Epidemiology of Mental and Behavioral Disorders Among the Elderly: Based on Data of Hospitalized Patients in Thailand 2010

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Background: *To date, only small, selected groups of elderly hospitalized with mental and behavioral disorders (EHMBD) have been studied. Since no national epidemiological studies have been published, the recent advent of universal healthcare in Thailand makes doing such a study timely for improving the medical curricula and service provision.*
Objective: *To analyze the epidemiology of the EHMBD in the year 2010 of Thailand.*
Material and Method: *The data analyzed were gathered from Medical Expense Reimbursement forms submitted for the fiscal year 2010. The particular focus of this research was on elderly inpatient aged 60 years and over with ICD-10 (for 2010) diagnosis: F00-F99 Mental and Behavioral Disorders. The authors extracted and analyzed the number of in-patient department (IPD) admissions, psychiatric diagnoses, length of hospital stays, hospital charges and mortality rate. Data were analyzed using SPSS 17 for Windows.*
Results: *In 2010, EHMBD accounted for 11,418 admissions which was 1.56 admission per 1000 elderly people or 13.9% of overall admission (19 years and over). Of the 11,418 admission, 44 died (0.39%). The mean in-patient charges/admission in Thai Baht (SD) for the EHMBD with any F00-F99 diagnosis was 12,896 (51,659). The average range of stay was 8.3 $\pm$ 22.2 days. The leading diagnosed clusters of behavioral and mental disorders were organic mental disorders (F00-F09: 23.8%), neurotic, stress-related and somatoform disorders (F40-F48: 21.1%); and mental and behavioral disorders due to use of alcohol (F10: 20.3%). Alcohol use disorders among the elderly resulted in four times more men being hospitalized than women. Regarding the F30-F39 cluster, mood (affective) disorders, the prevalence of depressive episodes increased with age and bipolar affective disorder decreased with age.*
Conclusion: *The prevalence of hospitalization among the elderly with mental and behavioral disorders was about one-eighth that of all admission of adult from 19 years old. Death was an uncommon result. The most common psychiatric diagnoses were organic mental disorders, neurotic, stress-related and somatoform disorders and mental and behavioral disorders due to use of alcohol.*

Keywords: *Elderly, Mental and behavioral disorders, Hospitalization, Organic mental disorders, Neurotic, stress-related and somatoform disorders, Mental and behavioral disorders due to use of alcohol*

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Mental illnesses among the elderly is a growing public health concern[1] with major social and economic ramifications to patients, their families and society as a whole. It has been estimated that 25% of the elderly have significant psychiatric symptoms[2], particularly depression and cognitive impairment[3]. The relatively recent accessibility to nationwide administrative databases in Thailand means that a sufficiently large data set can be analyzed for trends, which would be useful as evidence for making changes to medical education and healthcare service provision. The present study aimed to investigate in-patient psychiatric epidemiology among the elderly for use in refining medical education and better targeting healthcare services.

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Material and Method

The present study is a part of the larger "Health Situation Analysis of Thai People 2010:

Implications for Health Education and Health Service Reform" reviewed and approved by the Ethics Committee of Khon Kaen University (HE541036).

The materials for analysis were in-patient data for the fiscal year 2010 (October 1, 2009-September 30, 2010) from the Universal Health Coverage System, the Social Welfare System and the Civil Servant Medical Benefits Scheme, which together provided insurance coverage for over 96% of the Thai population. Data on in-patients 60 years old and over with any primary diagnosis of mental and behavioral disorders [F00-F99 (ICD-10 for 2010)][4] were extracted. Where possible, the data were subdivided into three age groups [*i.e.*, (1) 60-69 (2) 70-79 and (3) 80 and over years old] then analyzed for number of IPD admissions, psychiatric diagnoses, mortality rate, length of hospital stay, hospital charges for in-patient care and level of hospital in service.

Statistical analysis

SPSS version 17 for Windows was used to do the statistical analysis. Frequencies (percentages) of psychiatric illnesses among the elderly as related to hospitalizations and their sub-groups are herein reported.

Results

General description

In the fiscal year 2010, Thailand population comprised 55,023,897 non-elderly and 7,341,259 elderly people. There was a total of 6,880,815 hospitalizations in all age groups; of which 4,350,537 were adults (age 19 years old and over). 60% of 4,350,537 hospitalization were 19-59 year-olds and 40% were elderly (60 and over). The hospitalizations in 19 years old and over due to any psychiatric illness from F00 to F99 was 82,342, of which 11,418 were for elderly (60 years old and over) (65.9% males; 34.1% females). The rate of the elderly hospitalized with mental and behavioral disorder (EHMBD) was (a) 1.56 per 1,000 elderly population, (b) 0.17% of the total hospitalizations from all age groups, (c) 13.9% of the total psychiatric hospitalizations of adults (19 and over) and (d) 0.64% of hospitalizations of the elderly with any general medical diagnosis. The respective proportion of EHMBD in the northeast, central, northern and southern region of Thailand was 33.9%, 31.5%, 23.7% and 10.9%.

