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Human resources for health development: toward realizing Universal Health Coverage in Japan

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Summary **Human resources are an important factor in establishing universal health coverage (UHC). We examined Japan's health policies related to development of human resources for health (HRH) toward establishing UHC, and tried to formulate a model for other countries wanting to introduce UHC through reviewing existing data and documents related to Japan's history in developing HRH. In the results, there were four phases of HRH development in Japan: Phase 1 involved a shortage of HRH; Phase 2 was characterized by rapid production of less-educated HRH; Phase 3 involved introduction of quality improvement procedures such as upgrade education for nursing staff or licensing examination for physicians; Phase 4 was characterized by a predominance of formal health professionals. To encourage transition between these phrases, Japan utilized several procedures, including: (*i*) offering shorter professional education, (*ii*) fewer admission requirements for professional education, (*iii*) widespread location of schools, and (*iv*) the aforementioned quality improvement procedures. Japan was able to introduce UHC during Phase 3, and Japanese health indicators have improved gradually through these phases. Consequently, the government of Japan focused on increasing the quantity of HRH through relaxed admission requirements, shorter education periods, and increasing the numbers of educational facilities, before introducing UHC. Subsequently, the government began focusing on improving quality through procedures such as upgrade education or licensing examination programs to enable less-educated HRH to become fully educated professionals. For governments wanting to introduce UHC, the Japanese model can be a suitable option for HRH development, particularly in resource-poor countries.**

Keywords: Japan, human resources for health (HRH), universal health coverage (UHC), quantity, quality, nurse, auxiliary nurse, physician

1. Introduction

Universal health coverage (UHC) has been announced as one of the important topics in the post-Millennium Development Goal (MDG) agenda (*1*). Japan has gained international recognition for its outstanding achievement of UHC during the second half of the 20th century (*2*). Japan established UHC in 1961 with the completion of its universal health insurance ("kokumin kaihoken") system (*2-4*). However, a universal health insurance system, which enables the whole population to have financial access to health care services, is not sufficient for establishing UHC. Indeed, establishment of UHC would require a formal health service provision system including an adequate health workforce as suggested by the World Health Organization (WHO) in its six building-block model of an effective health system (*5*). Blockages in health systems, including a critical shortage of skilled, motivated, and geographically distributed health workers, can lead to inefficient and ineffective health coverage (6).

There are some cross-sectional studies of human resources development toward UHC in several countries (*7,8*). Similarly, there are other articles on the

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chronological history on human resource development in the health care system of Japan (*9*), but these present neither its fundamental meaning in relation to UHC development nor a model for UHC establishment. Ikegami and Buchan (*10*) discussed health policies in introducing licensed practical nurses (*i.e.*, auxiliary nurses), which were important for promoting UHC; however, there are few articles like theirs. In this paper, we examine how Japan attained UHC from a human resource perspective through reviewing existing publications and data on the Japanese history of human resources for health development. More specifically, we discuss human resource development with a focus on physicians and nurses because these health personnel are the main providers of medical services, and attempt to extract from this discussion important lessons and a schematic explanation of human resource development to provide a method of enabling such development towards UHC in other countries.

2. Chronological changes on the production of health service providers

2.1. *Nurses*

The following phases, listed chronologically, of nursing staff production in Japan were identified.

Phase 1 "Health workforce shortage": This phase, starting at around World War II (WWII), was characterized by a decrease in the number of nurses (*11*).

Phase 2 "Rapid production of auxiliary nurses": The Government of Japan (GOJ) implemented shorter nursing education programs (*i.e.*, auxiliary nurse education programs ["jun-kangoshi"], a form of two-year specialty education), while increasing the number of schools offering these programs from around 300 in the early 1950s to over 400 in the mid-1950s and over 500 in the late 1950s (*12*). The number of auxiliary nursing schools continuously increased after 1961, reaching over 700 in the mid-1960s. The number of prefectures with such schools increased from 41 in 1958 to 47 later on; eventually, every prefecture had them (*12-14*). These shorter programs were organized by local physicians' associations or hospitals, and were located throughout each prefecture, including in rural areas. Auxiliary nurse licenses were issued by prefectural governors. Using this strategy, the number of auxiliary nurses increased dramatically from less than 10,000 in the 1940s and early 1950s to around 70,755 in 1961 and 133,811 in 1969; the number of registered nurses (*i.e.*, completed a three-year program) plateaued at around 110,000 in the 1950s and 60s (*11*).

