PUBLIC HEALTH AND PEACE

Minimum Health Indicator Set for South Eastern Europe

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Aim. The Stability Pact includes a program for the development and reconstruction of training and research in public health for the countries of South Eastern Europe (PH-SEE). One of the identified priorities of national public health development is the definition of a Minimum Indicator Set for all countries of SEE.

Methods. A Task Force of the PH-SEE Network *(www.snz.hr/ph-see)* has proposed a Minimum Indicator Set on the basis of the list of the 224 indicators of the World Health Organization (WHO) Health for All (HFA) 21 strategy. The indicators selected follow the selection criteria as defined by expert groups of WHO and the European Commission. A meta-database describing the indicators should be established soon.

Results. A list of 32 indicators was agreed at a workshop in Ohrid, Macedonia, in September 2001. All indicators are included in the WHO HFA 21 indicator set. Some indicators are related specifically to the SEE post-war situation, such as indicators on suicide and homicide, literacy rate, average number of calories per person a day, and average number of persons per room.

Conclusion. After principal agreement of the expert group on the list of indicators, further practical steps are necessary, especially testing the indicators and building a logistic network for realizing the Minimum Indicator Set. This includes a pilot phase, a revision of the Minimum Indicator Set after testing, responsibilities and timelines for data collection and data analysis, and transfer of the project into a continuous surveillance and monitoring system.

Key words: data collection; Europe; health planning; health policy; health status indicators; public health

The first conference on Public Health Collaboration in South Eastern Europe (PH-SEE), entitled "Public Health Training and Research Collaboration in South Eastern Europe" was held at the Inter-University Center in Dubrovnik, Croatia, February 16-18, 2001 *(http://andrija.snz.hr/ph-see/news_doc/Conference2001.html)*. The conference was organized as a part of the Stability Pact project on the reconstruction of programs for training and research in public health in SEE.

Specific objectives of the conference were the following (1): a) to review current policy and practice of postgraduate and continuing public health training in SEE countries; b) to recommend and initiate further development of public health curricula and training modules based on regional specificities in the European context and in mutual collaboration; c) to discuss feasibility in development of a common Internet-Platform; and d) to identify priorities of national public health research projects and stimulate further collaboration and joint research within the PH-SEE network.

One of the priorities for PH-SEE Network is the development of a Minimum Indicator Set for the Balkan region. The participants established a Task Force (Doris Bardehle, Germany; Genc Burazeri, Albania; Doncho Donev, Macedonia; and Ulrich Laaser, Ger-

many) to prepare the draft for an indicator set suitable for SEE. Up to this time, an indicator set as the basis for comparison and use for decision making in health policy and health reporting has not been available for the SEE countries. A teaching module on Health Indicators and Health Reporting *(http://andrija.snz.hr/ph-see/curr_doc/U7_T3_M1.doc.)* containing the scientific background is included in the New Public Health Curriculum, which is also under work (2).

Material and Methods

On the basis of the Dubrovnik pledge of August 31–September 2, 2001, the following countries and territories were involved in the development of the Minimum Indicator Set: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Slovenia, FYR Macedonia, Romania, and FR Yugoslavia. The Health for All 21 (HFA 21) structure was used for the Minimum Indicator Set. The main source of indicators was therefore the list of 224 indicators of the World Health Organization (WHO) HFA 21 strategy. The indicators had to cover socio-demographic and economic situation; mortality; morbidity (hospital discharges); risk factors and lifestyles; environmental health; health care resources, utilization, and costs; and maternal and child health.

The preference was to define at least one indicator for each of the topics, taking into account as much as possible the deterioration of health statistics during the 1990s in most SEE countries.

The selection criteria for the indicators follow the report of a WHO Expert Group Meeting in the year 2000 (3) and the Final Report of the ECHI Project of the European Commission (4).

Selection Criteria for Health Indicators

Selection criteria for health indicators should be relevant (regarding priorities), valid (regarding determinants of health), measurable (in quantitative or qualitative terms), sensitive (to change and differences), comparable (inter-territorial), repeatable (for time series), affordable (in terms of relative costs), and useful (for intervention).

The working group also proposed some rules for the Minimum Indicator Set, concluding that all indicators had to represent either a dimension determining health, e.g., economics, or to satisfy different stakeholders (primary and secondary). The indicator set had to be limited to approximately 30 indicators, which had to be available in the majority of the SEE countries. The Minimum Indicator Set ought to be completed in a form of meta-database, describing the indicators and their quality.