Mental and behavioral disorders (F00-F09)

The five leading psychiatric clusters for EHMBD (60 and over) were: (1) F00-F09: Organic, including symptomatic, mental disorders (23.8%); (2) F40-F48: Neurotic, stress-related and somatoform disorders (21.1%); (3) F10-F19: Mental and behavioral disorders due to psychoactive substance use (20.3%); (4) F20-F29: Schizophrenia, schizotypal and delusional disorders (19.6%) and (5) F30-F39: Mood (affective) disorders (13.4%). Males outnumbered females by a factor of about 4 for the F10-F19 cluster while females outnumbered males in the other four clusters (*e.g.* about 3 to 1 in F40-F49 and 2 to 1 in F30-F39) (Fig. 2). Of note when sub-grouping the most frequent psychiatric diagnosis for EHMBD age 70 years old and over was F00-F09 (29.4% for the 70-79 years old and 56.9% for 80 and over) while for EHMBD age 60-69 years old was F10-F19 (Fig. 1).

F00-F09: Organic, including symptomatic, mental disorders

In this cluster, F05 Delirium, not induced by alcohol and other psychoactive substances was the most frequent disorder diagnosed in all three elderly age groups (65.8%, 51.3% and 56.5% for 60-69, 70-79 and 80 and over years-old, respectively). The second most frequent disorder in this category was F03

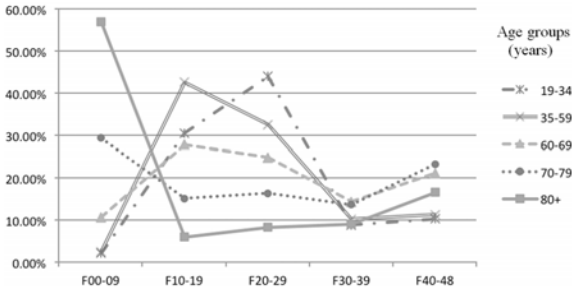

Fig. 1 Percentage of top five diagnosis categories within each age group

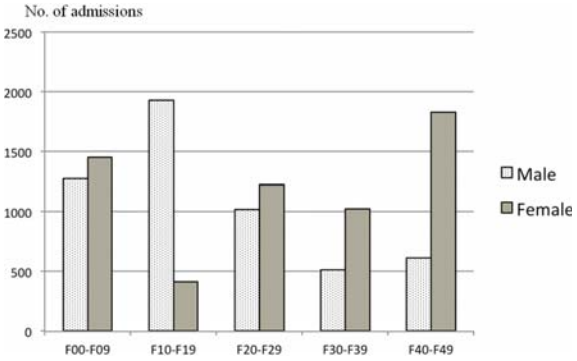

Fig. 2 Sex distribution for the top five diagnoses

Unspecified dementia (21%, 33%, and 33%) (Fig 3 and 4).

F10-F19 Mental and behavioral disorders due to substances use

In this category, F10: Mental and behavioural disorders due to use of alcohol was the most frequent diagnosis for every elderly group (97.9%, 94.5% and 91.3%, respectively). Other frequent diagnoses were: F19: due to multiple drug use; F11: due to use of opioids; F13: due to use of sedatives; and F15: due to use of other stimulants.

F20-F29 Schizophrenia, schizotypal and delusional disorders

The frequent diagnoses in this cluster for the three elderly groups were: F20-Schizophrenia (68.2%, 63.2% and 49.6%, respectively); F29-Unspecified nonorganic psychosis (13.04%, 18.50% and 24.80%); F23-Acute and transient psychotic disorders (12.02%, 13.40% and 22.00%); F25-Schizoaffective disorders (5.81%, 2.71% and 0.00%); and F22-Persistent delusional disorders (1.02%, 1.60% and 2.13%).

