

ROLE OF THE COLLEGE OF HEALTH SCIENCES IN
HEALTH MANPOWER DEVELOPMENT IN BAHRAIN

BY

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LIST OF ABBREVIATIONS

CHS	College of Health Sciences
FTE	Full-Time Equivalent
HSMD	Integration of Health Services and Manpower Development
MOH	Ministry of Health
NHS	National Health Service
OJT	On-Job Training
WHO	World Health Organization

SUMMARY

The College of Health Sciences (CHS) was established in 1976 to address the mid-level health manpower shortage in the State of Bahrain.

This study was undertaken to address the role and achievement of the College in health manpower development. An attempt was made to address issues such as: 1) whether the CHS had met the need for health manpower as identified by the Ministry of Health plan; 2) how did Ministry officials perceive the effectiveness of CHS in meeting health manpower needs; and 3) how did graduates perceive their training programs.

To obtain information from Ministry of Health officials and the College's graduates in a reliable manner, a structured interview was held with 19 Ministry officials and questionnaires were forwarded to 200 College graduates. Another survey was designed and distributed to 15 College graduates who resigned from the service.

An analysis of the data revealed that there is a general agreement among Ministry officials that the College's training programs are meeting the overall needs of the State of Bahrain. Weak areas (e.g., on-job training) in the training programs were identified and concrete suggestions for their improvement were made. Overall graduate perceptions regarding their training programs were favorable. Graduates found their educational experiences in the core, as well as in the specialty areas, to be well planned and relevant to their roles. The major factors influencing professional attrition were shifts, low salaries and poor transportation. Among the weak areas in the training

SUMMARY (Continued)

programs as seen by the Ministry officials and the graduates is the short duration of the on-job-training period. In addition, some programs do not coincide well with the job responsibilities. These programs were mainly Nursing, Public Health Inspector, and Pharmacy.

The study led to some recommendations regarding evaluation of the on-job-training period, the issue of shift, the integration of shift duties in the final training years, development of more effective clinical evaluation instruments, maintenance of the existing student yearly enrollment in programs such as Laboratory, Pharmacy, and Radiography, attracting more students to the Nursing program, and re-assessing the needs of the Public Health Directorate and Medical Equipment Maintenance Center.

In conclusion, the College of Health Sciences is meeting the needs of the health services in the State of Bahrain. The Ministry of Health needs, however, to re-examine its health manpower plan and give directions to the College on the exact numbers of health workers needed and the type of training required.

I. INTRODUCTION

A. Background

Health manpower development of a country needs to be viewed in the context of its health service plan. The health services of Bahrain are the longest established in the Arabian Gulf. During the past 50 years, the government of Bahrain has provided free medical services for all the inhabitants of the State of Bahrain. The availability of health care, according to the constitution, is one of the fundamental rights of all citizens.

The State of Bahrain is located midway in the Arabian Gulf on a cluster of 33 islands. Its small area of 600 square kilometers with a population of 358,857 (1981 Census), is in contrast to the islands' historic importance. Bahrain's main economic base is international trade, oil-based industries, and more recently an active international banking center.

By the turn of the century the first hospital, the Victoria Memorial Hospital, was built and a year later, the American Mission Hospital. There were also a few health clinics operating in some villages. At that time smallpox was endemic, malaria and trachoma were the main causes of death and blindness, amebic dysentery, anemia and tuberculosis were prevalent and the incidence of death from childbirth was high.

Bahrain's progress toward the eventual goal of health services for all is marked by many milestones. By 1933, two midwives had been appointed, one each for Muharraaq and the capital city of Manama. The first clinic opened in 1936 at Suq Al-Khamis in Khamis area. The

following year, however, marked the real start of organized government health programs with the establishment of six clinics and dispensaries. In 1938, construction began on the first government hospital at Naim area, which was completed in 1942 and had 200 beds.

In 1948, the Health Department took over from the Manama municipality its facility for mental patients and staffed it with physicians, making it the first in the region to be placed under professional medical care. In 1950, a building for the Directorate of Public Health was constructed.

In 1964, the demand for hospital care had outgrown the Naim Hospital and construction of the Salmania Hospital began. The new hospital was completed in 1959, a year that also marked the openings at Muharraq of the Women's Hospital which handled maternity cases, and of the School of Nursing with seven students.

In 1968, the Health Department, headed by Dr. Ali Fakhro (presently the Minister of Health) drew up a general plan for a comprehensive health care program, which still serves as its basic planning structure. It included: training programs for Bahraini citizens in all health fields, a comprehensive health center network covering all villages and islands of Bahrain, strengthening of the public health department and curative medicine, and development of medical records. The first specific steps toward fulfilling this ambitious program were taken in 1970, with the letting of contracts for the planning of a new medical center. This was followed by the construction of Yousif Kanoo School of Nursing in 1972.

In summary, the current health services in the State of Bahrain can be categorized as three types: tertiary, secondary and primary. The tertiary health care is provided by three hospitals, the Salmania Medical Center (620 beds), which stands at the apex of Bahrain's modern comprehensive health services. This is a referral center from secondary and primary health care. The secondary health care is provided by two maternity hospitals and a geriatric hospital and primary health care by a network of sixteen comprehensive health centers. These health centers are unique in the Arabian Gulf area, both because of the length of time they have existed and for the services they offer. Treatment at all hospitals and health centers is free of charge.

In addition to this state-financed health system, private facilities are available. The American Mission Hospital (50 beds) was established in 1901. There is a military hospital for the defense forces (129 beds), while the Bahrain Petroleum Company Hospital (50 beds) offers advanced health care to its employees and their families. Each of the ship building companies (ASRY) and the Bahrain Aluminum Company (ALBA) has its own medical services provided by health clinics with 20 beds. Another, a sophisticated hospital (25 beds) is privately owned and administered. Around 40 private clinics provide health care for a fee.

Health services expansion in Bahrain has not, however, been able to draw upon staff from local resources. If one looks at the staffing pattern of the Ministry of Health in the early seventies, the percentage of expatriates was still high, with 70% of physicians, 84% of nurses and 32% of allied health personnel being non-Bahrainis.

Bahrain realized that to achieve self-sustained economic growth, it had to develop its human resources in the most optimal way.

To meet this challenge, the Ministry of Health embarked on a two-pronged approach: major emphasis was placed on overseas training and staff development and a local institution for training various health professionals was established in 1976. The College of Health Sciences (CHS) started to provide much needed central training. Unlike many other countries, Bahrain chose to prepare the base of the health manpower pyramid first, and to stress development of middle level personnel who were critically needed at this stage of expansion and development.

The College of Health Sciences is a public institution funded and administered by the Ministry of Health. CHS offers associate degrees in the following health professions: General Nursing, Medical Technology, Pharmacy, Radiography, Public Health Inspection, Medical Equipment Repair and Maintenance, and post-basic Midwifery.

The CHS also offers Practical Nursing and Maternal and Children's Health programs.

Since 1978, three classes totaling 332 students have graduated. In 1981 and 1982, 152 and 174 are expected to graduate respectively. To date, no formal study has been conducted to ascertain whether the CHS is addressing the health manpower needs of the State. Furthermore, the contribution of graduates to health care delivery has not yet been assessed. There were, however, some expert reviews conducted by the World Health Organization (Sajid, 1979; Sukker, 1979) and a team from the American University of Beirut (Nelson, Raad, and Zahar, 1980).

B. The Problem

In the process of providing health professionals to meet the demand of the service market and following a change in the socioeconomic pattern of the population regarding health care delivery, issues such as the quantity and quality of training of health professionals are raised. The CHS has been motivated to address these issues by looking at its graduates and their compatibility to health service.

C. Purpose of the Study

The purpose of this study is to evaluate the role of the College of Health Sciences in developing health manpower for the State of Bahrain. Specifically, the study will attempt to address the following questions:

1. Did the CHS meet health manpower needs as identified by the Ministry of Health plan?
2. Did the Ministry of Health planners consider the health manpower needs of Bahrain adequately fulfilled by the CHS?
3. Were the graduates of the CHS satisfied with their training and consider it pertinent to their present and future roles?
4. Were there any differences on how the graduates of the CHS considered their role in providing health services based on the following:
 - a. Satisfaction with their training
 - b. Role mobility according to their scientific knowledge
 - c. Their compatibility with the future of health care system in Bahrain.

5. The difference between Tawjehia or secondary school, and pre-Tawjehia graduates.

D. Significance of the Study

Evaluation is an important process for an academic institution. This study is the first evaluation of the College's program to be initiated and conducted by a faculty member. This study also hopes to foster more coordination and interaction between the College and the Ministry service. Through the feedback and suggestions of Ministry officials, the College will look more critically at its training program and future plans.

Since the CHS is considered a model institute in the Gulf region for training middle level health personnel, the results of this study could be of some use to planners of health manpower in any of the Gulf states where the same culture prevails and highly similar health problems and health manpower shortages are encountered.

E. Limitation of the Study

In designing the study, major focus was placed on the CHS graduates. The study did not intend to evaluate health care services. It also excludes the faculty and administration of the CHS. This study could be considered a preliminary attempt which should inspire further detailed research.

F. Definition of Terms

Ministry officials: a group of policymakers who represent most of the major departments in the Ministry of Health.

Tawjehia Certificate: the Government secondary school learning certificate which is equivalent to twelve years of schooling. This is the prerequisite for admission to any of the Gulf and Arab universities.

Idadiah Certificate: this is the intermediate school certificate which is equivalent to nine years of schooling.

Health Services and Health Manpower (HSMD): the HSMD concept is the integration of Health Manpower Development components into a unified system linked with Health Services Development. In this integrated approach the system provides health care directly relevant to the health needs of the population.

New Nursing Stream: a new nursing program developed by Ministry of Health, Ministry of Education and CHS. The program accepts the third intermediate school certificate (9th grade) students. Three academic years are required to complete this nursing program. In 1983, the first group of nurses will graduate. They will be the only candidates for the Associate Degree program in the continuous education process.

Production: health manpower cannot be produced, however, conditions for the development of health manpower can be provided. In this sense, "production" is used throughout the study.

Health Team: a group of health workers share a common health goal and objectives. Those goals and objectives are achieved by group contribution in a coordinated manner. The competence and skills of each health worker are respected and valued by the group members.

Health Manpower Plan: consists of identifying and defining the health worker categories, their numbers, ratios of the health personnel required in a most suitable composition of the health team according to local conditions.

Full-Time Equivalent (F.T.E.): F.T.E. status is assumed to equal thirty-nine hours per week. It is calculated by dividing the total number of hours worked per week by respondents by the number of respondents.

On-Job Training (OJT): Laboratory Clinical Practice, during this on-job training, students are exposed to situations where they assume full responsibility as medical laboratory technicians, rotating in various sections of laboratory. Students are introduced to innovations in lab technology and are expected to carry out individual projects.

MOH: Ministry of Health.

CHS: College of Health Sciences.

II. REVIEW OF LITERATURE

A. Introduction

This study investigated whether the College of Health Sciences adequately trained mid-level health manpower in light of Bahrain's service needs. The study also explored how graduates felt about their preparation for various professional roles. Finally, Ministry of Health personnel were surveyed to ascertain their perception of the competence and preparation level of CHS graduates.

The design of this study is typical of follow-up studies. Therefore, the literature review will generally focus on similar studies undertaken either by a profession or school. Since the CHS is relatively new and the only formal training institution in the country, there is no literature that describes situations comparable to those at the CHS. Instead, the focus of this literature review was on the process of health manpower development. It is within this context that the CHS was conceived.

An attempt was made to review health manpower planning literature with the idea that some of the issues would be pertinent in discussion of this study's results as well as in preparing the College and the Ministry of Health for future courses of action. However, it is unclear whether the planners of CHS took into consideration the methodologies of health manpower planning that are described in the literature. Evidence of such was not available in either MOH documents or from interviewees.

The focus of this literature review is to describe the evolution of health manpower planning and to highlight the problems and

limitations of various approaches. An attempt was made to limit the studies to the allied health field and, where possible, show implications for the developing world.

B. Evolution of Health Manpower Planning

A continuous increase of the number of health professionals has been accompanied by an increase in the number of health professions schools. If this trend remains constant, Stambler (1979) pointed out, there will be a greater supply of health manpower in the 1980's which, he claims, may lead to a drastic reduction in the number of the health professions training institutions. Stambler (1979) forecasted that in 1990 the requirements for certifying health professionals can be expected to rise. The present enrollment and graduating classes should be adequate to meet the demand for health professionals and overall health manpower shortages are not foreseen in his view.

In the United States the health care enterprise is one of the largest employers; in 1970 the health labor force reached four million, with about three-fourths in the allied health professions (Sorkin, 1977). The increase in health personnel reflected an increase in use of medical technology in the health fields and the concomitant development of other health care occupations.

Whether a shortage of manpower currently exists in the United States is a significant and unresolved issue. Stambler argues that although the evidence suggests that the U.S. has indeed an inadequate supply in a few health professions, the evidence is not conclusive. Fendall (1972) states that there is a shortage at all levels of health professionals in the developing countries. He reasons that an

additional factor limiting accessibility to health care is the maldistribution of health manpower; another important factor is the imbalance of the health team. In order to attain maximum productivity, doctors need the support and cooperation of nurses and allied health personnel. The optimal ratio of nurses to physicians is 2.5 nurses per physician, according to Fendall (1972); his data, however, indicate that a lower ratio has currently been obtained. Moreover, Fendall (1972) claims that the increase in health manpower falls short of population growth. He emphasizes that in Latin America an increase of 0.8 physicians per 10,000 persons over 10 years is considered adequate to insure universal access to health care toward the end of the century. The health manpower shortage is made worse by physicians who emigrate following graduation. The loss of these graduates in terms of services is considerable (Sorkin, 1977).

Until the late 1960's and early 1970's, most of the educational medical programs which provided auxiliary and technical health personnel were hospital-based. Some of the training programs were informally operated by hospitals, cost for conducting such programs was high and, in addition to these factors, changing educational requirements resulting from changing population characteristics urged many institutions to terminate or drastically alter their programs. Thus, it seemed logical for educational institutions to take the lead and take charge of allied health programs providing allied health workers.

