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MEASUREMENT OF LEVELS OF HEALTH

Edited by

WALTER W. HOLLAND, JOHANNES IPSEN and JAN KOSTRZEWSKI



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FOREWORD

In recent years many WHO Member States have come to feel a growing dissatisfaction at what they see as the unacceptably slow progress made towards the achievement of universal health – the objective on which the World Health Organization set its sights when it came into existence 30 years ago. These countries are now insisting on a more equitable distribution of health resources throughout the world and are demanding from WHO more help and guidance in developing national programmes for health. WHO's response to this has been to pledge itself to realization of the goal "health for all by the year 2000", to which end it has strengthened its managerial methods to cope with programme formulation, implementation, and evaluation, and to provide the necessary information support. The WHO Sixth General Programme of Work covering the period 1978–1983 offers basic guidelines for these developments, and it is therefore most appropriate that "Measurement of levels of health", a publication designed to promote the effective use of information, should appear in the second year of the implementation of that Programme.

The challenge of securing health for all is worthy of our best efforts but the task will not be an easy one. Those responsible for policy making and planning, and for the organization and management of health care delivery face many difficulties: to keep abreast of technological advances both within and outside the health field – for health is as much a matter of environmental management as of medical science; to grasp and control the complexity of contemporary health care; and to strike an acceptable balance between growing aspirations and expectations for health care and the strictly limited resources available for this use.

Individuals and communities must be helped to understand and provide for their own basic health needs, as far as this is within their capacities, through the powerful concept of primary health care. For health professionals the main concern is not so much that of providing comprehensive coverage of curative services, which is governed by the available resources, as of determining where special health problems occur in order to define priorities that are relevant to the whole population, both national and global, and above all to bring good management practices to bear on health care systems. Their efforts are all too often frustrated by the increasing volume of technical information being generated on all sides, which they are not always able to use fully.

The Regional Office for Europe is convinced of the outstanding importance of being able, simply and surely, to measure levels of health in specified populations, and in 1976 began, in collaboration with the International Epidemiological Association, the preparation of this publication. "Measurement of levels of health" is intended to provide guidelines for health professionals wishing to undertake such measurements for purposes of allocating resources, monitoring and planning health and health-related services, and initiating innovations in the development of such services, as well as reviewing existing services and programmes. The methods outlined will be operationally feasible in most countries although emphasis is slanted towards the European Region and the developed countries, from which published examples mainly come. Nevertheless, the principles set out here can readily be adapted to the needs of the developing countries, where WHO would like to encourage a more systematic approach to health development.

This publication should therefore meet the information needs of many epidemiologists, health service administrators, and other health professionals. It is my earnest hope that it will lead to a greater use of sound concepts and up-to-date approaches to solving health problems and thereby make a significant contribution to progress towards the goal of health for all.



*Leo A. Kaprio, MD
Regional Director for Europe*

PREFACE

J. Kostrzewski

In recent years, the International Epidemiological Association and the World Health Organization have shown increasing interest in methods of assessing health service programmes as well as preventive and curative procedures. The problem of assessment is crucial for those responsible for the development and administration of health policy. Evaluation of health programmes and services is of particular importance for the decision makers and for the professionals who actually deliver health services.

Awareness of the demand for assessment methods was the stimulus for this publication, which is the outcome of a joint effort by the WHO Regional Office for Europe and the International Epidemiological Association. The initial intention was to produce a guide for policy makers, planners, health administrators, and medical professionals that could be used widely in all parts of the world. However, the first meeting of the Editorial Board agreed that the present work should concentrate mainly on the health problems of Europe and that a more ambitious publication of worldwide scope should be postponed.

For the purposes of this book, "measurement of levels of health" is taken to include the incidence and prevalence of specific diseases and syndromes, and measurements of physical and mental conditions, as well as the social function of individuals and population groups and their behaviour or attitudes towards health and health-related activities. Demographic phenomena are taken into consideration on the one hand, and availability and utilization of health services on the other. Measurable variables are grouped under the headings: measurements of ill health, measurements of need and demand for medical care, measurements of the use of health services, and measurements of effectiveness and efficiency of health services and programmes. The interface between health and social services is also examined.