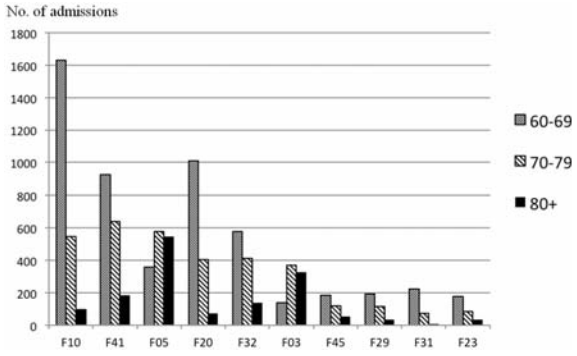

Fig. 3 Age distribution for the top ten common mental disorders among the elderly

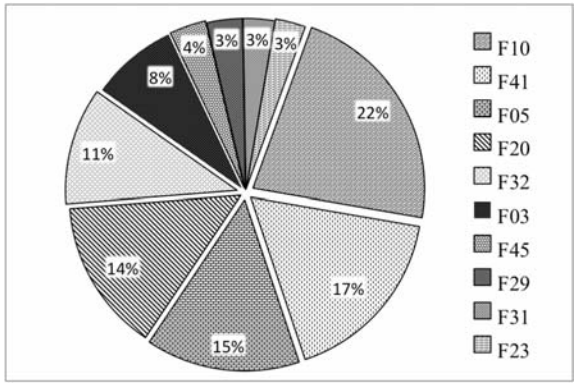

Fig. 4 Top ten psychiatric disorders among elderly according to ICD-10 classification

F30-F39 Mood [affective] disorders

The frequent diagnoses in each elderly group were F32-Depressive episode (68.12%, 78.60% and 88.40% respectively); F31-Bipolar affective disorder (26.21%, 14.0% and 5.20%). Other tiny frequent diagnoses (thus figure were not shown) were: F33-Recurrent depressive disorder; F34 Persistent mood [affective] disorders; and, F30-Manic episode.

The in-patient incidence of depressive episode increased with older age (*i.e.*, 46% for 19-34, 55% for 35-59, 67% for 60-69, 78% for 70-79 and 88% for 80 and over years old). By contrast, the incidence of bipolar affective disorder decreased with older age (*i.e.*, 48% for 19-34, 38% for 35-59, 26% for 60-69, 14% for 70-79 and 5% for 80 and over years old.

F40-F48 Neurotic, stress-related and somatoform disorder

The top five disorders in this cluster for each elderly group were: (1) F41-Other anxiety disorders (panic disorder and generalized anxiety disorder) (72.90%, 71.60% and 65.09%); (2) F45-Somatoform disorders (14.70%, 13.30% and 18.40%); (3) F43-Reaction to severe stress and adjustment disorders (8.30%, 8.33% and 7.42%); (4) F48-Other neurotic disorders [Neurasthenia, Depersonalization-derealization syndrome, Dhat syndrome, Occupational neurosis (including writer's cramp), Psychasthenia, Psychasthenic neurosis and Psychogenic syncope] (2.74%, 4.62% and 6.71%) and (5) F44-Dissociative [conversion] disorders.

The infrequent diagnoses among the hospitalized elderly included: F50-F59-Behavioural syndromes associated with physiological disturbances and physical factors; F51-Nonorganic sleep disorders; F55-Abuse of non-dependence-producing substances; and F50 Eating disorders.

Mortality rate

The mortality rate among EHBMD (60 and over) was 0.4%. The five disorders that caused the highest mortality rate were: (1) F09-3.30%, (2) F01-1.50%, (3) F25-1.00%, (4) F48-1.10% and (5) F03-0.80%.

Length of Hospital Stay (LOS)

The average (SD) LOS for EHMBD was 8.3 (22.2) days (12.87 days for 60-69 years old, 9.73 days for 70-79 and 7.79 day for 80 years old and over). The

top five longest hospital stays were: 87 days (SD 104) for F70-F79 (mental retardation), 30 days (SD 56) for F20-F29; 10 days (SD 21) for F30-F39; 8 days (SD 16) for F00-F09 and 6 days (SD 6) for F99.

Hospital charges

The mean in-patient charges in Thai Baht (SD) for the EHMBD with any F00-F99 diagnosis/admission vs. any diagnosis in general/admission was 12,896 (51,659) vs. 16,969 (58,804). The top five average in-patient charges (SD)/admission were for: F70-F79: 54,948 (51,659); F20-F29: 21,609 (34,334); F00-F09: 13,395 (33,378); F30-F39: 10,562 (20,478); and, F10-F19: 7,068 (13,688) Baht.

