

# National Occupational Health Research Priorities, Agenda and Strategy of Japan: Invited Report in NORA Symposium 2001, USA

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**Abstract:** An invited report on national occupational health research priorities, agenda and strategy of Japan was delivered in the NORA (National Occupational Research Agenda) Symposium 2001, USA. The third NORA Symposium was held by the US National Institute for Occupational Safety and Health (NIOSH) in Washington DC on June 27, 2001. The national conference in Japan entitled “Conference on Occupational Health Research Strategies in the 21st Century” was organized by the Japanese Ministry of Labour (Currently, Ministry of Health, Labour and Welfare) in the years 1998–2001, and the national occupational health research agenda and strategy for the next decade in Japan was identified. A total of 50 Conference members, i.e., representatives from various fields of occupational health in Japan, ranked 58 comprehensive research topics, yielding short-term (5-year) and long-term (6–10 year) priority research topics. Overall (10-year) priority research topics were calculated by combining the short-term and long-term priority scores. Together with the ranking by 145 extramural occupational health specialists, it was identified that work stress (i.e., one of the 58 research topics) was the first overall priority research topic for the next 10 years in Japan. Three other topics, i.e., elderly workers, women workers and maternity protection, and mental health and quality of work and life, were the second group of priority topics; and hazard and risk assessment and biological effect index were the third priority group. Based on the scores for the short-term and long-term priority research topics, all 58 research topics were classified into three key research areas with 18 key research issues (National Occupational Health Research Agenda, NOHRA). Finally, eight implementation measures of national strategy for the Japanese Government to promote occupational health research were introduced.

**Key words:** Research priority, National research agenda, Research strategy, NORA Symposium, Occupational health, Japan

## Introduction

One of the authors (SA) was invited by the US National Institute for Occupational Safety and Health (NIOSH) to give an invited report on the National Occupational Health Research Agenda (NOHRA) of Japan in the US National Occupational Research Agenda (NORA) Symposium 2001,

Washington DC, on June 27, 2001<sup>1,2)</sup>. This is a report based on the presentation at that symposium. Here, we wish to summarize the following four points: (1) How the Japanese NOHRA was identified, (2) What are the priority research topics, (3) What is the national research agenda, and (4) What is the strategy of the Japanese Government in promoting occupational health research<sup>3,4)</sup>. The first two points have not previously been reported in English in detail.

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## National Conference on Occupational Health Research Strategy of Japan: Members and Secretariat

The national conference entitled “Conference on Occupational Health Research Strategies in the 21st Century” was organized by the Japanese Ministry of Labour (currently the Ministry of Health, Labour and Welfare) in the years 1998–2001. The chairman was Masatomo Tachi, MD, Scientific Consultant of the Ministry of Labour, and Vice-chairmen were Haruhiko Sakurai, MD, and Shunichi Araki, MD, the 5th and 6th Director-Generals of the National Institute of Industrial Health (NIIH) of Japan.

Members of the Conference Committee were 16 representatives of various fields of occupational health (OH) in Japan: five senior OH specialists from occupational institutions, five university professors, one senior occupational physician, one senior occupational nurse, one representative from the Japan Medical Association, one from the Japan Chemical Industry Association, one from the Japanese Trade Union Confederation, and one from the Japan Federation of Employers' Associations<sup>3</sup>. And members of the following five Conference Subcommittees in the first year were 34 OH specialists: (1) Steel, automobile and construction industries (8 members), (2) Electronics industry (7 members), (3) Textile, pharmaceutical and chemical industries (6 members), (4) Finance, distribution, railway, information, communication and energy supply industries (6 members), and (5) Ceramics, local and small- and medium-sized industries (7 members). Each subcommittee was composed of OH specialists within industries (i.e., occupational physicians, consultants, hygienists, nurses etc) together with one academician and one NIIH researcher. On the other hand, most of the 34 Subcommittee members in the second and third years were academicians together with three occupational physicians, one occupational nurse and five NIIH researchers.

