

to ensure these drugs are used in an appropriate and safe manner and audit is a simple and effective means of achieving this.

Conflict of interest declaration

AP is the consultant of the Old Age Psychiatric team whose performance we audited.

References

- All-Party Parliamentary Group on Dementia** (2008). *Always a Last Resort. Inquiry into the Prescription of Antipsychotic Drugs to People with Dementia Living in Care Homes*. London: Alzheimer's Society.
- Aldred, D. P. et al.** (2007). Antipsychotic prescribing patterns in care homes and relationship with dementia. *Psychiatric Bulletin*, 31, 329–332.
- American Psychiatric Association** (1994). *Diagnostic and Statistical Manual of Mental Disorders*, 4th edn. Washington, DC: American Psychiatric Association.
- Ballard, C. et al.** (2008). Neuropsychiatric symptoms in dementia: importance and treatment considerations. *International Review of Psychiatry*, 20, 396–404.
- Joint Formulary Committee** (2009). *British National Formulary*, 57th edn. London: British Medical Association and Royal Pharmaceutical Society of Great Britain.
- National Institute for Health and Clinical Excellence** (2006). *Dementia: Supporting People with Dementia and their Carers in Health and Social Care*. Available at: <http://www.nice.org.uk/nicemedia/pdf/CG042NICEGuideline.pdf>.
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doi:10.1017/S1041610209991700

Old age psychiatry and geriatric medicine admissions and elderly suicide rates in England

Almost all elderly suicide victims have mental illness, and up to 90% have depression (Shah and De, 1998). A significant number of elderly suicide victims in Western countries consult their general practitioner or psychiatrist or contact mental health services between one week and six months prior to the suicide (Catell, 1988; Conwell *et al.*, 1990; 1991; Catell and Jolley, 1995; Vassilas and Morgan, 1993; 1994). This offers an opportunity for identification and treatment of the mental illness. Thus, the availability of appropriate healthcare services may be an important factor associated with elderly suicide rates.

High suicide rates in China (both rural areas and Hong Kong), in part, have been attributed to lack of mental health services and poorly developed social welfare and benefit systems (Yip and Tan, 1998; Jianlin, 2000; Yip, 2001; Yip *et al.*, 2000). Moreover, reduction in elderly suicide rates in Singapore and urban China have, in part, been attributed to improved healthcare and welfare services for the elderly (Kua *et al.*, 2003; Yip *et al.*, 2005). A decline in elderly suicide rates in England and Wales was associated with measures of improved healthcare for the elderly (Gunnell *et al.*, 2003; Lodhi and Shah, 2005) including an increase in the number of general practitioners, hospital medical staff, outpatient appointments for mental

illness, and field social workers and day center staff (Lodhi and Shah, 2005). However, in a cross-national study elderly suicide rates were higher in countries with greater numbers of psychiatric beds, psychiatrists and psychiatric nurses (Shah and Bhat, 2008). The relationship between elderly suicide rates and the utility of inpatient old age psychiatry (OAP) services has not been examined. Therefore, a study examining the relationship between elderly suicide rates and the utility of inpatient geriatric medicine (GM) and OAP services in England was undertaken with the null hypothesis that there will be no significant relationship between these variables. GM was considered because a third of GM inpatients have depression (Shah and Hoxey, 2000) and suicidal ideation (Shah *et al.*, 2000).

Data on suicide rates in both sexes in the age-bands 65–74 years and 75+ years for England and Wales was ascertained from the World Health Organization (WHO) website (<http://www.who.int/whosis/database/mort/table1.cfm>) for each of the nine calendar years between 1998 and 2006. Data on the number of finished episodes (i.e. the number of patients discharged with a completed inpatient episode), median length of stay, and the number of bed days for patients admitted to GM services and OAP services in England was ascertained from nationally collected data (Hospital Episode Statistics, available at: www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&CategoryID=192). These national data are gathered centrally via the patient administration systems in nearly 400 hospitals in England. Data were ascertained for the

nine financial years (1 April to 31 March) between 1998/1999 and 2006/2007.

Data on the size of the elderly population in England and Wales was also ascertained from the WHO website (<http://www.who.int/whosis/database/mort/table1.cfm>) for each of the nine calendar years between 1998 and 2006. The rates of finished episodes and bed days for GM and OAP were calculated by dividing these two variables by the size of the elderly population (65+ years) for each of the nine years.

The relationship between suicide rates in both the elderly age-bands in both sexes and the rates of finished episodes, rates of bed days and median length of stay was examined with Spearman's correlation coefficient (ρ).