Items describing the indicators were defined in various WHO and EU documents. The Norwegian National Health Indicator System in its "Norgeshelsa" database uses a similar model describing the indicators based on HFA 21 (5). Items describing the meta-database were the definition of the indicator, source of data, description of method of data collection, description of measurement of data, assessment of quality and limitations, and an explanation why this indicator was preferred.

The HFA 21 database also contains definitions for indicators and comments concerning country-specific adaptations or modifications within the countries (6).

Results

The Task Force checked the list of the HFA 21 indicators and selected 32 of them as descriptive of the specific conditions of the SEE countries (Table 1). On the list of 32 indicators, 11 are related to mortality. This overrepresentation is due to the fact that mortality statistics is reasonably accurate in SEE countries, whereas morbidity statistics, like registry and hospital discharge statistics, is not equally well kept everywhere and at all times. The indicators on homicide and suicide reflect consequences of the wars in SEE and psychological stress of the population. The incidence of tuberculosis reflects the socio-economic situation in the SEE region.

Oral health status of the children reflects the efficiency of the parts of the health care system.

Selecting lifestyle indicators was especially difficult in view of the nutritional situation. The planned pilot study has to show which data are available, the average number of calories per person per day or the percentage of total energy available from proteins.

The preferred indicators for environmental health were water supply or hygienic sewage and "average number of persons per room", which reflects inconvenient living conditions and factors favoring socially related diseases, such as tuberculosis.

These 7 indicators altogether refer to health care resources, such as manpower and health care utilization. Two indicators refer to health expenditure and the gross national product. Since maternal and child health are very important for the SEE countries as

Table 1. List of indicators selected from Health for All in the Twenty-first Century policy in accordance with specific conditions of the SEE countries

Topic	Indicator No.	Indicator
Demography/social/economy	01	Population aged 65 years (%)
	02	Unemployment rate (%)
	03	Literacy rate in population aged 15 years
Mortality-based indicators	04	Life expectancy at birth by sex
	05	Infant mortality rate per 1,000 live births
	06	Perinatal mortality rate per 1,000 births and rate of stillborn babies
	07	Maternal deaths per 100,000 life births (all causes)
	08	SDR[a], cardiovascular diseases per 100,000 population by sex, all ages
	09	SDR[a], malignant neoplasm per 100,000 population by sex, all ages
	10	SDR[a], external causes, injuries, and poisoning per 100,000 population by sex, all ages
	11	SDR[a], suicide and self-inflicted injuries per 100,000 population by sex, all ages
	12	SDR[a], homicide and purposely inflicted injury by other persons per 100,000 population by sex, all ages
	13	SDR[a], infectious and parasitic diseases per 100,000 population by sex, all ages
	14	Mortality rate for children aged 1-4 years per 100,000 of the age group, by sex
Morbidity and hospital discharges	15	Incidence of tuberculosis per 100,000 population, of which pulmonary tuberculosis by age and sex
	16	DMFT-12 index (Decayed, Missing, or Filled Teeth, aged 12)
Life style indicators	17	Pure alcohol consumed per person annually (L)
	18	Average number of calories per person a day (kcal) or % of total energy available from proteins
Environment	19	Population (%) with connection to water, total, or population (%) with access to hygienic sewage disposal, total
	20	Average number of persons per room in an occupied housing unit
Health care resources	21	Number of primary health care units per 100,000 population
	22	Number of hospital beds per 100,000 population
	23	Number of physicians, of which general practitioners, per 100,000 population
	24	Number of dentists (stomatologists) per 100,000 population
	25	Number of pharmacists per 100,000 population
	26	Number of nurses per 100,000 population
Health care utilization/costs	27	Average length of hospital stay (all hospitals)
	28	Total health expenditure, of which on inpatient care (US$)
	29	Gross national product (US$), and its fraction for health expenditure
Maternal and child health	30	Number of abortions per 1,000 live births (legal and other abortions)
	31	Life births (%) weighing 2,500 g and more
	32	Coverage of all vaccinations in children up to one year of age (%)

[a]Age-standardized health rates.

early warnings, the following 6 indicators were selected in this area: abortions, underweight newborns, complete vaccination, infant mortality rate, perinatal mortality rate, and maternal deaths.