C. Issues in Allied Health Manpower

The United States federal government considers the term allied health manpower to cover all health occupations below the doctoral

level: "allied health manpower, when used broadly covers all those professional, technical, and supportive workers in the fields of patient care, community health, public health, and health-related research, who engage in activity that supports, complements, or supplements the professional function of administrators, physicians, and dentists" (Personnel Training Act of 1966 as Amended, Report to the President and Congress on the Allied Health Professions, Washington, D.C.: U.S. Government Printing Office, 1969, p. 1). The question arises as to how different allied health occupations are created. Are they created from the appearance of new tasks or tasks that have been delegated by other health personnel?

In fact, the allied health occupations are created from both sources. In the post-war period, rehabilitation services were not known; the number of disabled accelerated the creation of these new jobs. Professions such as technicians have been introduced following the introduction of new technology (e.g., medical technologist). Also professionals such as psychiatrists have delegated responsibilities to social workers, and dentists have delegated functions and responsibilities to dental hygienists. Sorkin (1977) emphasizes that daily patient care has been managed one step or more down the health manpower hierarchy. Robbin (1970) maintains that patient care has been passed from physician to nurse to practical nurse to nurse's aides. The Bureau of Health Manpower, Washington, D.C. (1978) reported that many believe no national shortages of allied health manpower exist, yet there is enough information to strongly suggest that there are shortages in some health manpower categories.

D. System Problems in Manpower Planning

The main problem is that there is no health manpower policy, and accordingly there is no national health manpower system forming an integral part of the health system. Fulop (1976) maintains that the problem is a lack of real coordination among the three primary elements of the health manpower development process: planning, production and management. Fulop reasons that in this sense health manpower is being developed in isolation of the real needs of health services. Making the situation even worse, he adds, is that in most cases there is no monitoring or follow-up of health personnel activities and no feedback is provided in order to improve production.

1. Manpower Planning Problems

Health manpower plans either do not exist in many countries or are vague in others (Fulop, 1976). Unbalanced health teams are the result of emphasis on the classical health categories such as physicians and nurses. Fulop (1976) cautioned that more of these health personnel alone will not solve health services problems.

2. Manpower Production Problems

In many countries the main problem is related to shortage of facilities for training. One reason is the increased number of students (e.g., 2000-5000, in a medical school which was planned for less than one-tenth this number) (Fulop, 1976). In addition there is an overall shortage of faculty in medical sciences, especially those who can use systems analysis, plan, supervise, evaluate clinical practice and conduct, and conduct research in health education (Holder, 1981). Holder also stresses the need for leadership in clinical education.

3. Manpower Management Problems

Management concerns all matters related to health personnel, their use and motivation, productivity, and, therefore, the coverage of the health services system and its capacity to retain staff (Majie, 1978). Many problems are encountered in health manpower management. Fulop (1976) explains that working and learning conditions are often unattractive. Frequently, he adds, little or no provision is made for maintaining or improving levels of competencies and performance of trained health personnel by making continuing education an integral part of the health care and educational system.

4. Service Related Problems

Service problems often arise from the low priority assigned to a national health plan. Often there is no coherent health system and the community is not represented. Fulop (1976) explains that the result is fragmentation of health care. He further emphasizes that health services problems resulting from health manpower shortages are due to uneconomical utilization of many health workers. The poor definition of functions of health personnel leads to a situation in which highly specialized health workers are carrying out tasks that could be managed by highly trained health personnel; this again is a consequence of a non-existent policy in the health-team concept (Fulop, 1976). The results are health manpower shortages and inadequate health care coverage to the population.

5. Alternative Approach

A central problem has been the lack of coordination of health manpower planning, production and management. In order to overcome

this problem, WHO is promoting the integration of health services and health manpower (WHO Official Records, No. 233, Annex 7, pp. 102-104).

If the main problem is fragmentation of the present health manpower development process, then the solution should be the integration of the main components of the health manpower development process into one approach, which is the integration of Health Services and Manpower Development (HSMD). "(HSMD) is a fundamental requirement for success" (Fulop, 1976). The report of the task force (1967) warned that among a large number of agencies and jurisdictions results in loss and abuse of manpower. Links should be established between individuals and different groups within the health services and improvements made in existing relationships among others in order to influence decision-making, planning and management. In this context, HSMD environment is political in nature (Fulop, 1976), with numerous forces, constraints, vested interests, and points of view emerging and interacting. The success of the HSMD concept will depend on the degree to which these forces can be coordinated.

Mejia (1978) reiterates this stance by saying that the notion of bringing the producers and consumers together under the umbrella of HSMD is neither new nor revolutionary. He adds that the HSMD approach seeks the cooperation of different agencies related to health manpower production and utilization in order to accelerate the extension and improvement of health care services.

E. Planning Methodologies

The importance of health manpower planning should be self-evident, since hospitals can be built in months, but it takes years to train

health professionals (Baker, 1972). Baker (1972) outlined the analysis of health manpower planning in the following manner:

1. Supply, measuring the current supply.
2. Projecting future supply.
3. Demand: quantity demand for health personnel.
4. Projecting future demand.
5. Productivity of health workers.
6. Matching supply with demand.
7. Constraints.

1. Supply

Current supply usually refers to resources or services available at a given time, either present or future. A distinction should be made between active supply and potential supply. Active supply consists of health workers employed or seeking work in the health care field. Potential supply is composed of the active health workers plus those who could re-enter the health care work force if conditions were to change (Sorkin, 1977). Hall (1978) supports Sorkin's analysis, adding that statistical data are needed to sort out the categories to be studied and to affect changes in the supply of health manpower. These categories include doctors, dentists, nurses, technicians, and pharmacists (Kriesberg, Wu, Hollander, and Bow, 1976). Midwives and other health workers can be included in health manpower planning, where deemed important. Sorkin (1977) claims that the measurement of certain groups and their relative importance varies from one country to another. He adds that data regarding the number of teachers in the

health professions are important for determining the capacity for expansion of educational institutions.

2. Projecting Future Supply

There are a number of techniques used to project supply and all of them depend on existing health manpower data. The most simple and direct approach according to Sorkin (1977) is the projection of requisite future health personnel by using extrapolating methods from past supplies of health workers. A more time-consuming method is to project future supply by establishing certain data, such as the size of the population, numbers of deaths, retirement rates, migration figures, and the capacity of training institutions. Other techniques may involve studying the labor supply and variables such as wages, possible part-time work, and the "willingness of women to take jobs outside their homes" (Goldfarb, 1975). The health manpower planner has three important options that will increase the quantity of health manpower, according to Sorkin (1977). These are:

- a. increasing wages;
- b. lowering the educational and licensure requirements for entry into a particular health profession; and
- c. increasing the capacity of educational institutions.

To affect change in supply, the planner should understand the potential benefits and limitations of these options and how any one or combination of them may have the greatest effect on future health manpower supply.

3. Demand

The concept of demand as suggested by Hall (1978) is usually considered the opposite of supply; technically speaking, however, demand refers to the sum of the health services that are required by the population within a given time period. From these demands, manpower requirements are derived. Due to the semantic confusion when demand is used, "requirements" may be used instead. Estimating demand is an important aspect of health manpower planning. Basically four methods are used in estimating the demand or requirement of the population for health services with each method providing somewhat different results.

4. Projecting Future Demand

According to Backer, Ferguson, Hall, Haynes, and Taylor (1966) the approaches are biologic demand, physician-population ratio, economic-demographic methods and the service targets approach. Hall (1973) agrees with these methods but suggests using a "professional standard approach" for estimating biological demand.

a. Professional Standards

This method determines demand on the basis of health needs (Hall, 1969). Determination of requirements are based on the opinions of expert health professionals who take into consideration available medical and technological resources. The health services needed to obtain a healthy population is translated into manpower staffing and productivity standards.

This technique appears to project manpower needs based on an assumption of what health services should be. This approach has

been criticized by Goldfarb (1975) for establishing one professional standard while eliminating the possibility of substituting more economically efficient mixes of inputs. The main advantage, according to Sorkin (1977), is that it is based on serving all health needs. This is important for long-range health manpower planning.

b. Physician-population Ratio

This method is described by Hall (1978) as being the best method for both estimating the demand and characterizing the supply for health manpower. A ratio of the number of the health workers to the total population served is selected in order to determine the manpower requirement. This ratio is then applied to the target year population (Krieasberg et al., 1976).

The physician-population ratio method has been criticized by Hansen (1970) for ignoring changes in the population composition, changing medical demands, and not considering the possible increase in the health manpower productivity. Klarman (1969) reiterates Hansen's stance. Hall (1978) agrees with both Hansen and Klarman and showed that this method has three drawbacks. First, it does not show how the health sector works. Secondly, it does not outline ways of increasing health manpower productivity. Finally, it does not explore variables such as the population density in evaluating the adequacy of a doctor/population ratio standard. For example, the ratio of 1:10000 might be adequate for a high population density region in Africa (Bennett, 1978).

c. Economic-demographic Method

The method is based on relating demand for services to certain economic factors, with health manpower needs projected accordingly. Sorkin (1977) stressed that this approach is mainly applicable to countries where no large inequalities in access to health care occur, "on the basis of ability to pay" (Hall, 1978). Does this method offer better estimation of the number of physicians required? Fein (1967) indicated that the physician visits were expected to increase partly due to the increase of population and partly due to better income, education and health service utilization. As a result, the demand for allied health manpower and other health categories will increase. Goldfarb (1975) criticized economic-demographic techniques for holding utilization rates constant; that is to say, if a person has visited a physician a number of times during the year, at the beginning of the study period, the health service utilization rate will be projected accordingly. Also, in addition to income, there are a number of variables that affect demand for medical services. Consequently, it is difficult to study each of these inter-related variables separately to determine the demand for health professionals (Goldfarb, 1975).

d. Service Targets Method

The technique is widely accepted for the estimation of manpower requirements. It implies that the first step is to determine the target for the type and quality of service needed by the population. It has been pointed out by Sorkin (1977) that when service needs

are quantified, manpower requirements can be obtained by applying factors related to staffing and productivity. These factors, however, are not easily determined.

Hall (1978) has emphasized a number of important advantages and some limitations of this method. He pointed out that one advantage lies in the easily disaggregated health services which helps in matching the health system component with the appropriate method to estimate demand, productivity, and consequently, improvement in health services. The primary emphasis of the service targets approach is on the delivery of care. In addition, Hall (1978) has highlighted major constraints such as misjudging the educational institutions' ability to expand its productive capacity, the administrative ability to provide the specific service mix and the public willingness to use the services produced. Sorkin (1977) agrees with Hall, and points out that the service targets method is prone to having standards based on desires rather than reality, which leads to policy errors. Hall (1978), however, maintains that this technique is conducive to an active health policy by shaping and sharing future health events rather than just anticipating them.

5. Matching Demand with Supply

When future supply and demand are estimated and the findings compared, shortages in most instances are indicated. In order to dilute these shortages a number of issues may be taken into consideration. According to Hall (1978), such issues may include increasing enrollments in health educational institutes and substituting trained auxiliaries or assistants for highly trained health personnel.

On the international scene, Taiwan, Turkey, Peru, and Chile have health manpower problems similar to other developing countries. The supply of health personnel is not only inadequate, but there is also poor distribution and low productivity. In Turkey and Peru, scarce human resources are wasted by the low utilization rate (Last, 1970). Focusing in depth on these problems, the Department of International Health of the Johns Hopkins School of Hygiene and Public Health has completed comprehensive health manpower studies in Peru, Turkey, and Chile. Each study used different innovative methods to establish the future demand and supply of health personnel.

In Peru, Hall (1969) estimated future health worker requirements based on the concept of "rationalized demand." This technique employed the disaggregation of demand into different components, with projections being made for each of these components. These components are then reaggregated to reflect a consolidated demand projection for health manpower (Hall, 1969). The "rationalized demand" concept is similar to Harbison's and Myers' (1964) "target-setting approach" in which the goals for manpower requirements are specified, compared, and the results converted into educational requirements (Harbison and Myers, 1964). Hall (1969) used a second estimation method in a study which was a straight-line projection. This method considered staff-bed ratio, hospital discharge rates, and population growth trends.

In Turkey, an important obstacle to effective health manpower planning is the lack of technical knowledge and an inappropriate administrative system (Taylor, Dirican, and Deuschle, 1968). Three straight-line projects were employed in the study of Turkey's health

manpower supply. These were: a) a supply-attrition model for health professionals; b) the supply and labor force participation rate of nurses; and c) the current supply of midwives.

In Taiwan, a model was developed for determining demand from the following variables: population, income, age, education, morbidity and sex. A number of techniques were suggested, however. Last (1970) justified the use of straight-line method as it is not time-consuming and the health manpower predictions would not differ greatly from other methods.

The Taiwan study indicated that by 1983 an excess of physicians and a large surplus of nurses may occur (Baker and Perlman, 1967). A major part of the study involved projecting changes in the utilization of health services.

In Chile, two concepts were used in projecting demand: spontaneous demand and programmed demand (Hall, 1971). The spontaneous demand approach assumes that each stratum of the population would need the same number of services in the future as was required in the base year. According to Hall (1971), this technique was employed in the Taiwan study. Since Chile has inequitable distribution of health services, the spontaneous demand technique and other techniques mentioned above would provide an inadequate basis for planning future health services. Hall (1971) developed the concept of programmed demand. In using this concept, the health services were divided into preventive and curative categories. All major divisions of these categories were programmed according to norms developed by the Chilean

National Health Services (NHS). These norms, Hall (1971) explained, considered the desirable levels of health coverage by 1988.

6. Productivity and Utilization

Productivity gain (increased output) allows expansion by providing more health services per unit of time or providing the same amount of services in less time (Sorkin, 1977). It means providing additional health services with the same number of professionals. Backer (1978) explained that the concept of productivity and the utilization of health services are linked together and used interchangeably; an increase in productivity parallels an increase in health service use.

There are a number of ways to measure productivity. Some are based on monetary units; others depend on changes in health status (Backer, 1978). Backer (1978) suggests focusing on certain program activities to measure productivity; this approach offers an aggregated technique which requires a mechanism to cross-section and set comparisons. Statistics about patient/physician visits or visits to ambulatory care units can show great variability in productivity and may suggest how productivity might be increased.

