Issues in Measuring GDP of Health Care Service in India in the Standard National Accounts Framework

Suparna Pal

Centre for Development Studies

Trivandrum

Structure of the paper

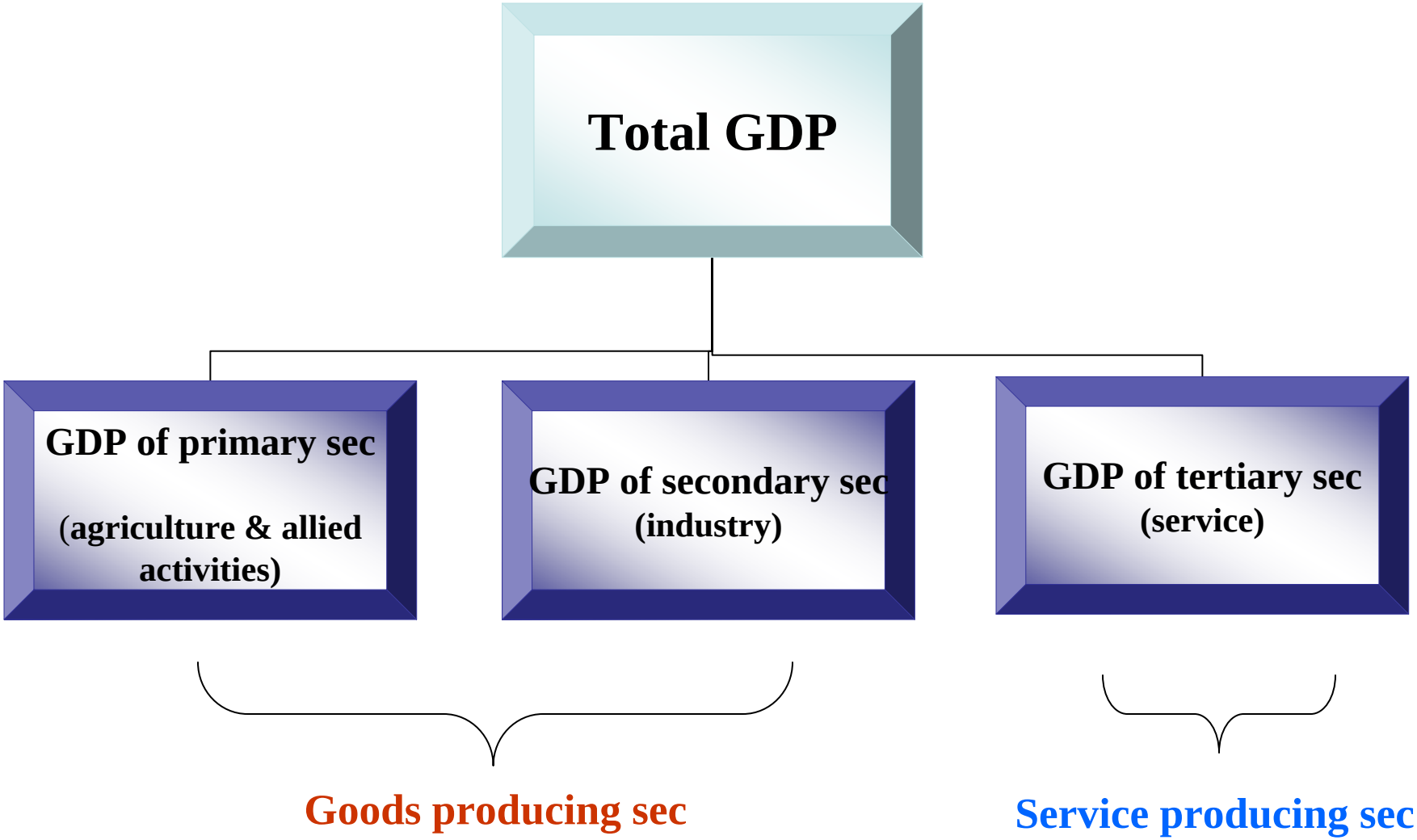
I. Introduction

II. Some basic concepts of health and health (or medical) related issues

III. Measurement of health (or medical) care service output

IV. Basic drawbacks inherent in the existing methods of estimation of GDP in Health Care Service in India

V. Concluding Remarks


Total GDP
GDP of primary sec
(agriculture & allied activities)
GDP of secondary sec
(industry)
GDP of tertiary sec
(service)
Goods producing sec
Service producing sec