Statistics

The HFA 21 indicator set includes several averages, as follows: a) the "EU average" (of the 15 Member States of the European Union), b) the "CEE average" (of the Countries of Eastern Europe); and c) the "NIS average" (of the Newly Independent States, former Soviet Union).

The Task Force investigated these different averages and concluded that the best average and at the same time benchmarking level would be the "EU average". So far (up to the year 2000), only Slovenia has reached the EU-average with regard to the indicator of "Infant Mortality (1-4 years of age)".

Concerning statistical tools for data analysis to be used for the Minimum Indicator Set, it was agreed to follow the recommendations of WHO and EU. For all mortality indicators, age standardization will be necessary to avoid bias caused by different age structures between the SEE countries. All indicators concerning mortality and morbidity must be presented for women and men separately and for the whole population.

As Slovenia is already using the WHO HFA 21 software (European Public Health Information Network for Eastern Europe – EUPHIN EAST) as a remote

database, it has been decided to ask their national institution to construct the software for the SEE Minimum Indicator Set database. A pilot phase using at maximum 15 indicators is planned to check the availability and quality of data. The Minimum Indicator Set was agreed upon at a PH-SEE Workshop in Ohrid, Macedonia, in September 2001. To demonstrate the intentions of the Ohrid expert group, Table 2 has been constructed using the indicator "Infant mortality rate per 1,000 live births for SEE regions" as an example. The ranges of the SEE countries infant mortality rates over 5-year period are compared with the "EU average", as discussed above. There is no data for Bosnia and Herzegovina, FR Yugoslavia, the territory of Kosovo, and the years 1998 and 1999 for some countries.

Standard data models for individual indicators will be more detailed than those requested for the HFA 21 set, especially in regard to age-and sex-specific data. This will allow age standardization, which is judged essential for interterritorial comparisons in the region.

A model for an indicator of the time-series type is demonstrated in Table 3. The HFA 21 indicator tables are limited to 5 items vs 11 items (or columns) required for the SEE region. It remains to be checked whether the WHO software can be adapted to this requirement. The table demonstrates big social differences that developed during the 1990s, such as increase in infant mortality in Macedonia. Slovenia, on the other hand, has reached a level identical with the "EU average".

Discussion

Indicators have to meet high standards. WHO once again dealt with the quality criteria through its HFA 21 strategy, although the criteria had already been applied to the HFA 2000 indicators. Standards for indicator sets and their systematization have also been fixed in the ECHI Project of the European Union. In terms of their validity, indicators usually cannot be better than the health statistics they are based on. This means, for example, that the "infant mortality rate (‰)" can be calculated correctly only if the number of children born alive and of those who died is correctly established. All 11 indicators derived from mortality statistics are therefore valid only if both of

Table 2. Infant mortality rate per 1,000 live births for the regions in South Eastern Europe, following Health for All 21 Indicator Set

Countries/Regions	Year				
	1995	1996	1997	1998	1999
Albania	23.32	20.22	15.55	14.70	no data
Bosnia/Herzegovina	no data	no data	no data	no data	no data
Bulgaria	14.80	15.58	17.51	14.43	14.62
Croatia	8.95	8.05	8.23	8.24	7.75
Kosovo	not included in the WHO Indicator List				
Slovenia	5.59	4.76	5.21	5.23	4.56
FYR-Macedonia	22.67	16.40	42.20	39.50	37.00
Romania	21.24	22.30	21.99	20.51	18.58
FR Yugoslavia	no data	no data	no data	no data	no data
EU average[a]	5.63	5.50	5.24	no data	no data
SEE range	5.6-23.3	4.8-22.3	5.2-42.2	5.2-39.5	4.6-37.0

[a]Benchmark values: the average of the member states of the European Union (EU) is used as a benchmark level for the SEE countries.

