International benchmarking of hospital utilisation: How does the South African private sector compare?

By S Ranchod, B Childs and M Abraham and R Taylor

ABSTRACT

In this paper we compare the hospital in-patient admission rates and length of stay of the South African medical scheme population with a set of international comparators. Such an international comparison is useful in developing reasonable expectations of the utilisation that can be achieved in the private hospital sector in South Africa, and as a means of identifying characteristics of the environment that are particularly unusual. It is particularly important that comparisons are on a like-for-like basis, and explicitly adjust for differences in data definitions, patient demographics and clinical case-mix. We used an economic basis for determining the comparator set as opposed to a health-systems basis. Considering two separate data sources, South Africa appears to have relatively high admission rates with low length of stays. On a combined basis, the bed days used per 1 000 for South Africa appears near the lower end of the spectrum which would indicate South Africa is making fairly efficient use of its hospital resources. In interpreting the results it is necessary to consider structural differences between countries.

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1. INTRODUCTION

1.1   Given the stark disparities between the public and private hospital sectors in South Africa, meaningful national benchmarks are difficult to establish – increasing the relevance of looking at global experience. Ramjee (2013) undertook a comparison of the costs of hospitalisation across the two sectors and comments on the differences in inputs, outputs, objectives and quality. International benchmarking plays an important role in establishing accountability, anchoring expectations and identifying outliers. There is extensive international benchmarking of both hospital utilisation and price, for example, between the Organisation for Economic Cooperation and Development (OECD) countries; however, such benchmarking is almost entirely absent for South Africa's private hospital sector.

1.2   The aim of this paper is to compare the hospital in-patient admission rates and length of stay of the South African medical scheme population with a set of international comparators. It is an update of work undertaken in 2009 by van Eck and Besesar (2009) where a comparison was undertaken between the South African medical scheme population and the United States of America (USA). The original analysis was undertaken in response to a report produced by the Council for Medical Schemes (Council for Medical Schemes, 2008) highlighting how much higher admission rates in South Africa were compared to the USA.

1.3   Rather than simply update the South African to USA comparison, we have elected to broaden the comparator set to a wider set of countries. The recent working paper published by the OECD health division on specialist pricing practices in some OECD countries (Kumar et al., 2014) included much discussion on hospital pricing and it was deemed useful to supplement this information with an updated and broadened study on hospital utilisation.[1]

1.4   We provide some background on the South African private hospital industry, outline the methodology used to identify comparator countries, describe the data that were obtained for this study and describe the methodology used to compare utilisation between countries on a like-for-like basis. We pay particular attention to data definitions and risk adjustment. We then present the results obtained, and discuss the relevance of these results in the South African context.

2. BACKGROUND AND CONTEXT

2.1   South Africa has a dual healthcare system, with publicly-funded and -provided healthcare, operating in parallel to privately-funded and -provided healthcare. Approximately half of total expenditure occurs in the private sector (Blecher et al.,

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1   This research was funded by the Hospital Association of South Africa. An earlier version of the work is in the public domain (www.insight.co.za)

2011). This means that there are two distinct sectors (public and private) offering hospital services that are separately financed, and that deliver care to (mostly) different subsets of patients.

2.2 Private hospitals are concentrated in the major metropolitan areas and facilities are predominantly owned by three major hospital groups (Life Healthcare, Mediclinic and Netcare). They largely provide services to medical scheme beneficiaries. As at the end of 2013 there were approximately 8.8 million beneficiaries covered by medical schemes, representing 16.25% of the population (Council for Medical Schemes, 2014, Statistics South Africa, 2014). Medical schemes are tax-exempt, not-for-profit entities owned by their members. They provide near-indemnity health insurance cover and are regulated under social-solidarity principles.

