Abstract: Recent State and Future Scope of Occupational Health in Japan: Toshiteru O KUBO.
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The most significant characteristic of the working population of Japan is aging. The increase in the senior population puts substantial pressure on the health insurance and pension systems and many health insurance organizations have decided to cut down voluntary programs on occupational health. The nature of occupational diseases has changed from health impairments caused by a single prominent occupational factor to unspecific health problems caused by the combined effect of both occupational and non-occupational factors. Diseases occurring through this mechanism are called work-related diseases, in contrast to typical occupational diseases. It is no longer effective to simply remove a single hazardous environmental factor, as has been the major approach in occupational health. A comprehensive approach is more important than ever. Health promotion in the work place is therefore one of the most important services in Japan. Along with the improvement of the work environment, workers' values regarding labor have also changed and they seek working conditions better than the threshold level to prevent health hazards11). Under these conditions the basic concept of occupational health should not be limited to only minimizing the minus health effects, but it should introduce the idea of seeking positive health. Positive health always seeks to improve health from any level, but up to now medical science has paid very little attention to positive health and there is lack of knowledge and experience. The highest priority of research in this field is therefore to be found in the development of positive health indicators.

Key words: Occupational health services, Japan, Current state, Future scope, Occupational diseases, Health promotion, Positive health, Ethical guideline

1. Health Status of Workers
   a. Health of the general population
   The most significant characteristic of the health status of the population of Japan is aging. This originated in the remarkable change in the vital statistics of the population occurring within a short period just after the Second World War. The crude death rate decreased by one half in 15 years (14.6 per 100,000 in 1947 vs. 7.5 in 1962). The birth rate also showed almost the same decrease in the same period (34.3 per 1,000 vs. 17.0). A continuing low mortality rate following this period resulted in the longest life expectancy of the Japanese in the world, 76.4 for males and 82.8 for females in 1995. Now Japan is expected to become the most aged country, a condition that has never been experienced by any nation in the world. It is estimated that the proportion of those 65 and older will reach 25.5% in the year 20203). The leading cause of death in 1996 was malignancies, 211.5 per one hundred thousand, or 28.5% of total deaths. Apoplexia and heart disease followed with 15.9% and 15.1%, respectively. The health of the population is therefore generally good, but increasing needs of health care for chronic diseases is expected among the growing aged population.
   The increase in the senior population will put substantial pressure on the health insurance and pension systems. With a growing budgetary deficit many health insurance organizations have decided to cut down voluntary programs on occupational health3). The leading cause of death in 1996 was malignancies, 211.5 per one hundred thousand, or 28.5% of total deaths. Apoplexia and heart disease followed with 15.9% and 15.1%, respectively. The health of the population is therefore generally good, but increasing needs of health care for chronic diseases is expected among the growing aged population.
   The increase in the senior population will put substantial pressure on the health insurance and pension systems. With a growing budgetary deficit many health insurance organizations have decided to cut down voluntary programs on occupational health3).
   b. Occupational diseases
   Occupational diseases reported to the Ministry of Labor in 1996 numbered a total of 9,2504), but since only those occupational diseases resulting in an absence of more than three days are required to be reported to the ministry by law, the figure does not include those diseases which do not require rest, e.g. skin diseases and hearing loss. Lumbago and other back injuries account for 56% of the total number. Pneumoconiosis follows with 14%. Diseases caused by abnormal thermal conditions occupy the third position (8%) of which the major proportion
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c. Occupational accidents

Total occupational accidents requiring four or more days of rest numbered 161,800 in 1996, which was 66% and 48% of 10 and 20 years ago, respectively. The rate per one million working hours was 1.89. The number killed by occupational accidents was 2,363 in the same year. There was no decrease in the number over the past 10 years. Even in 20 years only a 30% decrease was achieved, so almost no improvement has been observed recently in the number of fatal accidents. When accidents are observed by industry, the construction and manufacturing industries had almost the same proportion, namely 27.5% and 26.6% of the total, but where fatal accidents are concerned, the construction industry was responsible for 42.4% of the total number. The size of an enterprise is another important factor in terms of frequency of accidents. The rates per million working hours by number of workers for enterprises numbering 100 to 299, 300 to 499, 500 to 999 and 1,000 or more were 0.57, 0.99, 2.03 and 2.95 in that order. Although there were no data available for companies with less than 100, there are most probably more accidents. The tendency to decrease is also slower for smaller businesses.

2. Change in Industry and Health of Workers

The working environment of Japan in the 50 years after the World War has changed significantly. It reflects the decrease in occupational diseases and change in types of disease. This period can be classified into three stages in terms of industrialization.