Goods & Services

- The characteristics of goods and services are different.

- Measurement of service may be difficult due to – quantification problem, identification problem of the elements of complex services, intangibility nature of qualities, asymmetric information etc.

- The nature of each service is different. Thus the measurement technique of each service seek to be different.

GDP estimation of goods and service sector output

- Value of goods sector output

  Quantity produced * price of the product

  Quality of the product is hidden under price

  Price is quality adjusted

- Value of service sector output

  Difficult due to the problem of

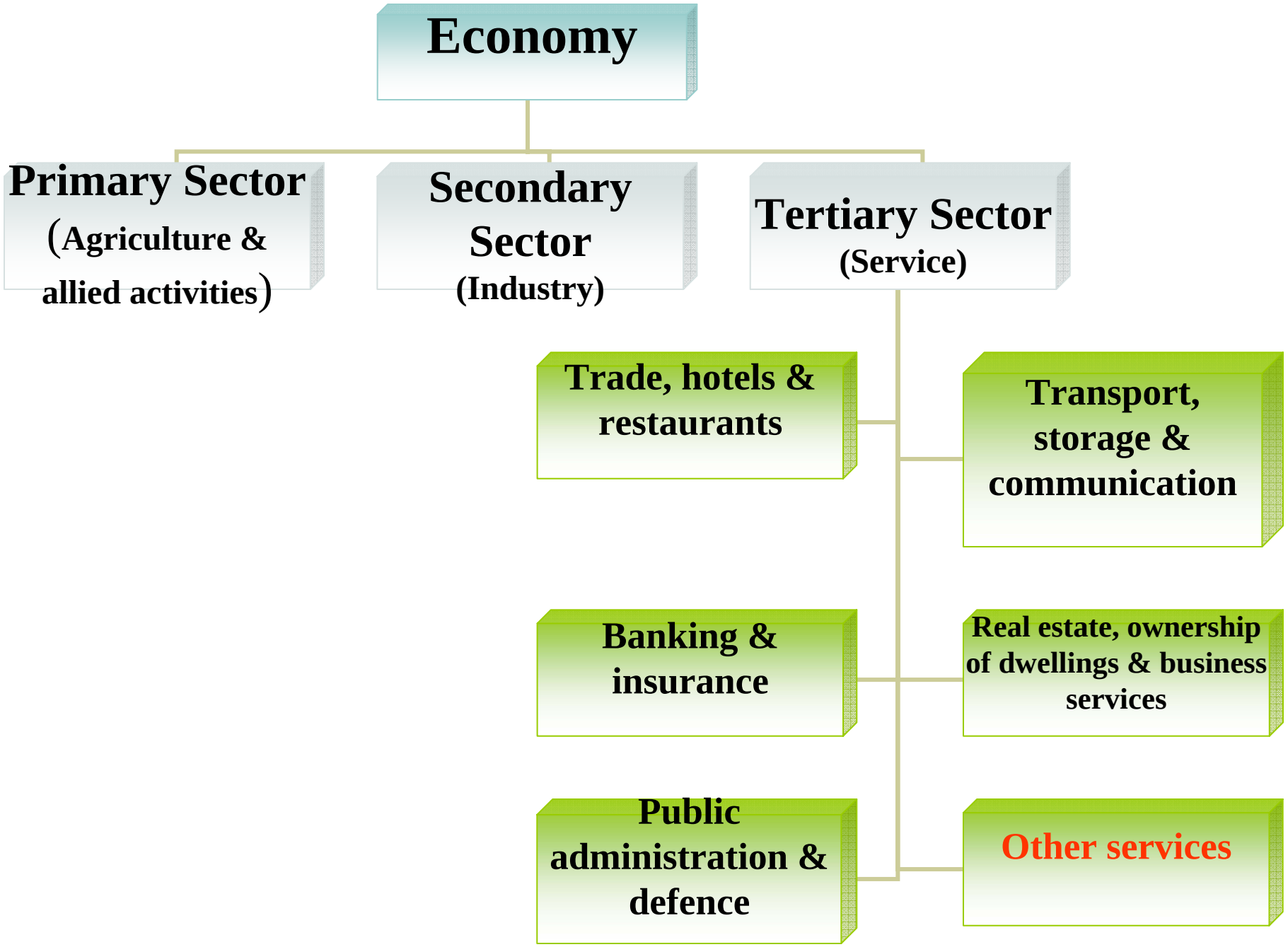
  Quantification of volume of output

  Identification of characteristics of the produced output to determine the quality

Importance of estimation of Service Sector Output

Service sector has emerged as the largest and fastest-growing sector in the global economy in the last two decades, providing more than 60 per cent of global output and, in many countries, an even larger share of employment. In India it now accounts for more than 50 per cent of the gross domestic product. (R.Banga, 2005)

Services output seems overestimated due to the deterioration in economic statistics and use of a widely acknowledged faulty methodology. (R.Nagaraj, 2009)


Economy
Primary Sector (Agriculture & allied activities)
Secondary Sector (Industry)
Tertiary Sector (Service)
Trade, hotels & restaurants
Transport, storage & communication
Banking & insurance
Real estate, ownership of dwellings & business services
Public administration & defence
Other services

‘Other Services’ – Covers

(i) Coaching and tuition
(ii) Education excluding coaching and tuition
(iii) Human health activities including veterinary activities
(iv) Sewage and refuse disposal, sanitation activities
(v) Activities of membership organizations
(vi) Recreational, cultural and sporting activities
(vii) Washing and cleaning of textiles and fur products
(viii) Hair dressing and other beauty treatment
(ix) Funeral and related activities
(x) Private households with employed person
(xi) Custom tailoring