Phase 3 "Quality improvement through upgrade education": During Phase 2 (in 1959), the GOJ began offering upgrade courses for auxiliary nurses (two-year program), thereby enabling auxiliary nurses to become registered nurses. Additionally, the production of formally educated nurses also increased.

Phase 4 "Predominance of formal nurses": This phase was characterized by a marked reduction in nurses with two-year educations, causing nurses with formal educations (more than three-year education) to become the predominant human resource for health; such nurses included bachelors of nursing course (four-year) graduates.

2.2. *Physicians*

The GOJ employed similar steps for physicians as for nurses. Before WWII, Japanese medical education included a six-year course for medical doctors and four-year vocational education courses.

Phase 1 "Health workforce shortage": Before WWII, there was a clear physician shortage; indeed, from 1912-1931, only 40,000 physicians were working (*11*). The number of medical schools was nine in 1888, and 17 in 1919 (*15*).

Phase 2 "Rapid production of less-educated physicians": The GOJ increased the number of medical doctors to reduce the wartime shortage. Thus, from 1939-1945, they increased the number of medical schools and three-year extra-affiliated schools of medicine (which offered shorter courses than the medical schools) (*15,16*). Accordingly, the number of admissions to medical schools increased from 3,078 students (1935) to 10,533 (1945) (*11*); female students were also accepted (*16*). The number of medical schools was 26 in 1939, and 69 in 1945 (*15*). The annual number of graduates from medical schools and extra-affiliated schools increased from around 50,000 (1932-1936) to over 60,000 (1937-1941) (*11*). This increase was not planned to introduce UHC but rather to account for wartime shortages in personnel; however, these procedures indirectly influenced introduction of UHC.

Phase 3 "Quality improvement phase through national licensing examination": After WWII (1945), physicians who had completed a three-year education returned to Japan, thus increasing the number from 13,833 in 1945 to 65,301 in 1946 and 70,636 in 1947 (*11*). It was thought that they would spread throughout Japan by returning to their hometowns. Subsequently, the national licensing examination was introduced in 1947; all medical school graduates had to pass this examination. Additionally, in 1948, medical universities became the only authorized medical schools. As such, graduates of three-year education courses had to pass a physician's preparatory examination and undergo one year of clinical training to ensure they were at the same level as medical school graduates (*15*).

Phase 4 "Predominance of formal physicians": The number of medical university graduates (*i.e.*, the six-year education) increased gradually, with the number of physicians reaching 104,732 in 1961 and 116,568 in 1969 (*11*) – over eight times the number in 1945.

These trends in the numbers of physicians, nurses, and auxiliary nurses are shown in Figure 1 (*11*). Based on our data analysis of physicians and nurses, a schematic explanation of their development processes is shown in Figure 2. Notably, many health indicators such as mortality rates from pneumonia and tuberculosis and the infant mortality rate (which was 76.7 in 1947 and 28.6 in 1961) improved gradually over the studied period; however, we observed increasing trends in mortality rates from cancers, cerebrovascular diseases, and cardiac diseases during that same period (*4,17*).

3. Strategies on health workforce development

Based on the Japanese experience, we extracted the following strategies on health workforce development.