Level of hospital care

The respective proportion of admissions of EHMBD 60 years old and over with any diagnosis in F00-F99 to primary, secondary, tertiary and private hospital was 50.4%, 13.7%, 33.7% and 2.2%. The top four psychiatric clusters in each hospital level were: F40-F48 (31.3%), F10-F19 (22.29%), F00-F09 (19.1%) and F30-F39 (13.4%) for the primary hospital level; vs. F00-F09 (29.5%), F10-F19 (24.4%), F40-F49 (22.5%) and F20-F29 (11.0%) for the secondary level; vs. F20-F29 (36.8%), F00-F09 (28.4%), F10-F19 (14.6%) and F30-F39 (14.3%) for the tertiary level; and, vs. F40-F48 (31.7%), F10-F19 (22.6%), F00-F09 (21.8%) and F20-F29 (11.1%) for the private hospitals.

Discussion

The current studies found that, as with other research, the most common reason for psychiatric hospitalization among the elderly (≥70 years) was delirium, not induced by alcohol and other psychoactive substances followed by unspecified dementia[5,6].

Neurotic disorders especially other anxiety disorders (panic disorder, generalized anxiety disorder and mixed anxiety and depressive disorder) were also frequently found among the elderly in-patients. The primary hospital level most often encountered the elderly with neurotic disorders, while the secondary level encountered organic mental disorders and the tertiary level schizophrenia and related psychosis (chronic disorders)[7] and organic mental disorders (usually late onset with multiple etiologies and increased morbidity)[8].

Even though elderly in-patients with a F00-F09 diagnosis had short LOS, they had the highest mortality rate. The elderly with mental retardation problems were associated with lengthy LOS and the most expensive hospital charges. Due to both high mortality rates and in-patient care costs, the goal, where appropriate and possible, should be to improve in-patient care of elderly psychiatric patients. A multidisciplinary approach should be organized to best do health promotion to the elderly.

Limitations

The present study had some limitations. Although psychiatric diagnoses were based on the judgment of medical professionals, their validity may have some discrepancies. In order to comply with diagnosis-related group reimbursement, every hospital must pay treatment costs within an allowable limit. This can cause discrepancies in the treatment approach between hospitals leading to differences in expenses, mortality rates and length of hospital stays. In order to assess the real burden of psychiatric illness among elderly in-patients, further study will be needed on other aspects, including: economic loss in the family and long-term consequences (*e.g.*, disability after hospitalization and quality of life). Notwithstanding any limitations, the authors hope that this report will be useful for medical education for (a) medical schools (curricula and modus operandi) (b) public health policy and planning and (c) the general public.

Acknowledgement

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Potential conflicts of interest

None.

References

1. National Statistic Office, Ministry of Information and Technology. A survey report of elderly in Thailand in 2002. Bangkok: Chan Chom Pub; 2003.
2. Sadock BJ, Sadock VA. Geriatric psychiatry. In: Sadock BJ, Sadock VA, editors. Kaplan & Sadcok's synopsis of psychiatry: behavioral sciences/ clinical psychiatry. 10th ed. Philadelphia: Lippincott Williams & Wilkins; 2007: 1348-58.
3. Reppermund S, Brodaty H, Crawford JD, Kochan NA, Slavin MJ, Trollor JN, et al. The relationship of current depressive symptoms and past depression with cognitive impairment and

instrumental activities of daily living in an elderly population: the Sydney Memory and Ageing Study. J Psychiatr Res 2011; 45: 1600-7.
4. World Health Organization. International statistical classification of diseases and related health problems 10th revision (ICD-10) version for 2010 [Internet]. 2012 [cited 2012 May 31]. Available from: http://apps.who.int/classifications/icd10/browse/2010/en
5. Gagliardi JP. Differentiating among depression, delirium, and dementia in elderly patients: a description and explanation of the distinguishing characteristics of depression, delirium, and dementia in elderly patients. Virtual Mentor 2008; 10: 383-8.
6. de Lange E, Verhaak PF, van der Meer K. Prevalence, presentation and prognosis of delirium in older people in the population, at home and in long term care: a review. Int J Geriatr Psychiatry 2012 Apr 18. doi: 10.1002/gps.3814.
7. Fatima A, Barkat U, Mahmood KT, Zaka M. Schizophrenia in elderly patients. J Pharm Sci Res 2001; 3: 952-60.
8. Rothenhausler HB. Mental disorders in general hospital patients. Psychiatr Danub 2006 Dec; 18(3-4): 183-92.