Measurements of ill health have dominated the field of health indicators used for evaluation of health status. In this publication an attempt is made to develop a broader range of tools for health indicators than those at present available for epidemiological study of diseases or assessment of therapeutics and preventive procedures. As mentioned above, various approaches to the use of measurements of levels of health in health care programmes are considered, and the need to improve measurements and information systems is

stressed. It is also emphasized that indices of health to be developed will be largely concerned with projections of future health needs and health programmes.

Measurement of levels of health is published under the joint sponsorship of WHO and IEA to facilitate communication between those engaged in research and teaching in epidemiology throughout the world and to encourage the development and use of epidemiological methods in social and preventive medicine.

Work on this publication began with a Study Group in Copenhagen in October 1976; this included, in addition to the members of the Editorial Board (see list on p. 6), Dr A.S. Härö, Director of the Department of Planning and Evaluation, Finnish National Board of Health. The Group examined the problem of measurements of levels of health and their application in the planning, management, and evaluation of health services, and prepared a draft outline for the publication.

The Study Group meeting was followed by a meeting of the Editorial Board in London in January 1977 and by a Working Group in Nieborow, Poland, organized jointly by the Regional Office for Europe and the International Epidemiological Association in collaboration with the Polish Academy of Sciences. This was attended by a group of experts invited by WHO and the IEA to contribute to the publication. The Group reviewed the plan of the publication and the individual chapters, making suggestions and recommendations for the preparation of the final draft, which was considered and approved by an Editorial Board meeting in Copenhagen in July 1977.

Although its main emphasis is on the European situation, this book is aimed at all those, in whatever part of the world, who wish to inform themselves on decision making in health matters. This heterogeneous group includes, in addition to the personnel directly responsible for the delivery of health care, political leaders, administrators, managers, voluntary and professional associations, and consumers; all of these have important, but differing, roles to play in the planning, programming, management, and evaluation of health services though their need for, and use of, health measurements will vary greatly. However, while health problems and the development of health services may differ from country to country and from region to region, the principles of health planning and evaluation are basically similar everywhere.

ACKNOWLEDGEMENTS

The planning of this publication was discussed and coordinated at a number of preparatory meetings, one of which convened in Nieborow, Poland, in March 1977. That meeting was attended by some 30 participants invited by WHO and the International Epidemiological Association. The Regional Office for Europe wishes to acknowledge the financial assistance given by the Commonwealth Fund, New York, NY, USA, the Esther A. & Joseph Klingenstein Fund, Inc., New York, NY, USA, and the Milbank Memorial Fund, New York, NY, USA, for the participation in the Nieborow meeting of a number of specialists, whose contributions were greatly appreciated. The WHO Regional Office for the Western Pacific also sponsored the attendance of several specialists.

The participants of the Nieborow meeting included: Dr A.I. Adams, Director of the Division of Health Services Research, Health Commission of New South Wales, Sydney, Australia; Dr T. McCarthy, Assistant Administrator for Scientific Liaison, Health Resources Administration, US Department of Health, Education, and Welfare, Rockville, MD, USA; Dr D. Naceur, Senior Lecturer, Department of Social Medicine, National Institute of Public Health, Algiers, Algeria; and Dr Boga Skrinjar, Chief, Development of Health Statistical Services, World Health Organization, Geneva, Switzerland. Although these four participants did not subsequently prepare papers for inclusion in *Measurement of levels of health* the sponsors of this publication are grateful to them for their contributions to the discussions and the planning of this work.