(xii) Extra territorial organizations and bodies

Objective of the study

This paper deals with the existing process of estimating health care service in India and tries to identify its limitations therein and also made some possible alternative suggestions for improving the measuring techniques.

Some basic concepts of health and health (or medical) related issues

- **Health**

Health is a state of complete physical, mental and social wellbeing and not merely an absence of disease or infirmity to lead a socially and economically productive life. (WHO,1978)

Criticism

Health can not be a state or condition

It can not be a static concept

It is an idealistic goal than a realistic proposition

According to this definition all are sick

Concept of Health is age, sex, community and geographic region specific

Health can be defined as

a condition of physical, mental and social well-being are functioning adequately in themselves homeostasis with respect to age, sex, community and geographic region specific individual and ability to lead a productive life

- **Health Care**

  Health care embraces all goods and services design to promote health, including preventive, curative, and palliative intervention whether direct to individual or to populations. (WHO)

Characteristics of Health care service

- **Demand is irregular and unpredictable**
- **Risk factor or probability factor works**
- **Consumer (patient) can not test the product before consuming**
- **Quality of the product is affected by producer consumer relation and guided by the objective of consumer's welfare**
- **Information asymmetry is more**
- **Market is not perfectly competitive rather monopolistic in nature**
- **Practice of pricing is different**

Health Care Service Output

- **Health care service output is defined as the quantity of health care received by patients, adjusted to allow for the qualities of service provided, for each type of health care. Quantities should be weighted together using data on costs or prices of the health care provided and the quantity of health care received by patients should be measured in terms of complete treatments. (Eurostat Handbook on Price and volume measure, 2001)**

