Methodology

Health
Statistics

STATISTICS CENTRE

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1. Overview

1.1.   Introduction

Is one of the pioneering projects carried out by the Statistics Center Abu Dhabi. Health statistics represent an important component of social statistics, as they provide information, data and indicators on the health of the population and the intensity of deaths. This is provided among different age groups, according to gender, geographical area, and other social and economic characteristics, as well as the extent of the incidence of communicable and non-communicable diseases and the percentage of children of different ages receiving appropriate vaccinations for children of these ages.

The data is categorized for communicable diseases to meet the international standards outlined by the World Health Organization's (WHO) International Classification of Diseases (ICD 10).

SCAD produce health statistics on an annual basis using mainly administrative data from the Department of Health (DOH) – Abu Dhabi. No intensive processing or calculations are done with the data once it has been received from the DOH beyond checking and categorizing it before publication.

The Ministry of Health (MOH) conducts a National Nutrition Survey, which SCAD take the results from to provide statistics on tobacco usage, malnutrition, and the obesity rate.

1.2.   Concepts and definitions

Health indicators are statistics that reflect the state of health of the population. These can be the number of patients at hospitals:

- In-patients: total of patients who have been formally admitted staying in the hospital.
- Outpatient visits: An outpatient is someone who has appointment in a hospital or clinic but does not need to stay overnight. This may be an appointment for treatment, diagnosis, or a procedure.

Furthermore, these include indicators that are commonly used by health authorities to assess health risk factors issues that may be prevalent in an economy:

- Death statistics
- Low birth height/weight statistics
- Vaccination/immunisation
- Blood bank
- Communicable diseases

The National Nutrition Survey, conducted by the Ministry of Health (MOH), attempts to understand the health of the population by collecting data on:

- Tobacco Usage
- Malnutrition
- Obesity rate

SCAD also collect data on the level of health insurance coverage in Abu Dhabi, which informs how at risk the population is to large medical bills for those that do not have insurance.

1.3.   Abu Dhabi special considerations

It should be noted that Abu Dhabi is an emirate and one of 7 emirates in UAE, and data collected is limited to Abu Dhabi emirate territorial. However, since the administrative sources used for collating data pertinent to health statistics also operate at the emirate level, this should not be a factor which compromises data quality.

1.4.   Classifications and standards applied

The classification guides used by SCAD are the World Health Organization's (WHO) International Classification of Diseases (ICD 10). This guide provided a health data standard in line with the WHO Constitution and Nomenclature Regulations. It is a conceptual framework independent of language and culture that is used for the integration of terminology and classification using the latest scientific knowledge. The ICD ensures interoperability of digital health data, and their comparability. The ICD contains diseases, disorders, health conditions and much more. ICD-11 has come into effect from January 2022 as the new standard that statistical authorities will have to adopt in the future.
SCAD use these classifications for:

- Inpatients/outpatients and deaths
- Communicable diseases

1.5.   Available breakdown

SCAD publishes the following breakdowns of health data:
Death statistics by:

- Type of cancer
- Type of diabetes
- Gender
- Place (region)
- Nationality
- Emirate
- Age group

Low birth height/weight statistics by:

- Gender
- Region
- Nationality

Malnutrition by:

- Region
- Gender

Obesity rate by:

- Gender
- Age group

[1] See https://icd.who.int/browse10/2010/en

- Region
- Nationality

Vaccination/immunisation by:
- Type

Blood bank by:
- Nationality
- Blood type

Tobacco Usage by:
- Gender
- Region
- Age group
- % of adolescents

Communicable diseases by:
- Type
- Age group
- Region
- Nationality
- Gender

Insurance coverage by:
- Type of insurance
- Gender
- Region
- Nationality

Inpatients/ Outpatients by:
- Gender
- Nationality
- Type of illness
- Sector
- Region of residence
- Age

1.6. Importance and objectives of the indicator

These statistics help in following up and evaluating the various health policies and programs in the fields of curative and preventive medicine.

The objectives of these indicators are to:
- Specifying and collecting statistics on health establishments and staff
- Providing basic data and information on the health of the population that would increase our knowledge of the existing health situation in the community and our understanding of the health care system in this community

- Improving information contributes to progress in the process of analyzing and evaluating health policy. This is so because health statistics help in finding alternatives and determining priorities for health policy on the basis of studying the health status of the population and presenting the effects attendant on implementing a particular policy and designing alternative policies to advance the health situation and measure change.

2. Indicator information

2.1. Geographical coverage

The current scope of health statistics is to collect data from selling sources and entities in the Emirate of Abu Dhabi. It includes the geographical divisions of the Abu Dhabi, Al Ain and Al Dhafra regions.

2.2. Statistical population

The administrative data collected from the Department of Health encompasses the entire population in the Emirate of Abu Dhabi.

The population targeted by the population census encompasses the entire population in the Emirate of Abu Dhabi.

2.3. Periodicity

Data is made available on an annual frequency in the annual Statistical Yearbook.

2.4. Timeliness

SCAD aim to publish the data within 4-6 months of the end of the refence period.

2.5. Units

Data collected and published as a count, for example the tobacco users.