There was a significant negative correlation between rates of GM finished episode and suicide rates in males aged 75+ years ($\rho = -0.68$, $P = 0.042$), but not with the other three suicide rate groups. There was no significant correlation between suicide rates in both sexes in both the elderly age-bands and rates of bed days and median length of stay in GM. There were significant positive correlations between rates of finished episodes in OAP and suicide rates in females aged 65–74 years ($\rho = +0.83$, $P = 0.006$) and 75+ years ($\rho = +0.77$, $P = 0.06$), but not with the two male groups. There were significant negative correlations between median length of stay in OAP and suicide rates in males aged 75+ years ($\rho = -0.67$, $P = 0.047$), females aged 65–74 years ($\rho = -0.77$, $P = 0.016$) and females aged 75+ years ($\rho = -0.78$, $P = 0.013$), but not with males aged 65–74 years. There was no significant correlation between rates of bed days in OAP and elderly suicide rates.

Some methodological issues need consideration. First, the accuracy of the nationally collected hospital episode statistics is unclear because the data is collected via the patient administration systems in nearly 400 hospitals (Shah, 2007). Data collected from such a large number of hospitals may be of variable quality. Second, there were only nine data points, and this small number may lead to type 1 or type 2 statistical errors (Shah, 2007). Third, in England and Wales, the coroner can only return a verdict of suicide if suicide can be proved beyond a reasonable doubt, and some genuine suicides may be misclassified as an open verdict when suicide cannot be proved beyond a reasonable doubt (O'Donnell and Farmer, 1995). This may have resulted in a lower genuine elderly suicide rate being included in the analysis, but data on deaths due to open verdicts were not available from the WHO for the period before 2001 when the ICD-9 classification was used. Fourth, it is also possible that other factors may independently influence

elderly suicide rates and service characteristics leading to spurious correlations (epiphenomena).

The positive correlations between rates of finished episode in OAP and female suicide rates in both elderly age-bands were inconsistent with previous findings from the U.K. (Gunnell *et al.*, 2003; Lodhi and Shah, 2004), Singapore (Kua *et al.*, 2003) and urban China (Yip *et al.*, 2005), where negative correlations between service provision and elderly suicide rates was observed. However, the findings were consistent with a cross-national study where a positive correlation was observed between elderly suicide rates and increased mental health service provision, including the density of psychiatric beds (Shah and Bhat, 2008). This may have several explanations. First, this may be an artifact of methodological issues discussed above. Second, evidence of higher suicide rates may have prompted policy makers, service commissioners and service providers to consider improvement in service provision. This is further supported by: (i) the positive correlation between suicide rates in older females and the percentage of the total health budget spent on mental health and per capita health expenditure in cross-national studies (Shah and Bhat, 2008; Shah *et al.*, 2008); and (ii) in individual countries, like the U.K. (Shah and Coupe, 2009) and Korea (Chiu *et al.*, 2003), policy-makers have implemented national suicide reduction policies. The mechanism for this could be as follows: (i) perception of high suicide rates; (ii) this perception leading to national policies to address mental health, including suicides; (iii) these policies resulting in increased expenditure on mental health services; and (iv) increased expenditure on mental health services resulting in increased provision of mental health services (Shah and Bhat, 2009). Third, other factors not examined in this study, including adequately resourced community mental health teams, social service teams and home treatment teams, may have simultaneously and independently influenced elderly suicide rates and provision of OAP services.

The negative correlations between elderly suicide rates and median length of stay in OAP units may also be an artifact of methodology. However, it is possible that suicidal patients require longer inpatient admissions and longer admissions may offer adequate opportunity to treat suicidal patients. This may, in turn, lead to a reduction in elderly suicide rates. The findings also suggest that different measures of utility of GM services have little impact on elderly suicide rates, which may be a genuine result or due to methodological issues. Patients presenting with suicidal ideation or depression without significant medical problems are more likely to be admitted to OAP units. Those presenting

with attempted suicide are more likely to be treated either in accident and emergency departments or on general medical wards before transfer to OAP units. Finally, a causal relationship between elderly suicide rates and provision of mental health services and its direction cannot be inferred from this cross-sectional ecological study.

Conflict of interest

None.

