Global Review of Projecting Health Expenditures for Older Persons in Developing Countries

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Outline

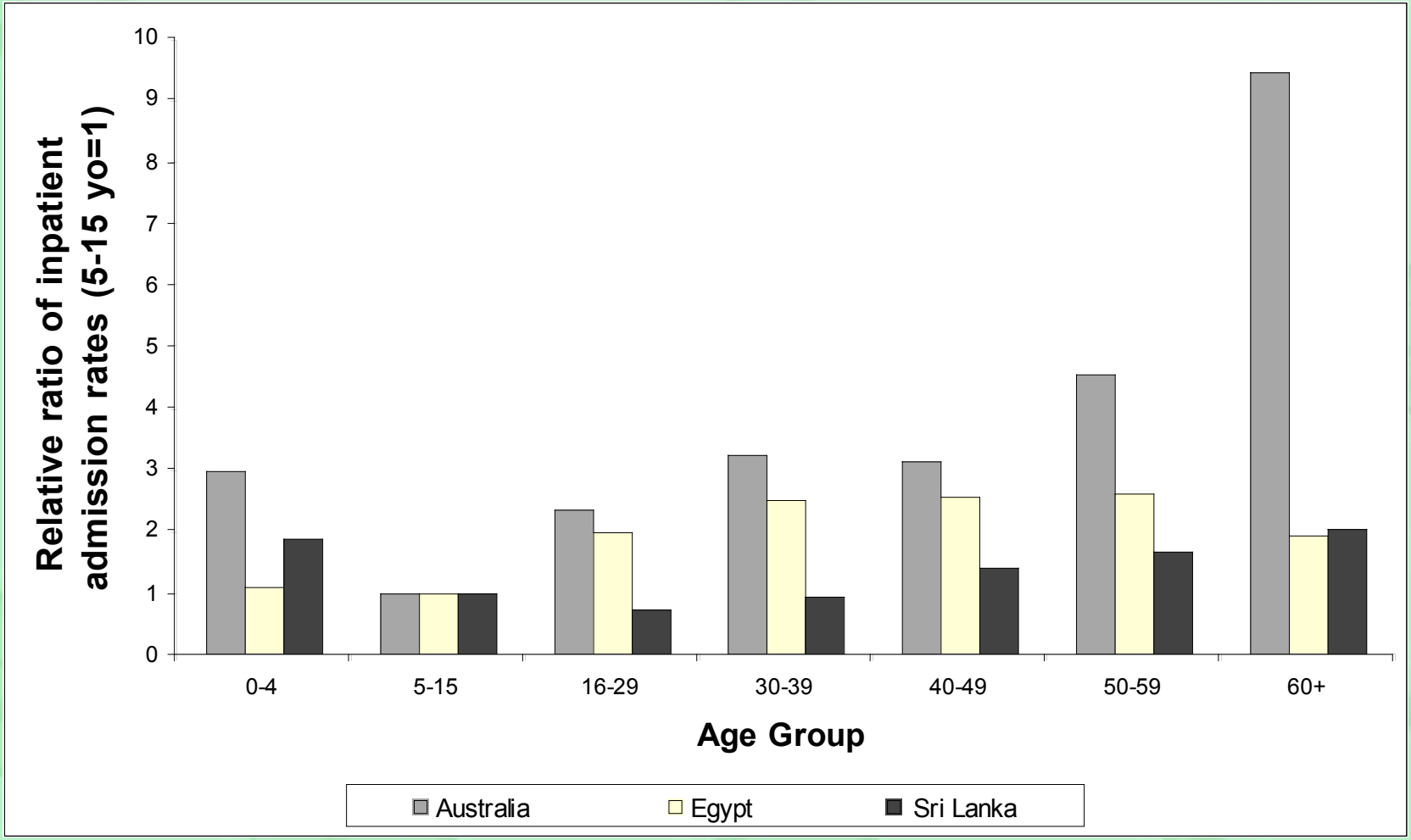
- Ageing of the world's population
- Demand by the elderly and cost of health care
- Health care expenditure projection methods
- Current and future research

Future ageing trends

- In developing countries a large increase in population expected by 2050
- Share of the elderly (≥65yo) and median age expected to rise as well
- Share of the “oldest-old” (≥80yo) to increase more significantly

The demand for health care

- The pattern of health care use is greater by the elderly


Relative ratio of inpatient admission rates (5-15 yo=1)
10
9
8
7
6
5
4
3
2
1
0
0-4
5-15
16-29
30-39
40-49
50-59
60+
Age Group
Australia
Egypt
Sri Lanka

Ageing and health expenditure

- Econometric analyses of spending patterns in OECD countries
- Only a modest impact on overall health spending by elderly in developed nations
- No similar studies examining the impact in developing nations

Factors that influence demand

- Biological / Epidemiological changes
  - Ageing (+)
  - Morbidity compression
  - Expenditures in last year of life
- Access to health care
- Socio-cultural factors
- Technological changes
- Inflation in prices
- Government policy changes

Projecting health care expenditure

- Relationship between aging and aggregate health spending is complex
- The need to use simplified methodology in practice
- Lack of data and limited studies in developing countries