2.3 Econex (2013) estimates that the private sector constitutes 35% of hospitals and 28% of hospital beds. There are 3.96 beds available in the private hospital sector per 1 000 medical scheme beneficiaries. The true level of bed availability is slightly lower than this as there are some non-medical-scheme patients who utilise private hospitals on an out-of-pocket basis, or who are covered by other insurance mechanisms (for example, hospital cash plans, medical insurance and critical illness cover). When we compare bed availability to other countries (Figure 1) we see that the South African private sector sits below the median (4.13) and mean (4.67). This is a supply-side figure and is not risk-adjusted in any way.
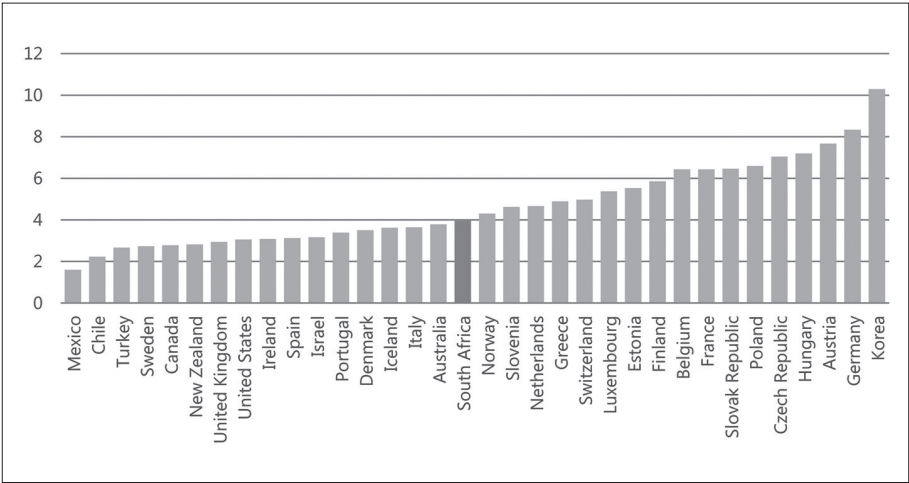

Figure 1 Beds per 1000

Source: OECD Health Statistics Database 2014 and Econex (2013)

2.4 This perspective does not serve to address the issue of the relative resourcing of the public and private hospital sectors in South Africa (and the equity implications thereof), but it does provide international context for the resourcing of the private sector in an absolute sense. According to the Health Systems Trust (2014) there are approximately 1.9 beds per 1 000 in the public sector – roughly half of private sector capacity.

3.   COUNTRY SELECTION

3.1 There are a variety of possible approaches to determine an appropriate set of comparator countries. Thematically, the comparator set can be identified considering the healthcare system characteristics of each country, or by considering the economic characteristics of each country, with each approach having its own challenges. In this paper we have elected to consider an economic basis for comparison because of the diversity and multi-faceted nature of healthcare systems.

3.2 The primary basis for the comparison to be made was the Gross National Income (GNI) per capita of each country. GNI is one possible measure of national income and output. A "domestic" measure is geographical in nature, whilst a "national" measure is based on citizenship of a country. A "national" measure makes sense for our purposes because we are interested in the sub-population that belongs to medical schemes (i.e. we are not using a geographical boundary).

3.3 Economic measures are also differentiated as "expenditure" or "income" measures. An "income" approach equates total output to total factor income (including employee compensation, interest income, rental income, royalties and profit). We have selected an income measure because there is a clear differential between the incomes of the sector of the South African population covered by medical schemes, and those that are not.

3.4 The World Bank classifies South Africa as an "upper-middle-income" country based on a GNI per capita of $6,820. Income inequality in South Africa means that the population can be segmented into an upper-income group and a lower-middle-income group. Furthermore, we know that medical scheme cover is concentrated in the top two income quintiles of the South African population (McIntyre, 2010). Given that this research aims to compare the utilisation of private hospitals only, it makes sense to compare this sector with countries with similar economic profiles to the sub-population using these private facilities. The corollary is also true – it would not be meaningful to compare the performance of the South African public hospital sector to countries classified as upper-middle-income or upper-income.

3.5 The concept of GNI does not apply to sub-populations, and it is therefore not possible to calculate the GNI of the medical scheme population. General Household

Survey (GHS) data were used to segment the South African population into medical scheme and non-medical scheme sub-populations, and to estimate the income differential between the two sub-populations. This method is not accurate in the sense that the GHS does not reflect all sources of income. However, it does provide a useful proxy.

3.6   From this segmentation method, a GNI figure of \$25 416 was estimated for the medical-scheme sub-population. This is comparable to an upper-income country using the World Bank's definitions. By contrast the non-medical-scheme sub-population was estimated to have a GNI of \$3 446.