- **Health care output is the number of complete treatments with specified bundles of characteristics so as to capture quality change and new products. A complete treatment refers to the pathway that an individual takes through heterogeneous institutions in the health industry in order to receive full and final treatment for a disease or condition. (OECD, 2009)**

Methods Followed to Measure Services According to the SNA 2008

- **Same method is followed to measure the output of goods and service**
- **Value of market services is measured as the sum of services sold, services bartered and the services used as intermediate inputs.**
- **Non-market services will be valued by their costs of production which is the sum of intermediate consumption, compensation of employees, consumption of fixed capital and other taxes, less subsidies on production.**
- **Volume indices are to be calculated using the weighted average of quantity relatives for the services produces as outputs using the values of these services as weights.**
- **As alternative method input measure is suggested as a proxy for output measure.**

- **SNA suggests to measure the GDP of Service Sector Output through the Direct approach or Output approach**

Value of Service Output

=

Quantity of service produced * price of the service

- **As an alternative Indirect approach or Input approach is mentioned**

Value of output = Value of Inputs = Costs incurred for the production

- **Output approach is superior to the input approach as it can capture the change in productivity**

- **In India to measure the GDP of Health care service Input method followed.**

- **Countries like UK, EU, OECD are trying to apply output approach .**

Health Care Services in India

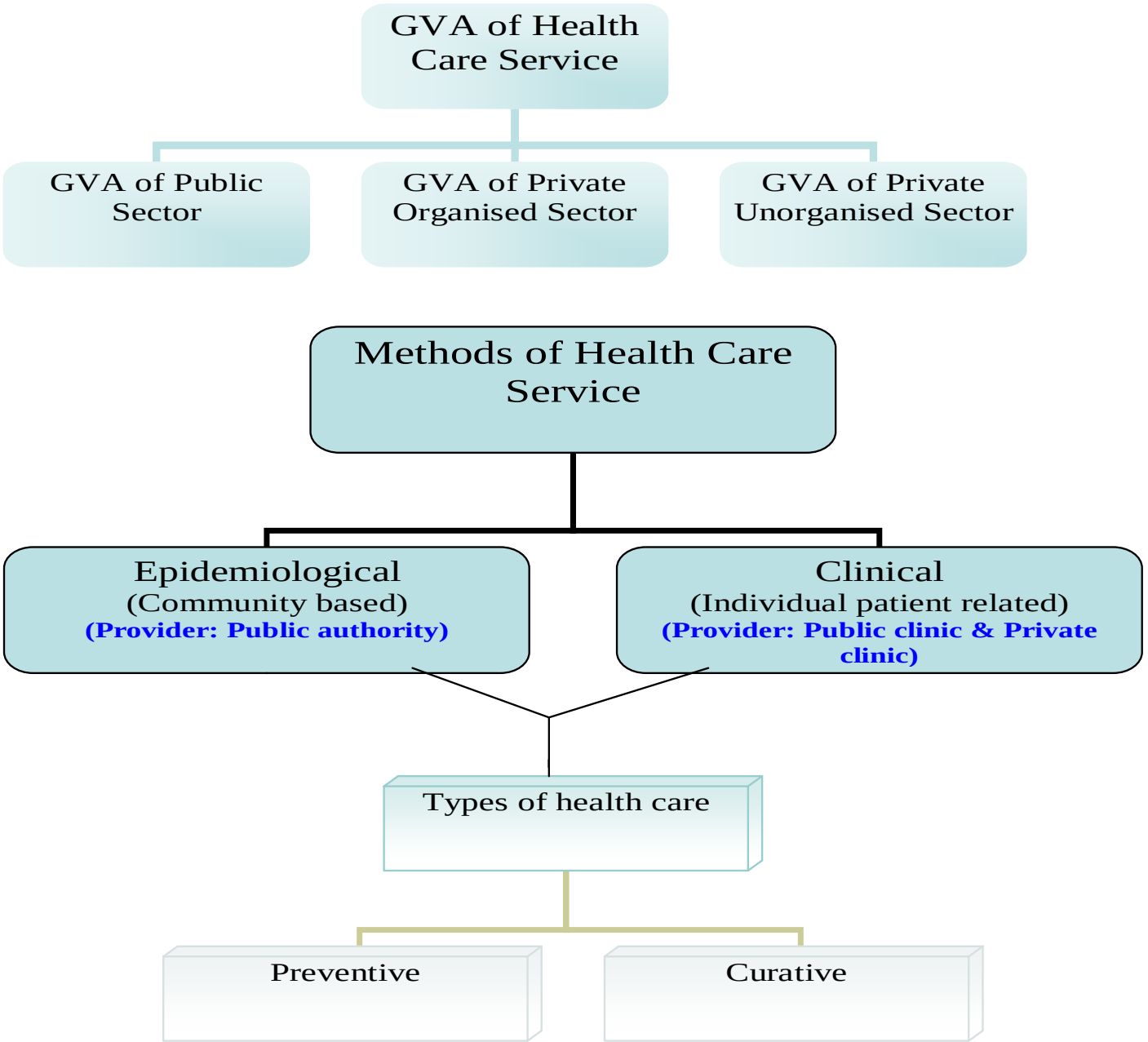
Coverage

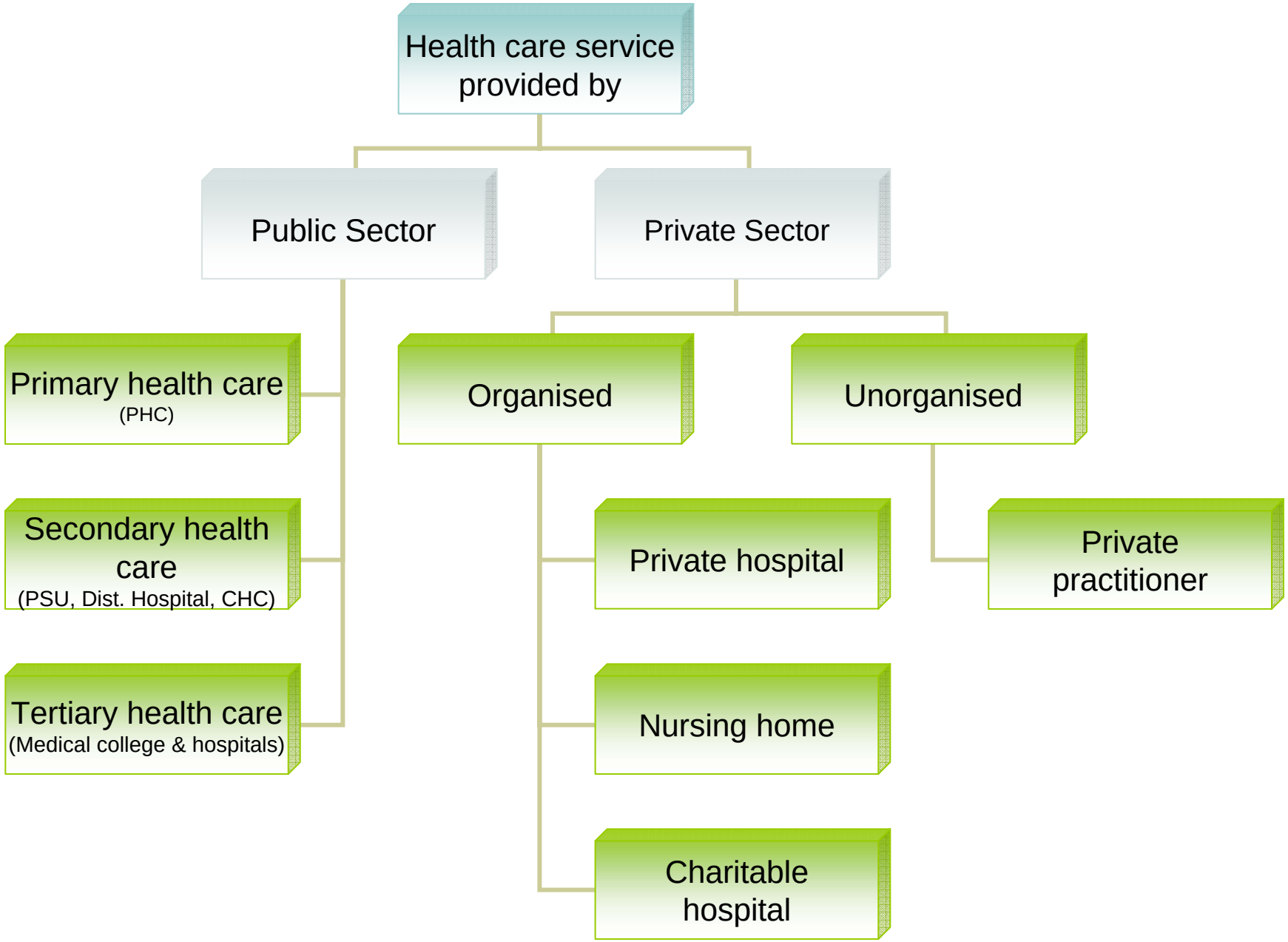
Human Health Activities

- Hospital activities
- Medical and dental practice activities
- Other human health activities

Veterinary Activities

Diagrammatic representation of the structural form of the Indian Health Care Service in the National Accounting framework




Health care service provided by
Public Sector
Private Sector
Primary health care
(PHC)
Secondary health care
(PSU, Dist. Hospital, CHC)
Tertiary health care
(Medical college & hospitals)
Organised
Unorganised
Private hospital
Nursing home
Charitable hospital
Private practitioner

Method of Estimation of Health Care Services in India

- **In public sector the GVA is calculated as input cost approach which is sum of intermediate consumption, compensation of employees, consumption of fixed capital (CFC) and other taxes, less subsidies, on production.**

- **In private organised sector GVA at factor cost is measured as gross output less intermediate consumption or as sum of compensation of employees and gross operating surplus. The production taxes net of production subsidies is added to the GVA at factor cost to obtain GVA at basic prices.**

  The other alternative method followed is labour input method.

- **In private unorganised sector labour input method is followed.**

  Total GVA = GVAPW * No. of workers

Drawbacks of the existing method followed in India

- **The basic problem is in finding out the output of health service in terms of health gain by means of precautionary or curative treatments in both qualitative and quantitative dimensions.**

- **the GVA of the public sector is estimated through budget documents, which includes expenditure on medical care and allied activities of medical care sector like - the expenditure on preventive, curative and clinical/hospital services; medical education, training and research; rehabilitation; and construction. But, medical education, training and research; rehabilitation; construction and the like allied activities do not bear any economic justification for the inclusion as input costs of given medical service of such service providers, which leads to an over estimation of GVA of health care services.**

- **As the method considers only the cost for the health care services it can not capture the value of the service what the patient receive from the service providing unit. Thus, it fails to reflect the change in the performance of health service due to the change in input cost entailed for the service.**

- **To calculate GVA of private organised and private unorganised sector weighted GVAPW is not considered.**

- **There is a problem in the estimation of GDP in private organized sector which is estimated through the RBI's company finance study on sample basis. Here the sample size is small (the sampling fraction is about one percent) and sometimes random sampling technique also can not be applied.**

Methods followed in UK to measure Health service output

- **Cost weighted output index (CWOI) (Laspeyres form)**

$$\frac{\sum_j x_{jt+1} c_{jt}}{\sum_j x_{jt} c_{jt}}$$

xjt volume of output j in period t

cjt unit cost of output j

Atkinson Report (2005) proposed to measure quality as an aspect of health care Output.

