by 18.1 per cent of the total sample, while 20.2 per cent had no opinion either on the rating of the service or on the need for additional service. The distribution of responses relative to counseling service by sex and wage type is shown in Table 20.

Each respondent in the sample was asked to estimate the time spent in waiting for treatment or diagnosis when he visited the dispensary. This estimate was meant to include the time spent in waiting

TABLE 20

RATING OF THE COUNSELING SERVICE CONDUCTED BY
THE DISPENSARY BY SEX AND WAGE TYPE

Rating	Male		Female	
	Hourly	Salaried	Hourly	Salaried
Excellent	1.6	6.8	-	-
Good	8.7	6.8	15.4	14.0
Fair	5.6	13.6	-	-
Poor	1.6	11.9	-	-
Need additional service	62.7	33.9	69.2	72.0
No opinion	19.8	27.1	15.4	14.0

for emergency treatment for injuries, follow-up treatment for injuries, diagnosis and treatment of other illnesses, and physical examinations.

The distribution of estimated waiting time is shown in Table 21. Approximately 90 per cent of the respondents stated that they normally spent less than one hour waiting for treatment or diagnosis.

TABLE 21

RESPONDENTS ESTIMATES OF THE AVERAGE TIME SPENT
PER VISIT IN WAITING FOR TREATMENT OR DIAGNOSIS

Estimated Waiting Time	Per Cent of Total Sample
10 minutes	42.3
20 minutes	12.5
30 minutes	21.0
45 minutes	4.4
60 minutes	8.9
More than 1 hour	10.9

Of those sampled who estimated that the waiting time was one hour or more the preponderant number spent approximately three hours waiting. This group was for the large part involved in physical examinations, with one person waiting eight hours for a physical examination.

Overall, 26.6 per cent of those sampled felt that they had to wait too long for services at the dispensary. However, 74.2 per cent indicated that the emergency treatment of injuries is accomplished promptly, although 33.1 per cent of the respondents felt that the location of the dispensary is not convenient for rapid treatment for those persons injured on the job.

Each interviewee who had been treated in the dispensary was asked to rate the treatment given for injuries and illnesses. Of this group 85.9 per cent rated the treatment of injuries as at least "good," while only 49.2 per cent gave the same rating to the treatment of illnesses. Of the total males, 54.5 per cent felt that the treatment of illnesses was fair to poor whereas 39.6 per cent of total females gave this evaluation. The per cent distribution of the rating of treatment of illnesses and injuries by total males and total females is given in Table 22.

The sample contained 237 people who had visited the dispensary. Of this group 69.6 per cent rated the services offered by the Occupational Medical Section as being at least "good."

The overall services were rated as "poor" by 10.1 per cent of this group, with 26.2 per cent of total females rating the services as

TABLE 22

RATING^a OF TREATMENT BY DISPENSARY OF INJURY
AND ILLNESS BY SEX (PER CENT)

Rating	Male	Female
Treatment of Injuries		
Excellent	5.9	-
Good	76.2	96.8
Fair	13.0	3.2
Poor	4.9	-
Treatment of Illness		
Excellent	3.2	-
Good	42.2	60.3
Fair	45.9	19.0
Poor	8.6	20.6

^aOf the 248 employees sampled 9 of the male salaried group and 2 of the female hourly group had never visited the dispensary. These were removed from the group totals in calculating the per cent distribution of ratings.

"poor" as contrasted to a rating of the services as "poor" by 4.5 per cent of the total males.

A detailed distribution of an overall rating of services by sex and wage type is shown in Table 23.

TABLE 23

RATING OF OVERALL SERVICES PROVIDED BY THE DISPENSARY
BY SEX AND WAGE TYPE (PER CENT)

Rating	Male		Female	
	Hourly	Salaried	Hourly	Salaried
Excellent	7.9	-	-	-
Good	63.5	72.0	72.7	62.0
Fair	26.2	18.0	-	12.0
Poor	2.4	10.0	27.3	26.0

CHAPTER V

DISCUSSION

This study was designed so that a statistically sound survey sample could be used to indicate what health services, both preventive and curative, are available in this large industrial organization. The function of the Occupational Medicine Section was readily determined in matters pertaining to employee health, but to ascertain how the employees utilized and viewed the services offered presented a more complex and difficult problem.