Popov (1971) pointed out that the standard visit in USSR is about 12 minutes long. In the developing countries, the physician productivity varies depending on the country. In some countries, the number of patients seen daily by a physician may exceed several hundred. On a national base, according to Backer's (1978) recent manpower and medical care study, it has varied from 40 visits in China (Taiwan), to 18 in Peru and Chile, to less than 8 in Turkey.

Technology may increase health manpower productivity. The use of technology in the medical field has increased manpower productivity substantially. Delegation of tasks is another way of increasing productivity even though on-the-job training and planned supervision are required. Using assistants or auxiliaries to treat or screen patients allows the physician to concentrate on more severely ill patients and allows more patients to be seen, resulting in high productivity.

Backer (1978) reports that delegation of responsibilities to assistants (in countries like Australia, Canada, New Zealand, Scotland and the United States) shows that the patients annually seen by dentists has increased progressively with the addition of auxiliary personnel. The number of patients increased two and one-half times when three full-time auxiliary staff persons were employed.

7. Constraints Encountered

These may include three factors: social, economic, and legal. The social factor is related to the acceptance of auxiliary personnel by the community, and the restriction, if any, on employing males or females in certain health roles. The economic factor may include the cost of training for a particular profession, whether or not the national economy can afford such expenses. The legal issues may arise from laws which prevent new professionals from practicing (Sorkin, 1977).

8. Manpower Production: Follow-up

A supply of competent health workers may not necessarily provide adequate health services. The demands and aspirations for better health care differ from one country to another. Accordingly, different

levels of health workers are produced. Katz (1978) explained that it is common to find health worker production in one country relevant to the health needs of past, rather than present needs. Many educational institutions claim that they produce manpower relevant to community needs. Katz raises the issue that if these health personnel were judged by a standard of relevancy according to the needs of the community, they would be deemed inappropriate. Hence, this process of producing health manpower not only diverges from the community needs but also is far from efficient. The statement of the WHO Expert Committee on National Health Planning in Developing Countries is that evaluation "measures the degree to which objectives and targets are fulfilled and quality of the results obtained. It measures the productivity of available resources in achieving clearly defined objectives. It measures how much output or cost-effectiveness is achieved. It makes possible the reallocation of priorities and of resources on the basis of changing health needs." In evaluation, process should be built into overall planning and implementation.

Continuing evaluation must be implemented in order to provide a means of assessing programs. Progress can be measured only if objectives are clearly stated in a measureable and comparable format. In this regard, objectives may provide criteria for the assessment of quality and a baseline for the measurement of efficiency.

The literature suggests that it may be possible to devise indicators that assess health manpower development. According to Walt (1980), indicators are used to assess how the goals, objectives, or targets are being addressed. Moreover, indicators will help fix

landmarks in the direction of change. As the goal for the health system in any country is to improve the health status of its people, indicators are suggested as a measurement tool helpful in attaining health for all by the year 2000 (Development of Indicators for Monitoring Progress Towards Health for All by the Year 2000, WHO, EB67/13, December, 1980).

Broadly speaking, and as suggested by Shipp and Levine (1980) indicators would be useful in monitoring the supply of health manpower in regard to the demand. One way to assess a program in meeting its objectives is by conducting a follow-up study of graduates.

A follow-up study of 94 graduates of the Allied Health Teacher Education Program (jointly offered by Baylor College of Medicine, University of Houston, and Texas A & M University), indicated that the program has met its major objectives, which mainly addressed the problem of staff development and the provision of qualified teachers to the allied health professions.

A second example of a follow-up study was conducted on 335 male and 508 female nurses and highlighted sex differences in attitudes toward nursing education. The data were collected by means of questionnaires. The results supported the original hypothesis which speculated that sex differences and male role strain would result. Nursing is an occupation of contradictory status for men. Men are not likely to enter the nursing profession in the same way as women; for men, orientations are more toward the "professionalizer" role rather than the "traditionalizer" or "utilizer" role.

In an attempt to retain and increase the supply of nurses in the State of Bahrain, a follow-up study was conducted to investigate the reasons for the dissatisfaction and discontent of Bahraini nurses who left the service. The results showed that financial factors ranked as the main reason for their dissatisfaction followed by absence of promotion and recognition (Koronfol and Al-Khalifa, CHS, 1980).

In a study conducted in 1971-1974 to evaluate the influence of Academic Support Programs on the retention of minority students (Drice, Hunter and Williams, School of Nursing, University of California, 1978), findings showed that student evaluation generated a positive response. This was reflected in better retention of student nurses at the University of California.

F. Summary

In conclusion, a rational method should be used in health manpower planning to ensure that future supply and demand for health personnel are in approximate balance whenever possible. For this purpose, four methods of determining demand were discussed: professional standards, physician-population ratio, the economic-demographic method, and service targets methods.

In developing countries, there is a critical shortage of health manpower. As a result, more countries have accepted the need for a systematic approach to national health manpower planning. Examples of countries where such studies were conducted are Peru, Taiwan, Turkey, and Chile. A variety of techniques for projecting supply and demand of health manpower that are relevant to each country have been developed.

The health manpower planner has three options to increase the supply: increasing wages to attract and retain more professionals; lowering educational and licensure for entry requirements to increase the pool of potential professionals of a particular health profession; and increasing the capacity of the educational institution. In recent times, a number of techniques have been used in health manpower study; however, their usefulness depends on the scope and size of the data provided.

III. METHODOLOGY

A. Study Design

The purpose of this study is to assess the role of the College of Health Sciences in the development of health manpower for the State of Bahrain. Since the CHS is responsible for producing and training the health labor force for the Ministry of Health, an attempt was made to select a methodology which would assist in collecting information and evaluation data on the College graduates working in the Ministry of Health. Review of the literature on evaluation of health manpower development revealed that joint manpower studies and research projects between the educational institution and health services organizations tend to provide meaningful data pertinent to long-range manpower planning (study on health manpower and medical education in Colombia, Pan-American Health Organization, 1967, and the Health Manpower Situation in Canada, First Pan-American Conference on Health Manpower Planning, Ottawa, 1974).

Considering the above issues and recognizing the role of the CHS as a part of the health manpower plan (1968), coordination of the CHS with the health services becomes significantly important. A carefully planned two pronged approach was taken in the form of structured interview in order to ascertain views of the health service officials about the CHS graduates.

The structured interview consisted of 19 items (Appendix A) which were designed to serve three purposes: first, to gather data regarding the number of CHS graduates presently working in various departments,

the ratio of CHS graduates to total employees in a particular department and the ratio of CHS graduates to the non-degreed Bahraini employees; second, to document officials' evaluation of the CHS training program and its graduates; third, to identify health manpower service needs for the next five years and to seek officials' opinions regarding the introduction of a health professions undergraduate program.

1. CHS Graduate Survey

In designing the survey for the graduates, the researcher considered some of the guidelines illustrated in studies conducted to assess the supply of health workers (Hall, 1978). Several questionnaires used in follow-up studies on nurses and on post-graduate allied health professionals were also reviewed (Holcomb et al., 1980; Koronfol and Al-Khalifa, 1980).

The survey was in English and contained 30 items. Although the items were randomly sequenced they fell into four categories:

a. demographic related items that collected demographic information on the sample population such as marital status, age, sex, category of health profession, and year of graduation;

b. instructional program related items that determined the graduates' evaluation of their training programs at the College;

c. profession related items which sought the graduates' perceptions about their profession, role, and significance in health care delivery; and

d. job related items that assessed the graduates' job conditions, how satisfied or dissatisfied they are with their jobs, and identified the main reasons for job dissatisfaction.

The survey was piloted on 8% (16 graduates) of college graduates in different specialties. They were requested to assess the clarity of the questionnaire, to indicate their time of completion and to suggest any modifications needed. Their comments and feedback indicated that the questionnaire was clear and understandable, and also that the time for completion (15 minutes) was reasonable. Minor modifications were suggested. These were done accordingly and a final version was prepared (Appendix B).

B. Sample Population and Data Collection

1. Ministry of Health Officials

The structured interview was conducted with nineteen ministry officials (Appendix C). Most items were answered during the interviews. Some officials, however, requested more time to complete items related to existing numbers of employees and the projected figure for the next five years. These completed surveys were returned to the researcher. The Bahrain Defense Force Hospital was unable to release information due to the nature of its services.

2. CHS Graduates

To identify the sample population for the graduate survey, lists of all college graduates for the years 1978-1980 were compiled, and 332 graduates in health categories were found (Appendix D).

Taking into consideration that some midwifery graduates are graduates of the associate degree General Nursing program, and that some alumni of the Maternal and Child Health Care program are graduates of Practical Nursing Program, duplications were omitted. Gulf region graduates were also omitted due to the nature of the study and its

relevance to Bahrain rather than the Gulf region. The amended lists contained 304 graduates, which were sent to the Ministry of Health Directorate of Personnel with a cover letter requesting their assistance in supplying the job locations of these persons.

The job location of all but 43 college graduates were identified. Those not identified resigned, according to the Ministry's records. Appendix E shows the distribution of college graduates according to job locations.

The survey was distributed with a cover letter explaining the purpose of the study to 200 graduates working at the Ministry of Health. To ensure even distribution of the sample population, different specialties and job locations were covered.

Of the 200 questionnaires, 180 were returned for a response rate of 90%. Twenty responses were, however, incomplete and were rejected by the researcher. This resulted in a final sample pool of 160, and a response rate of 80%.

Manpower planners need to compensate for probable attrition from the current supply and new graduates. It is recommended that planners survey a sample of persons in the age or occupational groups most susceptible to high loss and/or, ideally, those who have recently left employment (Hall, 1969).

Since the Ministry's documents in 1981 revealed that 43 graduates (14%) have resigned from the service, the researcher felt that a survey of those graduates should be conducted. Review of the literature indicated that in designing survey questionnaires to study attrition, it is important not only to identify the presumed reasons for

IV. PROGRAM DATA ANALYSIS

The purpose of this study was to assess the role of the CHS in health manpower development in the State of Bahrain.

Structured interviews were held with Ministry of Health officials. Two hundred questionnaires were distributed to college graduates currently working in different departments of the Ministry of Health; 180 were returned and 20 were incomplete. Of the 15 questionnaires distributed to college graduates who resigned from the service, only seven were returned.

Following is a data analysis from the various sources. It is organized into the following sections for purposes of description.

A. Health Manpower and Distribution

Having realized that for 40 years Bahrain has depended heavily on expatriate manpower, it became evident that Bahrain should become self-sufficient in all categories of health personnel. That was the real and crucial problem addressed in 1968. In that year, 10,000 Bahraini dinars were allocated for overseas training. In 1977, the allocation reached about one-third of a million dinars. This 33-fold increase indicated the Ministry's firm belief in training as quickly as possible enough Bahraini's to man the Ministry's different services (Ali Fakhro, 1979).

The overseas training policy, sending 2-4 individuals overseas in each of the allied health professions each per year was not effectively meeting the needs of the Ministry. Due to the economic boom in Bahrain, the Ministry's loss of health manpower was greater than those prepared in overseas training (Ali Fakhro, 1979).

The Yousif Kanoo School of Nursing was graduating a low number of nurses each year. This was far below the needs and expectations of the Ministry. The inservice training programs initiated by the Ministry of Health at different clinical departments (laboratory, pharmacy, radiography, public health) were also not coping with the needs; they were exerting pressure on the trainers and trainees who had to cope with the work load and the training.

Review of the Ministry's documents reveals that the goal of Bahrainization of the work force at all levels is to be achieved within 15 to 20 years. The Ministry found that determining exact future manpower needs based on demand was difficult because of the vast and rapid expansion in health care (Health Services, State of Bahrain, Ministry of Health, 1978).

In 1976, a team from the American University of Beirut was invited to study the health manpower needs of the Ministry of Health. By the end of the feasibility study, it became evident that centralization of all the Ministry's nursing and allied health programs was needed (AUBSCO Report, 1976). Six months later, the College of Health Sciences was created as the much-needed central training institution.

In 1979, the College of Health Sciences embarked on preparing an academic plan based on the needs of the Ministry of Health for nursing and allied health professionals for a three-year period. Through lengthy discussions and meetings between College and Ministry officials, a plan focused on the needs of the various departments of the Ministry of Health was formulated (CHS, Academic Plan, 1979).

Table I illustrates these needs as revealed in that plan (a summary report on the CHS, 1981).

TABLE I
PROJECTED HEALTH MANPOWER NEEDS FOR THE NEXT
THREE YEARS, EXTRACTED FROM A STUDY DONE IN 1979

Category	Staff Needed As Of 1980	Potential Graduates	Future Staff Needed by 1984
Nursing	891	196	695
Pharmacy	103	32	71
Public Health	25	25	0
Laboratory	134	36	98
Radiography	45	25	20

As the table reveals, the College is addressing the needs of the Ministry of Health by graduating nurses and allied health professionals to fill existing vacancies and filling the hundreds of positions held by expatriates with Bahrainis. To elaborate on this issue, the researcher in his structured interview with the Ministry officials requested them to project their manpower needs for the coming five years.

The responses of Ministry officials revealed that the Salmania Medical Center and the Directorate of Health Centers will be needing the highest numbers of nurses and other allied health professionals. These needs are illustrated respectively in Tables II and III.

TABLE II
 PROJECTION OF HEALTH MANPOWER NEEDS
 FOR NURSING AND ALLIED HEALTH PROFESSIONALS:
 SALMANIA MEDICAL CENTER 1981-1985

Category	Present Number	Number Needed
NURSING:		
Principle Nursing Officer	1	--
Senior Nursing Officer	2	4
Nursing Officer	11	5
Ward Nurses	41	26
Staff Nurses	387	438
Practical Nurses	51	71
ALLIED HEALTH:		
Radiography	44	64
Laboratory	74	143
Pharmacy	32	10
Medical Equipment Maintenance	29	11

TABLE III
PROJECTION OF HEALTH MANPOWER NEEDS
FOR NURSING AND ALLIED HEALTH PROFESSIONALS:
HEALTH CENTERS 1982-1986

Category	Present Number	Number Needed
Staff Nurses	57	71
Midwives	--	17
Public Health Nurses	15	27
Practical Nurses	38	46
Laboratory	21	27
Radiography	1	17
Pharmacy	58	62
Dental Assistant	--	24

The maternity hospitals (Central, Jidhafs, Ruffa, Sitra and Malchiya) will be needing 15 nursing officers, 60 ward nurses, 95 midwives and 40 practical nurses. The Psychiatric Hospital requires four nursing officers, 10 ward nurses, 30 psychiatric nurses and 24 practical nurses. The Directorate of Public Health needs 40 public health inspectors. When those needs are compiled (Table IV) it is evident that the total needs of the Ministry for different categories of nurses exceeds by three times the need for other allied health professionals.