ระบาดวิทยาของความผิดปกติทางจิตและพฤติกรรมในผู้สูงอายุ: การศึกษาจากข้อมูลผู้ป่วยในประจำปี พ.ศ. 2553 ของประเทศไทย

พูนศรี รังษีขจี, ภัทรี พหลภาคย์, พงศธร พหลภาคย์, นิรมล พัจนสุนทร, สุชาติ พหลภาคย์, สุมิตร สุตรา

ภูมิหลัง: *ในปัจจุบันการศึกษาเกี่ยวกับความผิดปกติทางจิตและพฤติกรรมในผู้ป่วยในและสูงอายุกระทำเฉพาะกลุ่มสูงอายุเล็กๆและเป็นกลุ่มที่มีลักษณะเฉพาะ เนื่องจากยังไม่พบว่ามีการเผยแพร่รายงานเกี่ยวกับระบาดวิทยาระดับชาติ และเนื่องจากในปัจจุบันมีระบบประกันสุขภาพเกิดขึ้นในประเทศไทย จึงควรศึกษาข้อมูลด้านระบาดวิทยาเพื่อนำมาใช้ในการปรับปรุงหลักสูตรแพทยศาสตร์และเพื่อการพัฒนาการให้บริการให้ดีขึ้น*

วัตถุประสงค์: *เพื่อวิเคราะห์ระบาดวิทยาของความผิดปกติด้านจิตใจและพฤติกรรมของผู้สูงอายุที่ได้เข้ารับการรักษาแบบผู้ป่วยในประจำปีงบประมาณ พ.ศ. 2553 ของประเทศไทย*

วัสดุและวิธีการ: *ข้อมูลที่นำมาวิเคราะห์คือรายงานเกี่ยวกับค่าใช้จ่ายในการรักษาพยาบาลผู้ป่วยในประจำปีงบประมาณ พ.ศ. 2553 สำหรับผู้ป่วยที่มีอายุตั้งแต่ 60 ปีขึ้นไปที่ป่วยด้วยโรคทางด้านจิตใจและพฤติกรรมตามรหัสโรค F00-F99 ของ ICD-10 ฉบับปีพ.ศ. 2553 ข้อมูลจะถูกนำมาวิเคราะห์ในด้านต่างๆดังนี้ จำนวนครั้งของการรับเป็นผู้ป่วยในทั้งหมด ความผิดปกติทางจิตและพฤติกรรม ระยะเวลานอนรักษาในโรงพยาบาล ค่าใช้จ่ายในการรักษาพยาบาล อัตราการตาย การวิเคราะห์ข้อมูลใช้โปรแกรมทางสถิติ SPSS รุ่นที่ 17*

ผลการศึกษา: *ในปี 2553 ผู้สูงอายุที่มีความผิดปกติทางจิตและพฤติกรรมได้รับการรักษาแบบผู้ป่วยในทั้งหมด 11,418 ครั้ง หรือคิดเป็นการรับไว้ 1.56 ครั้งต่อประชากรสูงอายุ 1,000 คน หรือร้อยละ 13.9 ของผู้ป่วยในที่อายุ 19 ปีหรือมากกว่า ในจำนวนการรับผู้สูงอายุ 11,148 ครั้ง มีผู้ป่วยเสียชีวิต 44 ราย (ร้อยละ 0.39) ค่ารักษาพยาบาลเฉลี่ย (ค่า SD) สำหรับผู้ป่วยในและสูงอายุที่เข้ารับการรักษาด้วยโรคทางจิตเวชต่อครั้งคือ 12,896.00 (51,659.00) บาท ระยะเวลาเฉลี่ยของการนอนโรงพยาบาลคือ 8.3 วัน (SD 22.2 วัน) กลุ่มความผิดปกติทางจิตและพฤติกรรมที่พบได้บ่อยที่สุด 3 ลำดับแรก ได้แก่ กลุ่ม organic mental disorders (F00-F09) พบร้อยละ 23.8 กลุ่ม neurotic, stress-related and somatoform disorders (F40-F48) พบร้อยละ 21.1; และ กลุ่ม mental and behavioural disorders due to use of alcohol (F10) พบร้อยละ 20.3 ในกลุ่มผู้ป่วยสูงอายุที่เป็นโรค F10 พบว่าเป็นผู้ป่วยชาย มากกว่าผู้หญิง 4 เท่า การวิเคราะห์เกี่ยวกับโรคในกลุ่ม F30-F39: Mood (affective) disorders พบว่าพบโรคซึมเศร้าบ่อยขึ้นตามอายุที่เพิ่มขึ้นและพบ bipolar affective disorder ลดลงตามอายุที่มากขึ้น*

สรุป: *ความชุกของการรักษาแบบผู้ป่วยในที่สูงอายุที่มีความผิดปกติทางจิตและพฤติกรรมคือ 1 ใน 8 ของผู้ป่วยในทั้งหมด มีอัตราการเสียชีวิตจากการรักษาพยาบาลต่ำ กลุ่มความผิดปกติทางจิตและพฤติกรรมที่พบได้บ่อยคือ organic mental disorders, neurotic, stress-related and somatoform disorders และmental and behavioral disorders due to use of alcohol*