3.7   The GNI figures used to identify comparable countries were obtained from the World Bank and are calculated for the year 2012 using the Atlas method.[2] This dataset was comprehensive but there were some countries where GNI data were unavailable. However, most of these were small island states and the only two countries of potential significance for this investigation with missing data were Argentina and North Korea. The GNI for Argentina was obtained for the year 2011 from "tradingeconomics.com". This was then inflated using US consumer inflation to provide a figure for 2012.

3.8   The list of countries was then trimmed down by using two simple criteria. The first was to exclude all countries with GNI of less than half of the derived South African 'private' figure of \$25 416. Following this, the second criteria excluded all countries with populations of less than one million people as these were typically small island states (including some tax-havens). This resulted in a list of 44 countries. This subsequently reduced to 42 countries due to data availability.

4.   DATA

4.1   The comparative nature of the research was complicated by differences in the quality and depth of available material for each country. The amount of available and useful information varies depending on the data source and country. The data checking and cleaning that was undertaken is clearly documented, and particular issues relating to data definitions are highlighted in this section.

4.2   South African Data

4.2.1 The dataset used for the purpose of deriving and adjusting the admission rates and length of stay for the South African medical scheme population was provided by participating HASA members to Insight Actuaries and Consultants ('HASA data'). The data includes all admissions to acute-care private hospitals (practice code 057/058) from Life Healthcare, Mediclinic and Netcare.

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2 The Atlas Method was developed by the World Bank in order to allow for comparisons that were not impacted by exchange rate volatility and consequently uses a three year exchange rate average for conversion to a standardised currency (typically dollars). More information is available at http://econ.worldbank.org/

4.2.2 Data were obtained directly from the hospitals due to some concerns with the data published by the Council for Medical Schemes (CMS). In addition, the CMS only publish highly summarised data. For the purposes of this project, detailed data were required in order to adjust appropriately for differences in case-mix and demographic profile between countries.

4.2.3 Data were aggregated over a three year period (2011, 2012 and 2013). Summary data were provided by age bands, gender and ICD10-3 code. The key variables provided were:
— the number of day cases;
— the number of admissions (including day cases); and
— the number of bed days.

4.2.4 The age and gender profile of the South African medical scheme population was obtained from collated medical scheme statutory returns for 2011 and 2012. The total medical scheme population for 2013 was available from the CMS Annual Report 2013/14 (Council for Medical Schemes, 2014). The 2013 age and gender distribution was assumed to be the same as for 2012.

4.3   International Data Sources

4.3.1 A thorough desktop search was conducted which resulted in data being obtained for 34 countries out of the 44 in the comparator set. Data were required in a format that would enable comparison on a like-for-like basis – this required a level of detail that was not available for all countries. There were challenges in finding data for all countries, including language differences. This is particularly problematic given that data definitions were a concern. In addition, data are frequently retained by governments but not available for public use or, where available for public use, are not in a format that would be useful for this analysis (for example, only reporting data for the top 100 diagnostic groups).

4.3.2 Data were found from three distinct sources. These were the OECD, the European Hospital Morbidity Database and from national governments. It should be noted that there were some additional countries from the first two sources for which data were available. It was decided to include these data in the available database. These were Hungary, Iceland, Luxemburg, Malta, Mexico, Poland and Turkey.

4.3.3 The OECD collects data on hospital utilisation in all of its 34 member nations. Figures for discharges and length of stay were available by broad diagnostic category (chapter-level ICD-10 code). However, the data were not available by age, gender and diagnostic category. All the data in this database had consistent definitions.

4.3.4 The second major source was the European Hospital Morbidity Database (EHMD), a data repository of all publicly available European hospital data. The data for each country aimed to include information on day cases, bed days and discharges (and hence length of stay) broken down into diagnostic category and by age and gender. However, not all countries in the database had their data in such a detailed format, with a number of countries only providing data by broad diagnostic category or simply providing aggregate figures. Some countries also simply provided discharges or lacked data on day cases. In addition, the countries used four different diagnostic groupings: ICD 9-3, ICD 10-3, ICD 10-4 and ISHMT (International Shortlist for Hospital Morbidity Tabulation). The latter three are compatible groupings and consequently we were able to map the data for all these nations on to the ISHMT format. However, the countries with data in ICD 9-3 coding were not compatible and could consequently not be used. In addition, to ensure that the data used were relevant, the most recent year of data was used provided that this was from 2010 or later. This database was consequently reduced from a list of 32 to 22 countries where up-to-date and comprehensive age, gender and diagnostic data were available. The definitions used for day cases, bed days and discharges were the same as used by the OECD.

