Time period, birth cohort and prevalence of dementia in mainland China, Hong Kong and Taiwan: a meta-analysis

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Introduction

• **Dementia in East Asia:** the challenges of considerable ageing people and rising numbers of people with dementia (UN 2012)

• **Impact of societal changes on health:**
  – Turbulence in the social environment can have a major influence on health (Wilkinson 1992; Shkolnikov et al., 2001).
  – Negative life experiences in early years can be associated poor health outcomes in later life (WHO 2008; Pensola et al., 2003).

• **Dramatic societal changes in East Asia:**
  – The changes occurred over the last hundred years are associated with several factors related to dementia, such as life expectancy, education opportunity, stress and quality of life.
Introduction

Source: Gapminder
"The country we call China is an immense, heterogeneous rapidly changing society whose people have experienced powerful and contradictory social forces. How those forces affect individuals’ mental health outcomes is of great consequence, as is the knowledge of that influence" (Kleinman 1996).

The aim of this study: to explore the variations of dementia prevalence in mainland China, Hong Kong and Taiwan between different time periods and birth cohorts.
Method

- **Literature search:**
  - 70 prevalence studies in mainland China, Hong Kong and Taiwan from 1980 to 2012
  - Both English and Chinese literatures
  - Inclusion criteria:
    - Field survey
    - Population sampling
    - Age 50 and over
    - Case was not decided only by a screening test and the criteria were reported.

- **Data collection:**
  - The results and several methodological factors, such as diagnostic criteria, were systematically extracted from the studies by two reviewers.
Method

• **Diagnostic criteria:**
  – Older criteria (DSM-III, -III-R, ICD-10, CCMD and mixed)
  – Newer criteria (DSM-IV, -IV-R, 10/66 and GMS-AGECAT)

• **Time period:**
  – Categorised base on beginning year of investigation
  – No clear information: publication year – 3 years

• **Birth cohort:**
  – Birth year= (Year of investigation) - (The median of each 5-year age group)
Method

• The processes of analysis:

  – Estimated the overall prevalence of the people aged 60 and over by time periods with the consideration of methodological factors and age structure (meta-regression)

  – Estimated pooled prevalence by time periods and age groups (meta-analysis)

  – Examined the potential cohort effect (median polish)

  – Estimated pooled prevalence by birth cohorts and age groups (meta-analysis)
Results

- **Estimated prevalence in the population aged 60 and over**

1. Adjusted for diagnostic criteria, whole study age range and age structure
2. n= Number of studies contributing data
• **Time periods**

**Older criteria (n=45)**
(DSM-III, -III-R, ICD-10, CCMD and mixed)

**Newer criteria (n=25)**
(DSM-IV, -IV-R, 10/66 and GMS-AGECAT)
• Birth cohort

Older criteria (n=45)  
(DSM-III, -III-R, ICD-10, CCMD and mixed)

Newer criteria (n=25)  
(DSM-IV, -IV-R, 10/66 and GMS-AGECAT)
Discussion

• **Age, period and cohort effects:**
  
  • **Ageing**
    – Extended life expectancy (1895~2010): from 32 to 73 years
    – The change of age structure: controlled by standardisation and stratification

  • **Period**
    – No significant variation between 5 time periods
    – Higher mortality in the people with dementia

  • **Cohort**
    – Different results between two diagnostic criteria; the studies using older criteria are considered to provide more information
    – Concepts to dementia and mental illnesses in older people
Discussion

• **Limitation of meta-analysis**
  – Variations between the studies
  – Difficult to conduct complete age-period-cohort modelling
  – The modified effect of individual factors

• **Insufficient data**
  – Small sample size of marginal age groups
  – Approximate categories of birth cohorts and unknown birth years of participants

• **Geographical variation**
  – Different histories, economic development, political and social environments in mainland China, Hong Kong and Taiwan
  – Only 7 studies conducted in Hong Kong and Taiwan
Conclusion

• No significant variation across time periods was found after controlling for methodological factors.

• An increasing pattern of dementia prevalence from less recent to more recent cohort groups with the consideration of diagnostic criteria

• To improve the limitation of meta-analysis, conducting longitudinal studies with the same survey designs and methods over time can provide more comparable information to explore the temporal variation of dementia prevalence.
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Reference