241 Extramural OH specialists were also called to examine the variation in the priority topics selected by the Conference members. They were 18 occupational physicians, 16 occupational nurse, 6 OH specialists within industries, 30 directors (physicians) in the 30 OH Promotion Centers of the Japan Labour Welfare Corporation, i.e., nationwide semi-governmental OH centers, 24 clinicians in the Labour Accident Hospitals of the same corporation (nationwide semi-governmental hospitals), 54 medical OH researchers, 30 OH specialists in public or private institutions, 13 OH engineering researchers, 20 social and other science researchers, 8 managements in industries, 6 directors in trade unions, and 12 stakeholders.

## Selection of Priority Research Topics

In 1998, the 34 Subcommittee members listed 344 Original OH research topics; all the 52 Conference members (Chairman, Vice-chairman, 16 Committee members, and 34 Subcommittee members) classified the Original OH topics into 58 Research topics. Then the 50 (96%) Conference members selected half (29) of the all 58 Research topics as short-term (i.e., 5-year) or long-term (6–10 year) priority research topics according to the following criteria: needs in occupational health, importance and urgency, attainability of research aim, usefulness and further development of research results, and breakthrough of research results, methods, etc. (General priority criteria), applied, urgent, social interest, high attainability, and attained within 5 years (Short-term criteria), and basic, fundamental, germinative, scientific contribution, and attained in the next 6 to 10 years (Long-term criteria).

The numbers of the 50 Conference members who selected the 29 short-term and 29 long-term priority topics from the 58 Research topics represented the short-term and long-term priority score for each Research topic, respectively. The overall priority score for each Research topic was calculated by combining standardized values of the short-term and long-term priority scores. The first ten short-term and long-term priority research topics selected by the 50 Conference members are shown in Table 1. The overall priority research topics selected by the 50 Conference members and by the 145 (60%) of all 241 extramural specialists are shown in Table 2. Ranks of all overall priority research topics are also shown in Table 3.

## Identification of National Research Agenda and Strategy: 3 Key Research Areas, 18 Key Research Issues and 8 Implementation Measures

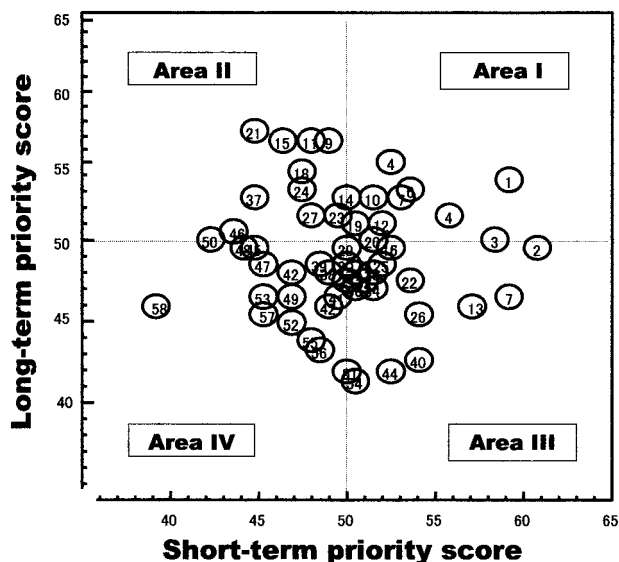
All 58 Research topics were classified into four Research areas (Areas I–IV) according to the short-term and long-term priority scores (Fig. 1). Areas I–III were composed of those Research topics with higher short-term and/or higher long-term priority scores. Area IV had Research topics with both lower short-term and lower long-term priority scores. Then all the 58 Research topics were integrated into three Key research areas and 18 Key research issues according to their mutual similarities as follows (Table 3):

The First key research area (Key Research Area I) integrated was entitled Changes in life and health at work. This research area was mainly identified from Research area I, which included higher short-term and higher long-

**Table 1. Short-term and long-term priority research topics selected from 58 Research topics by 50 Conference members\***