In the first stage until 1968 the proportion of farmers and miners was prominent. However, the manufacturing industry began to grow rapidly during this period. The nature of occupational diseases earlier on was mainly direct effects of work environmental hazards. Eye diseases due to foreign bodies or caustic burn due to strong chemicals are examples.

The introduction of automation allowed industry to expand the magnitude of processing units, and the amount of chemicals used in a single process increased. The production facilities destroyed by the war recovered completely and even exceeded the pre-war level. However, working conditions and the work environment had been ignored in the course of recovery and the delay in taking countermeasures resulted in environmental pollution in both occupational and regional settings.

Along with industrial growth, the number of occupational diseases and injuries increased substantially. Pneumoconiosis, acute intoxications and all other typical occupational diseases were most prevalent in this period.

Then, in the second stage from 1969 to 1978, the number of blue collar workers increased while that of farmers and miners decreased. Economic growth achieved in the previous stage allowed them to pay more attention to matters other than those relevant to direct profit making. Extensive countermeasures to improve work as well as general environment were introduced. The occupational Safety and Health Law was implemented in 1972. The total number of registered occupational diseases, which had been increasing until 1967, started to decrease, but serious sequelae of the heavy exposure during the last stage, e.g. pneumoconioses and occupational cancers, became matters of concern.

The third stage is characterized by the increase in managers and clerks and specialists in the service sectors. Even though the production scale expanded more than the previous stage, the introduction of computers and other sophisticated tools decreased the number of workers involved in a process. From this stage the aging of the working population became apparent, especially in large-scale manufacturing industries. The decreasing demand for manpower precludes recruiting workers and accelerates the aging of workers in such industries. On the other hand developing industries can maintain a young working population by continuously introducing new graduates, so that aging of the working population progresses unevenly by industry.

Since that time the nature of occupational diseases started to change from health impairments caused by a single prominent occupational factor to non-specific health problems caused by the combined effects of multiple factors including those of non-occupational origin. Occupational factors became co-existing factors

consists of burns. These three leading causes accounted for 78% of occupational diseases in 1996. Occupational diseases caused by heavy metals or organic solvents have decreased substantially, the total number being 322 in 1996. The number of newly diagnosed cases of occupational cancer was only 3, but the number compensated in the same year was 79 (Ministry of Labour, Personal communication). Occupational cancer has a long latent period from first exposure to a carcinogen to the outcome of the disease. A major proportion of the compensated have already retired and are not reflected in the statistics for current workers.

Based on formal reports to the ministry from employers, among workers who participated in periodic health check-ups in 1996, 38.0% had at least one abnormal finding. Liver function tests, cholesterol and triglycerides levels show prevalent abnormalities. Health surveillance of the workers handling specific hazardous chemicals as defined by the Law was reported to have been conducted on 1,554,080 workers in 1996. The proportion of those with abnormal findings was 5.2%. Those exposed to organic solvents were the most numerous in the recipients, followed by those exposed to noise, lead and ionizing radiation. The highest abnormal finding was reported for those exposed to noise, the rate being 17.8%.
in many cases\(^6\). They may act as promoting factors in the progression of disease. They may also inhibit the activity of a given suppressive factor of a non-occupational disease. Diseases occurring through this mechanism are called work-related diseases, in contrast to typical occupational diseases. Occupational factors are not essential here and may be only one of multiple etiological factors.

It is therefore no longer effective to simply remove a single hazardous environmental factor, as has been the major approach in occupational health. A comprehensive approach is more important than ever in solving this problem.

3. Occupational Health Services

1) Legal framework and formal administration\(^7\)

The Labor Standards Law implemented in 1947 has been effective as the basic legislative framework of occupational health services in Japan. Based on articles of occupational safety and health in this law, the Occupational Safety and Health Law (OSH Law) was enacted in 1972. Under these two Laws, there are many Cabinet Orders and Regulations issued by the Ministry of Labor. Including health surveillance and other health issues for workers, in the national government the ministry is solely responsible for the administration of occupational health. This ministry has its own regional offices. Each prefecture has a Labor Standards Office, and there are 347 Local Labor Standards Bureaus under these offices nationwide. The peripheral bureaus are administered directly by the central government. The ministry has 3,466 Compliance Officers as of 1997 (Ministry of Labour, Personal communication). They have police authority in investigating violations of the OSH Law.

