HEALTH AND HUMAN SERVICES STATISTICS

1. Introduction

After years of neglect, the health sector has increasingly become a major concern to the Nigerian Government. Improved fertility, better health and the resultant increased life expectancy on the one hand, and population control on the other, are being pursued as mutually compatible programmes in Nigeria today as in most other developing countries. In this direction, Government must rely on adequate health statistics for planning and monitoring its relevant programmes. Data are also needed to estimate health statistical indicators which are required for making geographical (inter-regional and international) comparisons of the health situation in Nigeria.

Health statistics are also required for research purposes. Most of the advances made in medicine could not have been possible without health statistics, especially those generated on longitudinal basis.

Before the attainment of independence, the items of data on health were collected by the departments of health of the then Regional Governments. Data were obtained from the few general hospitals, infectious diseases hospitals and public health units. Initially, emphasis was on keeping records of reported cases of, and deaths from, communicable diseases such as small pox, cholera, malaria, tuberculosis, leprosy and yaws. Records of immunisation were also kept. Administrative records of health resources, manpower and vital statistics were among the earliest items of data kept by the regional departments of health.

Over the years, there has been a noticeable change in the range of items of data in respect of which records are kept in the health sector, especially on the statistics of primary health care delivery. The Federal Ministry of Health coordinates data collation activities in this sector.

With the launching of the National Integrated Survey of Households (NISH) programme in 1981, the National Bureau of Statistics devoted more attention to data collection on some health-related aspects by devoting some modules of the NISH to health, nutritional and demographic matters.

In spite of all these modest efforts, most of which were supported by international agencies, Nigeria's health statistics are in a very bad shape. They are generally uncoordinated, incomplete, unreliable and untimely. This situation has prompted recent efforts of Government

and the UNDP to improve on the management of health statistics in the country.

2. Coverage, Scope, Uses and Users of Health and Human Services Statistics

Statistics in this sector cover the following broad areas:

- resources for health care delivery.
- usage of health care delivery facilities.
- vital statistics and demographic characteristics.
- budgetary provisions for health care delivery.

These statistics are generated mainly through routine sources from Health Services Delivery points such as hospitals, clinics, maternity homes and dispensaries. They are then collated at the Local Government Area, State and the National levels. Some of these statistics are available on institutational basis. For example, the teaching hospitals maintain their own records which may, however, not form part of the national health statistics used for planning and management. Health statistics are also relevant for demographic analysis and evaluation of population dynamics. Users of these data include Government agencies, private researchers as well as local and international NGOs engaged in health and population activities.

Administrative statistics can also be classified as secondary from the point of view of the users, since the procedures for their collection are not based on conventional sampling or census procedures.

Primary health statistics are items of data on health collected for specific purposes. The main objective is the estimation of health and population characteristics. Such statistics are derived from surveys and censuses.

3. Sources and Methods of Compiling Health Human Services Statistics

The Federal Ministry of Health (FMH) is the major source of routine health statistics in Nigeria. However, the National Bureau of Statistics (NBS) is the principal source of published health statistics in the country. Initially, the NBS published detailed routine health data for Lagos Federal Territory as obtained directly from the Medical Statistician and less detailed routine health statistics for other States as obtained from the Federal Ministry of Health. At that time, the Bureau also published frequency distribution of registered health personnel obtained from the Nigerian Medical Council. After the late 1970s, it began to published aggregate country data and detailed State statistics, all of which were obtained directly from the FMH.

The Federal Ministry of Health obtains routine health statistics from the following sources:

- State Ministries of health.
- Teaching Hospitals.
- Armed Forces Hospitals.
- Airports and Seaports.

The State Ministries of Health obtain their routine health statistics from the following sources:

- General hospitals.
- Specialist hospitals.
- Primary health care units.
- Zonal health boards.
- Local Governments for routine vital statistics.

Other sources of statistics on health are:

- the National Population Commission (NPC).
- State Ministries of Finance.
- Office of the Accountant-General of the Federation for public finance statistics on the sector.

