

The Problems in Health Manpower Development: A Conceptual Analysis

by Dal Sun Han, M. D. *

In health service as in other sectors of the economy, there are never enough resources available to meet all conceivable needs. Nevertheless, the effort to do everything possible to improve health conditions in all strata of the population is increasingly perceived as a moral imperative throughout the world (Myrdal, 1970). Taken together, achieving effectiveness and efficiency in the use of available resources should be a central consideration in health care. This is of particular importance in underdeveloped countries, where health resources are extremely scarce.

Manpower constitutes a crucial resource in health service. The allocation of manpower resources to their most productive uses is one of the main problems confronting health planners and policy makers. Increased attention has thus been given to the planning of health manpower development.

The first step in health planning of any sort is to identify and define problems through analysis of the present situation. This paper is intended to provide a conceptual scheme for such an analysis of health manpower. It will begin with identification of the elements and processes involved in health manpower development. Then manpower conditions that are essential to good health care will be considered. Finally the basic objectives of health manpower planning and the general nature of planning problems will be discussed.

I. Components of Health Manpower Development

Human resource development in economic terms is described as the accumulation of human capital and its effective investment in the development of the economy (Harbison and Meyers, 1964). Health manpower development likewise can be defined as the accumulation of health personnel and their effective utilization in the improvement of health. Such a definition places the elements and processes involved in a clearer perspective.

From this definition, two main segments of the development process can be identified: the education and training to supply health personnel having knowledge and skills requisite to the provision of health services and the utilization of these personnel in health care to meet health needs. This means that health manpower development is

* School of Public Health, Seoul National University

part of the activities of educational and health systems. These two systems, together with relevant social, economic, technological, and other factors constitute the environment which shapes the course of development and determines its limits. Some of these could be modified through either direct manipulation or development of health manpower.

The final output of health manpower development is an improved level of health of the population. Many things contribute to health. Health care is one of them, and it is through its effect on health care that health manpower development contributes ultimately to the improvement of health. Improved health care thus can be viewed as the intermediate objective of health manpower development.

Students acquire knowledge and skills through the educational system to become effective health workers. All forms of further training and retraining have to be included in the educational segment in that they are the processes through which more competent health manpower is produced. The service they provide is one of the basic resources in health care. Seen as an input element to the health system, health manpower interacts with other system inputs to provide care that contributes to health, the final output of health manpower development. The elements and processes of development may be adjusted to improve output achievement by the feed-back, channeled information, which may be derived from every phase of development.

II. The Manpower Component of Good Health Care

As pointed out before, the final output of health manpower development is health, and the means for achieving this end is the contribution to health care. This necessitates identifying the manpower component of good health care.

Accessibility, continuity, quality, and efficiency constitute the essential elements of good health care (APHA, 1965). For the assurance of accessibility and continuity, enough of various kinds of health personnel must be available to meet all needs. Essential to high quality care is the occupational competence of individual health workers. Achieving efficiency requires a functional allocation which will place adequate numbers of health workers in all required activities and will delegate responsibility to the least expensive kind of personnel capable of maintaining appropriate quality. To improve accessibility, continuity, and efficiency, there should be adequate geographic distribution to have personnel where they are most needed.

In summary, the manpower variables associated with adequacy of health care are: 1) available range of health personnel; 2) number of personnel; 3) functional allocation among the various types of personnel; 4) occupational competence of individual workers; and 5) geographic distribution. Adequacy in these variable constitutes the manpower component of good health care.

It should be noted that although these variables are distinguishable to some extent, they are not discrete or independent but are interrelated and interactive with each other. Health manpower development, therefore, has to be directed toward the

achievement of overall adequacy in all of these variables. The specific standard of adequacy may differ depending upon the local situation because health is influenced by many things other than health care, which in itself involves interaction between various resources and institutions. However, the standard has to comply with the criteria of effectiveness and efficiency in the use of health resources.

III. Basic Concept of Health Manpower Planning

From the preceding description, it follows that health manpower planning is fundamentally a process concerned with achieving effectiveness and efficiency in development of health manpower to improve health care.