TABLE IV
 PROJECTION OF THE TOTAL NEEDS OF THE MINISTRY
 OF HEALTH: FOR NURSING AND ALLIED HEALTH
 MANPOWER FOR THE FIVE COMING YEARS

Category	Present Number	Number Needed
NURSING:		
Principal Nursing Officers	2	--
Senior Nursing Officers	3	9
Nursing Officers	16	19
Ward Nurses	76	96
Staff Nurses (Associate Degree)	710	509
Midwives	92	112
Public Health Nurses	15	27
Psychiatric Nurses	--	30
Practical Nurses	139	181
ALLIED HEALTH:		
Laboratory	103	170
Pharmacy	92	72
Medical Equipment Maintenance	29	11
Radiography	46	81
Dental Assistant	--	24
Public Health Inspector	463	40

B. Curriculum Structure of the College of Health Sciences

The College of Health Sciences was organized to address the present as well as future needs of the Ministry of Health.

The College offers an Associate Degree in nursing and allied health programs (Medical Technology, Pharmacy, Radiography, Public Health Inspection, and Medical Equipment Maintenance and Repair). Apart from the general nursing program which lasts three years, the duration of the Associate Degree allied health programs is two years. The criteria for admission to any of the above programs is the Tawjihi certificate. Selection is based on the College entrance examination, applicant choices and availability of places in each of the programs as per the Ministry's needs.

In addition, the College offers one-year, post-basic programs in teacher training and midwifery. The admission requirement for the former is an undergraduate degree or associate degree plus one year of experience; for the latter, it is the associate degree in nursing plus one year of clinical experience in the service.

The College also offers a two year practical nursing program for the intermediate school levels and a maternal-child health care program for practical nurse graduates (six months).

In designing these educational programs, the College reorganized a number of assumptions that previously guided curriculum development:

- 1) programs need to be relevant to the health needs of the population and the graduates need to be well-prepared to meet those needs; 2) the professional responsibilities expected of all categories of health professionals are to be carefully translated into specific, terminally

observable educational objectives that are analyzed according to their respective components of skills, knowledge and attitudes; 3) the College is to use a core program to ensure a joint team experience among the various professionals, in order to provide the opportunity for the development of a health team approach; 4) clinical experience is to be given at sites typical of health services; and 5) self-study is to be a cornerstone of the CHS curriculum in order to promote independent learning.

The overall program consists of a core curriculum which lasts for two semesters, followed by specialty training in various professional areas.

The College has emerged over the past five years as an educational institution responding to the needs of the entire Gulf region; and two of its training programs are regional, those being Teacher Training and Medical Equipment Repair and Maintenance.

In 1981, the total number of graduates reached 304, and the expected number of graduates for the years 1981 and 1982 are 152 and 174 respectively (Appendix G).

C. The CHS Graduates Profile

A profile of CHS graduates reveals that the sample population is 84% female and 16% male. This is almost consistent with the current sex distribution of the College's graduates. Of the respondents, 66% are single, 22% married, 10% engaged, and 2% divorced. Distribution of respondents by age reveals that the population has a mean age of 24.

Table V shows the distribution of respondents by specialty; it is consistent with the current graduation pattern of the College. If this

TABLE V
DISTRIBUTION OF CHS GRADUATES SURVEYED
BY SPECIALTY (N=160)

Category	Number	Percent
General Nursing	18	11
Practical Nursing	30	19
Maternal and Child Care	13	8
Midwifery	20	13
Pharmacy	23	14
Laboratory	24	15
Radiography	13	8
Medical Equipment Maintenance	8	5
Public Health Inspector	11	7
TOTAL:	160	100

table is compared with the needs of the Ministry as stated in Table IV, one could say that the rate of production in regard to nursing is not consistent with need. While the need for nurses is three times that of allied health professionals, the production of nurses is only 51% of the total graduation rate.

Table VI illustrates the distribution of respondents by job location with the highest percentage working in Salmania Medical Center, followed by health centers, Central Maternity Hospital, the Public Health Department, College of Health Sciences, Psychiatric Hospital and Bahrain Defense Force Hospital.

graduates who resigned were identified. Table VII illustrates their distribution by specialty.

TABLE VII
DISTRIBUTION BY SPECIALTY OF COLLEGE GRADUATES
WHO RESIGNED FROM THE MINISTRY OF HEALTH
DURING THE LAST THREE YEARS (N=43)

Category	Number	Percentage
General Nurses	12	28)
Practical Nurses	17	) 68 40)
Laboratory	7	16
Pharmacy	7	16
TOTAL:	43	100

Unfortunately, the highest percentage of resignation is in nursing; again this is not consistent with Ministry needs and expectations.

In an attempt to survey this phenomenon, the officials were requested to list the reasons which they believe account for employee resignations. Table VIII reveals that work shift and financial factors are seen as having a strong influence on professional attrition.

If these reasons are compared to those reported by the graduates presently working and intending to resign (Table IX), it is evident that there is agreement between the officials and graduates on shift being the factor which has the strongest influence on attrition as

TABLE VIII
REASONS FOR CHS GRADUATE RESIGNATIONS AS
GIVEN BY THE MINISTRY OF HEALTH OFFICIALS
(N=10)

Reason	Frequency	Percentage
Shift	8	50
Financial	4	26
Job Dissatisfaction	2	12
Personal	1	6
Transportation	1	6
TOTAL:		100

TABLE IX
REASONS FOR INTENTION OF RESIGNATION AS GIVEN
BY GRADUATES PRESENTLY WORKING (N=24)

Reason	Frequency	Percentage
Shift	11	31
Transportation	11	31
Financial	7	19
Job Dissatisfaction	6	17
Personal	1	2

perceived by the officials, it had a strong influence on the graduates' responses.

Upon reviewing the responses of the graduates who actually resigned from the service, the two main factors influencing attrition were job dissatisfaction and family circumstances. One hundred percent of those graduates, however, found their training programs useful, and 86% found them relevant to their jobs. Furthermore, 100% would still advise their relatives to join the CHS. That is a good indication that the resignations were not primarily due to the failure of the training programs in meeting the needs and expectations of the graduates. Instead, they seem to be more closely related to specific circumstances of the professional's job and family.

Going back to shift, the main reason for resignations, one could say that in general female graduates in almost all categories resist working afternoon and night shifts. This resistance is true of both single and married graduates. For the former, the main reason is cultural and the reluctance of the Bahraini families to permit their daughters to work late shifts. For the married graduates, it is coupled to family commitments, children, and unavailability of home helpers.

Taking into consideration that almost 75% of the College graduates are females, this becomes a serious issue that has to be addressed at a national level.

E. Instructional Program Evaluation

To assess the role of the College in health manpower development, one needs to consider such questions as: "Are the training programs

producing graduates compatible to the tasks of the health service and reflecting their manpower needs?" and "Are the graduates satisfied with their training and do they consider their training pertinent to their jobs?" These questions were examined from the Ministry officials' survey and from graduates' perceptions.

Sixty-three percent of Ministry officials feel that the College's training programs are meeting their departmental needs. Some of them, however, indicated that a few programs (especially Nursing and Public Health Inspector) are not. The reasons given by officials for such a failure included broad and general comments such as immaturity of the graduates and their lack of practical experience. In addition, specific areas where the existing General Nursing Program was not meeting the needs of specialized nursing care were identified. Those were psychiatric and public health nursing. Furthermore, special public health programs (Statistics and Diet) were suggested to meet the needs of the Public Health Department.

In evaluating the College graduates, 70% of the Ministry officials reported that the graduates' training was good. Such evaluation was true of almost all programs.

In planning relevant and pertinent education programs, the CHS used the so-called "Systemic Course Design" approach whereby all the future job responsibilities of the graduates were listed and analyzed in close coordination and consultation with the directors and heads of clinical departments. The responses of these officials, however, show that 38% feel that the training programs do not coincide with actual

job responsibilities. Those programs were mainly Nursing, Public Health Inspector and Pharmacy.

Following are the weak areas in the training programs as seen by MOH officials. They are listed in priority order.

1. The On-Job Training Period (OJT) is too short.
2. The graduates' attitudes are not satisfactory.
3. Field training is not adequate.
4. English language competency does not meet the required standard.
5. Some programs are deficient in important courses (e.g., Pharmacy and Public Health).
6. Graduates lack discipline and a sense of responsibility.

It is clear that the On-Job Training (OJT) period is an area of concern to the officials. It will also be shown later when the perceptions of the graduates are presented, that lengthening the OJT period was the suggestion most frequently endorsed by the graduates.

The researcher believes that this issue should be studied carefully and that the clinical experience during OJT should be evaluated to assess whether the period is adequate and the training organized and carried out effectively.

The other areas of weakness identified by the officials should be studied and actions to remedy them initiated accordingly.

The responses of Ministry officials, however, did not stop at criticism. They also offered a number of concrete suggestions for the improvement of the training programs. Those are listed in priority order and are as follows.

1. Place more emphasis on Practical Training.
2. Prolong the On-Job Training period.
3. There should be more involvement of the service in the practical training and evaluation of students.
4. Post-basic and refresher courses should be offered.
5. Senior students should take afternoon and night shifts during their final year.
6. More incentives should be given to top graduates (such as overseas continuing education, etc.).
7. Introduction of few new courses in some of the training programs is needed.
8. Intensify training in the English language.
9. Upgrade the quality of teachers and selective recruitment.

The CHS awarding an Associate Degree, was established in 1976 to prepare middle level allied health professionals. After five years of operation, it was crucial to assess whether the Associate Degree is still regarded as the optimal level of training by the Ministry of Health, or whether the College should provide a higher level of training for the allied health professional. In response to items on this issue, 100% of the respondents stressed that the College should offer post-basic courses in all nursing and allied health programs and 77% indicated that the College should consider offering undergraduate degree programs in different allied health professions in the future. However, 82% of the respondents stressed that any future B.S. programs should be in addition to the existing Associate Degree programs, rather than replacements for them. This is an evidence of the continuing need

of Bahrain for health professionals with Associate Degrees, a need which the CHS is addressing. The need for graduates with higher levels of training, however, is also indicated.

F. Graduates' Perceptions: Program and Career

The effectiveness of an educational program is dependent on its relevance, compatibility to the future job, and the interest students find in it. Learning is more likely to occur when the learner is motivated. Motivation can be achieved by planning educational programs that are interesting, enjoyable and adequate.

The perceptions of CHS graduates revealed many interesting and significant points. For instance, Table X reveals that most of the graduates seemed to like the programs of training.

Graduates in three specialties, Pharmacy, Medical Equipment and Public Health Inspector, did not seem to be totally enthusiastic. The Public Health program graduates seemed to be radically different in their views about the program. Perhaps the underlying causes of such differences are clarified when one looks at the other responses.

To assess graduates' perceptions regarding the compatibility of service tasks with their learning experiences, they were asked whether they were assigned tasks by their supervisors which their training at CHS did not prepare them to do. Their responses as illustrated by Table XI indicate a high level of program compatibility to the service tasks.

Table XII illustrates CHS graduates' ratings concerning the degree of relevancy of training programs to their jobs. On this point, 28% felt that training coincides well with their jobs; and 68% felt that

TABLE X
DEGREE OF INTEREST BY CHS GRADUATES
IN THEIR TRAINING PROGRAMS (N=160)

Category	Number	% - Very Interesting	% Interesting	% - Not Interesting	%-Not at all Interesting
General Nursing	18	35	65	--	--
Practical Nursing	30	37	63	--	--
Pharmacy	22	7	73	20	--
Labora- tory	24	13	79	8	--
Radiog- raphy	13	--	100	--	--
Medical Equipment Maint.	8	--	75	25	--
Midwifery	20	42	48	--	--
Public Health Inspector	11	--	45	56	--
Maternal Child Care	14	--	91	9	--
TOTAL:		19%	72%	9%	--

TABLE XI
 PERCEPTION OF CHS GRADUATES ON COMPATIBILITY OF
 SERVICE TASKS WITH THEIR LEARNING EXPERIENCES
 (N=160)

Category	Number	Yes	No
General Nursing	18	12%	88%
Practical Nursing	30	4%	96%
Pharmacy	22	7%	93%
Laboratory	24	8%	92%
Radiography	13	--	100%
Medical Equipment Maintenance	8	25%	75%
Midwifery	20	10%	90%
Public Health Inspector	11	27%	73%
Maternal and Child Health	14	--	100%
TOTAL:	160	10%	90%

TABLE XII

CHS GRADUATES' RATINGS ON THE DEGREE OF
RELEVANCY OF TRAINING PROGRAMS TO THEIR JOBS
(N=160)

Category	Number	Very Well	Well	Not so Well	Poorly
General Nursing	18	29%	71%	--	--
Practical Nursing	30	10%	90%	--	--
Pharmacy	22	26%	69%	5%	--
Laboratory	24	25%	71%	5%	--
Radiography	13	23%	77%	--	--
Medical Equipment Maintenance	8	--	13%	87%	--
Midwifery	20	63%	37%	--	--
Public Health Inspector	11	9%	36%	55%	--
Maternal Child	14	55%	45%	--	--
TOTAL:	160	28%	63%	9%	--

training coincides well with their jobs. However, 10% felt that training did not coincide so well with their jobs, and while this ratio could be considered insignificant, it is worth noting that again the Medical Equipment and Public Health Inspector programs dominate this rating category.

Again, the nature of those two programs is reflected as is the need for revising them. In fact, this had been done in the Medical

Equipment program and a modified program has been proposed to the academic committee (CHS, 1980).