Routine statistics on health are collected from the sources listed above through questionnaires completed by or on behalf of households and institutions. Returns and reports rendered periodically by institutions and agencies involved in health care delivery also constitute a major source. In particular, the numerous forms designed for collecting medical records form a vital primary source of routine statistics on health. These can be grouped into six categories:

A. **National Returns Collated by the FMH**

[i] Reported Cases and Deaths from Notifiable Diseases. These are expected to be rendered monthly by each State ministry of health to the FMH on 43 diseases.

[ii] Vital Statistics on Live Births, Still Births and Maternal Deaths. They are supposed to be rendered quarterly by each State ministry of health to the FMH.

[iii] Weekly Returns on Infectious Diseases supplied by each State, airport and seaport to the FMH on broadly classified localities in respect of cases of, and deaths by, 21 infection diseases.

[iv] Monthly Returns on Communicable Diseases supplied by each State, airport and seaport to the FMH on cases of, and death by, 16 diseases as reported in broadly classified localities.

[v] Monthly Immunisation Activity Report supplied by each epidemiological unit to the FMH on number of children who received each of 10 types of immunisations in five age brackets.

[vi] Expanded Programme on Immunisation in Nigeria Monthly Surveillance Report, supplied by each epidemiological unit to the FMH on the vaccination status of cases of and deaths by six killer-diseases.

B. **Returns, Summaries and Reports by State Ministries of Health**

[i] Hospital Birth Summary.
[ii] Morbidity Summary Form.
[iii] Infectious Diseases Summary Form.
[iv] Vital Statistics Returns.
[v] Inventory of Health Manpower and Facility Listing for Health Establishments.

C. **Returns, Summaries and Reports by Hospitals and Other Primary, Secondary Health Care Institutions**

[i] Morbidity Report Form.
[ii] Health Care Facilities.
[iii] Health Manpower Distribution.
[iv] Surveillance Report on Immunisation Return on Infectious Diseases.
[v] Summaries of In-patient movement, Health Manpower (broad occupational groups and gender) and operations during the month.

D. **Other Statistics**

[i] Human Population Statistics: used as denominator variables for computing important health indicators.
[ii] Public Finance Statistics.

E. **Returns, Summaries and Reports by Tertiary Health Institutions (Teaching Hospitals)**

[i] Registers kept daily:
  [a] Out-Patients Register.
  [b] Casualty Register.
  [c] Admissions, Discharges and Deaths Register.
[ii] Other Daily Returns or Summaries:
  [a] New-Patients Referred Form.
  [b] Out-Patients Attendance.
  [c] Bed Returns.
  [d] Casualty Records.
[iii] Weekly Returns or Summaries:
  [a] In-Patients Gender Analysis.
  [b] Bed Occupancy, Admissions and Deaths.
[iv] Monthly Returns or Summaries:
  [a] Out-Patients Statistics.
  [b] In-Patients Gender Analysis.

[c] Out-Patients Statistics Returns in respect of six departments.

[d] In-Patients Statistical report/summary.

[v] Quarterly Returns or Summaries:

[a] Statistical Returns: Attendance classified by type of clinic and nature of treatment.

[vi] Annual Returns or Summaries:

[a] Statistical Returns: Attendance classified by clinic and nature of treatment.

F. **Forms Giving Information on Individual Patients**

[I] Forms Designed by the Ministry of Health:

[a] Hospital - based Deliveries.

[b] Non-hospital Births.

[c] Morbidity Report Form.

[d] Non-hospital Deaths.

[ii] Other Forms Giving Information on Individuals:

[a] Patient's Hospital card.

[b] Patient's Case Note.

[c] Patient's Treatment Card.

[d] Immunization and Vaccination Card.

[e] Laboratory Request Form.

[f] Patients Prescription Form.

[g] Forms on Birth and Death.

