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WORLDWIDE

# SLEEP AND HEALTH

## PROJECT OVERVIEW

DIVISION OF  
MENTAL HEALTH  
AND PREVENTION  
OF SUBSTANCE ABUSE

Worldwide Project on  
**Sleep and Health**



World Health Organization

**WORLD HEALTH ORGANIZATION**  
in collaboration with the  
**WORLD FEDERATION OF  
SLEEP RESEARCH SOCIETIES**

# WORLDWIDE PROJECT ON SLEEP AND HEALTH

## PROJECT OVERVIEW



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**GENEVA - 1998**

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## THE WORLDWIDE PROJECT ON SLEEP AND HEALTH

Many individuals worldwide are faced with a variety of severe sleep difficulties. WHO and a number of partner organizations have been exploring the relationship between sleep and health, as a basis for action to deal effectively with sleep problems and disorders. Over the past two years, WHO has participated in four international conferences<sup>1</sup> on insomnia, the use of hypnotics, and research into this important area.

Scientific evidence, revealed during this series of meetings, justifies the *launching of a specific Worldwide Project on Sleep and Health*, to be implemented in collaboration with the World Federation of Sleep Research Societies and supported by an unrestricted educational grant from the International Foundation for Mental Health and Neurosciences (IFMHN) and Synthélabo (which provided the initial funding).

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<sup>1</sup> **International Consensus Conference on Insomnia.** Versailles, France (October, 1996). (WHO Doc.: MSA/MND/98.2);

**International Discussion Forum on Optimizing the Management of Insomnia: From Public Health Concerns to New Research Perspectives.** 11th Annual Meeting of the Association of Professional Sleep Societies, San Francisco, California (June, 1997);

**International Symposium on The Chronic Use of Hypnotics.** 11th Annual Meeting of the Association of Professional Sleep Societies, San Francisco, California (June, 1997);

**International Workshop on Sleep and Health: Research and Clinical Perspectives.** Palm Springs, California (December, 1997).

## OBJECTIVES OF THE PROJECT

The *overall objective* of this new project is the development of a comprehensive database on sleep problems and disorders, and the application of this knowledge in providing assistance to Member States in dealing effectively with these problems.

The *specific objectives* are as follows:

- to develop a comprehensive database on worldwide patterns of sleep and sleep disorders;
- to carry out in-depth analyses of the different components of this database to complement existing knowledge;
- to assist Member States, in all WHO Regions, to develop and implement specific programmes to identify and deal with sleep problems and disorders.

## BACKGROUND INFORMATION

One-third of life span is spent in sleep, a state that is crucial for physical, mental and emotional well-being. When the sleeping pattern is disrupted, individuals cease to function effectively. Sleep is a basic necessity of life, as fundamental for the maintenance of human health as air, food and water. Today, approximately half of the population on Earth is at risk of suffering from some kind of sleep problem. When we sleep well, we wake up alert and ready to face the day. When we don't, every aspect of life suffers. When an individual is afflicted with any of the more than 90 sleep pathologies, there may be serious physical and psychological

In addition, sleep pathologies severely exacerbate the effects of other illnesses.

Scientific evidences indicate that large numbers of people in the world are severely sleep deprived, and consequently are dangerously drowsy during the day. Over the past century, average nightly total sleep time has been reduced by more than 20%. With the advent of jet travel, shift work and other modern disruptions in sleep, problems are greatly increased, adverse affects the quality of life, and endanger public safety by contributing to traffic and industrial accidents.

At any one moment, as many as 50% of adults suffer from one or more sleep disorders - for 13% they are severe and may harm their health. These disorders include problems falling or staying asleep, staying awake and adhering to a consistent sleep/wake schedule. In addition, specific sleep disorders themselves occur with significant magnitude and some are potentially fatal. Narcolepsy, for example, afflicts as many individuals as does Multiple Sclerosis or Parkinson's Disease. Sudden Infant Death Syndrome (SIDS), heart attacks, lack of growth in adolescence, disrupted immune activities in adults and many other medical problems due to insufficient or disrupted sleep affect millions of individuals. Unfortunately, a majority of those with sleep problems do not discuss their difficulty sleeping, with a physician or other health care professionals.

Clearly disrupted sleep has grave consequences for individuals and society as a whole. There are economic consequences, for example, that result from the current sleep status of our population. The result is a tremendous loss for individuals and society; this loss can be registered in economic terms (US\$ 18

billion in lost productivity per year in the United States alone), physical problems (a 20% increase in physical problems occurs when there is a problem sleeping), mental difficulties (half of adults have difficulty making decisions when they are sleepy) and emotional disturbances (sleep problems are especially prevalent in schizophrenia, depression and other mental illnesses. Each year, sleep disorders, sleep deprivation and sleepiness add billions to the national health care bill in industrialized countries.