Table XIII illustrates the responses of the graduates with respect to the duration of programs. General Nursing, Pharmacy, Laboratory, Medical Equipment and Public Health Inspector graduates considered their programs to be too short. When they were requested to specify which part of the curriculum is short, 60% indicated the OJT period, while 40% felt that the specialty programs are not long enough.

Considering the structure of the Associate Degree programs where almost all the first year is geared to the Common Core Curriculum; while the second year deals with the specialty courses and the last three months are allocated to the On-Job Training, one could say that the graduates consider the period after the common core inadequate to cover the specialty courses and to gain the clinical experience required of them. This is in agreement with the responses of officials who showed concern regarding the duration of OJT periods and the clinical experience of the graduates.

The duration of the programs could have an implication on the graduates' perceptions regarding the difficulty of the programs. Table XIV shows that 72% of the respondents found their programs difficult, while 27% found them easy. When this was elaborated and respondents were asked to indicate the reasons for the programs being difficult, the majority attributed this feeling to the heavy load of courses (51%). Language, which might be expected to be the major reason scored only 19%, while teaching methods scored 30%. Language was, however, the major factor behind the difficulty of the practical nursing

TABLE XIII
CHS GRADUATES' RESPONSES REGARDING THE
DURATION OF THE PROGRAMS (N=160)

Category	Number	Short	Adequate	Long
General Nursing	18	33%	49%	18%
Practical Nursing	30	17%	73%	10%
Pharmacy	22	70%	26%	4%
Laboratory	24	40%	50%	10%
Radiography	13	8%	77%	5%
Medical Equipment Maintenance	8	100%	--	--
Midwifery	20	5%	95%	--
Public Health Inspector	11	64%	36%	--
Maternal Child Health	14	23%	77%	--
TOTAL:		34%	57%	9%

TABLE XIV
CHS GRADUATES' RATINGS ON THE DIFFICULTY OF PROGRAMS
(N=160)

Category	Number	Very Difficult	Difficult	Easy
General Nursing	18	--	67%	33%
Practical Nursing	30	--	70%	30%
Pharmacy	22	4%	74%	22%
Laboratory	24	--	79%	21%
Radiography	13	--	85%	15%
Medical Equipment Maintenance	8	--	75%	25%
Midwifery	20	--	60%	40%
Public Health Inspector	11	9%	64%	27%
Maternal Child Health	14	--	77%	23%
TOTAL:		1%	72%	27%

program, which is quite understandable taking into consideration the entry level of the program.

In an attempt to relate program difficulty and short duration, responses in Table XIII were compared with those in Table XIV. The tables are consistent in that graduates of the Pharmacy and Medical Equipment programs found the programs difficult because of the heavy course load and time inadequate to cover and grasp them. The results

related to the Public Health Inspector, however, reveal that teaching methods rather than the heavy course loads were the major factor behind the difficulty of the program.

1. Graduates' Suggestions for Improvement

When the graduates were asked to write their suggestions for improving the College training programs and for making them more useful, 72% of the sample had suggestions while 28% did not have any. Table XV shows the most significant suggestions the graduates forwarded. The table reveals positive and mature responses which show great concern and awareness. Although some suggestions such as prolongation of the On-Job Training program, offering a B.S. degree and better supervision in the clinical area were the most common. All the suggestions are worth careful study and consideration.

2. Service Responsibilities

Any organization is dependent on the performance of its people. Performance depends on factors in addition to those of skill, knowledge, and competency. Performance depends largely on the interaction of the individual with the organization and the satisfaction he finds in his job. It is therefore essential in any health development endeavor to facilitate all favorable conditions that would retain people and keep them motivated. Therefore, this study includes some items related to the graduates' jobs and how they are interacting with them.

Table XVI demonstrates that 32% of the graduates find their job very interesting, and 64% find them interesting; only 4% considered

TABLE XV
DISTRIBUTION OF GRADUATES' SUGGESTIONS FOR IMPROVING
TRAINING PROGRAMS AT THE COLLEGE OF HEALTH SCIENCES
(N=115)

Suggestion	Frequency	Percentage
1. Prolongation of the On-Job Training Period.	56	31%
2. Offering of B.S. Degrees.	22	12%
3. Better Supervision in the Clinical Areas.	18	10%
4. Upgrade the Quality of Teachers.	16	9%
5. Reduce the Course Load.	13	7%
6. Relate Theory More to Practicals.	10	6%
7. More Intensive English Language.	10	6%
8. Ensure That the Associate Degree is Internationally Recognized.	10	6%
9. Give More Responsibilities to Students During On-Job Training.	9	5%
10. Recruitment of More Bahraini Teachers.	8	4%
11. To Conduct Some of the Practical Sessions at the College.	5	3%
12. More Use of Audio Visual Aids.	2	1%

TABLE XVI
CHS GRADUATES' PERCEPTIONS OF THEIR
SERVICE RESPONSIBILITIES (N=160)

Category	Number	Very Interesting	Interesting	Not Very Interesting
General Nursing	18	41%	59%	--
Practical Nursing	30	37%	59%	4%
Pharmacy	22	20%	80%	--
Laboratory	24	50%	50%	--
Radiography	13	8%	92%	--
Medical Equipment	8	--	100%	--
Midwifery	20	47%	53%	--
Public Health	11	9%	55%	36%
Maternal Child Health	14	36%	64%	--
TOTAL:		32%	64%	4%

considered their job not very interesting, with 36% of the Public Health Inspectors falling into this category.

Table XVII illustrates that 14% of the graduates are very satisfied in their jobs, 77% are satisfied, and 9% not satisfied. It also reveals that the highest percentage of job dissatisfaction is evident in the Public Health Inspector graduates, followed by Maternal and Child Health and Practical Nursing.

TABLE XVII
COMPARISON AMONG PERCEPTIONS OF DIFFERENT CATEGORIES
OF CHS GRADUATES REGARDING THEIR SERVICE
RESPONSIBILITIES (N=160)

Category	Number	Very Satisfied	Satisfied	Dissatisfied
General Nursing	18	12%	88%	--
Practical Nursing	30	33%	56%	11%
Pharmacy	22	7%	93%	--
Laboratory	24	8%	88%	4%
Radiography	13	--	100%	--
Medical Equipment Maintenance	8	--	100%	--
Midwifery	30	11%	84%	5%
Public Health Inspector	11	18%	45%	37%
Maternal Child Health	14	27%	45%	28%
TOTAL:	160	14%	77%	9%

Table XVIII compares job satisfaction in different job locations with the Public Health Department, which has the highest degree of dissatisfaction.

Table XIX reveals that 43% of CHS graduates are working mornings only, 22% are working mornings and afternoons, and 35% are working mornings, afternoons and nights. To elaborate on this,

TABLE XVIII
COMPARISON AMONG PERCEPTIONS OF CHS GRADUATES IN
DIFFERENT DEPARTMENTS REGARDING THEIR SERVICE
RESPONSIBILITIES (N=160)

Job Location	Number	Very Satisfied	Satisfied	Dissatisfied
Salmania Medical Center	56	11%	87%	2%
Psychiatric Hospital	8	13%	87%	--
Bahrain Defense Force	5	33%	55%	17%
College of Health Sciences	12	20%	80%	--
Central Maternity Hospital	17	--	93%	7%
Health Centers	50	20%	68%	12%
Public Health Department	12	18%	50%	32%

TABLE XIX
TYPES OF SHIFTS CHS GRADUATES ARE WORKING
(N=160)

Category	Number	Morning	Morning & Afternoon	Morning & Afternoon/Night
General Nursing	18	29%	--	71%
Practical Nursing	30	22%	11%	66%
Pharmacy	22	13%	87%	--
Laboratory	24	54%	4%	42%
Radiography	13	31%	69%	--
Medical Equipment Maintenance	8	100%	--	--
Midwifery	30	53%	16%	31%
Public Health Inspector	11	55%	18%	27%
Maternal and Child Health	14	82%	18%	--
TOTAL:	160	43%	22%	35%

the graduates were asked for reasons for not working shifts. Shift responsibilities were not assigned, 74% indicated that they and the rest gave personal and family reasons. In fact, all graduates working in health centers are not requested to work night shifts due to the nature of the services the health centers are providing, which extend over mornings and afternoons only. The same applies to graduates working in the Medical Equipment Center.

Until recently, only nursing graduates (both general and practical) worked night shifts at Salmania Medical Center. Other allied health categories such as laboratory, pharmacy, and radiography technicians were not asked to work night shifts. Such responsibilities were delegated mainly to expatriates and a few male Bahrainis, since the majority of CHS graduates are female and Bahrain culture restricts the practice of females working late shifts.

The situation is changing, for greater Bahrainization is achieved day by day and more CHS graduates are replacing expatriates. There was a 29% increase of Bahraini employees in 1980 as compared to 3.2% in 1978 (Annual Report on Health Statistics in Bahrain, 1978; and Health Manpower Statistics, Ministry of Health, 1980).

This issue will become more critical and local health manpower will have the challenge of addressing the needs of the service. In an attempt to forecast the results of such a challenge, the graduates were requested to indicate their reactions if they were asked to work shifts.

Table XX illustrates their responses; 64% would accept working night shifts; 26% would refuse; 10% would resign. This in fact was not expected; it even contradicts the general consensus that the majority of college graduates will never accept working shifts and would ultimately resign when they are obliged to work late shifts. Although the 10% might be an insignificant ratio, it could become a serious trend. This is correlated with previous findings which revealed that 15% of the graduates presently working are intending to resign from the service. The reasons as were given by them are mainly shift (35%),

TABLE XX
DEGREE OF ACCEPTANCE BY CHS GRADUATES
FOR WORKING NIGHT SHIFTS (N=160)

Category	Number	Accept	Refuse	Resign
General Nursing	18	94%	--	6%
Practical Nursing	30	81%	4%	15%
Pharmacy	22	40%	47%	13%
Laboratory	24	50%	33%	17%
Radiography	13	18%	82%	--
Medical Equipment	8	63%	37%	--
Midwifery	30	95%	5%	--
Public Health Inspector	11	80%	20%	--
Maternal & Child Health	14	45%	45%	10%
TOTAL:	160	64%	26%	10%

transportation problems (31%), financial (19%), job dissatisfaction (17%), and personal (2%).

3. Attitudes

In fulfilling its role in health manpower development, the College of Health Sciences believes that one of its main objectives is to graduate health professionals who have pride in their profession and who recognize and appreciate their significant and integral role in health care delivery. The researcher included a few items in an attempt to evaluate the graduates' professional esteem.

Table XXI demonstrates how significant the graduates consider their professions; that their professions are very significant is felt by 36% and 63% feel that they are significant. This indicates that CHS graduates have a high level of professional esteem.

TABLE XXI

CHS GRADUATES' RATINGS REGARDING THE
SIGNIFICANCE OF THEIR PROFESSIONS
(N=160)

Category	Number	Very Significant	Significant	Insignificant
General Nursing	18	47%	53%	--
Practical Nursing	30	26%	74%	--
Pharmacy	22	33%	67%	--
Laboratory	24	58%	42%	--
Radiography	13	--	100%	--
Medical Equipment Maintenance	8	38%	50%	12%
Midwifery	30	42%	58%	--
Public Health Inspector	11	18%	82%	--
Maternal Child Health	14	45%	55%	--
TOTAL:	160	36%	63%	1%

Table XXII shows how the graduates assess their role and contribution to health care delivery. Such responses could be considered an indication of the awareness of the graduates of the health team concept and the shared responsibilities of all health professionals in health care delivery.

TABLE XXII
CHS GRADUATES' RATINGS REGARDING THEIR ROLES
AND CONTRIBUTIONS IN HEALTH CARE DELIVERY
(N=160)

Category	Number	High	Average	Low
General Nursing	18	53%	47%	--
Practical Nursing	30	34%	63%	3%
Pharmacy	22	34%	66%	--
Laboratory	24	75%	25%	--
Radiography	13	10%	60%	30%
Medical Equipment	8	75%	25%	--
Midwifery	30	47%	53%	--
Public Health	11	27%	73%	--
Maternal Child Health	14	45%	55%	--
TOTAL:	160	46%	51%	3%

It is generally presumed that professionals who are proud of their professions would never think of changing them even if they have the opportunity to do so. This issue was presented hypothetically to CHS graduates. They were asked whether they would adopt another profession if they were given the opportunity to do so. Table XXIII reveals their responses with 72% choosing the same profession, 22% choosing another health profession, and only 6% choosing a totally different profession.

TABLE XXIII
CHS GRADUATES' RESPONSES REGARDING OPPORTUNITIES
FOR CHOOSING OTHER PROFESSIONS (N=160)

Category	Number	Same Profession	Another Health Profession	Different
General Nursing	18	59%	29%	12%
Practical Nursing	30	63%	33%	4%
Pharmacy	22	74%	13%	13%
Laboratory	24	80%	13%	7%
Radiography	13	100%	--	--
Medical Equipment Maintenance	8	100%	--	--
Midwifery	30	79%	21%	--
Public Health Inspector	11	27%	73%	--
Maternal Child Health	14	82%	9%	9%
TOTAL:	160	72%	22%	6%

4. Continuing Education

The CHS has always stressed to its students the fact that learning is a continuous process. Students are made aware of the importance of continuing education and learning that extends beyond college training.

Table XXIV illustrates the CHS graduates' evaluation of their clinical experience after graduation. The rankings are 39% good, 60% satisfactory, and 1% poor. When the graduates were asked to specify the way in which they are pursuing continuing education, their responses were: through self-learning, 44%; inservice training and good supervision, 56%.

In continuing education, the graduates' responses showed that they prefer reading professional books and journals. This is a possible indication of self-study and learning habits which the College was trying to establish in its graduates. In addition, the graduates are also participating in organized continuing education activities such as lectures, seminars, projects, group discussions and special training.

G. Summary of Findings

Following is a list of findings based on the responses of the Ministry officials and of CHS graduates.

1. At current rates of production, the CHS is meeting the health services needs for all the allied health specialties except Nursing.