Effectiveness requires the availability of competent health workers, i. e., the adequate supply of all kinds of health personnel and the occupational competence of individual health workers. Efficiency can be achieved by adequate functional allocation and geographic distribution. Prerequisite to efficiency is effectiveness, and efficiency increases effectiveness, i. e., there is interaction between the two. Thus effectiveness and efficiency criteria incorporate the concept of the manpower component of good health care. This implies that health manpower planning is concerned with not only increasing or decreasing the supply of health personnel to balance estimated shortages but also inducing desirable changes in all the manpower variables to increase overall effectiveness in development. Since those variables are associated with other elements and processes of both the educational system and the health system, the planning must be made within the framework of total educational and health planning.

In the light of the long lag time in training health professionals, much emphasis has been placed on long-range planning. The implication of long-range planning is that current decisions to do something are made in the light of their future consequences (Steiner, 1966). As already noted, planning is concerned with all the manpower variables associated with the adequacy of health care. They are interactive with each other and the relationship may be influenced by the environment in which development occurs. Therefore, prerequisite to sound planning are identification of relevant variables, understanding of the interrelationships among them, and measurement of the effects of their changes on the effectiveness of development. The following comment on general manpower study is in accord with this point:

It (manpower study) is not a balance of present supplies, plus the numbers in the pipeline, minus those who will retire or die, yielding a future net supply which is then juxtaposed against one or another estimate of future requirements based on data derived from the national plan, employer's estimates, or other guidelines. While such an approach may have some value in establishing limits for gross categories of manpower, depending on the ready availability of planning data, it is only the beginning of a sound inquiry (Ginzberg and Smith, 1967).

IV. Problems in Health Manpower Development

Having described the basic concepts in health manpower study, it is desirable to consider the problems which it has to deal with. Yet, there is no scientific answer to the question of how much health services contribute to the health of a population, and there is no definite model to translate health indices into community goals or relative priorities for various health programs (Hilleboe and Schaeffer, 1968). This poses the difficulties in the precise definition of the problems in health manpower development to which planning should be addressed. These difficulties can be minimized however if we shift our focus to those unmet health needs attributable to inadequate health manpower.

The constituents of the manpower component of good health care can thus provide a general guideline for identification and classification of the problems. Very simply, they may be represented as inadequacy in one or more of the manpower variables associated with quality of health care. Such grouping of the problems makes them more tangible and manageable. Although none of these groups is completely discrete or separable, as implied by the fact that the variables are interactive with each other, a description of each of the categories will be helpful for understanding the general nature of the problems.

Quantity: Although the main focus of health manpower analysis has been the estimation of shortages, it was already observed that a sufficient number of health personnel is only one of several elements making up the manpower component of good health care. Increased supply of health manpower does not necessarily mean as much of an increase in health services. Health personnel cannot provide in a void; other resources and institutions are involved. Moreover the various health manpower fields both complement and substitute for each other (Hiestand, 1968). A shortage of physicians for example could have two possible effects. If physicians are uniquely necessary, any shortage of them will be accompanied by a lack of demand for nurses and other paramedical personnel, while an increase in the number of physicians will be accompanied by a nearly equivalent increase in the employment of various auxiliary personnel. On the other hand, to the extent that nurses and other paramedical personnel are substitutes for physicians, a shortage of physicians will add to the demand for paramedical personnel, while an increased supply of physicians reduces the demand for paramedical personnel. Similar relationships exist between other health personnel. This indicates that the emphasis on personnel shortages is misplaced and that attention should be directed rather to the very real shortage of health services as such (Shuman, *et al.*, 1972).

The oversupply problem is frequently neglected under the shade of the problem of undersupply, though it may deserve attention. There exists some indication that the higher the marginal revenue received by physicians for certain services, the more they are used, and overutilization can occur in a fee-for-service situation (Mansma, 1970). Physicians

are in a position to determine the demand for their own services to some extent because of the fact that the consumer is often not a good judge of what he is buying or what he should buy in the field of medical care. Therefore, physicians can, within broad limits, earn the income they think they are entitled to (Ginzberg and Ostow, 1969). Taken together, the oversupply of physicians may induce overtreatment and threaten effective and efficient use of the various resources and the quality of care.

Geographic Distribution: The manpower to provide services generally must be located close to or in the immediate proximity of the place where the services are to be consumed (Ginzberg and Ostow, 1969). Appropriate geographic distribution is thus essential to effective utilization of health manpower. It is well known that the basic distribution problems are of socio-economic origin in private enterprise systems of health service. Hiestand (1968) stated that urbanization, income levels, population density, and education are all highly correlated, and cause and effect cannot be traced.