There are also transportation safety consequences of disturbed sleep. Twenty percent of all drivers have fallen asleep behind the wheel at least once. The most frequently cited probable cause of mass transportation accidents is fatigue, accounting for nearly one-third of all fatal-to-the-driver heavy trucking accidents. About 50% of fatal crashes are caused by drowsy drivers. Annual sleep-related accidents in transportation alone claim thousands of lives, cause hundreds of thousands of injuries and cost billions with regard to health care costs, death, lost productivity and damage to property. A host of other consequences ranging from shiftwork to jet lag are at the core of poor health and economic loss.

## PROJECT ACTIVITIES

The activities of the Worldwide Project on Sleep and Health will be devoted to the development of a comprehensive database on sleep patterns and disorders in different regions of the world. They will also address specific problems that arise at the interface between sleep and related disorders in psychological, physiological, psychiatric and behavioural areas. For each area, a number of sub-programmes will be instituted, and examples will be:

- a knowledge base will be developed to determine incidence and socio-economic costs;
- educational programmes for the general public will be undertaken;
- educational programmes for physicians will be undertaken so that they can effectively recognize, diagnose and treat sleep problems and disorders.

With respect to sleep-related issues and problems, the following group of major medically-important areas of interest will be examined:

1. Cardiovascular Function and Sleep
2. Cognitive Function and Sleep
3. Public Safety and Sleep
4. Child Development and Sleep
5. Immune Function and Sleep
6. Mental Health and Sleep
7. Drug Abuse and Sleep
8. Mortality and Sleep
9. Primary Health Care and Sleep
10. Training in Sleep Disorders Medicine
11. Sleep and Psychiatry
12. Psychoactive Substances and Sleep
13. Sleep and Circadian Rhythms
14. Sleep and Research/Clinical Training
15. Future and Basic Science in Sleep
16. Epidemiology of Sleep/Sleep Disorders



Areas 1. through 8. deal with the consequences of disturbed sleep and/or sleep disorders, whereas 9. through 16. deal with the interaction between sleep and other processes or factors. The way in which each of these areas of interest (and others that will be determined as the Project evolves) are affected by and in turn affect sleep and specific sleep disorders will be studied. For example, the effect of sleep on basic and disordered cardiovascular function will be examined as will the manner in which disturbed cardiovascular function affects sleep. Similarly, the manner in which specific sleep disorders, such as insomnia, narcolepsy, apnoea, etc. affect cardiovascular function will be evaluated. Each programme will deal with such matters as epidemiological determinations, socio-economic costs, recognition and diagnosis, education, etc. and will utilize a variety of approaches, such as workshops, conferences, training sessions, educational materials, scientific publications, etc. to achieve specified goals. The activities of the Worldwide Sleep Project will be devoted to the development of general knowledge bases dealing with sleep hygiene and sleep disorders in specific regions of the world.

Carrying out these activities will require the conduct of a series of symposia. The problems that are identified at the symposia will then be dealt with by the generation and implementation of a three-year programme in each area of interest. Members of the International Advisory Committee, the Sleep Centres of Reference and other relevant experts will interact with and lend their expertise to the activities of the Project.

Specific activities that will be developed in the next three years are the following:

- *Educational Kit on Insomnia for Primary Care Physicians* (1998)

The Educational Kit will be designed specifically for primary care physicians. It will provide information related to the identification of insomnia and its management. The kit will contain pamphlet(s), poster(s), a glossary, questionnaires, sleep log forms, etc. for use by primary care physicians.

- *International Symposium on Sleep and Cognitive Function: Research And Clinical Perspectives* (1999)

This symposium will critically review the field of cognition and sleep and present a state-of-the-art report dealing with the clinical importance of these data and the research possibilities that exist. The Symposium will consist of plenary lectures by renowned investigators. Debates between leaders in the field and individual presentations by experts in clinical science and applied science will highlight the event. Conclusions will be published in a scientific journal and/or as a WHO technical document. There will also be a Web presentation on the site of the Project.

- *International Study on the Economic Costs of Insomnia* (2000)

This study will determine the socio-economic consequences of untreated insomnia in selected developed and developing countries. In order to carry out this project a panel of sleep and

socio-economic experts will be convened. A monograph describing the findings and conclusions of the study will be produced and published in a scientific journal and/or as a WHO technical document.