Rank	Priority research topics**
Short-term priority:	
1	Elderly workers (43)
2	Work stress (41)
2	Risk communication and Material safety data sheets (MSDS) (41)
4	Women workers and maternity protection (40)
5	Small industries and self-employed (38)
6	Mental health and quality of work and life (36)
7	Health examination and guidance (33)
7	Health education and information service (33)
9	Business strategy and health and safety management (32)
9	Endocrine and reproductive effects of chemicals (32)
Long-term priority:	
1	Genetic susceptibility (39)
2	Multiple exposure (38)
2	Gene effect (38)
2	Biological effect index (38)
5	Hazard and risk assessment (36)
6	Exposure limit value (35)
7	Work stress (34)
8	Epidemiology (33)
8	Endocrine and reproductive effects of chemicals (33)
10	Sampling and analysis of chemicals (32)

\*The first ten priority research topics are listed. \*\*The number of the 50 Conference members who selected half (29) of all 58 research topics as short-term or long-term priority research topics is shown in parentheses.



**Fig. 1. Classification of all 58 Research topics into 4 Research areas (Areas I-IV) according to short-term and long-term priority scores: Encircled numbers of Research topics correspond to ranks of Overall priority research topics in Table 3 (Modified from Figure 2 in Reference 3).**

Scores of all Research topics are normalized into a mean of 50 with a standard deviation of 10.

**Table 2. Overall priority research topics selected from 58 Research topics by 50 Conference members and by 145 Extramural specialists**

Conference members		Extramural specialists	
Rank	Priority research topics*	Rank	Priority research topics**
1	Work stress (113.8)	1	Work stress (68)
2	Elderly workers (111.3)	1	Mental health and quality of work and life (68)
3	Women workers and maternity protection (109.4)	3	Elderly workers (67)
4	Mental health and quality of work and life (108.4)	4	Women workers and maternity protection (55)
4	Hazard and risk assessment (108.4)	5	Biological effect index (50)
6	Endocrine and reproductive effects of chemicals (107.7)	6	Work-related disease (46)
7	Night and shift work and work time (106.6)	7	Small industries and self-employed (45)
7	Risk communication and Material safety data sheets (MSDS) (106.6)	8	Hazard and risk assessment (41)
9	Biological effect index (106.1)	9	Change in industrial structure (40)
10	Sampling and analysis of chemicals (105.1)	10	Business strategy and health and safety management (39)

\*The sum of the normalized short-term and long-term priority scores is in parentheses. \*\*The number of the 145 extramural specialists who selected 10 of all 58 research topics as overall priority research topics for next 10 years is in parentheses.

term priority topics (Table 3, Fig. 1). Six Key research issues with 11 Research topics were classified into this area.

Similarly, the Second key research area was entitled Mechanism of health effects. This research area was mainly identified from Research area II, which had Research topics

with higher long-term and lower short-term priority topics (Table 3, Fig. 1). Five Key research issues with 16 Research topics were classified into this area.

The Third key research area was Assessment and management in occupational health and safety. This area was mainly identified from the Area III, which was

**Table 3. National occupational health research agenda (3 Key research areas, 18 Key research issues, and 58 Research topics): Ranks of 58 Overall priority research topics in parentheses**

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Key research area I: Changes in life and health at work

1. Work style and health: Night and shift work and work time (7th priority research topic), Change in industrial structure (46th), Overseas company and workers (51st), Work force (58th)
2. Information technology (IT): Tele-work, home-work and free work-time (16th)
3. Work stress and mental health: Work stress (1st), Mental health and quality of work and life (4th), Industrial fatigue (48th)
4. Work-related disease: Work-related disease (12th)
5. Elderly worker: Elderly workers (2nd)
6. Woman worker: Women workers and maternity protection (3rd)

Key research area II: Mechanism of health effects

7. Toxicity assessment: Endocrine and reproductive effects of chemicals (6th), Immunological effect and allergy (14th), Nervous system effect (23rd), Kinetics and metabolism of chemicals (37th), Respiratory effect (38th), Skin, nose and eye effects (52nd)
8. Gene effect and carcinogenicity: Gene effect (15th), Occupational cancer (19th)
9. Multiple exposure: Multiple exposure (11th)
10. Individual differences in health effects: Hereditary traits and susceptibility (21st)
11. Ergonomic factors and workload: Job type and design (30th), Musculo-skeletal effects and heavy-weight work (35th), Human factors in accidents (36th), VDT and information-processing work (44th), Physical function in ergonomics (45th), Operability of equipment (56th)