In this context, it would require a tremendous increase in the supply to bring about any significant redistribution of physicians with rapid increases in the number of physicians to population (Ginzberg and Ostow, 1969). An increased supply could result in oversupplied urban centers and an increase in foreign migration unless appropriate measures are taken to maintain physicians in the areas where their services are required. Included in these measures are adjustments in working conditions, income, facilities, social environment, and so forth. Underdeveloped countries cannot compete with affluent countries in meeting these conditions, and it is hardly expected that they can be provided in rural areas to the extent that they obtain in urban areas. The solution to this problem calls for alternative approaches improvised to meet specific situations.

In geographic distribution, the dimension of quality is often neglected. Since an important characteristic of any professional service is the marked difference among the members authorized to provide services, increasing total supply will never prevent those in a preferred market position from having preferred access to those with the most talent (Ginzberg and Ostow, 1969). This proposition suggests that the wide variation in training requirements within the same profession can aggravate the maldistribution problem by adding a quality dimension to it. For example, specialist physicians in Korea who must receive five years of post-graduate education tend to be drawn to the lucrative urban markets, while the services that are available in rural areas are almost exclusively provided by general practitioners who are not required to take any formal post-graduate education. Thus the urban-rural unbalance in medical service supply, which is already severe when considered in terms of the gross physician-population ratio, is further aggravated by the fact that those who work in rural areas in general have much less training than those in urban areas.

Available Range: The range of health personnel here refers to the professional categories and manpower levels available, e.g., physician, dentist, social worker, registered nurse, practical nurse, and nursing aide. Without a comprehensive pool of manpower categories, it is impossible to insure the availability of all the required kinds of services or the provision of services by appropriate personnel.

A reasonable continuum of manpower levels is necessary for adequate functional allocation of health manpower. This problem, however, should be examined in connection with the magnitude of the demand for each service, service priorities, and the capacity of the health system to meet the demand. In poor countries, the health system may have to mobilize available resources into rather basic health services,* and consumer demands for certain services may be scanty. In such a limited market situation, too much division of labor among health personnel could be harmful (Zimmerman, 1966). This concept must be taken into account for the assessment of adequacy in available professional categories of health personnel.

Functional Allocation: This can be considered from three angles: functional distribution between different professional categories of health personnel, between different levels, and within the same category and level. In any case, the underlying principle is effective and economic utilization of health manpower. The problem, then, is giving each service exactly the level of skill it needs, no more and no less, and having the appropriate number of health personnel in each area of the various health activities.

Functional reallocation, by and large, means the substitution of lower level manpower for higher level manpower. Such an effort requires the design of a mechanism to facilitate good supervision and careful identification of health activities that can be delegated to lower level personnel without endangering the quality of care. Such changes thus include changes in the organization of services and in training programs to make professionals fit their new roles better. This approach could improve efficiency in the use of manpower resources through the increased use of lower level manpower saving higher level manpower for jobs which require their expertise. The substitution also has some implications for the resolution of geographic maldistribution**. This is related to the notion that what we need is health services, not health personnel as such.

Quality: The essential characteristic of a competent health worker is the mastery of knowledge and skill needed to fulfill their role requirements. Good applicants and professional education of relevance and quality are necessary to produce competent health workers.

The ability to recruit good applicants involves attractive incentives in terms of career prospects, social prestige, income and so forth. The relevance of education and training is related to efficiency of care as well as to quality. It is obviously a waste of resources to train health workers in sophisticated knowledge and skills which are irrelevant for their future functions. The required functions to some degree depend upon the local situation. Professional education must thus be fitted to the local situation.

Improved quality is frequently equated with a longer period of training, but this is not always valid (Hiestand, 1968). Since the length of a training program is a crucial

* An analogy of the evolution of medical services in the poor countries to their economic evolution is described by Rene Dubus (1965, pp. 450-52).

** Stroe (1969, p. 239) pointed out that incorporation to the consideration of distribution into manpower analysis may suggest new types of health personnel and new ways of utilizing auxiliary personnel. The substitution was suggested as an alternative pattern of manpower distribution by Baker, *et al.* (Undated, pp. 164-69).

incentive, longer training programs may add to the difficulty of recruiting more and better applicants.

The main problems in this category can be summarized as the relevance and quality of professional education, and the ability of the health system to attract good applicants.