Some percentages are used, for example the percentage of low birth weights out of total births.

2.6. Reference period

The reference period for the data is the year of collection.

3. Methodology

3.1. Alignment to international standards

SCAD do not currently follow any international standards in the collection of health statistics.

3.2. Data sources

Health statistics rely primarily on administrative sources from the Department of Health.

Data is taken from the population census to use in calculation of indicators relative to the size of the population.

3.2.1 Survey data

Most health statistics collected by SCAD only use survey data to supplement the main administrative data obtained from the Department of Health.

The population census is used for data on the total number of the population to calculate indicators such as "Cancer Deaths rate (per 1000 population)". This surveys all individuals across the three regions of the Emirate: Abu Dhabi, Al Ain, and Al Dhafra.

A National Nutrition Survey is conducted by the Ministry of Health to collect data on the overall health and wellbeing of the population. For further information, please refer to their website.

Below is a summary of the main indicator groupings and their sources:

Indicator Name	Type of Source
Causes of death	Admin
Cancer deaths	Admin
Low birth weight	Admin
Low Birth height	Admin
Vaccination and immunization	Admin
blood bank	Admin
Health facilities	Admin
Hospitals	Admin
Health Centers	Admin
Clinics	Admin
Pharmacies	Admin
Beds	Admin
Inpatients	Admin
Outpatients	Admin
communicable diseases	Admin
Insurance coverage	Admin
Human Resources	Admin
Physicians	Admin
Nurses	Admin
Dentists	Admin
Pharmacists	Admin
Hospital beds	Admin
Hospital beds by region	Admin
Hospital beds by sector	Admin
Medical personnel according to gender and nationality	Admin
Physicians by region	Admin
Physicians by sector	Admin
Physicians/1000 population	Admin
Registered nurses	Admin
Registered nurses by region	Admin
Registered nurses by sector	Admin
Registered nurses /1000 population	Admin

Registered dentists	Admin
Registered dentists by sector	Admin
Registered dentists by region	Admin
Dentists /1000 population	Admin
Registered pharmacists	Admin
Registered pharmacists by sector	Admin
Registered pharmacists by region	Admin
Pharmacists /1000 population	Admin
Clinicians by Region	Admin
Number of Emirati Health care professionals in Abu Dhabi Emirate	Admin
Number of Emirati Health Care Professionals by Gender	Admin
Malnutrition	Survey
Obesity	Survey
Tobacco Usage	Survey

3.2.2 Administrative data

Administrative data is collected from the Department of Health (DOH). This includes:

- Deaths by cause of death
- Low birth weights
- Blood bank donors

This data is collected from the DOH via an electronic link between SCAD and the Department of Health.

3.3. Data validation and editing

3.3.1 Data validation

The data is evaluated by ensuring the logicality of the data, considering the internal consistency among them.

SCAD validates the data by making comparisons between these data and the data available from previous years to ensure internal consistency.

3.3.2 Missing data adjustments

SCAD follow up missing data with the Department of Health.

3.4. Data processing

The health data is taken from the DOH and not adjusted by SCAD.

To protect the confidentiality of patients, the data received by SCAD is aggregated and anonymized.

3.4.1. Linking different datasets

Not applicable as all data is sourced from the Department of Health.

3.4.2. Sample weighting

Weighting is not applicable to the production of health statistics.

3.4.3. Statistical calculation method

Most of the data published by SCAD is taken directly from the DOH with no adjustments required. The following indicator is calculated by SCAD using data from the DOH before publishing:

Incidence rate "occurrence":

$$\frac{\text{number occurenc of cases reproted by age and nationality in a given year}}{\text{population per age group by age or gender or nationality for each population in the midyear}} \times 100{,}000$$

3.4.4. Seasonal adjustment

The data is annual and collected across the year, therefore seasonal adjustment is not required.

3.4.5. Chain linking

Chain linking is not applied to this production.

4. Special cases

SCAD also publish calculate a Health Price Index (HPI) to reflect changes in the price of health-related services, medications, and equipment to provide a comprehensive view of price developments in the healthcare sector.

As a sub-group of the Consumer Price Index (CPI), it broadly follows the methodological principles outlined in Consumer price index manual, concepts and methods[2] published jointly by the ILO, IMF and other international organizations. The HPI relies on survey data only, no administrative data is used. The survey questionnaire was designed by the Income and Prices Section at SCAD to collect data on health-related goods and services from providers in Abu Dhabi. It is sent to the sources on a quarterly basis.

5. Outputs and quality

5.1 Dissemination and accessibility

Data are disseminated in SCAD official website and available in Excel and PDF on annual basis   6

5.2. Length of available dataset

The health statistics dataset consists of time series with varying start dates, the earliest being deaths by cause starting in 2001. Most health statistics start in 2010.

5.3. Methodology changes

SCAD have always sourced their data from DOH and have made no changes to their methodology approach.