References

- Cattell, H.** (1988). Elderly suicides in London: an analysis of coroner's inquests. *International Journal of Geriatric Psychiatry*, 3, 251–261.
- Cattell, H. and Jolley, D.** (1995). One hundred cases of suicide in the elderly. *British Journal of Psychiatry*, 166, 451–457.
- Chiu, H. F. K., Takahashi, Y. and Suh, G. K.** (2003). Elderly suicide prevention in East Asia. *International Journal of Geriatric Psychiatry*, 18, 973–976.
- Conwell, Y., Rotenberg, M. and Caine, E. D.** (1990). Completed suicides at age 50 and over. *Journal of the American Geriatrics Society*, 38, 640–644.
- Conwell, Y., Olsen, K., Caine, E. D. and Flannery, C.** (1991). Suicide in later life: psychological autopsy findings. *International Psychogeriatrics*, 3, 59–66.
- Gunnell, D., Middleston, N., Whitley, E., Dorling, D. and Frankel, S.** (2003). Why are suicide rates rising in young men but falling in the elderly? A time-series analysis of trends in England and Wales 1950–1998. *Social Science and Medicine*, 57, 595–611.
- Jianlin, J.** (2000). Suicide rates and mental health services in modern China. *Crisis*, 21, 118–121.
- Kua, E. H., Ko, S. M. and Ng, T. P.** (2003). Recent trends in elderly suicide rates in a multi-ethnic Asian city. *International Journal of Geriatric Psychiatry*, 18, 533–536.
- Lodhi, L. and Shah, A. K.** (2005). Factors associated with the recent decline in suicide rates in England and Wales. 1985–1998. *Medicine, Science and the Law*, 45, 115–120.
- O'Donnell, I. and Farmer, R.** (1995). The limitations of official suicide statistics. *British Journal of Psychiatry*, 166, 458–461.
- Shah, A. K.** (2007). The impact of the Community Care (Delayed Discharge) Act 2003 on the length of stay and bed occupancy in old age psychiatry units in England. *International Journal of Geriatric Psychiatry*, 22, 1164–1165.
- Shah, A. K. and Bhat, R.** (2008). The relationship between elderly suicide rates and mental health funding, service provision and national policy: a cross-national study. *International Psychogeriatrics*, 20, 605–615.
- Shah, A. K. and Coupe, J.** (2009). A comparative study of elderly suicides in England and Wales, Scotland and Northern Ireland: trends over time and age-associated trends. *International Psychogeriatrics*, 21, 581–587.
- Shah, A. K. and De, T.** (1998). Suicide in the elderly. *International Journal of Psychiatry in Clinical Practice*, 2, 3–17.
- Shah, A. K. and Hoxey, K.** (2001). Depression in medically ill elderly inpatients: prevalence, correlates and longitudinal stability. *International Journal of Methods in Psychiatric Research*, 10, 147–156.
- Shah, A. K., Hoxey, K. and Mayadunne, V.** (2000). Suicidal ideation among acutely medically ill elderly inpatients: prevalence, correlates and longitudinal stability. *International Journal of Geriatric Psychiatry*, 15, 162–169.
- Shah, A. K., Bhat, R., MacKenzie, S. and Koen, C.** (2008). A cross-national study of the relationship between elderly suicide rates and life expectancy and markers of socioeconomic status and healthcare status. *International Psychogeriatrics*, 20, 347–360.
- Vassilas, C. A. and Morgan, H. G.** (1993). General practitioner's contact with victims of suicide. *BMJ*, 307, 300–301.
- Vassilas, C. A. and Morgan, H. G.** (1994). Elderly suicides' contact with their general practitioner before death. *International Journal of Geriatric Psychiatry*, 9, 1008–1009.
- Yip, P. S. F.** (2001). An epidemiological profile of suicides in Beijing, China. *Suicide and Life-Threatening Behaviour*, 31, 62–70.
- Yip, P. S. F. and Tan, R. C. E.** (1998). Suicides in Hong Kong and Singapore: a tale of two cities. *International Journal of Social Psychiatry*, 44, 267–279.
- Yip, P. S. F., Callanan, C. and Yuen, H. P.** (2000). Urban/rural and gender differences in suicide rates: East and West. *Journal of Affective Disorders*, 57, 99–106.
- Yip, P. S. F., Liu, K. Y., Hu, J. and Song, I. X. M.** (2005). Suicide rates in China during a decade of rapid social change. *Social Psychiatry and Psychiatric Epidemiology*, 40, 792–798.

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doi:10.1017/S1041610209991608

The relationship between elderly suicide rates and smoking in England and Wales

Completed suicides have been shown to be associated with smoking cigarettes in cohort studies

of mainly female registered nurses in the U.S.A. (Hemenway *et al.*, 1993), both sexes in the Finnish general population (Tanskanen *et al.*, 2000), male army recruits in the U.S.A. (Miller *et al.*, 2000a), males in the U.S. general population (Davey Smith *et al.*, 1992), army recruits in Sweden (Hemmingsson and Kriebel, 2003), males