Key research area III: Assessment and management in occupational health and safety

12. Risk Assessment and health effect index: Hazard and risk assessment (4th), Biological effect index (9th), Exposure limit value (18th), Biological monitoring (20th), Epidemiology in occupational health (24th), Environmental assessment at work (28th), Electromagnetic and radiation effects (34th), Physical environment and health effects (42nd), Effect of biological agents (50th)
13. Risk communication: Risk communication and Material safety data sheet (MSDS) (7th), Health education and information service (26th), Occupational health statistics (29th), New technology and materials (31st), Evidence-based medicine (49th)
14. Measurement and control of work environment: Sampling and analysis of chemicals (10th), New techniques of measurement (27th), Measurement and control of physical factors (39th), Control and management of work environment (41st), Collection and measurement of dusts (53rd), Protective equipment (54th), Measurement and control of noise and vibration (55th)
15. Business administration and health and safety management systems: Business strategy and health and safety management (22nd), Assessment of health services (32nd)
16. Occupational health in small industries and self-employed: Small industries and self-employed (13th), Health in agriculture, forestry and fishery (57th)
17. Quality of working life and health promotion: Work of diseased and disabled and return to work (25th), Health promotion (32nd), Health examination and guidance (40th), Comfortable work environment (42nd), Lifetime health (47th)
18. International standard and collaboration: International standard, harmonization, comparison and collaboration (16th)

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composed of Research topics with higher short-term and lower long-term priority topics (Table 3, Fig. 1). Seven Key research issues with 31 Research topics were included in this area.

Table 4 shows implementation measures for promotion of national occupational health research strategy by the Ministry of Health, Labour and Welfare. According to the National OH Research Strategy Report issued in December, 2000<sup>3)</sup>, the newly integrated Japanese Ministry of Health, Labour and Welfare, academic institutions, stakeholders, and research workers are advised to direct their OH research programs on these 3 Key research areas and 18 Key research issues, and to promote efficient and high-level research for resolution of OH issues. It is also proposed that the research in the 3 Key research areas should be beneficial for: (1) understanding current changes in life and health at work,

**Table 4. Implementation measures for promotion of national occupational health research strategy in Japan\***

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1. Promotion of public awareness on occupational health research
  2. Dissemination of research strategy to institutions, specialists and stakeholders
  3. Strengthening of the function of research institutions and of cooperation among domestic and overseas institutions and researchers
  4. Development and use of human resources
  5. Securing and efficient use of research funds
  6. Enhancement of information technology (IT) system in research institutions and opening of research facilities to external researchers
  7. Monitoring of national research strategy
  8. Promotion of national research strategy with National Institute of Industrial Health as an executive office
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\* Translated from Reference 3.