[h] Other Forms filled on behalf of the patient in rendering intra-and inter-departmental health care services.

As the forms, questionnaires, returns, summaries and reports inventoried above show, the health sector is one of the richest in administrative or routine statistics when compared to other social service sectors such as education or public order and safety.

Before considering some of the characteristics of the information content of these documents, attention will first be focused on the flow of health information.

The ultimate destination of most routine health information is the Federal Ministry of Health, which publishes sectoral (State, Zonal, local Government) statistics and national aggregates. Most health institutions (except the State-owned hospitals which report to their home Ministries of Health) report directly to the FMH.

AIRPORTS NATIONAL POPULATION
VOLUNTARY SEAPORTS COMMISSION
AGENCIES

C (F) MINISTRY OF FINANCE C (F)
D

ZONAL HEALTH BOARDS FMH ARMED FORCES MEDICAL SERVICES
EPIDEMIOLOGICAL UNITS A SPECIALIST HOSPITALS

LOCAL GOVT. PUBLIC HEALTH DEPTS. LEPROSARIA
C (F) C (F)

STATE MINISTRIES OF HEALTH B STATE HOSPITALS C (F) TEACHING HOSPITALS E (F)

The Flow of Routine Health Statistics in Nigeria

The flow chart illustrates the situation. The forms, reports, summaries are classified into six groups A,B,C,D, E and F as defined above.

Note:

A National Reports/Summaries Collated by FMH.

B Returns/Summaries collated by State Ministries of Health.

C Returns/Summaries/Reports by State Hospitals, Armed Forces Medical Services, Special Hospitals, Primary Health care units, Airports and Seaports.

D Demographic, Statistics and Public Finance Statistics on Health and other sectors.

E Tertiary Health Care Institutions: Teaching Hospitals

F Individual Hospital Patients and Households.

The forms and questionnaires filled by, or on behalf of, individual patients or households are the primary sources of all routine health statistics in Nigeria. Although they are quite numerous, they incorporate some common features which facilitate their analysis as indicated below:

[a] The forms generate count data or categorical statistics. Most of the responses indicate whether or not the respondent possesses one of several attributes, statuses, gender, religion, ethnic group, occupation, location, marital status, clinic, hospital ward, in- or out-patient, admitted, discharged, morbidity, casualty status, reaction to clinical tests (positive, negative), blood group, shape, colour or location of organ or deformity, degree of infection and immunization status. All these questions call for responses which can be classified

into mutually exclusive groups which are in turn easily coded and summarized into frequency distributions or cross-tabulations.

[b] Responses to questions included in the forms also generate variables measurable on the ratio scale. These include age, height, weight, income, and duration (of infection, illness, admission). Most of these variables are usually grouped into suitable categories for the purpose of analysis. These categories include infants, children, adults; age cohorts; tall, medium short; long, short; low, medium, high; AA, AS, SS (blood group); normal, abnormal; small, medium, large; and regular or irregular.

These responses can, therefore, also be treated as categorical once individual observations are assigned to mutually-exclusive categories. As a result of these two characteristics of the forms on which most routine health statistics are based, most of the data sets in categories A,B,C, and E are at various levels of aggregation over individuals on the bases of conditions such as morbidity, immunisation and casualty status.

Some aspects of category C data are information about the resources of medical institutions, that is, human resources, physical assets such as number of beds and other hospital equipment.

Finally, Category D datasets are macro statistics on health budget and population. These data (which are expected to be available on Local Government Area, State and National basis) are used as denominator or numerator variables in computing important socio-economic indicators.

Survey and Census Health Statistics

The National Bureau of Statistics (NBS) is the major organiser of surveys and censuses on health statistics in Nigeria. The Federal Ministry of Health also conducts a few surveys and in some cases in collaboration with NBS.

The following are the most important of such surveys and censuses conducted on health in Nigeria with brief notes on their methodology.