2. Forty-three graduates have resigned over the last three years. This represents 14% of the total number of graduates. Unfortunately, the highest percentage of resignation is in Nursing. Shift, financial

TABLE XXIV
CHS GRADUATES' RATINGS REGARDING POST-GRADUATION
CLINICAL EXPERIENCES (N=160)

Category	Number	Good	Satisfactory	Poor
General Nursing	18	24%	76%	--
Practical Nursing	30	52%	48%	--
Pharmacy	22	40%	53%	7%
Laboratory	24	63%	37%	--
Radiography	13	15%	85%	--
Medical Equipment	8	--	100%	--
Midwifery	30	53%	47%	--
Public Health Inspector	11	18%	82%	--
Maternal & Child Health	14	27%	73%	--
TOTAL:		39%	60%	1%

factors and transportation problems had a strong influence on professional attrition. Shift, however, remains a serious issue that must be addressed at the national level.

3. A majority of health officials indicated that the College training programs are meeting their needs, with some of them, however, feeling that their exact needs are not being met. The main reasons given by them were the need for specialized programs such as Public Health and Psychiatric Nursing, and Public Health Inspector.

4. In evaluating graduates, Ministry officials indicated that the graduates' training was good. Such evaluation held across almost all the specialty programs.

5. Some Ministry officials felt that the training programs do not coincide well with the job responsibilities. Those programs were mainly Nursing, Public Health Inspector, and Pharmacy.

6. Among the weak areas in the training programs, as seen by Ministry officials, are the short duration of the OJT period, the graduates' lack of discipline and sense of responsibility, and the inadequacy of field training.

7. About those weak areas, the Ministry officials made some concrete suggestions for the improvement of the training programs. Topping the list were: prolonging the OJT period, putting more emphasis on practical training, involving the service in the training and evaluation of the shortcuts, offering of post-basic and refresher courses, and including afternoon and night shifts in the final years of college.

8. There was a genuine consensus among officials that the College should consider offering undergraduate programs in various allied health professions. They also stressed that the Associate Degree should be maintained.

9. Most of the graduates seemed to like the program of training. Graduates in three specialties--Pharmacy, Medical Equipment, and Public Health Inspector--however, did not seem to be totally enthusiastic. The Public Health program graduates seemed to be radically different in their views about the program.

10. The graduates' responses indicated a high level of program relevancy and compatibility to service tasks.

11. A considerable percentage of the graduates felt that the programs are relatively short. This was mainly attributed to the On-Job Training period which the graduates considered inadequate. This is in agreement with the official responses which showed a concern regarding the duration of the OJT period.

12. The graduates' responses showed a great concern and awareness. This was manifested by a variety of significant suggestions which they made for the improvement of the College training programs. Among those were the following: prolongation of the OJT period, offering undergraduate degrees and better supervision in the clinical areas.

13. Similar to their satisfaction with their training programs, the graduates showed a great interest and satisfaction in their jobs.

14. A high level of professional esteem within the College graduates was manifested through their responses regarding the significance of their jobs and their role and contribution in health care delivery.

15. In continuing education, the graduates indicated that they are participating in organized continuing education activities such as lectures, seminars, projects and special training. Self-learning was the main avenue of their continuing education activities.

V. DISCUSSION AND RECOMMENDATIONS

A. Discussion

The purpose of this study was to assess the role of the College of Health Sciences (CHS) in health manpower development in Bahrain.

Major sources of data and feedback information were Ministry of Health officials, official documents, college graduates, and literature. The implications of these findings concerning manpower production are compared to the Ministry's needs. That the CHS is meeting the needs of the health service is evident in regard to all the allied health professions except nursing. The need outlined by officials of the Ministry of Health for 1,000 nurses is compared to the existing CHS production rate of 100 nurses per year. If the postulated model is to be used, then the CHS would only meet one-half the estimated demand at the end of the coming five years. These figures do not account for the expected attrition rate or the Bahrainization process which has been the goal of the Ministry of Health since 1968. The CHS, in realizing the need to provide more nurses for the health services, has concentrated its efforts on increasing student enrollment and intensive recruitment campaigns were conducted by the faculty in an attempt to attract more students. Mass media and school visits were also emphasized. A study was conducted by CHS (Mohmoud, 1980) to monitor student career choices and the reasons for not selecting nursing as a profession. Shift work and family disapproval were found to be the most prominent problems in attracting students to nursing. Koronfol and Al-Khalifa (1980) attributed the nurse attrition rate to financial

factors and maintained that job dissatisfaction and lack of promotion and recognition also contributed. These findings were submitted to the Ministry of Health for appropriate action. Recently, a new pay scale for nurses was proposed and approved. This may address one reason for attrition. The monetary rewards, although crucial, may not be the only answer. In reviewing the responses obtained in the study, no single factor was consistently seen by the officials or the graduates as having a major influence on the attrition rate of health professionals. Rather, it is a combination of factors that are responsible for attrition. The most important one was related to job situations, namely, late shift working hours, financial factors, and transportation problems. These areas appear to reflect frustration perceived as being caused by a chosen career that has become a dead end job.

If these factors remain, then more dropouts are to be expected. Attempts should be made at all levels to prevent the continuous drain of health professionals.

While graduate responses revealed that some would not refuse to work shift hours, others may resign if they were obliged to work shifts. This issue may raise the question as to whether the CHS has in fact integrated the health care concept in its program and, if so, then how do graduates perceive this concept?

If this issue is not addressed by CHS programs, then it may be necessary to redefine the role of health personnel. A blending to the aspect of role behavior that different health professionals have in common, such as shift responsibilities, may lead to common educational requirements. This will entail educational preparation and utilization

of the health professional at clearly defined levels. The mesh of role identification would ultimately produce more satisfied and motivated health workers. Furthermore, student awareness of the nature of health care service can be enhanced by including shift duties as part of their training. This concurs with the Ministry officials' notion of introducing night shift training in the CHS program.

The continuous production of health manpower that is not compatible to service demands may result in increased attrition in a category of health manpower. The CHS has a strong desire to evaluate its programs. The evaluation process has to be performed under conditions which focus mainly on the primary responsibility of health manpower, which is patient care. In this context, allied health programs should not be built up as an isolated entity that impacts patient care, but in a more realistic fashion that enhances the health team concept. Accordingly, to attract more Bahrainis into the health profession, the CHS has undertaken a two-pronged approach. First is the innovative introduction in collaboration with the Ministry of Education of nursing education at an earlier stage through the new nursing stream in the secondary school. Second is a provision for career mobility by initiating the undergraduate program in nursing which will start in early 1982. The study of graduate responses reveals the demand for undergraduate programs. These programs, in addition to providing career mobility, have a built-in mechanism for motivating those who opt for advanced degrees and thus help reduce the attrition rate.

Realistically, Ministry officials emphasized the need for higher qualifications in undergraduate programs that would address the current shortage in some professions.

The CHS, in realizing its role as an innovative educational institution responsible for the training of allied health professionals, encourages the health service and the graduates to evaluate its program. Ministry officials indicated in this study that the training programs met their departmental needs. However, some officials identified certain areas where the CHS programs did not meet their expectations.

Immaturity, unsatisfactory attitude, and graduates' lack of discipline were areas of concern to the officials. Certainly these issues reflect a deep concern and high expectations by Ministry officials. It is important not to overgeneralize that notion to the entire group of graduates. It should be noted that maturation develops with experience and close interaction with the concerned organization.

It is true that development of the psychiatric services is hindered by the lack of suitably qualified and experienced Bahraini nurses. This issue has addressed the need for specialized programs such as psychiatric and public health nurses as expressed by officials in this study. The CHS has always been sensitive and responsive to the demands and problems of the health care system. As a result of joint efforts of CHS and the psychiatric service, a post-basic psychiatric nursing program was developed in which the theoretical and practical aspects were integrated. This is an illustration of coordination and

collaboration between the service and CHS. This program has been unanimously endorsed and began this academic year (1981-1982).

A study related to role delineation of public health nursing in Bahrain (Khalfan, 1981) addresses the needs in public health nursing. This study was conducted to explore the possibility of starting such a program by CHS.

Program evaluation to determine the relevancy of the training program was the focus of Ministry of Health officials. In this area, as revealed by this study, certain areas were identified as weak, but most officials thought the programs were indeed relevant to health services responsibilities. This issue has always been a major concern to CHS and such findings and feedback would induce change and program development in the future. Continued program evaluation has identified specific weak areas in the training programs. These include the short duration of On-Job Training programs, the deficiency in certain courses of programs such as pharmacy and public health, and that proficiency in the English language is not at the expected level. If these responses are coupled with their suggestions for improving CHS training programs, priority areas can be identified. Topping the list is the length of On-Job Training periods, which also has been the concern of the graduates. It is recommended that studies be conducted to evaluate clinical training during the On-Job period.

The Ministry officials are also concerned with practical training, and it was indicated that the graduates lack practical skills. It appears that officials attribute this problem to time factors, and think that CHS needs to allocate more time to practical training. CHS

considers this issue differently, however, basing its view on the grounds that distribution of curricula between didactic and practical instruction (50/50) has been built on a sound systems analysis approach. Competencies have been clearly defined and analyzed as to their components. This should not be understood as CHS defending its programs; on the contrary, continuous evaluation of its programs should be an integral part of its objectives.

CHS graduates focus on the practical training issue from a different perspective. Their suggestions strongly emphasize improving supervision in the clinical areas and the integration of theory with practical. They also suggest that more responsibilities be assigned to them and that practical sessions be carried out on the CHS floor whenever possible.

To address these issues wholistically, CHS needs a regular input from the service to help guide the College's training efforts. Avoiding duplication in the clinical settings and the rational utilization of human resources in a maximally efficient and feasible manner are the goals to be striven for by CHS-health service collaboration. This idea concurs with officials' suggestions for more involvement in the training and evaluation of students by the service.

It is worth mentioning that in some programs a high degree of collaboration between CHS and the service has been achieved. In contrast, other programs have suffered from lack of coordination and input from the service. Such discrepancies could be justified on the grounds of shortage of staff, as claimed by some clinical departments.

Moreover, the reluctance of some Ministry employees to contribute to CHS programs is mainly due to the lack of financial reimbursement.

The strong belief of CHS in the HSMD concept has always been the basis for promoting the collaboration of service professionals. To strengthen this concept, CHS has submitted a recommendation to the Ministry of Health for better financial remuneration and offers for College adjunct appointments. Poor coordination between the service and the training institution may lead to irrelevant programs (Fulop, 1976). Unlike most CHS programs, the Public Health Inspector and the Medical Equipment Maintenance programs were the least relevant and pertinent as revealed by graduate responses. In the former, the service had minimal input in curriculum planning and almost no input in teaching. In the latter, however, the service had been involved in teaching a curriculum developed independently of them. To remedy these situations, collaborative efforts have been proposed. A key person in the Public Health Directorate has accepted the leading position at the Public Health program in CHS on a part-time basis. Changes in the program are already underway. As for the Medical Equipment Maintenance program, the curriculum has been jointly revised. It is hoped that this new program will prove more relevant. Nevertheless, officials were satisfied in general with the quality and performance of graduates. Although this may highlight the performance level of the graduates, it also expresses the strong commitment of service leadership to these newly graduated health professionals. The graduates, as indicated in the study, found their programs interesting. Graduates of the three specialties, Pharmacy, Medical Equipment, and Public Health

Inspectors, did not seem to be totally enthusiastic. Public Health program graduates in particular seemed to be radically different. In regard to the interaction of the graduates with their jobs, the survey illustrates that most of the graduates identified quite strongly with their jobs.

This overall healthy attitude has been manifested by a general awareness of the health team concept. Similarly, graduates' sense of contributions to health care strengthens their self-esteem as members of the health team. Furthermore, a strong commitment from the graduates to their professions has been demonstrated by their willingness to choose the same health profession if they had another opportunity.

One goal of CHS is to encourage student self-learning and continuing education. Graduate responses regarding their accomplishments in the postgraduation clinical experience has been mainly due to self-learning. The effort of the service in staff development and involving graduates in a variety of activities such as seminars and projects should also be acknowledged.

B. Recommendations

1. The yearly intake of students in Laboratory, Pharmacy, and Radiography programs at 15-17 per year for each of the coming five years should be maintained. This intake should meet the service needs as reported by the officials; 170, 72, and 81 health professionals, respectively, are needed for each of the programs for the five-year period.

2. Efforts by the Ministry of Health, Ministry of Education, and CHS should be jointly focused in order to increase and encourage

students in the general nursing programs where the service need is more than 800 nurses during the next five years. In 1983, the first group of new nursing streams will graduate. The decision that entry to the general nursing program is to be restricted to this group should be reconsidered. The graduates of the science Tawghia sections who are currently accepted in nursing programs should still be given the chance to enroll. This will increase the pool of applicants.

3. The Public Health Directorate and Medical Equipment Center should be requested to reassess their future needs for health personnel, as reported by the officials; 40 and 11 health workers are needed in each program respectively in the next five years.

The Medical Equipment program is a program for the entire Gulf region and it could continue with 2-3 Bahraini students and 7-8 Gulf region students each year.

The Public Health Inspector program should be carefully studied with the aim of transforming it into a regional program and if this suggestion does not seem feasible, then the program should be discontinued.

4. The issue of late shifts should be addressed at the national level.

5. Orientation of the incoming students to the health professions should be improved.

6. Afternoon and evening work should be incorporated in the final training years.

7. The On-Job Training period in all the College programs should be evaluated systematically and on a continuing basis.

8. Contacts with recognized universities at the regional and international levels should be established in order to achieve evaluation and accreditation for CHS programs.

9. Continued and expanded dialogue with the clinical service departments should be encouraged in order to reach more consensus and achieve more collaboration and interaction among the College training programs.

10. A more effective evaluation instrument (formative and summative) that assesses the clinical experience of students should be developed.

11. The undergraduate training programs for all the allied health professions should be approached carefully on the basis of accurate data and research.

To maintain the credibility of Associate Degree programs, entry to B.S. programs should be contingent on the successful completion of the Associate Degree and a minimum of one year of service experience.

12. The College should implement short-term continuing education courses for practitioners, in collaboration with the service.

13. There should be better financial remuneration and appointments as adjunct faculty for the health service professionals who participate in CHS training activities consistent with the existing recommendations of the College.