2) Specialists

a) Occupational (Health) physicians: Employers hiring more than 50 workers are required by the OSH Law to appoint an occupational physician. If the number exceeds one thousand, the appointment must be full-time, and for more than three thousand workers two or more occupational physicians are necessary. Based on a survey in 1993 by the ministry, the appointment rate of occupational physician was 81.0% in enterprises with more than 50 workers.

Until 1996 there was no requirement for becoming an occupational physician other than the ordinary medical license. An amendment of the law was approved in 1996 and new legislation relevant to the appointment will be enforced in October, 1998, mandating occupational physicians to finish a short course equivalent to the program offered by The Japan Medical Association (JMA) to be described below\(^8\).

The JMA introduced a new systematic training and certification program in occupational health in 1990. By the end of May, 1997, 29,453 physicians had been certified under this program (Japan Medical Association, Personal communication).

The Japan Society for Occupational Health (JSOH) also established a specialists certification plan in 1992, requiring a candidate doing a minimum of five years’ training under programs accredited by the association to take the final examination.

b) Health Supervisor: Employers are required to appoint Health Supervisors who must hold a license from the Chief of the Prefecture Labor Standards Office. The number of Health Supervisors to be appointed is defined by Cabinet Order in accordance with the classification of the work involved and the number of workers.

c) Work environment measurement expert: When an employer wishes to carry out working environment measurements in conformity with the provisions of the OHS Law, he or she must have such measurements performed by a work environment measurement expert. The license of the work environment measurement expert is classified by the level and the substance to be examined.

d) Hazardous substances operations chief: For operations involving specified hazardous processes employers are required to appoint an operations chief in accordance with the classification of work from among those with a license.

e) Occupational Health Consultant (OHC): A qualified OHC can consult about the health of a workplace at the request of an employer. The primary OHCs are experienced occupational health physicians and hygienists. The OHC license is issued by the Minister of Labor.

f) Nurses working in occupational health settings: Although the appointment of an occupational health nurse is not mandatory in Japan, 1,532 nurses qualified as public health nurses were hired by industry in 1994\(^9\). In addition, as many as several thousand ordinary registered nurses also work in the industry.

g) Industrial hygienist: An industrial hygienist is not defined as such by law. Some hygienists qualified in the USA or other countries work as OHCs in their own offices or as Health Supervisors in industry.

3) Required services

The Occupational Safety and Health Law mandates employers to conduct health check-ups. A general health check-up is mandatory once a year for all workers. Other types of general check-ups are also obligatory for those who are newly employed, who are to be dispatched abroad for more than six months, or who have returned from abroad after more than six months. In addition, for those who are handling prescribed hazardous chemicals or who are working under prescribed hazardous conditions specific health surveillance to detect early health effects
caused by such environmental exposure is required. Currently the number of such types of work is 76. It is the employer’s responsibility to carry out these required health check-ups. They must be done within paid working hours at the employer’s expense.

Based on information obtained through such health check-ups and work-site visits required by the law, occupational physicians reserve the right to give formal advice to the employers regarding improvement of the work environment to protect the health of workers. The Law mandates the employers to respect such advice and prohibits them from unfavorable treatment of the physicians providing the advice.

A health and safety committee should be organized in every establishment where the number of the workers exceeds 50. The chairperson should be selected from among the top executives who have sufficient power and responsibility for protecting workers’ health. An occupational physician and health supervisor must be members under this law. Including these specialists half the committee members must be recommended by the union.

4) Education and training institutions

In addition to the Ministry of Labor there are institutions for service, training and information dissemination. The Japan Industrial Safety and Health Association (JISHA) is the largest voluntary association. JISHA is responsible for health promotion and the establishment of a comfortable work environment. It has an extensive program for the training and education of health supervisors. Consultation on occupational hygiene and ergonomics is another important activity of the institute.

The University of Occupational and Environmental Health is responsible for the education of physicians and co-medical workers. It has an Occupational Health Training Center and an Institute of Industrial Ecological Sciences. The former is a post graduate training center and the latter is responsible for research on practical occupational health services and post graduate education in occupational health.

JISOH is an academic society of specialists in this field. It holds an annual assembly as well as regional meetings and scientific meetings of each sub-discipline. It also holds education and training courses, and has a certification program for physicians as mentioned above. One of its important activities is to publish an updated list of TLVs every year.