3.1. *Focusing on quantity instead of quality*

3.1.1. *Shorter professional education*

Shorter education courses – such as extra-affiliated schools of medicine for physicians and auxiliary nursing education courses for nursing staff – were introduced in Phase 2. For example, with nursing staff, rather than expanding the number of three-year courses, the GOJ increased the number of two-year courses,

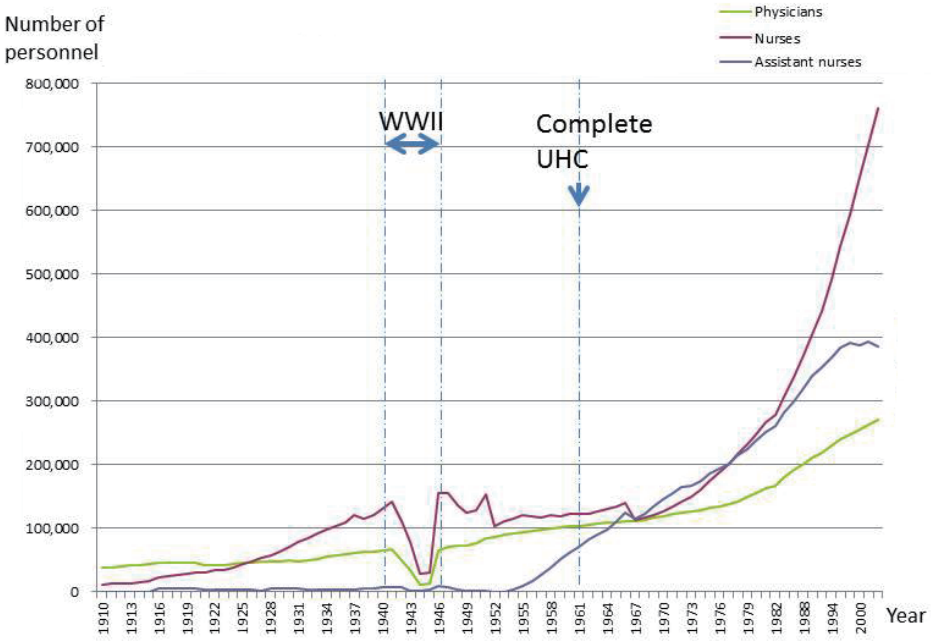

Figure 1. Trends of human resources for health in Japan. WWII: World War Second, UHC: Universal Health Coverage.

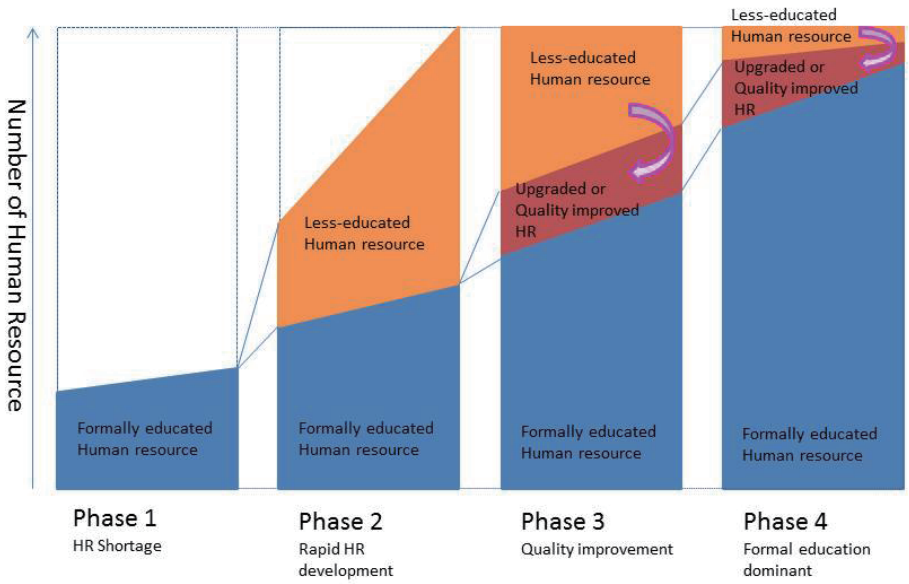

Figure 2. Schematic framework for human resource development to address its shortage. HR: Human Resources, Arrows in the figure mean "conversion" from less-educated HR to quality improved HR through up-grading course education, licensing examination, or other quality improvement procedures.

that is, auxiliary nursing schools (*12*). For physicians, a similar strategy was observed, although the expansion of shorter courses was to account for wartime shortages. In other words, the GOJ began rapid production of less-educated physicians with three-year educations instead of six-year ones before 1945 during wartime (Phase 2). Additionally, special medical schools for women were opened to serve people inside of Japan. Then, many physicians, including those less-educated ones, returned to Japan just after the end of WWII (Figure 1), and they covered almost the entire country after 1946.