Surveys and Censuses on Health in Nigeria

[a] National Inventory of Health Manpower and Facilities conducted by Federal Ministry of Health and National Bureau of Statistics. This is a population survey and the respondents are all health and medical establishments operating in the country, each of which is required to supply information on a structured questionnaire in respect of:

[i] form of ownership (15 identified).
[ii] type of institution (13 identified).
[iii] type of health programme (10 identified).
[iv] quantity of personnel (20 identified).

[v] specialties of institution (11 identified).
[vi] bed complement (12 categories identified).

Information is usually required for the period January-December of the survey year.

[b] National Integrated Survey of Households (NISH). This integrated survey conducted by the NBS, has a module on aspects of health and vital statistics in which information is collected on sample basis using a structured questionnaire on:

[i] illness and injury by type and severity.
[ii] disability and handicaps.
[iii] child mortality.
[iv] number of malnourished children.
[v] attitude to breast feeding.
[vi] child birth attendance at clinics.
[vii] births and deaths.

Information is collected monthly. The survey results are used in estimating state- and countrywide parameters.

[c] Demographic and Health Survey (NDHS) is a national sample survey designed to provide information on fertility, family planning activities, population structure and participation in the EPI. The respondents are randomly selected women aged between 15 and 49 years. The structured questionnaire used for collecting information has eight main sections:

[i] respondent's background.
[ii] reproduction.
[iii] contraception.
[iv] health and breast feeding
[v] marriage.
[vi] fertility preferences.
[vii] husband's background.
[viii] woman's work.

[d] General Household Survey is an NBS sample survey of individual households selected from 120 Enumeration Areas selected from each State (48 Urban, 12 Semi-Urban and 60 Rural). Its multi-subject questionnaire is designed to collect socio-economic, demographic and health information from households. The three sections of the structured questionnaire on health contain questions on:

[I] children ever born by women ever married or not less than 15 years.
[ii] births and deaths in households.

[iii] Expanded Programme of Immunisation (EPI) for children not more than 2 years old.

The sampled Enumeration Areas [EAs] are allocated at random to different months in the year for interviewing purposes.

[e] Federal Ministry of Health: National Control Programme on Schistosomiasis — National Prevalence Survey. The survey is conducted to assess the magnitude of the disease in Nigeria among 5-14 years old children as a preliminary to designing control measures. The survey is in two phases:

[i] school-based survey.
[ii] household-based survey.

4. Current Methods of Data Storage and Dissemination

As already discussed, most of the variables generated by routine collection of health statistics are categorical. Consequently, aggregation by geographical and other criteria into frequency tables is the most commonly used statistical procedure. Most of the operations are handled using electronic calculators although there are a few cases of institutions which use computers for summarising data.

Although some of the surveys, especially the national inventory of health manpower and facilities also generate data which are aggregated over institutions and States, the number of questionnaires is usually so high that the analysis has to be computerised. Most of the other surveys based on samples, are used by the NBS in estimating state and national parameters on aspects such as fertility, birth and death rates. Most of these analyses are computerized by the NBS.

Four main agencies are involved in the dissemination of health statistics in Nigeria, these are: Medical Institutions (Hospitals and Clinics), States Ministries of Health (SMH), the Federal Ministry of Health and the National Bureau of Statistics.

Health statistics are also available from hospitals, clinics and other medical Centres in mimeographed form as returns, reports or summaries.

Since FMH collects its health statistics from States, health institutions, and other bodies, all the returns listed in section 3.2.2 are available at the SMH. Some States publish Annual Statistical Bulletins on Health which in most cases contain information on:

[I] population.
[ii] birth and death registration.
[iii] health resources and expenditure.
[iv] communicable diseases.
[v] immunization programmes.
[vi] activities of medical institutions.
[vii] family planning.
[viii] environmental health.

At the Federal level, the FMH produces, in mimeographs, statistics on the following:

[i] reported cases of, and death from notifiable diseases.
[ii] vital statistics on live and still births.
[iii] weekly returns on infectious diseases
[iv] weekly returns on communicable diseases.
[v] monthly immunization activity report.
[vi] monthly surveillance report on EPI.