5.4. Data coherence and comparability

Internal comparability

- Methodological changes

- o None have been made by SCAD for health statistics
- Reclassifications
  - o The Department of Health updated all classifications to ICD-10 from ICD-9

External comparability

In general, SCAD follows internationally recommended classification, definitions, and data collection processes. Furthermore, the sample size used reflects a relatively larger share of households than many other large international statistical authorities used as benchmarks.

5.5.   Data accuracy and potential sources of errors

SCAD follows extensive quality checks and has well-defined manuals for statistical data quality framework, statistical survey implementation guide, etc.

Data accuracy describes how closely the statistical indicator resembles the true value of the concept it measures, in this case the health of the population in the Abu Dhabi Emirate's economy. There is the potential for errors to occur in the collection of data, for example:

- Recording errors at the DOH
- Tabulating errors at SCAD

These errors can arise as follows:

Sampling errors: Errors arise in the collection of data due to human error in filling in forms and conducting the survey in a standard manner

Non-sampling errors (these are difficult to measure)

- Coverage: Using an outdated census can result in surveying houses that are no longer inhabited
- Measurement: Errors that arise from any influence the interviewer has on the interviewee – solution may be to introduce a proxy interviewer
- Processing: Errors can arise in the calculation and manipulation of data if definitions or standards used become out of date
- Non-response: Can calculate a non-response rate at the household or individual level
- Good practice to analyze if there is a common theme to people that do not reply (i.e., from a certain background)

The Covid-19 pandemic has had a significant impact on the collection and accuracy of the health data given that social distancing measures were enforced for extensive periods of 2020 and 2021.

5.6.   Revision policy

SCAD receive preliminary data from DOH and classify it as so, until the final data is transferred and then SCAD revise it.

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[2] See https://www.imf.org/en/Data/Statistics/cpi-manual

5.7. Limitations of dataset

A limitation of this dataset is that it is reliant on data from an external source and subject to the data collection and quality assessments made by the DOH.

5.8. Confidentiality statement

SCAD ensures the confidentiality of all patient data as the data that is received from the Department of Health is aggregated and anonymized.

All indicators are published on an aggregate level, which ensures the confidentiality of individuals.

6. Institutional environment

Statistics Centre – Abu Dhabi (SCAD), as the competent government entity in charge of organizing statistical activities in the emirate, plays a pivotal role in supporting decision-makers, and policymakers in Abu Dhabi. The statistical activities in the emirate are organized by SCAD, with its strategic partners in the Statistical System of Abu Dhabi. The Law entrusts SCAD with the task of developing and organizing statistical in Abu Dhabi Emirate.

7. Glossary

Live birth:

The complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether the umbilical cord has been cut or the placenta is attached.

Skilled birth personnel:

An accredited health professional – such as a midwife, doctor, or nurse – who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth, and the immediate postnatal period, and in the identification, management, and referral of complications in women and new-borns. Traditional birth attendants (TBA), trained or not, are excluded from the category of skilled attendant at delivery.

In-patients:

Total of patients who have been formally admitted staying in the hospital.

Outpatient visits:

An outpatient is someone who has appointment in a hospital or clinic but does not need to stay overnight. This may be an appointment for treatment, diagnosis, or a procedure.

Incidence rate:

Rate of new cases of a disease in a specified population over a defined period.

Prevalence:

Number of cases of a specific disease present in a given population at certain time.

Crude death rate:

The number of deaths occurring during a period (usually one calendar year) per 1,000 population in the same age group in the middle of that period.

Underlying cause of death:

a) the disease or injury which initiated the train of morbid events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury – classified by ICD-10

Low birth weight:

This is defined as the percentage of live births weighing less than 2,500 grams.

Child underweight:

This indicator relates to the percentage of children under 5 years who are categorized to have low weight in the Emirate of Abu Dhabi. It is calculated as total number of children under 5 years old who are below minus two standard deviations (-2 SD) from median weight for age of Abu Dhabi population in a specific year, divided by Total number of children under 5 years old in the Emirate of Abu Dhabi, multiplied by 100.

Stunting children under 5:

This indicator relates to the percentage of stunting children under 5 years old in the Emirate of Abu Dhabi. It is calculated as the total number of children below minus two standard deviation (-2SD) of the average height of children under 5 age of Abu Dhabi population, divided by total children under 5 years old in the Emirate of Abu Dhabi, multiplied by 100.

Malnutrition:

This is defined as the stunting, wasting, overweight and underweight which are used to measure nutritional imbalance; such imbalance results in either undernutrition (assessed from stunting, wasting and underweight) or overweight. Child growth is internationally recognized as an important indicator of nutritional status and health in populations.

Obesity:

People are defined as obese with Body Mass Index (BMI) higher than 30.0.

People over BMI of overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. BMI is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults.

Body Mass Index (BMI):

BMI is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m^2).

Vaccination and immunization:

This is defined as people who have received vaccinations.

Blood bank:

This is defined as a medical institution that takes blood donations from the population.

Tobacco Usage:

This is defined as people who smoke tobacco cigarettes or equivalent.

Communicable diseases:

These are diseases that are caused by infection that invades the human's body tissues through infectious agents.

Insurance coverage:

This is defined as the percentage of people in Abu Dhabi with health insurance.

STATISTICS CENTRE

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