Closure of a rural hospital with acute care function – was mortality affected?

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ABSTRACT:

BACKGROUND: In 1999 Ribe Hospital, Denmark, was closed, thereby increasing the distance to acute care for the citizens of Ribe County by up to 40 km. This paper analyses if the change in access to medical care had consequences for mortality in Ribe County.

MATERIAL AND METHODS: Data on mortality and population was retrieved from StatBank, an extensive database on the Danish society.

Mortality rates for Ribe County and the whole of Denmark were compared for the period July 1989 to July 2000 and for July 2000 to July 2005.

RESULTS: The mean quarterly mortality rate was 2.74 per 1000 inhabitants in Ribe County in the 10 year period before Ribe Hospital was closed. From the hospital closure in July 1999 to July 2005 the mean quarterly mortality rate was 2.72 per 1000 inhabitants in Ribe County. This was not statistically significant different from the mortality rates for the whole of Denmark or from the neighbouring Esbjerg County.

CONCLUSION: There were no statistically significant changes in mortality rates in Ribe County after closure of the small hospital with acute care function. This might be explained by increased ambulance services. Further epidemiological studies should try to clarify which factors that affect morbidity and mortality when hospitals close.

KEY WORDS: Hospital downsizing, acute care, mortality.

Introduction

In the years 1989-2000 a total of 26 hospitals in Denmark were closed (1). This development was a result of budget cuts and an intention of improving patient care.

In July 1999 Ribe Hospital (Ribe Sygehus) closed after debate on the possible consequences for Ribe County since the majority (85%) of admissions to Ribe Hospital were for acute illness (2,3).

There are however few published studies on the consequences for mortality in areas where rural hospitals have been closed. The present study will clarify if the closure of the local hospital affected mortality in Ribe County.

Materials and methods

The catchment area for Ribe Hospital was Ribe County and parts of neighbouring Bramming County. Only statistics for Ribe County (population of 18.000) were included in this analysis to ensure accuracy. Data on the quarterly number of deaths and population in Ribe and Esbjerg County and Denmark during the years 1989 to 2005 were retrieved from StatBank Denmark (www.statistikbanken.dk), August 2005. The StatBank is a public statistical database on the Danish society.

Mortality rates were calculated and data analysed using Student's t-test.

Results

From July 1989 to July 1999 the mean quarterly mortality rate was 2.74 per 1000 inhabitants (s.d. 0.42) in Ribe County, in neighbouring Esbjerg County it was 2.63 per 1000 inhabitants (s.d. 0.24) and in the whole of Denmark 2.92 per 1000 inhabitants (s.d. 0.19). These differences were non-significant. From July 2000 to July 2005 the mean quarterly mortality rate was 2.72 per 1000 inhabitants (s.d. 0.40) in Ribe County, in Esbjerg 2.68 per 1000 inhabitants (s.d. 0.15) and in the whole of Denmark 2.53 (s.d. 0.25); These differences where non-significant, and there was no significant difference between the mortality rates in Ribe in the two periods.

Discussion

The closure of Ribe Hospital meant that the distance to the nearest hospital increased by up to 40 km for some patients (3). At the time of closure, Ribe Hospital had a total of 32 beds (internal medicine only) and received the majority of the citizens of Ribe that were admitted to hospital (3). Since early treatment of acute illness in some cases can reduce mortality and morbidity it could be expected that the mortality rates of Ribe County would rise with increasing distance to the nearest hospital. In connection with the closure of Ribe Hospital, Ribe County increased ambulance services: there are now two ambulances covering the area compared to one before 1999 (Ribe Amt, personal communication).

Patients from Ribe are now being admitted to larger hospitals (eg. Esbjerg Hospital). Increased hospital volume has been shown to improve outcome (4,5) and some studies of the consequences of hospital closure have shown that mortality rates actually fell when small hospitals closed down for acute admissions (6,7). Although mortality is a crude measure of hospital performance it is commonly used as a measure of the quality of health care and have been used in similar studies (6,7,8). But other indicators of the quality of health care services, including changes in morbidity and costs are relevant to consider: In the year that Ribe Hospital was closed the total number of admission of citizens from Ribe decreased, the number of clients receiving home help increased, and the total impact on the county's health budget was low (3).

Thus neither the claims of the opponents nor the proponents of the closure of Ribe hospital can be supported in light of these results: there was no major increase in mortality, but no decrease or reduction in costs either.

In conclusion there were no changes in mortality rates in Ribe County after closure of a small hospital with acute care function, even though the distance to the nearest hospital increased by up to 40 km. This might be explained by increased ambulance services. Further epidemiological studies could help clarify how mortality and morbidity is affected when access to acute health care is changed on a regional level.

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