V. Summary and Implications

This paper discussed health manpower development and planning at the conceptual level. We considered the concepts of health manpower development, the manpower component of good health care, health manpower planning, and the problems to which planning and development should be addressed. The manpower component of good health care was used as the guideline for identification and classification of the problems.

The articulation of general considerations of manpower problems revealed that they were all associated with a complex of factors both inside and outside the health system. It suggests that simple supply-and-demand analysis of traditional kinds of personnel in current organizational settings involves some danger of potentially misleading manpower policy. The shortage of health services is not always caused by health personnel shortages. Even though the estimation of personnel shortages by all means was made accurately, the increased supply could not guarantee their distribution in functional and geographic areas where they are needed.

Thus, prerequisite to the formulation of effective manpower policy are a thorough examination of all the variables relevant to health care delivery, including manpower variables, and measurement of the effects of changes on the effectiveness of the entire health system. Shuman and his colleagues (1972) pointed out:

The crux of the problem is to investigate and assess alternative delivery systems through which services can be provided, prior to any conclusions as to the number of particular kinds of personnel required. Such an investigation would include consideration of possible methods for increasing productivity (e.g., introduction of technology, transfer of specific tasks to less skilled types of personnel) and organizational change aimed at improving the flow of patients and the provision of services. The primary problem then, is to determine the mix of manpower that, together with the necessary equipment and facilities, will provide an identified population with the health services it requires at a cost it can afford.

Health manpower development is a part of the development of health services, and this in turn is a part of national development. Development is growth plus change (Cibotti, 1971). Accumulation of health personnel will not continuously promote community health unless it is accompanied by other necessary measures. This notion is of particular relevance to the underdeveloped countries which cannot afford waste of resources, including skilled manpower.

In short, many health manpower problems have their origin in the poorly planned, unsystematic nature of the health system and in other environmental aspects rather than just in personnel shortages or surpluses. A planning effort to improve the entire

health system especially the organization and financing of services, based on the realities of the society, is thus urgently needed. A viable plan for health manpower development can be made only when it is part of such an effort. Otherwise, health manpower development could be entirely misdirected.

REFERENCES

- American Public Health Association. *A. Guide to Medical Care Administration*. New York: American Public Health Association, 1965.
- Baker, Timothy; Ferguson, Donald; Hall, Thomas; Haynes, Alfred; Taylor, Carl. "Health Manpower Planning in Developing Nations". The Johns Hopkins Division of International Health. (Mimeographed), Uudated.
- Cibotti, R. "Introduction to the Analysis of Development and Planning." *International Journal of Health Services*. I (August, 1971), 201-24.
- Dubos, Rene. *Man Adapting*. New Heaven; Yale Univ. Press, 1965.
- Ginzberg, Eli, and Ostow, Miriam. *Men, Money and Medicine*. New York, Columbia Univ. Press, 1969.
- Ginzberg, Eli, and Smith, Herbert A. *Manpower Strategy for Deloping Countries; Lessons from Ethiopia*. New York; Columbia Univ. Press, 1967.
- Haribson, Frederick, and Meyers, Charles A. *Education, Manpower, and Economic Growth*. New York: McGraw-Hill, 1964.
- Hiestand, Dale L. "Research into Manpower for Health Services." *Milbank Memorial Fund Quarterly*. Vol. 44, No. 4, Part II (October, 1968), 146-79.
- Hilleboe, Herman E., and S. Morris. "Evaluation in Community Health: Relating Results to Goals." *Bulletin of New York Academy of Medicine*, 44 (February, 1968), 140-58.
- Mansma, George N., Jr. Revenue and the Demand for Physicians' Services." *Empirical Studies in Health Economics*. Edited by Herbert E. Klarman and Helen H. Jaszi. Baltimore: The Johns Hopkins Press, 1970.
- Myrdal, Gunnar. *An Approach to the Asian Drama*. Vintage Books. New York: Random House, 1970.
- Shuman, Harry J.; Young, John P.; Naddor, Eliezer. "Manpower Mix for Health Services: A Prescriptive Regional Planning Model." *Health Services Reserach*, VI (Summer, 1972), 103-19.
- Steiner, George A. "The Notion and Significance of Multinational Corporate Planning." *Multinational Corporate Planning*. Edited by George A. Steiner and Warren M. Cannon. New York; The MacMillan Co., 1966.
- Strope, Don. "Health Manpower-Some Needed Research and Analysis." *The Recognition of Systems in Health Services*. Edited by George K. Chacko. Operations Reserach society of America, 1969.
- Zimmerman, Louis J. "The Demand for Intellectual Manpower in Developing Areas

for the Next Twenty Years." *Social Change and Economic Growth, Annual Meeting of Directors of Development and Reserach Institutes, Berben (Norway), 11th-15th July, 1966.* Development Center of the Organization for Economic Cooperation and Development, 1966.