- **Two broad aspect of quality –**

  Health Gain

  Patient Experience

- **Value weighted output index (VWOI) (Laspeyres form)**

Castelli *et al* (2007)

$$\frac{\sum_j x_{jt+1} \sum_k \pi_{kt} q_{kjt+1}}{\sum_j x_{jt} \sum_k \pi_{kt} q_{kjt}}$$

x_{jt} volume of output j in period t

q_{kjt} amount of characteristic k produced by a unit of j

π_{kt} marginal monetary value of characteristic k

Characteristics – health effects, waiting time, food , cleanliness, respect and dignity etc.

- **The CWOI is equivalent to the VWOI if and only if (Dawson *et al*., 2004)**

  (a) quality change is zero for all characteristics of all outputs

  (b) cjt is proportional to the marginal social value of output

- **The quality adjusted CWOI is**

$$\frac{\sum_j x_{jt+1}\left(q_{jt+1}/q_{jt}\right)c_{jt}}{\sum_j x_{jt}c_{jt}}$$

Methodology suggested for the European countries according to Eurostat Handbook (2001)

- **Suggested to apply quality adjusted cost weighted method in terms of complete treatments**

- **Methods for measuring quality adjusted output volume are ranked as**
  - **A method (preferred)**
  - **B method (less satisfactory but acceptable)**
  - **C method (unacceptable)**

Methodology suggested for the OECD countries

- **The value of output of institutional units in the health care industry is measured by the observed money value of output in the case of market producers and by the sum of costs of production1 in the case of non-market producers.**

Concluding Remarks

Difficulties in measuring complete treatment to implement in national accounts

- **Collecting data on outputs for complete treatment from a number of health care providers and aggregating them in a meaningful way is very challenging.**

- **The principle of a complete treatment is directly applicable only if the service provider is the same during the whole treatment.**

- **Most data retrieval systems do not have the capacity to link the treatment of an individual across institutions to enable measurement of the complete treatment.**

- **The beginning and end point of a treatment pathway is observable in the case of acute health conditions but unclear for chronic health problems or for medical conditions that give rise to long-term care and services provided in nursing homes.**

- **The methods which followed by the European countries (Euro-stat Handbook, 2001) have some limitations (CSLS research report, 2007)**

(i) it considers output to be measured as a whole course of treatment rather than a measure of activities

(ii) it recommends to weight the outputs by cost of production, which may or may not equal the marginal valuation of output

(iii) for making quality adjustment, it is assumed that higher cost treatments indicate higher quality and its focus mainly on measuring quality adjusted life expectancy.

- **Methodology applied in UK can not be followed in India**

(i) In UK, health care is completely in the domain of public service whereas in India it is a combination of both public (20%) and private (80%) services;

(ii) In India the private health care market is monopolistic in nature and the prices of the private health care service are influenced by the three factors – experience of the treating physician, technology and location;

(iii) To apply output approach in India necessitate a such kind of data that are not available at present.

A few suggestions can be given to improve the methodology -

1. **Estimation of health care output should be imbibed some performance indicators of the service provided, which in turn would give us a better estimate of GVA of health care service.**

(a) In case of public sector GVA estimation cost incurred for the preventive care can be weighted by the ratio of actual number of people given preventive measure and targeted number of people to be given preventive measure.

(b) For clinical services expenditure by the patients or by the public authority can be weighted by the qualitative indicators. Separate performance indices can be formed for different types of health care providing units by each of their set of performance indicators.

2. **In public sector cost for the allied activities is needed to exclude.**

3. To calculate GVA, weighted GVAPW is needed to consider weightage can be given according to the different working class in a service providing unit.

4. In case of private organised service instead of RBI company finance statistics a better sample survey is needed where sampling bias will be lesser.

Thank you