SYNOPSIS

J. Ipsen

This publication is aimed primarily at all those involved in decision making in the health services. Apart from the health service personnel actually delivering health care this includes politicians, policy makers, planners, administrators, managers, voluntary bodies, and consumer groups. At all levels of health — from care of the dying to the promotion of physical and mental wellbeing — measurements can be made of the frequency and severity of each condition. These indicators must be applicable to practical decisions on the allocation of resources, planning, and monitoring of health and health-related services, to innovation in such services, and to the evaluation of ongoing services and programmes.

Since health can be measured only indirectly, measurements of levels of health will indicate the occurrence of specific diseases, syndromes, and conditions — levels of function of individuals and population groups — and individual and collective behaviour and attitudes toward health-related matters. This book does not give technical details about measuring specific determinants of disease (e.g., levels of pollution), but does include discussion of social and demographic structures as they relate to levels of health. Factors such as the utilization and availability of health services in various population groups are used as proxy measures to help estimate the level of need for certain services and to define population groups at risk from disease.

For measurements of levels of health to be useful as indicators of need for health services, knowledge is required of determinants of disease and of the conditions that place particular groups at risk from disease. The same is true of measurements for evaluation of intervention activities and the outcome of established health services. However, medical knowledge is only one of several skills involved in planning, decision making, and evaluation. An attempt is made here to synthesize the combined contributions of the various professions in their endeavour to develop and analyse comprehensive and effective health systems.

SCOPE OF THE BOOK

The three parts of the book are arranged so that feasible measurements of health are presented in a logical sequence.

Part I is concerned with general strategy for selecting efficient indicators and arranging information systems (Chapter 2), the combination of information at the interface of social and medical services (Chapter 3), and the use of measurements in the planning, allocation, and monitoring of health activities (Chapter 4). These chapters each contain illustrative examples of the matters discussed and other examples follow throughout the book where subjects are treated in greater detail.

The principles set forth in Part I are elaborated further in Part II (Chapters 5–8). These chapters are designed to illustrate, from a variety of different approaches, the nature of a selection of measurements of health levels: although the nature of the resulting indicators may be similar the selection process and the weighting given to each indicator will most probably differ with the approach.

The strategic approach, described in Chapter 5, arises from the need to attain equitable distribution of, and access to, the curative and preventive services. The chapter expands this notion by defining indicators that are suitable for this purpose.

The need for health services, a much debated and elusive concept, is elucidated in Chapter 5, section III. The terms “perceived”, “medically defined”, and “socially determined need” are delineated and their interrelationships analysed. Those indicators of need that are appropriate to these definitions are illustrated.

In Chapter 5, section IV, distribution of government resources and manpower are viewed from various administrative levels, and there is particular emphasis on the formulation of suitable guidelines at all levels to ensure uniform information collection. A number of measurements are discussed in answer to the simple, but powerful, administrative questions: “Where are we now?”, “Where do we want to be?”, and “How do we get there?”. The boundaries within which these problems are considered are those of a national health service, and the chapter is aimed at administrators and planners as well as at medical advisers.

The organizational or hierarchical approach to health indicators is closely related to the strategy of health planning. Chapter 5, section V, and Chapter 6 deal with two specific aspects of governmental approaches to measurement of levels of health: *priorities* (Chapter 5, section V) in decision making must be based on informative indices of health and health resources in order to determine effective ways of “putting first things first”. In the hierarchy of *organization* (Chapter 6) attempts are made to provide a general framework for relating measures of health to the needs of decision makers at characteristic levels of authority within the health system. The levels are viewed over a wide range, from the individual and the family, through various communities increasing in size, to the international level of health activities.

Services and programmes create the need for a more specific approach to health indicators than outlined in the preceding chapters. Chapter 7 presents general considerations pertaining to services and also upholds the necessity of viewing services as part of the overall planning of health systems. In the different sections of Chapter 7 problem-oriented services (accidents, alcoholism, and maternal and child care) are selected as examples of circumstances where there is need to define specific measurements of disease and injury. These examples are not intended to cover all possible areas of interest, but they might be sufficient to illustrate the important steps towards, and the appropriate weightings on, measurements in the context of specific programmes.