保健人力開發의 概念的 基礎

韓 達 鮮*

保健醫療에 대한 모든 要求를 充足시킬만큼 充分한 資源의 確保가 不可能하다는 것은 어느 社會에서나 共通的인 經濟的 現實이다. 그런데 社會의 各階層人口集團의 健康을 增進시키기 爲하여 可能한 모든 措置를 取하는 것이 道德的 當爲라는 認識이 점차 높아가고 있다. 따라서 資源의 效果的이고 能率的인 使用方案은 保健醫療에 있어서 核心的 論題인 것이다. 保健資源이 稀貴한 後進國에 있어서는 그 重要性이 特히 더하다는 것은 말할 것도 없다.

人力은 保健醫療에 있어서 必須的이고 基本的인 資源이므로 適正數의 人力을 確保하고 그들을 效率的으로 利用할 方案을 강구한다는 것은 保健政策과 行政에 있어서 가장 重大한 課題의 하나이다. 本 小考는 이같은 論點을 基盤으로 하여 保健人力開發의 概念的 基礎를 定立하려는 한 試圖이다.

保健人力開發의 定義와 構成要素를 保健體制全體와의 關聯성을 念頭에 두면서 論述한 후 適正 保健醫療의 必須的 要件을 充足시키는데 必要한 人力條件을 論述하므로써 保健人力開發을 通하여 變動시켜야 할 變因을 밝혔다. 保健人力開發은 결국 이들 人力變因의 全盤的 適正성을 이룩하여 保健醫療를 向上시키려는 努力인 것이며 이러한 努力을 合理的으로 이끌어 效率的으로 目的을 達成하려는 過程이 保健人力企劃인 것이다.

人力變因을 類型, (數), 資質, 機能分掌, 地理的 分布로 大別하고 이들 各各과 關聯된 保健醫療上的 問題點들을 檢討한 結果 이들 相互間은 물론이거니와 保健體制內외의 여러가지 다른 要因들과도 關聯되어 있음을 알 수 있었다. 이것은 保健人力의 問題點이 保健體制를 包含한 社會의 各種 狀況으로부터 由來함을 意味하는 것이라고 解釋될 수 있겠다. 이렇게 볼 때 單純한 需要와 供給의 分析은 保健人力研究의 初步的 始發點에 不過하다. 가령 需給의 不均衡을 是正한다 하더라도 그들이 要求되는 機能分野 또는 地域에 從事하리라는 保障이 없다. 더우기 保健人力만으로 健康增進을 爲한 서비스가 生産되는 것은 아니다. 組織, 財政, 施設이 아울러 必要하며 健康을 希求하는 消費者의 參與가 있어야 한다. 保健人力의 數 뿐만 아니라 다른 人力要件 나가서는 그 社會의 모든 狀況이 함께 考慮되어야 함을 여기서 알 수 있다. 즉 우리에게 必要한 것은 保健人力自體가 아니라 그들의 서비스가 한 要素를 이루고 있는 保健醫療인 것이다.

그러므로 效果的 保健人力開發의 前提는 人力變因을 包含한 保健體制의 모든 變因들 사이의 關係를 把握하여 體制의 有効성에 影響을 미치는 諸 要因과 그들의 效果를 究明하는 것이다.

開發은 成長 더하기 變動이다. 保健人力의 數를 增加시키는 것 만으로는 保健人力開發이라 할 수 없고 他 人力變因의 合理的 變化가 隨伴되어야 한다.

保健人力開發의 가장 重要한 課題는 따라서 需要와 供給의 不均衡을 是正키 爲한 供給量의 調節方案이 아니고 可用資源의 限度內에서 特定條件下의 一定 人口集團에게 所要 保健醫療를 效率的으로 提供하기 爲한 人力, 施設, 裝備등의 保健資源을 效率的으로 配分하는 方法인 것이다. 保健人力開發이 保健體制開發을 爲한 全盤的 計劃의 一環으로 展開되어야 하는 것은 이때문이다.

* 서울大學校 保健大學院