The purpose of the employee health program of this large industrial installation is to support the overall activity of the installation by maintaining the health, welfare, and morale of the civilian contingent at optimum operating levels through consistent and vigilant application of standard and current therapeutic and preventive medicine principles and practices.

The survey was limited to the health services offered civilian personnel and the response of those persons to available services. The sample, as discussed in Chapter IV, was drawn from the entire work force on the basis of a stratified random sample with primary

variables of distinction being sex of the employee and whether or not he or she was an hourly or salaried wage earner.

It is my opinion that the people interviewed concerning their health care and practices exhibited a somewhat lackadaisical attitude concerning the services made available to them through the Occupational Medicine Section; choosing instead to enlist the services of their personal physician whenever circumstances were such that a choice was possible. The majority of the employees felt that emergency procedures concerning accidents and treatment of injuries is adequate, but that the treatment of illnesses leaves something to be desired. The need for an ambulance stationed in the industrial area was expressed by most of the respondents due to the fact that many had experienced or observed extremely long delays in obtaining emergency ambulance service.

The opinion that additional counselling service would be beneficial to the employees was expressed by 58.1 per cent of the total sample. Of this group, it was interesting to note that the greatest need for additional service was expressed by both male and female hourly employees.

Survey responses and personal observations substantiated by treatment and manpower records for the Occupational Medicine Section indicate an increase in the ratio of the patient load to the number of employees in this section over a period of years. The

data are shown in Table 24.

TABLE 24
 PATIENT LOAD AND NUMBER OF EMPLOYEES IN
 THE OCCUPATIONAL MEDICINE SECTION
 FOR SELECTED YEARS

<u>Year</u>	<u>Patients</u>	<u>Employees</u>
1952	137,670	53
1960	48,620	34
1961	68,988	32
1962	74,274	28
1964	78,352	22
1965	89,092	24
1966	104,000	40

These statistics suggest an increased workload during this time of action in Vietnam rapidly approaching the number of patients treated during 1952, the time of fighting in Korea. Currently the Occupational Medicine Section is functioning with only forty assigned employees. Due to this increase in the number of patients, and the diversification created by the physical layout, only minimal medical care can be provided. Doctors and nurses find their time curtailed by an unbalanced work load and increasing administrative duties. Therefore, neither sufficient time or effort can be devoted to some of the other important areas which are part of the Occupational Medicine Section responsibility. They are unable to visit and maintain checks on hazardous areas or develop health program activities such

as weight control program, heart program, immunization program, and diabetic surveys. The glaucoma survey appears to be receiving only minimal attention.

The supervisors have very little opportunity in the course of their supervisory duties to provide adequate guidance and counselling for their employees in matters relating to the Occupational Medicine Section. Training efforts are affected by heavy workloads and the need for space. The effectiveness of the Health Educator-Coordinator is restricted because of time he must devote to administrative responsibility and jobs unrelated to his assignment.

In my opinion, the efficiency of the Occupational Medicine Section could be greatly increased by the addition of full time custodial service, a permanently assigned driver and vehicle from the motor pool, a supply man, and a clerk-typist to support the optical unit. Proper administration of the safety glass program requires a minimum of three full time employees. Currently this area is staffed by two full time employees and a clerk-typist borrowed from medical records.

While administration and nursing share many related fields, it is my opinion that for maximum utilization of each, the administrative duties should be supervised by an administrator directly responsible to the branch chief.

I believe some re-organization would result in more clearly

defined lines of authority, accountability, and responsibility. More efficient use of employee abilities, aptitudes, and attitudes would result and the needs of the Occupational Medicine Section could be met.

Possibly an improved patient appointment system could be put into effect to allow more efficient use of time, equipment, and staff. The Occupational Medicine Section appointment system is primarily based on each sub-unit maintaining an appointment register. The following areas are largely responsible for appointments either scheduled or on a walk-in basis.