5) Occupational Health Centers

In 1994 the Japanese Government started an extensive program for establishing a regional service system of occupational health. Two center projects are included. The first one is the Occupational Health Promotion Center (OHPC). An OHPC is allotted to each prefecture. The Regional Occupational Center (ROC) is entrusted by the ministry to the local medical association. The total number of ROCs is 347. The major role of the ROC is to provide occupational health service to small scale enterprises with less than 50 workers where the appointment of occupational physicians is not mandatory. The OHPC is expected to support such regional activities by the members of the local medical association. The OHPC has necessary human resources, teaching materials, information resources and equipment to be used to support the ROC in actual service and training of physicians.

6) Service organization

There is no regulation regarding occupational health service organizations. In large companies in-plant service organizations are usually established. However, whether they carry out all health check-ups by themselves or subcontract them does not necessarily depend on size.

Some in-plant services include a clinical curative service. Enterprises with a long history tend to provide such clinical service but the more newly established companies do not. It is based on past medical demand rather than current needs. Such organizations inevitably have larger medical staffs than those of comparable size without a curative service.

Middle and small scale enterprises do not have sufficient human resources to provide the necessary service by themselves. Some of the service must be provided from outside. Occupational health service institutions in the private sector are in charge of such requests. No legal requirements for such service institutions have been established in terms of quality, price of service or specialists to be included.

Great diversity is seen in such service institutions. Some provide only general health check-ups as a department of ordinary hospitals, while others provide a comprehensive occupational health service, including industrial hygiene or ergonomics. A federation of such comprehensive institutions has been organized. It has membership criteria and only those institutions with the appropriate number of specialists, equipment and facilities can become members. The federation is officially supported by the ministry. The number of member is 135 as of July, 1997. It has an extensive volunteer program to provide better quality service to the member institutions.

7) Health promotion

Health promotion in the work place in Japan has improved substantially since the Occupational Health and Safety Law was amended in 1988. Since then employers have become responsible for making maximum efforts to introduce health promotion programs in the work place.
To comply with the demand by employers, health promotion service institutions have been established. The Ministry of Labor furnishes guidelines for the operation of such service institutions. This new occupational health promotion program authorized by the Japanese government is called the “total health promotion plan” (THP).

a) The recommended standard health promotion program: If an enterprise is large enough to provide all necessary specialists, it is strongly recommended that the company organizes a committee comprising relevant specialists responsible for the planning and execution of a health promotion program.

The program should be comprehensive, based on both group and individual approaches. On a group basis various health education classes are offered on, for example, nutrition, life style, stress management and recreation. As the first step in the individual approach, a health survey is recommended by an occupational health physician. The physician then issues a plan for the individual based on the results of the survey. Following this plan, relevant specialists will supply the necessary instructions or counseling. Exercise trainers will design a personal physical training program based on the plan.

b) Training of specialists: The ministry has appointed JISHA to be the official body of THP for conducting the training courses and allocating a substantial budget. JISHA is holding training courses for physicians, nurses, counselors, nutritionists and physical trainers to be included in the health promotion program.

c) Service institutions: Two kinds of health promotion service institutions are approved under THP by JISHA and a list of the registered institutions is available to the public. One kind is entitled to conduct health surveys so that physicians with the necessary training can issue a plan to the individual. This type of institution can provide comprehensive health promotion service. The other kind of service institution is only permitted to provide physical training service in accordance with a program drawn up by the former type of institution.

d) Financial support from the ministry: THP also has a budget to support the establishment of new programs by enterprises and the introduction of equipment for physical exercise by service institutions. When an enterprise establishes a new program, the expenditures will be supported by the ministry through JISHA for a maximum of three years. The amount depends on size. If the number of employees of an enterprise is less than 300, two thirds of the total expenditure will be met by the ministry. For businesses with over 300 employees, financial support covers one third of the total.

8) A new project on a comfortable working environment

An amendment of the OSH Law in 1992 includes a recommendation to the employers to establish a comfortable working environment. This new policy is based on quite a new concept of occupational health. Prevention of occupational diseases by removing or decreasing of hazardous factors in the work environment has been the basic idea of occupational health. The improved work environment lessened the effectiveness of such an approach, as mentioned above. Along with this change in the environment workers’ values regarding labor have changed and they seek working conditions better than the threshold level to prevent health hazards\(11\).

The ministry announces the standard criteria for a comfortable working environment and provides some financial support for good programs meeting these criteria.

4. Recognition by Management and Union

Typical acute occupational diseases are caused by a single dominant factor. Removal of the factor from the work environment is effective in preventing the occurrence of further cases. This type of occupational health activity can be easily appreciated by both employers and employees.

