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Concentration of gynaecology and obstetrics in Germany: Is comprehensive access at stake?

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ABSTRACT

Financial soundness will become more and more difficult in the future for all types of hospitals. This is particularly relevant for gynaecology and obstetrics departments: while some disciplines can expect higher demand due to demographic changes and progress in medicine and medical technology, the inpatient sector for gynaecology and obstetrics is likely to lose patients in line with these trends. In this paper we estimate future demand for gynaecology and obstetrics in Germany and develop a cost model to calculate the average profitability in this discipline. The number of inpatient cases in gynaecology and obstetrics can be expected to decrease by 3.62% between 2007 and 2020 due to the demographic change and a potential shift from inpatient to outpatient services. Small departments within the fields of gynaecology and obstetrics are already incurring heavy losses, and the anticipated decline in cases should increase this financial distress even more. As such, the further centralisation of services is indicated. We calculate travel times for gynaecology and obstetrics patients and estimate the anticipated changes in travel times by simulating different scenarios for this centralisation process. Our results show that the centralisation of hospital services in gynaecology and obstetrics may be possible without compromising comprehensive access as measured by travel times.

1. Introduction

Financial soundness will become increasingly difficult in the future for all types of hospitals. Small hospitals that offer a large range of services face more severe economic problems on average than those with a stronger focus in their product portfolio, i.e. the specialisation and profitability of hospitals correlate positively. Therefore, there is ongoing discussion on implementing high-volume centres with a higher degree of specialisation [1]. This is particularly relevant for gynaecology and obstetrics departments: while some disciplines can expect higher demand due to demographic change and progress in medicine and medical technology, the inpatient sector of gynaecology and obstetrics is most likely to lose patients through these trends. Augurzky et al. provide an outlook on the anticipated number of inpatient cases in gynaecology and obstetrics departments over 2005–2020 using data from the Federal Statistical Office in Germany [2]. Their projections suggest a decrease in inpatient cases of between 7.3% and 15.1% by 2020. They conclude that smaller departments in particular are not cost-effective given decreasing demand.

While closing the least efficient hospitals may increase efficiency in the hospital market (e.g. [3]), concerns

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regarding access to care arise. The ongoing decline in patient numbers [2], together with a reduced number of hospital systems and even fewer departments [4,5] may jeopardise comprehensive access to health-care services. Augurzky et al. [2] impose the restriction that patients should be able to access at least one location within 30 min. They estimate that in a scenario with around 350 facilities providing basic care and 180 providing maximum care in gynaecology and obstetrics, the sector would become economically viable and comprehensive access to treatment in this discipline would be maintained. The assumption regarding comprehensive access relies on calculations of the accessibility of general, central locations as proposed by Pütz and Spangenberg [6]. Calculating the sufficient number of central locations depends on regional road and transport networks and accounts for future changes in population distribution. Whether these central locations include a hospital with an obstetrics or gynaecology department, however, is not guaranteed.

National and international studies have analysed access to hospital services for different patient populations. Varkevisser and van der Geest find that for some non-emergency services Dutch patients travel further than necessary [7]. Varkevisser et al. artificially increase travel times by 10% for non-emergent neurosurgical outpatients. Their results suggest that all hospitals have at least one nearby alternative [8]. Kansagra et al. assess the implications of a minimum volume standard for patients undergoing percutaneous transluminal coronary angioplasty in parts of the US and conclude that travel distances would be unaffected for most patients [9]. In these settings, timely access does not appear to be at stake.

For Germany, only two studies that analyse access to hospital services with respect to travel times could be identified. Hentschker and Mennicken show that the overall travel burden for patients with a hip fracture or abdominal aortic aneurysm in Germany would increase only marginally if low-volume hospitals offering these respective services exited the market [10]. A recent study by Spangenberg [11] finds that two thirds of German residents can reach their nearest hospital within 10 min and 97.5% within 20 min; this journey takes more than 20 min for just 2.5% of the population. However, their results concerning accessibility depend heavily on the assumption that all hospitals provide services for all conditions, i.e. hospitals are perfect substitutes for each other. This assumption is not tenable as Hentschker and Mennicken also show that out of more than 1700 acute care hospitals around 1200 treat patients with hip fractures and fewer than 400 treat patients with intact abdominal aortic aneurysm [10]. Hence, in assessing access to hospital services, assuming that all hospitals provide universal care underestimates the actual travel times for specific conditions.

For gynaecology and obstetrics departments international findings to date do not show clear signs of endangered access to hospital services through the consolidation or decline in the number of hospitals: Blondel et al. [12] find that a longer travel distance to a maternity unit is associated with a higher rate of out-of-hospital births, which raises concerns of higher maternal and infant health risks. However, overall mortality does not appear to be associated with increased travel distance to a maternity unit [13]. Pilkington et al. [14] investigate the actual closure of maternity units in France on accessibility as measured by distance and mean travel time. France has seen a 20% decrease in the number of maternity units with high regional variation in the rate of closures. However, travel times did not increase and even declined to some extent.

If travel time is affected by consolidation, the question arises whether this has an impact on health outcomes. Buchmueller et al. study the effects of hospital closures in Los Angeles County on access to care for patients experiencing a heart attack [15]. Their results suggest that an increased distance to the closest hospital results in increased mortality from heart attacks and unintentional injuries. Engjom et al. analyse the effects of the centralisation of obstetrics facilities in Norway on the risk of unplanned delivery and maternal morbidity and find small effects on these outcomes [16]. A study by Grzybowski et al., who use data from Canada, concludes that greater travel distances increase adverse outcomes for patients in obstetrics. However, the authors find a significant effect only for catchment areas with travel time greater than 4 h [17]. Ravelli et al. study the effect of driving times to hospitals on mortality and adverse neonatal outcomes in women giving birth in the Netherlands, adjusting for urbanisation, tertiary care centres and hospital volume, among others [18]. They find that travel times longer than 20 min are associated with an increase in all adverse health outcome variables, including mortality.

Given that increased distance to hospitals may result in adverse health outcomes, it is essential to investigate whether consolidation leads to an increase in travel times. To strengthen our travel time analysis, we follow Augurzky et al. [2] to estimate future demand in gynaecology and obstetrics in Germany and develop a cost model that calculates the average profitability for different department types. Our results confirm the findings of Augurzky et al.: further centralisation of hospital services in gynaecology and obstetrics departments is necessary as demand will decrease in the future and small departments in particular are already incurring heavy financial losses.

In the main part of this paper, we calculate travel times for gynaecology and obstetrics patients using the existing road and hospital infrastructure to estimate anticipated changes in actual travel times following centralisation. We show under different scenarios that the centralisation of hospital services does not appear to compromise overall access to care. We are particularly concerned with two dimensions of an access framework for hospital services [19]: availability, i.e. whether the supply of hospital services can meet demand, and physical accessibility, i.e. whether patients have suitable proximity to the nearest hospital. Both availability and accessibility are seen as important dimensions of patient–service interactions that should be considered in any health policy decision [20].

2. Data and methods

We use administrative data from 2007 for our analyses. This comprises all inpatient cases in Germany collected according to §21 KHEntgG for reimbursement purposes