4.3.5 The final general source of data obtained was from individual national governments (either their health department or a statistics department). However, these data were not used, other than as a check on the data obtained from the other two sources as in all cases it was either superseded by the data from the other sources or did not provide useful additional information.

4.4 Data Cleaning

4.4.1 The data were cleaned, checked for errors and collated. The data obtained from the OECD was of a high standard and, consequently, cleaning and checking resulted in very few data changes and/or adjustments. The EHMD data required more adjustments to be in a readily usable form. The different diagnostic coding used by different countries required careful cross-mapping. A crosswalk was developed in order to do this. Furthermore, certain population groups had to be combined to ensure comparability with the South African data (for example, the South African data combined all ages above 75).

4.4.2 It should be noted that it is possible that the data for some countries does not include all hospitals (for example, only public or publicly-funded hospitals are included).

4.5 Data Definitions

4.5.1 For both the OECD database and the EHMD the same definitions were used for discharges (in-patient discharges), bed days, average length of stay and day cases. Consequently, these were the definitions used for the analysis.

4.5.2 A discharge (or in-patient discharge) is defined as the release of a patient who was formally admitted into a hospital for treatment and/or care and who stayed for a minimum of one night. This includes emergency cases and urgent admissions when they resulted in an overnight stay. Hence, this additionally includes both formal admissions and patients admitted as day-care patients but who have been retained overnight due to complications. In-patient discharge excludes day cases and outpatient cases. A discharge from any hospital for any reason was counted; including death, transfer to a different hospital and discharges of healthy newborns. Any transfers within a hospital were not counted as a discharge.

4.5.3 The South African data refer to admissions, and not discharges. It was assumed that these are broadly consistent (i.e. that the mortality-rate in hospital is not material at a system-wide level).

4.5.4 It is important to note that, in the South African private sector, healthy newborn babies are not counted as separate admissions (as distinct from their mothers) since separate accounts are not created for them. On inspection (comparing maternity-related admissions to admissions for under 1s) it appeared that there were other countries where this is the case. Consequently, for these countries the admission rate will be understated relative to comparator countries (as will bed days per 1 000).

4.5.5 South Africa appears unusual in that the gap between the two sets of admission rates is larger than most countries, but smaller than countries where newborns are clearly excluded. In South Africa, newborn babies with complications are admitted in their own right and this may account for the difference.

4.5.6 A bed day is defined as a day during which a person admitted as an in-patient is confined to a bed and in which the patient stays overnight in a hospital. The number of bed days for a patient is counted as the date of discharge minus the date of admission (for example, a patient admitted on the 25th and discharged on the 26th is counted as 1 day).

4.5.7 Average length of stay (ALOS) is calculated by dividing the number of bed-days by the number of discharges during the year.

4.5.8 Day cases are cases where the patient was either never formally admitted and allocated a bed, or where the bed-days for the patient are zero i.e. the patient entered and left hospital on the same calendar day.

5. METHODOLOGY

5.1 This research is focused on measures of hospital utilisation (as distinct from total expenditure, or the pricing of hospital services). The key measures that are used are: in-patient admissions per 1 000 lives, average length of stay and bed days per 1 000 lives.

5.2   According to the OECD (2013): "The average length of stay in hospitals (ALOS) is often used as an indicator of efficiency. All other things being equal, a shorter stay will reduce the cost per discharge and shift care from in-patient to less expensive post-acute settings. However, shorter stays tend to be more service intensive and more costly per day. Too short a length of stay could also cause adverse effects on health outcomes, or reduce the comfort and recovery of the patient. If this leads to a greater readmission rate, costs per episode of illness may fall only slightly, or even rise."