Nevertheless, when improvement of the working environment reaches a certain level, the number of etiological factors involved in the occurrence of a disease increases and the proportion attributable to each factor decreases. In addition, the nature of such diseases becomes chronic and the result of countermeasures appears only after a long period. It is therefore not always easy for employers and employees to recognize the significance and importance of preventive activities. The top management of many companies in Japan are not the owners and maintain their positions for only a limited period. This means that even if they should recognize the necessity for a program to prevent against chronic diseases, they tend to be reluctant to fund programs which cost much but whose effects are only expected to appear after the expiration of their term of office. Such programs would only benefit future management.

This is also true for union leaders, and their major concern has been set to obtain monetary benefits or compensation for the diagnosed occupational diseases so they can continue to receive support from their members.

5. Necessary Steps Towards the Future

a. Necessity of a new scientific approach

Until quite recently in the history of occupational health in Japan, all the problems mentioned above were dealt with by traditional preventive medical approaches, i.e. by establishing appropriate countermeasures after realizing the problems in the work environment or occurrence of occupational diseases. In other words, occupational health was always running after problems, like fire fighters. With so many problems to be solved and diseases to be treated, this can be justified. However,
general health has already reached a certain level and the number of acute diseases of both occupational and non-occupational origin requiring individual countermeasures has decreased among the working population.

Given these circumstances a uniform occupational health service throughout the country is hardly acceptable from a cost-performance and cost-benefit point of view. The basic concept of occupational health should not stick to just minimizing the minus health effects, but it should introduce the idea of seeking positive health. Positive health always seeks to improve health at any level. Nevertheless, medical science until now has paid very little attention to positive health and there is lack of knowledge and experience for practical services based on the positive health approach. The THP program is certainly a new service activity following this concept, but there is little scientific ground yet and it is becoming difficult to expand to smaller scale enterprises without sufficient evidence of its effective effect.

The highest priority for research in this field is therefore to be found in the development of positive health indicators. Tests currently being used in health check-ups have been selected from clinical tests to diagnose diseases or to evaluate the degree of health impairment. They have been developed to measure damaged health, so they are not sensitive enough to measure marginal health or determine a completely healthy zone. Measurements of psychological health are also important in evaluating comprehensive health. Only when appropriate positive health indicators become available will we be able to quantitatively evaluate the effect of health service programs targeting health promotion.

b. Importance of strengthening management in service

Occupational health service in Japan has been depending much on regulations and administrative instructions from the Government. Compliance with such instructions has been the basic motivation of employers, and as a result a passive attitude is common in decision making. Along with improvement of the health status of workers, the concept of uniform programs throughout the country is losing justification.

Future occupational health service should be more voluntary and fit the needs of each condition. Such a service should begin with analysis of the health status and set the most appropriate aims. It becomes important for specialists to acquire skills in deciding priorities when they establish occupational health programs. To decide priority, diverse factors must be considered. After execution of a program the results should be evaluated and there must be a feedback system for future improvement. These procedures are closely related to those of management. Occupational health should establish its own management skills when introducing experience from relevant specialties. The idea of risk assessment and risk management is one such skill.

c. Ethical guidelines

Once occupational health service is deregulated and becomes more voluntary, the possibility of conflict between specialists and employers and employees may increase. Specialists are more responsible for the results of programs proposed by themselves. In individual cases specialists may be exposed to contradictory requests from employer and employee.

To cope with all these difficulties the establishment of ethical guidelines for specialists is indispensable. In many developed countries there already exist established guidelines. The guidance issued by the Royal College of Physicians, London, is the most comprehensive one. However, these preceding models have all been established by the specialists’ organizations and the purpose is more or less inclined toward prevention of or defense against law suits. Guidelines of this nature are apt to isolate the specialists from the employers and the workers. Law suits relevant to occupational health service are still very rare in Japan. Ethical guidelines accepted by both employers and employees would be better in terms of improving the relationship between them. When conflict is less the easier it will be to establish a new type of ethical guideline in Japan.

e. Small-scale industries

The proportion of workers involved in small-scale industries is usually greater than that of large industries. In Japan, about 25% of the total work force is engaged in enterprises of less than 10 workers. As mentioned above, the law requires employers to assign occupational physicians when the number of workers exceeds 50. This, however, covers only one third of the entire work force. The smaller the enterprise the more frequent the occupational accidents and diseases. The general health status is poorer because of aging of workers and low socioeconomic conditions. If the size is less than 10 employees, it is difficult to deliver occupational health services comprehensively at the establishments. Establishing a service delivery system through the local community health network is the only way to provide services for such establishments. ROCs were established for this purpose. However, continuous effort in education and training in occupational health is necessary on the part of the physicians working at such centers to provide good health service for these workers.

References