The final chapter in Part II (Chapter 8) approaches the matter of measurements from the point of view of the natural history of disease. Although each disease entity follows its own natural course, general epidemiological principles and practice permit a logical subdivision into cure, care, and prevention of disease with distinct characteristics of the measurements of health in focus at each phase. These considerations make it convenient to deal separately with the three phases of the natural history of disease and also to devote separate sections of the chapter to measurements relating to prevention of communicable diseases and those relating to noncommunicable diseases; for example, incidence is the more important measure for communicable diseases and prevalence the more important for noncommunicable diseases.

This book would fail to make any practical impact unless it presented detailed examples of solutions to real problems that are either successful or serve to illustrate fallacies or pitfalls in attempts to formulate consistent measures of levels of health. Thus, Part III tries to answer the questions "how?" and "so what?" arising from the more theoretical Parts I and II.

Some examples may be familiar to those who have diligently studied recent professional literature. However, the examples are chosen from such a wide range of publications that it is likely that some have escaped the notice of even the most thorough readers. Moreover, all the examples have been rewritten and condensed by the original authors, following an agreed outline, so that the salient points are emphasized to illustrate the concepts described in Parts I and II.

Terminology in the various sections of this book has been kept as uniform as possible, although authors had considerable freedom to use expressions in the way that seemed most appropriate. The terms are mostly used in accordance with definitions in *Glossary of health care terminology*.^a Some of these terms call for further explanation at this point.

The words "indicator" and "index" are often used synonymously. It is suggested that *index* (plural, *indices*) should be used only with reference to exactly defined numerical measurement scales, while *indicator* should be used generically as a term qualifying those measurements or variables that

^a Hogarth, J. *Glossary of health care terminology*. Copenhagen, WHO Regional Office for Europe, 1975 (Public Health in Europe No. 4).

indicate certain conditions of interest. For example, certain interview questions are listed in Chapter 4, Table 1, that are indicators of functional ability, personal mobility, etc. If these questions were graded numerically in order of intensity, a positive answer to a question could be given a number that would then be an index of the condition. Thus, only indices are used in statistical operations such as means or correlations. Some indices are composed of weighted sums or products of single measurements. Some indicators are indirect or proxy indicators of health — age or smoking habits, for example. If they are strongly associated with direct measurements of health they are often termed “predictors” or “determinants” of health.

In the terminology of planning the English language is more explicit in distinguishing between various levels of intent, as expressed by the words “goal”, “objective”, and “target”. For the purposes of this work, a *goal* is defined as a specified state towards which action and resources are directed. Goals are not constrained by time or existing resources, nor are they necessarily attainable, but are, rather, ultimate desirable states. An *objective* is a measurable and attainable state that can be achieved within a foreseeable period with the resources available. *Targets* are the operational and tactical aspects involved in reaching an objective.

The nomenclature of need for health services is given in detail in Chapter 5, section III. Similarly, it is unnecessary to mention here the stages of disability and impairment since Chapter 3 is largely concerned with definitions and measurements in this field.

Measurements of levels of health can be classified in many ways. The multitude of possible and feasible indicators can be organized for one system or another for academic purposes, but it would be pointless to consider all possible arrangements. The intention of this book is to place the greatest emphasis on presenting the measurements according to the purpose they should serve. The skills and techniques used to provide measurements come from an increasing number of disciplines. Although medical science and practice are able to provide indicators of ill health, the understanding and usefulness of these indicators rely also on support from social, economic, and administrative disciplines.

It is not proposed to develop here a universal “index of health”. It is generally thought impossible to arrive at a composite health scale to suit all comparative situations in the planning, management, and evaluation of health services. However, knowledge of how health indicators are selected, composed, and used should enable the scientist and the administrator to choose measurements that are specific to a situation and can be generalized for application in other similar situations.