Also, FMH publishes a quarterly journal titled **Nigerian Bulletin of Epidemiology.** The maiden issue was published in February 1991. It contains statistical information, in some cases, on state basis, on reported cases of, and death from selected diseases for specific periods, as well as information on immunization and procedure for disease notification. Other publications of FMHHS are: **The National Health Policy and Strategy to Achieve Health for all Nigerians (1988)**, and **The National Mental Policy for Nigeria (1991).**

The most readily available statistics on health in Nigeria is published by the NBS in its **Annual Abstract of Statistics**. The statistics are on:

[i] health establishments in Nigeria by type, state of location and ownership.
[ii] registered health personnel by occupational category.
[iii] reported cases of, and deaths by notifiable diseases by State.

All these are obtained from the FMH. Also in its publication titled **Social Statistics in Nigeria**, the NBS publishes statistical information on selected aspects of human health including: those included in the **Annual Abstract of Statistics** and illness and injury rates by State, gender and age group.

The following items of health statistics are those in respect of which NBS currently stores data on health. The number of details identified and coded for each item is included in brackets. Although the producers of health statistics may not be able to supply numerical information on some of the items and details listed below the strategy is to use this opportunity to propose the ideal health database which the producers should strive to achieve.

A. **Health Establishments and Facilities**

1. Types of Hospital (15)
2. Ownership of Health Establishments in Nigeria (6)
3. Specialty of Health Establishments in Nigeria (11)

B. **Health Personnel**

4. Registered Health Personnel in Nigeria by major occupations, Nationality and Gender (69)

C. **Reported Cases of, and Deaths from Notifiable Diseases**

5. Reported Cases from Notifiable Diseases by Disease Type and Gender (99).
6. Reported Death from Notifiable Diseases by Disease Type and Gender (99)
7. Major causes of Morbidity from Notifiable Diseases by Major Disease Type, and Gender (30)
8. Major Causes of Deaths from Notifiable Diseases by Major Disease Type, and Gender (30)
9. Summary of Hospital Morbidity By Groups of Diseases and Gender (In-Patient Cases) (58)
10. Summary of Hospital Mortality by Groups of Diseases and Gender (In-Patient Cases) (58)

D. **Macro, Socio-Economic Indicators on Health**

11. Macro Indicators (14).

Share of Health in National Budget

(i) Share of recurrent costs of health in total recurrent budget.

(ii) share of capital costs on health in total capital budget.

(iii) share of health in total budget.

The quality of health statistics as currently produced in Nigeria is very poor. This is also recognised by the FMH which organised a national conference on the establishment of a Health Management Information System in Nigeria in February 1992. The problems of health statistics can be grouped into two categories. These are response and methodological problems.

The response problems consist of non-response, untimely response and inaccurate response. Most of these problems exist at the agency or institutional level where returns or summaries of patients' records are either not made at all, not made on time or are incorrectly made by hospitals, health care units, Local Governments or State ministries of health. Every hospital or health care delievery centre is expected to have authentic records of patients. The only aspect of non-response that may occur at the patient or household level is in the reporting or registration of vital events such as non-hospital births and deaths, and marriages according to native law and custom. Thus, if medical records are not summarised at the institutional level, zonal, Local Government or State returns cannot be made to FMH for collation.

The methodological problems which adversely affect the quality of health statistics are in respect of the instruments of collecting routine health statistics and the flow of health information.

The number of forms which have to be filled in the process of collecting health statistics at the primary, secondary and tertiary levels are too many. A common feature of some of the forms and returns is that they overlap in their information content. As a result of the proportion of man hours needed to complete these forms and returns, there is a wide variation in the timeliness and accuracy of producing aggregates at institutional and State levels, thus resulting in the production of inaccurate, incomplete and untimely State and national aggregates. The problem is worse with non-hospital health records and voluntary agency institutional health records which are infact not kept in many cases.