Health care expenditure projection methods

- Econometric time-series analyses
- Macroeconomic general equilibrium models
- Epidemiological models
- Actuarial models
- Modeling the impact on long-term care expenditures

Econometric time-series analyses

- Uses regression analysis to fit statistical models to time-series data of aggregate health expenditures
  - Health expenditure as dependent variable
  - Other factors (GDP, population, inflation) also taken into account
- Only one example in a developing country
- Constraints
  - No reliable or long-term time-series data
  - Estimation of out-of-pocket expenditures

Selected Econometric analyses

China Jamison et al (1984)	Compared health expenditures (actual and predicted) of China to 19 other less developed countries
OECD Countries Martins et al (2006) Projection Period: 2005-2050	Projection of public expenditures on long-term care and on health care (preventive and acute) factoring in demographic and non-dem. variables separately
Japan Tokita et al (1997) Projection Period: 1993-2025	Used historical data and utilization as inputs and forecasted health expenditures using two econometric models
Jordan Nandakumar et al (2004) Projection Period: 2000-2015	Modeled expenditures and utilization using a cross-sectional household survey

Macroeconomic general equilibrium models

- Explores the interaction of two productive sectors: the health sector with the rest of the economy
- Each sector uses inputs such as labor and capital
- Demographic change (ageing) influence the labor supply and demand for health services
- Limitations
  - Does not allow for analysis of detailed changes in age structure or multiple factors that drive health care spending
  - Impact of health sector on economic growth is not of a policy concern
  - Economic expertise to construct suitable models

Macroeconomic General Equilibrium Models

United States Warshawsky (1994) Projection Period: 1990-2065	Compared this model with a more traditionally used actuarial model useing a two sector (health care and everything else) and a two factor (labor and capital) general equilibrium model
United States Warshawsky (1999) Projection Period: 2000 - 2040	Same as above

Epidemiological models

- Projection of health expenditures as a function of future disease trends
- Allows changes in the prevalence of disease or morbidity to enter as independent cost drivers
- Limitations
  - Difficulty in making meaningful forecasts in practice
  - Does not take into account technology or price changes

Epidemiological models

Poland Baran (1995) Projection Period: 1995-2000/2010	Measures the effects of demographic changes in the utilization of hospital care due to selected groups of diseases
Chile World Bank (1995) Projection Period: 1990 - 2030	Projected the number of individuals dying of a specific illness and forecasted hospitalization costs in public facilities

Actuarial Models

- Project expenditure as a function of change in age-sex (demographic) structure
- Other factors can be adopted into the model
  - Changes in the age-sex specific utilization of health care services (IP/OP, acute/chronic)
  - Medical care price inflation or unit cost (productivity) changes within a particular age group
  - Changes in health status (proximity to death) or disability
- More superior, useful and probably the most reliable method

Actuarial Models - selected

Spain Monteverde (2005) Projection Period: 1999 - 2010	Modeled LTC factoring in mortality & morbidity (disability) on unit costs of services of pop ≥65
UK Wanless (2002) Projection Period: 2002 - 2023	Modeled the impacts of utilization, technological developments, productivity, LTC and proximity to death
Thailand Ogawa et al (1988) Projection Period: 1980 - 2015	Computed age-specific total health expenditure as a sum of age-specific total costs for outpatients and inpatients
Sri Lanka Rannan-Eliya (2005) Projection Period: 2001 - 2051	Accounted for changes in pop, utilization of med services, productivity, price inflation and macro-economy (war/peace)

Modeling long-term care costs

- Modeling the impact of ageing on expenditures of long-term care and social care for the elderly
- Studies done only in developed nations
- Better policy agenda and more advanced state of population ageing
  - Social health insurance programs
  - Public financing
- Issues:
  - Substitution of nursing care to medical care
  - What constitute health care services and how do we measure social care expenditures?

Use & Limitations of Models

1. Policy planning
   - New technology and the increase in productivity
   - New technology and the change in health seeking behavior
   - Technology changes and the increase in life expectancy and the demand for health care
   - Policy changes itself may alter future financial requirements
   - Eg: Fairbank *et al.* (2000) Egypt model
2. Forecasting
   - To predict future health spending more accurately
   - Useful for funding agencies for financial planning and budgeting
   - Eg: US Medicare Trustees report
- Limitations
   - Difficult to evaluate for accuracy (forecast value and the actual outcome)
   - Assumption that expenditures are beyond policy-makers control

Issues specific for developing countries

- Tendency to under-appreciate the importance of factors other than ageing
- Methodological improvement
- Not well documented health spending in the last year of life
- Existing morbidity compression not known
- Lack of research and data on productivity change in health services

Current research

- Routine official projections of national health care spending
- Ad-hoc official studies
- Academic research
- Multi-country international studies

Research Priorities

- Multi country collaborative studies applying actuarial-based projection methods
- Research including primary data collection in developing countries on compression of morbidity and expenditures in the last year of life

Conclusions

- Actuarial method most widely accepted to generate official cost projections in developed countries
- Able to capture a large range of cost drivers
- Feasibility and applicability makes it the best available projection method for developing countries

To obtain paper

Monograph prepared for WHO Kobe Centre, Kobe, Japan

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