- *International Survey of the Costs of Circadian Rhythm Disruption in the Workplace (2000)*

This survey will determine, in both developed and developing countries, the economic consequences in the workplace of the disruption of circadian rhythms. A questionnaire will be developed and presented to a representative sample of individuals in the workplace in selected countries. Various methodologies for the administration of the questionnaire will be explored, including computer-based, Internet-based and traditional print-based procedures. Results and recommendations will be discussed during a specific Symposium and published in a scientific journal and/or as a WHO technical document.

- *International Consensus Conference on Insomnia and Circadian Rhythms (2000)*

This consensus conference will critically review the current knowledge about insomnia and circadian rhythms and present a state-of-the-art report dealing with the causes and costs of work-related circadian problems and ways to ameliorate them. The conference will consist of plenary lectures by renowned investigators, debates between leaders in the field and individual presentations by experts in clinical science and applied science. Conclusions of the consensus conference will be published in a scientific journal and/or as a WHO technical document. An article in a sleep or psychiatric journal will be developed as will a

monograph and/or a WHO publication. There will be a Web presentation on the Site of the Worldwide Project on Sleep and Health.

- *Web Sites*

Web Sites will be established which will highlight the work of the Worldwide Project on Sleep and Health and help to communicate the availability of treatments of insomnia and sleep disorders in developed and developing countries. The following and related information will be brought together and organized in a coherent manner:

- activities of the Worldwide Project on Sleep and Health,
- description of its affiliated centres of reference (personnel, areas of expertise, etc.),
- contact information,
- listings of seminar series,
- learning and promotional materials about sleep disorders,
- simple self-assessment instruments designed to indicate whether an individual may have a sleep disorder or not.

## STRUCTURE

The overall direction of the project is assured by Dr J. A. Costa e Silva, Director of the Division of Mental Health and Prevention of Substance Abuse (MSA) of the World Health Organization (WHO). Dr J. M. Bertolote, Chief of WHO's Mental Disorders Control Unit is the Project Officer.

Dr Michael Chase, President of the World Federation of Sleep Research Societies and Dr Thomas Roth, Editor of the international journal *Sleep*, are Co-Directors of the Project. The Project is supported by a Steering Committee and an International Advisory Board composed of experts from all WHO Regions, whose names are indicated below.

**STEERING COMMITTEE.** The Steering Committee is composed of the following members:

Dr J. A. Costa e Silva (Chair)  
Dr M. Chase  
Dr T. Roth  
Dr P. Macher  
Dr J. M. Bertolote (Project Officer)

**INTERNATIONAL ADVISORY COMMITTEE.** The Advisory Committee is composed of the following experts:

- |                            |                     |
|----------------------------|---------------------|
| J. Adrien, France.         | R. Nakamura, USA.   |
| F. Antun, Lebanon.         | T. Okuma, Japan.    |
| A. Bentley, South Africa.  | T. Paiva, Portugal. |
| D. Buysse, USA.            | G. Richardson, USA. |
| S. Chatterji, India.       | T. Roehrs, USA.     |
| J. Costa da Costa, Brazil. | H. Schulz, Germany. |
| R. Grunstein, Australia.   | M. Von Korff, USA.  |
| M. Kryger, Canada.         | T. Young, USA.      |
| E. Lugaresi, Italy.        |                     |

**AREAS OF EXPERTISE.** In order to provide the expertise necessary for the various programmes of the Project, six specialized Areas of Expertise have been identified to be under the direction of designated Area Heads responsible for ensuring the implementation and quality of the work being done. These areas (and their respective Heads) are: Health Outcome/Pharmacoeconomics (M. Von Korff), Recognition/Diagnosis (D. Buysse/E. Lugaresi), Prevention/Therapeutics (T. Roehrs), Epidemiology (T. Young), Education (M. Kryger) and Communications (G. Richardson).

**AFFILIATED CENTRES OF REFERENCE.** In order to develop databases and to define appropriate regional and local objectives and implement them, a network of Sleep Centres of Reference will be established. These Centres will form regional

groups whose objectives are to implement the goals of the Worldwide Sleep and Health Project according to the problems and needs in that particular region; they will collect and evaluate data, develop prevention, treatment, educational and research programmes, and generate materials.

The Sleep Centres of Reference will be linked through the Internet to exchange information and data. They will also take into special account activities that are worldwide in scope, as well as specific culturally-oriented approaches to medical treatment that are indigenous to each WHO Region.

## ADDITIONAL INFORMATION

Additional information on the Worldwide Project on Sleep and Health can be obtained at the address below:

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