14. Initiation of the Public Health Nursing program should be supported at all levels.

15. The Bahraini development plan for health manpower should more adequately reflect the complex interdependence of national aspirations, educational resources, and anticipated manpower requirements. The plan should be an integral part of the overall approach to the delivery of comprehensive and inclusive health care to the people of Bahrain. If the manpower plan is firmly based on the nation's total health policy, then the likelihood of meeting projected goals of manpower quality and quantity will be substantially increased.

16. Forecasting for health manpower development should be carried out as part of a collaborative project by the College of Health Sciences and Ministry of Health, utilizing current research methodologies for predicting future trends.

VI. APPENDICES

Appendix A

State of Bahrain
Ministry of Health
College of Health Sciences

STRUCTURED INTERVIEW FOR THE
MINISTRY OF HEALTH OFFICIALS

NAME: _____

DEPARTMENT: _____

1. How many employees are there in your department?

2. How many of them are Bahrainis?

3. How many of them are CHS graduates?

4. Do you feel that the Training at the CHS reflect your department needs?

☐

YES

☐

NO... Please specify

Appendix A (Continued)

5. What are your staff requirements over the next 5 years?

6. Would you evaluate the training of the CHS graduates as:

- ☐ Very good
- ☐ Good
- ☐ Satisfactory
- ☐ Poor... Please specify

7. Do you feel that the training of the CHS graduates coincides with the nature of their job responsibilities?

- ☐ Very well
- ☐ Well
- ☐ Not so well
- ☐ Poorly... Please specify

Appendix A (Continued)

8. Do you have any input in the CHS Training Programs?

☐ Yes

☐ No

9. Do you feel that CHS should offer advanced courses (Post A.D.) to their graduates?

☐ Yes

☐ No

10. Do you feel that the CHS should offer a B.Sc. Degree?

☐ Yes

☐ No

11. Should the B.Sc. replace the Associate Degree?

☐ Yes

☐ No

12. Should the B.Sc. be an additional to the Associate Degree?

☐ Yes

☐ No

Appendix A (Continued)

13. What would you suggest to make the training at the CHS more useful?

14. What in your opinions are the specific weak areas the college should focus on during the Training?

15. Do you feel that the number of staff as compared to the work load is:

☐ Adequate

☐ Inadequate

☐ Surplus

16. How many of your Bahraini Staff (College Graduates), resigned over the past 3 years?

17. What was the reason for their resignation?

☐ Financial

☐ Transportation

☐ Personal

Appendix A (Continued)

☐

Job dissatisfaction

☐

Others... Please specify

18. What continuing education and professional development programs is your department conducting?

☐

Journal/book (Dept. Library)

☐

Seminars

☐

Group discussions

☐

Project(s)

☐

Others... Please specify

19. Any other Comments: _____

Appendix B

STATE OF BAHRAIN
MINISTRY OF HEALTH
COLLEGE OF HEALTH SCIENCES

6th May, 1981

Dear Colleague,

I am studying the ROLE OF THE COLLEGE IN HEALTH MANPOWER DEVELOPMENT IN BAHRAIN.

By answering the attached questionnaire you will be assisting me in collecting the information required.

Your help and cooperation are highly appreciated.

Kindly return the questionnaire to COLLEGE OF HEALTH SCIENCES, YOUSIF KANOO BLOCK, ROOM NO. 13.

Thanking you for your valuable time.

Sincerely yours,

Encl: Questionnaire

Appendix B (Continued)

QUESTIONNAIRE

PLEASE FILL IN THE BLANKS OR TICK (✓) THE MOST APPROPRIATE SINGLE ANSWER.

1. NAME: _____
2. YEAR OF BIRTH: _____
3. SEX:
☐ Male
☐ Female
4. MARITAL STATUS AT PRESENT:
☐ Single
☐ Married
☐ Divorced
☐ Engaged
5. QUALIFICATION OBTAINED FROM CHS
☐ Associate Degree
☐ Practical Nursing Diploma
6. SPECIALTY: _____
7. YEAR OF GRADUATION: /19
8. DATE OF APPOINTMENT: /19
9. PRESENT POSITION: _____
10. GRADE/STEP: _____

Appendix B (Continued)

11. DID YOU FIND YOUR TRAINING PROGRAM:

- ☐ Very interesting
- ☐ Interesting
- ☐ Not very interesting
- ☐ Not interesting at all

12. DID YOU FIND THE ASSOCIATE DEGREE PROGRAM:

- ☐ Short
- ☐ Adequate duration
- ☐ Long

If your answer was "SHORT"...please specify:

- ☐ Common Core
- ☐ Specialty
- ☐ On-Job Training
- ☐ Over-all Training

If your answer was "LONG"...please specify:

- ☐ Common Core
- ☐ Specialty
- ☐ On-Job Training

Appendix B (Continued)

☐ Over-all Training

13. DID YOU FIND THE ASSOCIATE DEGREE COURSES:

☐ Very difficult

☐ Difficult

☐ Very easy

If your answer was "VERY DIFFICULT" OR "DIFFICULT", please specify:

☐ Common Core

☐ Specialty

☐ On-Job Training

Would you attribute most of the difficulty of the program to:

☐ The Language

☐ Heavy load of courses

☐ Method of teaching

☐ Others, please specify...

Appendix B (Continued)

If your answer was "EASY" OR "VERY EASY", please specify:

- ☐ Common Core
- ☐ Specialty
- ☐ On-Job Training

14. DO YOU FEEL THAT YOUR STUDIES AT THE CHS COINCIDED WITH YOUR FIELD OF INTEREST OR SPECIALTY?

- ☐ Very well
- ☐ Well
- ☐ Not so well
- ☐ Poorly

15. WHAT WOULD YOU SUGGEST, TO MAKE THE TRAINING IN THE CHS MORE USEFUL.

16. IS THERE ANYTHING YOU HAVE BEEN ASKED TO DO THAT YOUR TRAINING IN THE COLLEGE DID NOT PREPARE YOU TO DO? ... SPECIFY...

Appendix B (Continued)

17. WHERE ARE YOU WORKING AT PRESENT?

☐

Salmania Medical Center

☐

Health Centers... Specify _____

☐

Central Maternity

☐

Others... Specify _____

18. HAVE YOU PARTICIPATED IN ANY OF THE FOLLOWING ACTIVITIES DURING THE LAST YEAR?

PLEASE TICK AS MANY AS YOU HAVE ATTENDED:

☐

Seminar

☐

Group discussions

☐

Project

☐

Special training course

☐

Lectures

☐

Others, Specify... _____

19. HOW INTERESTING DO YOU FIND YOUR JOB?

☐

Very interesting

☐

Interesting

☐

Not very interesting

Appendix B (Continued)

20. HOW USEFUL OR SIGNIFICANT DO YOU CONSIDER YOUR JOB?

☐ Very significant

☐ Significant

☐ Insignificant

21. HOW SATISFIED ARE YOU WITH YOUR PRESENT JOB?

☐ Very satisfied

☐ Satisfied

☐ Dissatisfied, Specify... _____

22. WOULD YOU EVALUATE YOUR CLINICAL EXPERIENCES AFTER JOINING THE SERVICE AS:

☐ Good

☐ Satisfactory

☐ Poor

If your answer was "GOOD" OR "SATISFACTORY", would you attribute that to:

☐ In-service training

☐ Good supervision and constructive feed back

Appendix B (Continued)

- ☐ Self-learning
- ☐ Others, please specify... _____
- _____
- _____
- _____

If your answer was "POOR" indicate the reason:

- ☐ Lack of motivation and interest
- ☐ The job itself required limited knowledge and skills
- ☐ Your supervisors themselves are not keen on training you
- ☐ Others, please specify... _____
- _____
- _____
- _____

23. HAVE YOU READ ANY JOURNAL/BOOK RELATED TO YOUR SUBJECT DURING THE PAST...

- ☐ 12 months
- ☐ 8 months
- ☐ 6 months
- ☐ 4 months
- ☐ 2 months

Appendix B (Continued)

24. WHAT TYPE OF SHIFT ARE YOU WORKING?

- ☐ Mornings only
- ☐ Morning and afternoon
- ☐ Morning, afternoon and night

If the answer was "MORNINGS ONLY", indicate the reason:

- ☐ Personal reasons
- ☐ Family objections for working other than "Mornings Only"
- ☐ Were not asked to (job required mornings shift only)
- ☐ Others, please specify... _____
- _____
- _____

25. IF YOU WERE ASKED TO TAKE AFTERNOON AND NIGHT SHIFTS WOULD YOU?

- ☐ Accept
- ☐ Refuse
- ☐ Resign if the pressure increases

26. AS A HEALTH WORKER WHAT IS YOUR CONTRIBUTION IN PROVIDING HEALTH SERVICES?

- ☐ High
- ☐ Average
- ☐ Low

Appendix B (Continued)

27. DO YOU THINK THE NUMBER OF BAHRAINIS WORKING WITH YOU IS:

☐ Increasing

☐ The same

☐ Decreasing

28. DO YOU FEEL THAT THE NUMBER OF STAFF AS COMPARED TO THE WORK LOAD IS:

☐ Adequate

☐ Inadequate

☐ Surplus

29. ARE YOU PLANNING TO CONTINUE WORKING FOR THE MINISTRY OF HEALTH?

☐ Yes

☐ No

If "NO", is it because of:

☐ Financial reasons

☐ Transportation problems

☐ Personal reasons

☐ Job dissatisfaction

Appendix B (Continued)

30. IF YOU HAD ANOTHER OPPORTUNITY TO CHOOSE CAREER/PROFESSION, WHAT WOULD YOU CHOOSE?

- ☐ The same as present
- ☐ Another profession within the health services
- ☐ A completely different one (not related to health services)

Appendix C

Ministry officials have been selected according to their involvement with the CHS. They are both health professionals and administrators. The Ministry officials were requested to complete the questionnaire by providing the answers that best represent their opinion and position of the issues discussed in the questionnaire. They were assured that individuals would not be identified and that all responses would be kept confidential.

Appendix D

TABLE XXV

GRADUATES OF THE COLLEGE OF HEALTH SCIENCES
FOR THE YEARS 1978, 1979, AND 1980

Year	Midwifery	General Nursing	Maternal Child Health	Practical Nursing	Laboratory	Pharmacy	Radiography	Public Health Inspector	Medical Equipment		Total
									Associate Degree	Vocational	
1978	13	17	--	39	11	13	5	6	--	--	104
1979	9	11	15	17	9	9	--	7	5	5	87
1980	4	14	10	40	15	15	9	12	15	4	141
GRAND TOTAL:	26	42	25	96	35	37	14	25	20 ^a	9 ^b	332

^a Five are Iraqis

^b All are Saudis

Appendix E

TABLE XXVI
JOB LOCATION OF COLLEGE GRADUATES (1978-1980)
AS OF MAY 1981

Location	Number	Percentage
Salmania Medical Center	105	35%
Health Centers	81	27%
Central Maternity Hospital	21	7%
College of Health Sciences	10	3%
Psychiatric Hospital	12	4%
Bahrain Defense Force Hospital	6	2%
Public Health Department	26	9%
Resigned	43	14%
TOTAL:	304	100%

Appendix F

بسم الله الرحمن الرحيم

إن الهدف من هذا الاستبيان هو معرفة ودراية دور كلية العلوم الصحية وأهميتها في تطوير
المنهج المتبعة في المجال الصحي في البحرين .

لذا أوجو منكم التعاون معي في الإجابة على هذا الاستبيان بصدق .

وسكون لتعاونكم أيمت الأثر في نجاح هذا الاستبيان .

وفقاً الله جميعاً لهذه هذه البلاد .

فهد بنعقوب الناصر

كلية العلوم الصحية

تج ٢٥٢٦١٢

٢٥٢٦١٢ ٢٥٢٦١٢

Appendix F (Continued)

الاستبيان

اجب بوضع علامة ☒ عند الاجابة الصحيحة :

٠١ الاسم :

٠٢ العمر :

٠٣ الجنس :

ذكر ☐

انثى ☐

٠٤ الوضع الاجتماعي :

افرنج ☐

متن ☐

مطلق ☐

مطابق ☐

٠٥ اذا كنت متزوجا ، فهل لديك أطفال ؟

كم عددكم ☐ نعم ☐

لا ☐

٠٦ من اين جاء خبرك عن كلية التعليم الصحية ؟

لا ☐

٠٧ جاري الشهادة التي حصلت عليها :

شارك في التعليم ☐ ضمنى ☐

التعليم العظمى ☐

Appendix F (Continued)

٠٨ ماهر ضيفك لدراساتك بكتبة العلوم الصحية :

ضخيدة ☐فهرضخيدة ☐

٠٩ هل كنت دراستك بكتبة المعلم الصحية ثلاثة وعطابقة للوظيفة التي التفتت بها بعد التخرج ؟

نعم ☐لا ☐

١٠ هل صلت بوزارة الصحة بعد التخرج ؟

نعم ☐لا ☐

١١ اذا كان الجواب "نعم" فأين صلت ؟

مركز السلامة الطبي ☐المراكز الصحية ، ... اذكر اي ضيا ☐اماكن اخرى ... اذكرها ☐

١٢ ماهر الندة التي صلت بها بوزارة الصحة ؟

سنة _____

شهر _____

Appendix F (Continued)

١٣. هل استقلت من تلك الوزارة المصحة ، هل أصبحت لك القدرة لمواصلة عملك في الخارج ؟
☐ نعم ، اذكر المكان _____ والتاريخ _____ ام

☐ لا

١٤. متى استقلت من تلك الوزارة المصحة ؟
 _____ ام

١٥. لماذا استقلت من تلك الوزارة المصحة ؟

☐ ظروف عائلية

☐ طبيعة العمل

☐ اسباب مالية

☐ المتفرغ في وظيفة اسهل ومرتبه اكر

☐ صبر عدم الميعة في العمل

☐ ظروف العمل

١٦. هل انت على علاقة واصال بزملائك في كبة التعليم المصحة ؟

☐ نعم

☐ لا

١٧. ان استشارك احد اصدقاءك او زملائك في كبة التعليم المصحة لغير تخصصك ؟

☐ نعم ، اذكر بالى من التواريخ _____

☐ لا

Appendix F (Continued)

١٨. هل قدمت على اسقاطك من وزارة الصحة ؟

نعم ☐لا ☐

١٩. هل تفكر بالمعودة للعمل بها ؟

نعم ☐

لا ☐ ... لماذا ؟

Appendix F (Continued)

TRANSLATION OF THE ARABIC QUESTIONNAIRE

PLEASE FILL IN THE BLANKS OR TICK (✓) THE MOST APPROPRIATE ANSWER.