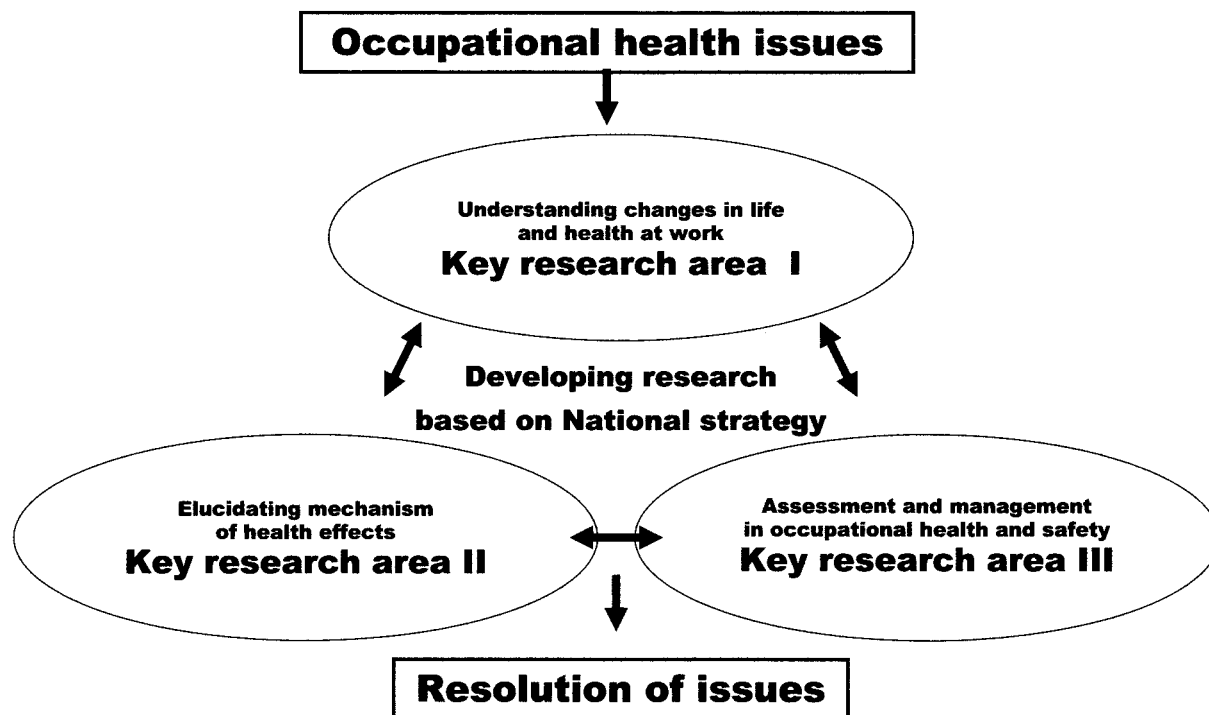


Fig. 2. National occupational health research strategy of Japan: Roles of 3 Key research areas (Modified from original Japanese-language Figure in Reference 3).

(2) elucidating the mechanism of the health effects of occupational factors, and (3) assessment and management in occupational health and safety. Figure 2 shows the roles and interrelationships of the 3 Key research areas identified.

## Discussion

Work stress was selected as the first overall priority research topic for next ten years both by 50 conference members and by 145 Extramural specialists. This agrees with the fact that work stress control is one of the most important policies of the Department of Occupational Safety and Health in the Ministry of Health, Labour and Welfare currently in Japan.

The priority of Work stress research appears to be also highest in Japan among the industrialized countries in which occupational health priority research topics were investigated. For example, in the USA, neither Stress, Psychological stressor, nor Depression and anxiety were identified as one of the 21 top priority research topics in the NORA study by the NIOSH<sup>2)</sup>. Also in the UK, Stress related disease was identified only as the fourth of all the five priority areas in a survey of medical opinion by the Delphi technique<sup>5)</sup>. In the Netherlands, the topic on Work stress was judged to be

more important than topics on Musculo-skeletal disorders, Safety, and Biological, chemical and physical hazards, but Work stress and all the latter topics belonged to the second group (i.e., “Assessment of relations between exposure and effect”) of the four most important research groups, following “Design/implementation/evaluation of measures such as cost-benefit analysis”<sup>6)</sup>.

Elderly workers, Women workers and maternity protection, and Mental health and quality of work and life were identified as overall priority research topics between the second and fourth ranks for next ten years also both by the Conference members and by the Extramural specialists. Therefore, these three research topics are assumed to be the second group of priority research topics following Work stress.

On the other hand, only Hazard and risk assessment and Biological effect index were selected as priority topics between the fifth and tenth ranks both by the Conference members and by the Extramural specialists. Thus these two topics are assumed to be the third priority group for next ten years.

Finally, a big difference existed between the short-term and long-term priority research topics selected; only Work stress and Endocrine and reproductive effects of chemicals

were selected within the first ten topics both for short-term and long-term priority research topics by the Conference members. This should imply that priority research topics are assumed to change greatly within five years. Thus monitoring of priority research topics is essential.

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