A. Physical Examination Section

1. Pre-employment physicals and overseas TDY physicals are on a walk-in basis
2. The various classes of physical examinations such as tow-operator, policeman, are on a scheduled basis

B. Optometry Unit

Refraction examinations are scheduled

C. Health Educator-Coordinator

Appointments for training and health counselling are scheduled

D. Dispensary

Patients are seen on a walk-in basis with some patients having scheduled appointments. This arrangement seems to work quite well for new patients as well as rechecks ordered by the doctors

The major problem causing confusion in the appointment

system is the lack of coordinating information from civilian personnel regarding the expected number of persons for overseas TDY physicals and pre-employment examinations. Since other types and classes of physical examinations are scheduled, an unusually large number of walk-in appointments for physicals can disrupt the daily workload of the Occupational Medicine Section. This causes the staff to work under stress and is detrimental to their responsibility to other phases of the medical program.

The survey and gathering of existing data was of such an extensive scope that it precluded entirely many areas of interest which this study was able to acknowledge only superficially. Once these data are published, it is hoped that further investigations will be directed toward these other areas of interest.

This study is intended primarily to point the way as a satisfactory yardstick for the measurement of performance and effort in the industrial health field. Such a study at the outset must be used on an experimental and study basis, after which it may be revised and standardized using much of this information as base line data which can be compared from year to year.

CHAPTER VI

SUMMARY

A study was made at the Tinker Air Force Base, Oklahoma City, Oklahoma, to develop an evaluation plan of industrial health service and make an attempt to identify the value and pertinency of the medical activities and, therefore, the effectiveness and needs of the medical program as a whole.

There were three essential parts of this study. The first part, Personnel Information and Welfare Benefits, is directed to a description of the characteristics of the plant population eligible for service, of the physical and socio-economic aspects of the plant environment, and of the administrative regulations concerning those in the plant population who receive service.

The second part of the study, Health Program Activities, describes the medical program itself, its organizational structure, facilities, services rendered, productivity, administrative costs, and the interrelationships existing between the medical directors and other management, and between the medical program and allied disciplines and activities. The main findings in this section of the

study were that the whole appointment system for the Occupational Medical Section could be improved in order to reduce an unnecessary disruption of services, and that the staffing of various departments seem to be understaffed.

A questionnaire was used in the terminal phase of this study in an attempt to obtain a total picture of the usage by the employees of the health facilities available to them and the employee attitude toward the available facilities. Sick leave usage, the distribution of visits to the dispensary, and immunization levels, together with various other topics, are discussed in Chapter IV. The most striking result of the tabulation of the data from the questionnaire used in the sample survey was the expressed need for increased counselling services (58.1 per cent of the total sample), and the dissatisfaction with the treatment of illnesses (50.8 per cent of the total sample). The questionnaire used in the survey can be found in the Appendix.

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APPENDIX

Sample No. _____ Date _____ Work shift _____
 Interviewee _____ Occupation _____ Educational level: _____
 Ethnic Group: A. Post Grad. _____
 a. White _____ B. College Grad. _____
 b. Minority _____ C. Hi. Sch. Grad. _____
 Have you been on sick leave in D. 10-11 yrs. _____
 the past year? Yes ___ No ___ E. 7-9 yrs. _____
 How many days lost? F. 0-6 yrs. _____
 a. 0-1 _____ d. 8-11 _____ G. Unknown _____
 b. 2-4 _____ e. 12-14 _____
 c. 5-7 _____ f. 15 + _____
 Was the sick leave due to:
 a. Accidental injury on the job _____
 b. Infectious disease acquired on the job _____
 c. Accidental injury at home _____
 d. Infectious disease acquired away from job _____
 e. Other (specify) _____
 Did you visit OCBDMO as a direct result of an "on the job" accident?
 yes ___ no ___
 Did you visit OCBDMO as a direct result of an "on the job" acquired
 infectious disease? yes ___ no ___
 Have you a personal family physician? yes ___ no ___
 Have you ever used a private physician for treatment of any accident
 or disease condition contracted while you were performing your
 occupational duties? Yes ___ No ___
 Why? _____