1. NAME: _____

2. AGE: _____

3. SEX:

☐ Male

☐ Female

4. MARITAL STATUS:

☐ Single

☐ Married

☐ Divorced

☐ Engaged

5. IF MARRIED, DO YOU HAVE ANY CHILDREN?

☐ Yes Number: _____

☐ No

6. YEAR OF GRADUATION: 19_____

7. QUALIFICATION OBTAINED FROM THE CHS:

☐ Associate Degree

☐ Practical Nursing

Appendix F (Continued)

8. HOW WOULD YOU EVALUATE YOUR TRAINING AT THE CHS?

☐ Useful

☐ Not useful

9. DID YOUR TRAINING AT THE CHS COINCIDE WITH YOUR JOB?

☐ Yes

☐ No

10. DID YOU WORK FOR THE MINISTRY OF HEALTH AFTER GRADUATION?

☐ Yes

☐ No

11. If "YES", WHERE?

☐ Salmania Medical Center

☐ Health Center..., specify: _____

☐ Others..., specify: _____

12. HOW LONG DID YOU WORK FOR THE MINISTRY OF HEALTH?

_____ months

_____ years

13. WHILE WORKING FOR THE MINISTRY OF HEALTH, HAVE YOU BEEN GIVEN THE OPPORTUNITY FOR HIGHER EDUCATION?

☐ Yes... Where? _____

When? (give date) _____

Appendix F (Continued)

☐ No

14. WHEN DID YOU RESIGN FROM THE MINISTRY OF HEALTH?

19____

15. WHAT WAS THE REASON FOR YOUR RESIGNATION?

☐ Family reasons☐ Nature of the job☐ Financial reasons☐ For better paid job☐ Did not feel like working☐ Job circumstances

16. ARE YOU IN CONTACT WITH YOUR COLLEAGUE CHS GRADUATES?

☐ Yes☐ No

17. WOULD YOU ENCOURAGE ANY OF YOUR FRIENDS AND RELATIVES TO JOIN THE CHS?

☐ Yes, ... in Program _____☐ No

18. ARE YOU SORRY FOR RESIGNING FROM THE MINISTRY OF HEALTH?

☐ Yes☐ No

Appendix F (Continued)

19. ARE YOU THINKING OF REJOINING THE MINISTRY OF HEALTH?

☐

Yes

☐

No..., why?

Appendix G

TABLE XXVII
 EXPECTED NUMBERS OF CHS GRADUATES
 FOR THE YEARS 1981, 1982

CATEGORY	YEAR	
	1981	1982
Midwifery	4	6
Psychiatric Nursing	--	10
General Nursing	26	30
Maternal and Child Health	--	10
Practical Nursing	40	40
Laboratory	20	15
Pharmacy	18	15
Radiography	14	15
Public Health Inspector	17	15
Medical Equipment		
a. Associate Degree	8	8
b. Vocational	5	10
TOTAL:	152	174

VII. BIBLIOGRAPHY

- Abou Zaid, A.A.: Annual Report on Health Centers. Bahrain, Ministry of Health, 1980.
- Al-Hamer, F.Y. and Kronfol, N.M.: Health care staffing in Bahrain. World Hospitals 26: 34-36, 1980.
- Anderson, J. and Graham, A.: A problem in medical education: Is there an information load? Medical Education 14: 4-7, 1980.
- Auster, D.: Sex difference in attitudes toward nursing education. Journal of Nursing Education 18: 19-28, 1979.
- Baker, T., Ferguson, D., Hall, T., Haynes, A. and Taylor, C.: Health Manpower Planning in Developing Nations (mimeographed). Department of International Health, The Johns Hopkins University, Baltimore, 1966.
- Baker, T.D. and Parlman, M.: Health Manpower in a Developing Economy: Taiwan, A Case Study in Planning. Baltimore, Johns Hopkins Press, 1967.
- Baker, T.D.: Health manpower planning. In Health Planning: Quantitative Aspects and Quantitative Techniques, ed. William A. Reinke. Baltimore, Department of International Health, Johns Hopkins University, 1972.
- Baker, T.D.: Productivity. In Health Manpower Planning: Principles, Methods, Issues, ed. T.L. Hall. Geneva, World Health Organization Publications, 1978.
- Bennett, F.J.: Medical manpower in East Africa: Prospects and problems. East African Medical Journal 42: 149-161, 1965.
- Bureau of Health Manpower Education: The Supply of Health Manpower: 1970 Profiles and Projections to 1990. Washington, D.C., U.S. Government Printing Office, 1972.
- Carter, L.B.: Improving relationships between nursing service and education in the clinical agency. Journal of Nursing Education 18: 7-12, 1979.
- Census, 1981: Directorate of Statistics, State of Bahrain, 1981.
- College of Health Sciences: 1979-1980 Catalogue. Bahrain, College of Health Sciences, 1979.
- College of Health Sciences: Academic Plan. Bahrain, College of Health Sciences, 1979.

BIBLIOGRAPHY (Continued)

- College of Health Sciences: A Summary Report on the College of Health Sciences 1981. Bahrain, College of Health Sciences, 1981.
- Crawford, B.L., Kramer, L.M. and McClendon, B.J.: Workshop on allied health manpower: A cooperative approach to data collection and analysis. Public Health Reports 95: 80-86, 1980.
- Dickey, F.G.: The future of allied health education. Journal of Allied Health 9: 4-13, 1980.
- Directorate of Public Health: Annual Report on Health Statistics. Bahrain, Ministry of Health, 1978.
- Drice, A.D., Hunter, V. and Williams, B.S.: The influence of academic support programs on retention of minority nursing, 1971-1974. Journal of Nursing Education 17: 22-34, 1978.
- Dunkerley, D.: Wastage among student and trained nurses. Nursing Times : 193-194, January, 1975.
- Fakhro, A.M.: A general discussion of the health care system in Bahrain. In Human Resources for Primary Health Care in the Middle East, ed. American University of Beirut, pp. 185-194. Beirut, American University of Beirut, 1980.
- Fein, R.: The Doctor Shortage: An Economic Diagnosis. Washington, D.C., Brookings Institution, 1967.
- Fendall, N.R.E.: Primary medical care in developing countries. International Journal of Health Services 2: 304, 1972.
- Fulop, T.: New approaches to a permanent problem: The integrated development of health services and health manpower. WHO Chronicle 30: 433-441, 1976.
- Gish, O.: Doctor Migration and World Health. London, G. Bell and Sons, 1971.
- Goldfarb, M.: Methodological problems of health manpower planning models. Medical Care Review 32: 705, 1975.
- Golladay, F.L., Miller, M. and Smith, K.: Allied health manpower strategies: Estimates of the potential gains from efficient task delegation. Medical Care 11: 457-469, 1973.
- Hall, T.L.: Health Manpower in Peru. A Case Study in Planning. Baltimore, The Johns Hopkins Press, 1969.

BIBLIOGRAPHY (Continued)

- Hall, T.L.: Chile health manpower study: Methods and problems. International Journal of Health Services 1: 170, 1971.
- Hall, T.L.: Estimating Requirement and Supply. Where Do We Stand? Pan American Conference on Health Manpower Planning, September 10-14, 1973. Scientific publication No. 279. Washington, D.C., Pan American Health Organization, pp. 64-65, 1974.
- Hall, T.L.: Health Manpower Planning: Principles, Methods, Issues. Geneva, World Health Organization Publications, 1978.
- Hansen, W.L.: An appraisal of physician manpower projection. Inquiry 7: 104-112, 1970.
- Harbison, F. and Mayers, C.A.: Education, Manpower, and Economic Growth. New York, McGraw-Hill Book Company, 1964.
- Hepner, J.O. and Hepner, D.M.: The Health Strategy Game: A Challenge for Reorganization and Management. St. Louis, C.V. Mosby, 1973.
- Herdson, P.B. and Mason, G.H.: Pathology medical manpower planning, New Zealand: Results of a 1977 Survey. New Zealand Medical Journal 87: 348-351, 1978.
- Holcomb, J.D., Ponder, L.D., Evans, D.W., Rouch, R.F. and Buckner, W.P.: Preparing faculty for allied health professions: A follow up study of a program's graduates. Journal of Allied Health 9: 41-48, 1980.
- Holden, W.: A perspective of physician manpower. The New England Journal of Medicine 300: 493-495, 1979.
- Holder, L.: Allied health perspective in the 1980's. Journal of Allied Health 10: 5-13, February, 1981.
- Jacoby, I.: Impact of health professions education assistance act on specialty among first-year residents. Public Health Reports 94: 22-30, 1979.
- Katz, F.M.: Guidelines for Evaluating a Training Program for Health Personnel. Geneva, World Health Organization, 1978.
- Khalfan, S.A.: Role Delineation of Public Health Nursing in Bahrain. Masters thesis, University of Illinois, Chicago, 1980.
- Klarman, H.E.: Economic aspects of projecting requirements for health manpower. Journal of Human Resources 4: 360-376, 1969.

BIBLIOGRAPHY (Continued)

- Kriesberg, H., Wu, J., Hollander, E. and Bow, J.: Methodological Approaches for Determining Health Manpower Supply and Requirements, Vol. I: Analytical Perspective. DHEW Publication No. HRA 76-14511. Washington, D.C., U.S. Government Printing Office, 1976.
- Kronfol, N.M. and Al-Khalifa, H.: Career Dissatisfaction Among Bahraini Nurses. Bahrain, College of Health Sciences, 1980.
- Last, J.M.: Health manpower in international perspective. The Milbank Memorial Fund Quarterly 48: 221, April, 1970.
- Mahmoud, K.H.: Career Choices in Allied Health: A Survey of College of Health Sciences Students. Bahrain, College of Health Sciences, 1980.
- McKibbin, R.C.: Allied abstracts. Journal of Allied Health 8: 254-255, November, 1979.
- Mejia, A. and Pizurki: World migration of health manpower. WHO Chronicle 30: 455-460, 1976.
- Mejia, A.: The health manpower process. In Health Manpower Planning: Principles, Methods, Issues, ed. T.L. Hall. Geneva, World Health Organization Publications, 1978.
- Ministry of Health: Health Services in the State of Bahrain. Bahrain, Ministry of Health, 1968.
- Ministry of Health: Health Services in the State of Bahrain. Bahrain, Ministry of Health, 1977.
- Ministry of Health: Health Services in the State of Bahrain. Bahrain, Ministry of Health, 1978.
- Ministry of Health: Health Manpower Statistics. Bahrain, Ministry of Health, 1980.
- National Commission on Community Health Services: Report of the Task Force on Health Manpower. Washington, D.C., Public Affairs Press, 1967.
- Nelson, A., Raad, N. and Zahar, L.: Evaluation Visit to College of Health Sciences, Bahrain. March, 1980.
- Orkin, F.K.: A critique of the Bureau of Health Manpower: Estimates of the need for anesthesia manpower. Medical Care 26: 878-885, 1978.

BIBLIOGRAPHY (Continued)

- Personnel Training Act of 1966 as Amended: Report to the President and Congress on the Allied Health Professions. Washington, D.C., U.S. Government Printing Office, 1969.
- Popov, G.A.: Principles of Health Planning in the USSR. Public Health Papers No. 43. Geneva, World Health Organization, 1971.
- Robbins, A.: Allied health manpower. Inquiry 7: 56, 1970.
- Rosenblatt, P. and Huard, B.: The nurse practitioner as a physician substitute in a remote rural community: A case study. Public Health Reports 94: 571-575, 1979.
- Sajid, A.W.: Consultancy Assignment Report, College of Health Sciences. Bahrain, College of Health Sciences, 1979.
- Shipp, P. and Levine, A.: Addendum to Health Manpower Development Indicators by G. Walt, 1980. London, Evaluation and Planning Centre, Ross Institute, London School of Hygiene and Tropical Medicine, 1980.
- Smith, K.R., Miller, M. and Golladay, F.: An analysis of the optimal use of inputs in the production of medical services. Journal of Human Resources 7: 208-225, 1972.
- Sorkin, A.L.: Health manpower planning. In Health Manpower: An Economic Perspective, ed. A.L. Sorkin, pp. 151-166. Lexington, Massachusetts, Toronto, Lexington Books, D.C. Heath and Company, 1977.
- Sorkin, A.L.: Allied health manpower. In Health Manpower: An Economic Perspective, ed. A.L. Sorkin. Lexington, Massachusetts, Toronto, Lexington Books, D.C. Heath and Company, 1977.
- Sorkin, A.L.: Health Economics in Developing Countries. Lexington, Massachusetts, Toronto, Lexington Books, D.C. Heath and Company, 1977.
- Stambler, H.V.: Health manpower for the nation: A look ahead at the supply and requirements. Health Manpower 94: 1-10, 1979.
- Staropoli, C.J. and Waltz, C.F.: Developing and Evaluating Educational Programs for Health Care Providers, 1978.
- Sukker, M.Y.: Visit to College of Health Sciences, Bahrain, June, 1979: Reference No. WHO, EMRO, EM/HMD/416, 1979.

BIBLIOGRAPHY (Continued)

- Switzer, M.E.: Allied health professions planning for the future. Journal of Allied Health 9: 14-21, 1980.
- Talamanca, F.: Procedures to identify functions, activities and tasks of health personnel. MCH/HMD/80, May 1, 1980.
- Taylor, C.E., Dirican, R. and Deuschle, K.W.: Health Manpower in Turkey. Baltimore, The Johns Hopkins Press, 1968.
- Walt, G.: Health Manpower Development Indicators: An Outline of Potential Use and Examples of Indicators. London, Evaluation and Planning Centre, Ross Institute, London School of Hygiene and Tropical Medicine, 1980.
- Watson, E.J.: Meeting community health needs: The role of the medical assistant. WHO Chronicle 30: 91-96, 1976.
- World Health Organization: Health Manpower Planning. Geneva, World Health Organization, 1978.

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