Table 3. Infant mortality rate per 1,000 live births for the countries/regions in South Eastern Europe presented as time-series, following Health for All 21 Indicator Set

Year	Albania	Bosnia and Herzegovina	Bulgaria	Croatia	Kosovo	Slovenia	FYR Macedonia	Romania	FR Yugoslavia	EU average[a]	SEE range
1970	no data	no data	27.30	no data	Not included in the WHO Indicator Set	no data	88.00	no data	no data	21.93	no data
1980	no data	no data	20.24	20.57		no data	54.20	24.33	no data	12.24	no data
1990	no data	14.83	14.77	10.67		8.27	31.60	26.81	no data	7.60	8.3-31.6
1991	no data	14.64	16.93	11.09		8.23	28.25	22.73	no data	7.41	8.2-28.3
1992	33.81	no data	15.93	11.62		8.85	30.63	23.35	no data	6.87	8.9-33.8
1993	32.91	24.70	15.52	9.89		6.80	24.12	23.29	no data	6.47	6.8-32.9
1994	25.24	no data	16.31	10.19		6.47	22.46	23.89	no data	6.07	6.5-25.2
1995	23.32	no data	14.80	8.95		5.59	22.67	21.24	no data	5.63	5.6-23.3
1996	20.22	no data	15.58	8.05		4.76	16.40	22.30	no data	5.50	4.8-22.3
1997	15.55	no data	17.51	8.23		5.21	42.20	21.99	no data	5.24	5.2-42.2
1998	14.70	no data	14.43	8.24		5.23	39.50	20.51	no data	no data	5.2-39.5
1999	no data	no data	14.62	7.75		4.56	37.00	18.58	no data	no data	4.6-37.0

[a]Benchmark values: the average of the member states of the European Union (EU) is used as a benchmark level for the SEE countries.

the official major statistics – population statistics and mortality statistics – are conducted correctly (7). This leads to the conclusion that a comparison between the SEE countries depends on the quality of population and vital statistics. Comparing their health status and situation in health care on the basis of indicators is something new for the SEE countries. Therefore, together with the definition of indicators, teaching materials for advanced public health training have to be developed. In this context, the HFA 2000 and HFA 21 indicator projects, which have been successfully run for years, are used as a basis. An analysis shows that, starting with the year 1995, not all data are available for all countries in South Eastern Europe, e.g., for Bosnia and Herzegovina or FR Yugoslavia. There are no data at all available for Kosovo, because this territory has not been included into the WHO lists yet.

A prerequisite for the selection of an indicator is its relevance to the situation in the Balkan region and the availability of data. Indicators relating to the health situation, which are at the same time indicators of the social status, are considered of highest relevance. They include demographic data, such as unemployment rate, literacy rate, the proportion of children born underweight, as well as mortality and morbidity data, such as life expectancy, maternal mortality, infant mortality, mortality of children aged 1-4 years, and frequency of tuberculosis.

Environmental conditions are characterized by the living conditions (number of persons per room) and by water supply and waste water disposal. The population's nutritional situation plays a major role because of the danger of malnutrition and/or false nutrition for some population groups. Therefore, the number of calories per day and the portion of proteins in the total number of calories are to be covered by one indicator (average number of calories per day, percentage of which comes from proteins).

Conclusions

The WHO document "Reproductive Health Indicators for Global Monitoring" describes the methodology for developing an indicator set with a reduced number of core indicators, agreed with international organizations and the countries concerned (8). The methodology consists of the following steps: 1) to reach consensus on the indicator list; 2) to develop a plan for further research and data collection; 3) to provide guidance and technical assistance to collect and to report on these indicators; and 4) to agree on how to implement such a plan of work.

Adhering to this strategy, the conclusions and recommendations of the described plan for introducing an indicator set for health policy, health monitoring, and health reporting in SEE are the following: 1) to carry out a pilot phase and complete the indicator list after testing the indicators, 2) to review the experience with the 32 indicators and present the results at an interagency technical meeting, 3) to establish responsibilities and timelines for collecting data, 4) to present the indicator list at country and regional levels through a series of workshops, 5) to provide national capacity to collect and analyze the data, 6) to

provide resources to support implementation at country level and resources for global monitoring of the Minimum Indicator Set, 7) to guarantee that the indicators should be collected in a standardized manner, and 8) to disseminate the results to all levels necessary and provide feedback to the data-providers.

To introduce the Minimum Indicator Set within all SEE countries, the consensus of all Ministries of Health in the SEE countries has to be reached regarding a framework and a timetable. The participants of the PH-SEE Workshop in Ohrid, Macedonia, in September 2001, proposed to delegate the task of coordinating the Minimum Indicator Set to the Ljubljana University School of Medicine, Institute of Public Health, Slovenia, which has already gathered valuable experience in handling the remote database EUPHIN EAST.

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