3.1.2. *Fewer admission requirements for professional education*

Admission requirements for auxiliary nursing courses were only a basic education (*i.e*., junior-high school graduates), whereas ordinary nursing courses required at least a high school graduation. There were few high school graduates during the study period; specifically, the admission rate to high school was 42.5% in 1950, 51.5% in 1955, 57.7% in 1960, and 70.7% in 1965 (*18*). This seems to have occurred in other countries as well. In Cambodia, there are few nursing student candidates with high school education, especially in rural areas (*19*).

However, we did not observe reduced admission requirements to medical schools for physicians' education (*15*).

3.1.3. *Widespread school locations*

Widespread schools can contribute to an increasing health workforce. For nurses, one of the reasons for this expansion in schools was that auxiliary nursing schools were usually established in hospitals by local physicians' associations in rural prefectures of Japan. This was because rural local hospitals under the physicians' associations required cheaper labor, and thus wanted to produce such relatively less qualified nurses by themselves. Another reason was that less-educated students seemed to predominantly inhabit rural areas just after WWII. This phenomenon meant that the GOJ began establishing schools throughout the country, although the quality of education in such nursing schools varied. "Those who had stayed longer in rural areas had settled and integrated well within their community" (*20*); therefore, it can be said that the local recruitment of students is important for staff retention in remote areas. However, it is important to consider how these schools are distributed, because it has been reported that this increase in nursing institutions could only be accomplished by deepening geographical imbalances in human resource distribution (*7*).

For physicians, 69 schools (including 18 universities and 51 relevant special schools) in 1945 were widely distributed covering almost the entire country (*15*).

3.2. *Shifting from quantity to quality*

Ikegami and Buchan pointed out that Japan's focus on quantity was an important factor for UHC introduction (*10*). This unique Japanese approach of producing auxiliary nurses may be appropriate for increasing the amount of health personnel in rural areas. However, in 1957, once auxiliary nurses had spread throughout the country, Japan introduced education upgrades for two-year courses, thereby allowing auxiliary nurses to become registered nurses (Phase 3). These upgrade courses have continued until the present. Through these processes, registered nurses gradually became the predominant human resource for health, and the four-year nursing university education was introduced (Phase 4). In these last two phases, the GOJ shifted the focus of its policy from increasing the quantity to increasing the quality of the health workforce. For physicians, the GOJ certified less-educated physicians as fully educated physicians via a licensing examination rather than providing an upgraded education (Phase 3).

3.3. *Limitation*

There are some problems in focusing solely on quantity rather than quality of an individual health workforce to ensure the quality of medical services. However, less-educated health personnel may be better than no health personnel or harmful procedures practiced by some traditional healers.

The year that UHC began in Japan, 1961, was during Phase 3. During this period, some health indicators improved such as the mortality rates for pneumonia or tuberculosis. However, we cannot conclude that the increases in the health workforce were responsible for these improvements, because streptomycin, chest X-rays, improved nutrition, etc. were introduced during that time, which contributed to a reduction in tuberculosis in Japan (*21*).

4. Conclusion

The Japanese process of introducing UHC is said to have been a complicated and unique case; however, it appears that human resource development was largely responsible and its process can be simplified as we have shown. In other words, before introducing UHC, the GOJ focused on increasing the quantity of health and medical professionals via less stringent admission requirements and shorter professional education courses delivered at institutions covering the entire country. Then, quality improvement procedures such as upgraded courses or quality assurance licensing examinations were introduced to allow existing human resources to be recognized as fully educated professionals. Governments wanting to introduce UHC may be able to use this Japanese model as a means of

human resource development, especially in resource-poor countries..

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