The flow of health statistical information is such that individual hospitals and zones can, in some cases, forward some returns to the FMH without going through their States. The issue of ownership has undue influence on the flow of health information. Thus teaching hospitals of Federal Universities report directly to the FMH without passing such data through the states in which they are located. The ministries of health in the states do not report on their share of registered health personnel and the FMH reports the aggregate for each occupation for the whole country.

The consequence of this pattern of data flow is that the FMH has to deal with numerous agencies and institutions before it can collate State and national aggregates. Even as non-response by one institution renders the aggregate inaccurate, the inclusion in a time-series of such a variable is misleading.

5. NBS Data Base Coding System for Health and Human Services Statistics

The data structure for health statistics is coded according to the convention of the International Standard Industrial Classification (ISIC). In this document on Nigerian official statistics, Division Code 85 is assigned to Health and Human Services. The item under each division is the elementary entity or group of elementary entities about which statistical data are gathered. For example, in this dataset, the division is 85; 8501 is the first item, while 850101 is the first detail. Generally, the NBS uses the six-digit code for variables. The first two digits are used to identify a particular division (that is, 85), the first four digits for a particular item under the division (that is, 8501), while six digits are to identify details (that is, 790101).

Based on the above coding system, the NBS data structure for health and human services statistics is as shown below. The items of data coded in the SOR fall into the following categories.

01-03 Health Establishments and Facilities

08 Health Personnel
09-14 Reported Cases of and Deaths from Notifiable Diseases
25 Macro Socio-economic Indicators on Health.

6. **CONCLUDING REMARKS**

Two approaches to the constraint of non-response are proposed. These are persuasion and the use of sanctions. Nigerians should be educated on the value of timely and accurate data on health in the same manner that they were made to realise the importance of accurate human population census to national planning. Households may also be more disposed to respond promptly and accurately to questionnaires on health matters if there are visible improvements in the quality of health care delivered. No amount of media propaganda or drama sketches can be used to convince individuals when they are forced by the deplorable state of health care delivery system to resort to traditional medicare.

The more serious problem which adversely affects the quality of health statistics is non-response at institutional and agency levels. Information on hospital births, deaths, morbidity, immunization, admissions and attendance at out-patient departments are available at patient level in institutions which deliver primary, secondary and tertiary health care. The major problem is the failure of most hospitals, clinics and immunisation centres to summarise such information and render timely returns to the Local Government, State ministries of health or the FMH.

Where such reports are rendered to these agencies, they may not get to all relevant tiers of administration. In many cases, the returns of defaulting agencies are ignored in the summary leading to incomplete data. There is some scope for compelling this category of respondents to render accurate and timely returns on health statistics. Hospitals,

clinics and other medical centres will at some stage apply for some facilities from Government. Granting these facilities could be made conditional on evidence or certification of having supplied a prescribed number of required statistical information accurately and timely to appropriate agencies. The accuracy aspect requires some inspection which is feasible in the case of returns based on summaries of hospitals records. If a Government health institution, or a defaults in rendering accurate and timely returns, sanctions such as freezing the promotion of the staff responsible or stopping their salaries are viable penalties. These penalties can also be applied to units or divisions where there is group responsibility for the non-response.

As a long term solution, the FMH should modernize and upgrade hospital record-keeping and health statistics reporting system in Nigeria. The establishment of a National Health Management Information System [NHMIS] is long overdue. Since the bulk of health statistics is administrative and characterised by the filling of numerous forms which overlap in their information content, the establishment of institutional, zonal, Local Government, State and national health data bases (which can ultimately be networked) is feasible and should be vigorously pursued.

While small health care units may continue with the traditional form filling, big hospitals should be encouraged and assisted by the FMH to establish computerised data bases. The FMH should also monitor the management of the data bases to ensure the production of reliable statistics on this critical sector.