Have you received immunization for:
 a. Polio... Salk(No.) ___ Oral(No.) ___ g. Cholera _____
 b. Infl. Vacc. _____ h. Para-Typh. _____
 c. Small Pox Vacc (in last 4 yrs) ___ i. Typhus _____
 d. Typh. Vacc. (in last 4 yrs) ___ j. Plague _____
 e. Diph-Tet. (in last 4 yrs) ___ k. Malaria _____
 f. Yellow Fever _____ l. Other (specify) _____
 To whom do you immediately report, when you wish to report an in-
 jury to your person, while performing your duties? _____
 To whom do you report when you are requesting sick leave? _____
 Do you feel that requests for treatment of injuries are reacted upon:
 a. Promptly _____
 b. Slowly _____
 Are you familiar with existing medical services at OCBDMO?
 yes ___ no ___
 Could you name some of these services?
 a. general physical examinations _____

- b. X-rays _____
- c. EKG _____
- d. Hearing examinations _____
- e. Laboratory analysis (blood, urine) _____
- f. Other (specify) _____

Do you believe that the medical services offered are sufficiently identified? Yes _____ No _____

Have you in the past year visited the OCBDMO for a:

- a. General physical examination _____
 - 1. pre-employment _____
 - 2. continued employment _____
- b. Eye examination _____
- c. Hearing examination _____
- d. Immunizations _____
- e. Counseling service _____
- f. Other (specify) _____

Have you in the past year gone to a private physician for any of the above mentioned examinations? Yes _____ No _____

Have you in the past year received treatment for:

- Was treatment conducted at:
- a. OCBDMO _____
 - b. Private physician _____
 - 1. Why _____
 - a. Dermatitis _____
 - b. Gastro-intest. dis-
order _____
 - c. Heat exhaustion _____
 - d. Pulmonary disorders _____
 - e. Other (specify) _____

Have you received an x-ray in the past year?

- a. At OCBDMO _____
- b. At private physician _____
 - 1. Why? _____

Have you received physiotherapy in the past year at:

- a. OCBDMO _____
- b. Private physiciain _____
 - 1. Why _____

How would you rate the overall services provided by the OCBDMO facility (dispensary)?

- a. Excellent _____
- b. Good _____
- c. Fair _____
- d. Poor _____
- e. Have not visited the dispensary _____
- f. Other (specify) _____

What would you do to improve the quality of your treatment at the OCBDMO facility? _____



Do you believe the location of the OCBDMO facility is convenient to areas of high priority so that those persons injured on the job may have satisfactory access to services? Yes No

Do you have regular health and safety training sessions? Yes No

How often? Is this often enough? Yes No

a. Once monthly

b. Every two months

c. Every three months

d. Other (specify)

What would you do to improve the health and safety sessions?

Does your area have easily accessible emergency fire control equipment? Yes No

Have you been trained to do emergency artificial respiration? Yes No

a. On the job B. Civil Defense c. Other (specify)

Do you believe that the health and safety training sessions are conducted satisfactorily? Yes No

Do you feel that the methods required in reporting injuries or sickness are satisfactory? Yes No

What do you suggest might be done to improve these methods?

What you visit OCBDMO for treatment or diagnosis, do you have to wait:

a. 10 min.

b. 20 min.

c. 30 min.

d. 45 min.

e. 60 min.

Do you believe you must wait too long a time for service? Yes No

What would you suggest to speed up the service?

Have you visited the dispensary in the past: 1 yr 2 yrs 3 yrs
4 yrs , 5 yrs , for treatment of illness or injury? Yes
No

How would you rate OCBDMO for the following:

a. Treatment of injuries:	b. Treatment of illness:
Excellent <u> </u>	Excellent <u> </u>
Good <u> </u>	Good <u> </u>
Fair <u> </u>	Fair <u> </u>
Poor <u> </u>	Poor <u> </u>
Other (specify) <u> </u>	Other (specify) <u> </u>

c. Counselling Service

Excellent

Good

Fair

Poor

Other (specify)