5.3   They go on to say: "Hospital discharge rates measure the number of patients who leave a hospital after receiving care. Together with the average length of stay, they are important indicators of hospital activities." The bed days per 1 000 measure brings these two measures together.

5.4   Removing Outpatient Cases and Day Cases
5.4.1   All the data used excluded outpatients and day cases. This includes all ambulatory cases, visits to emergency units (that did not result in an admission), and same-day cases. This was also done in the van Eck and Besesar (2009) study.

5.4.2   Day cases are reported explicitly for most countries in the comparator set. South Africa's private sector sees higher than average (68 versus 60 per 1 000) day cases than the comparator countries for which day cases data are available. South Africa's figure is close to the 75th percentile for day cases per 1 000 (70). The proportion that day cases constitute of total admissions varies considerably from country to country, and South Africa's day-case rate (28%) is slightly above the median and average for comparator countries where the data were available.

5.4.3   Differences between countries in the number of day cases per 1 000 may be due to structural differences (for example, the existence and popularity of day clinics and the availability of doctors after hours). A low day-case rate may also point to unnecessary admissions for low-acuity cases (i.e. it may be more efficient for cases to be treated as day cases as opposed to being admitted). As van Eck and Besesar (2009) point out, countries like the USA have a well-developed infrastructure of day clinics and unattached operating theatres (surgi-centres). The equivalent facilities are not as widely available in South Africa. There is recently increased activity in this sector where specialist day hospitals are attracting investment.[3] Consequently ambulatory and day cases are treated in acute care facilities on a 'day-case' basis. The inclusion of these cases in the comparison would distort the South African admission rate upwards, and the average length of stay downwards.

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3   www.moneyweb.co.za/moneyweb-industrials/day-hospital-groups-seeks-buyin-from-medical-schem

5.5   Scaling up the HASA Data

5.5.1 The data obtained for South African private hospitals represents a subset of the market. The three large hospital groups from whom data were obtained represent 78.3% of beds in the private sector.

5.5.2 In order to derive the in-patient admission rate to private hospitals in South Africa, it was assumed that the proportion of admissions seen by the three large hospital groups is equal to the proportion of private hospital licensed beds in these groups. It was also assumed that there were no significant differences in average length of stay between the hospitals included in the dataset and those excluded. Figures were checked against industry-wide data published by the Council for Medical Schemes and the Health Systems Trust. Using this proportion, the HASA admissions data was proportionately increased to represent a figure for the total medical scheme population.

5.6   Adjusting for Demographic Profile and Burden of Disease (Case Mix)

5.6.1   WHAT IS CASE MIX?

5.6.1.1   Each individual patient treated by a hospital presents with different clinical needs depending on their diagnosis. They will consequently receive different amounts and types of services (Fetter et al., 1980). The term "case mix" refers to the relative proportions of the types of patients treated by a hospital (Fetter et al., 1980).

5.6.1.2   If we consider the aggregate profile of patients treated by a country, some countries will treat a group of patients that require a more sophisticated and expensive set of treatments than others. These countries are considered to have a more "severe case mix" or a "heavier case mix".

5.6.1.3   The term "case mix groupers" is used to describe statistically-developed mechanisms used to group patients into homogenous sub-sets, an example of which are Diagnosis Related Groups (DRG) classification systems. DRGs group patient treatments into a restricted set of clinically and economically homogeneous groups, according to the resources used. These groupers are used to assist the planning and management of healthcare (Heavens, 1999) and may also be used for the reimbursement of healthcare providers.

5.6.2   CHOICE OF RISK-ADJUSTMENT FACTORS

5.6.2.1   The choice of risk-adjustment factors for this study was constrained by data availability. For the OECD data it was not possible to adjust by age and gender, and the only consistent clinical information available across countries was the high-level disease chapter. The countries covered in the European database have more information available to enable more precise risk adjustment. For these countries we were able to adjust for age, gender and ISHMT group.

5.6.2.2 Figure 2 illustrates the distribution of in-patient admissions by age and gender (from the HASA data). The importance of adjusting for differences in age profile between countries can clearly be observed. The profile of admissions is also distinctly different for males and females. The significant effect of the child-bearing years can clearly be seen. This is also reflected in the shorter average length of stay for females in those years (Figure 3). The average length of stay rises with age (with the exception of neonatal cases).
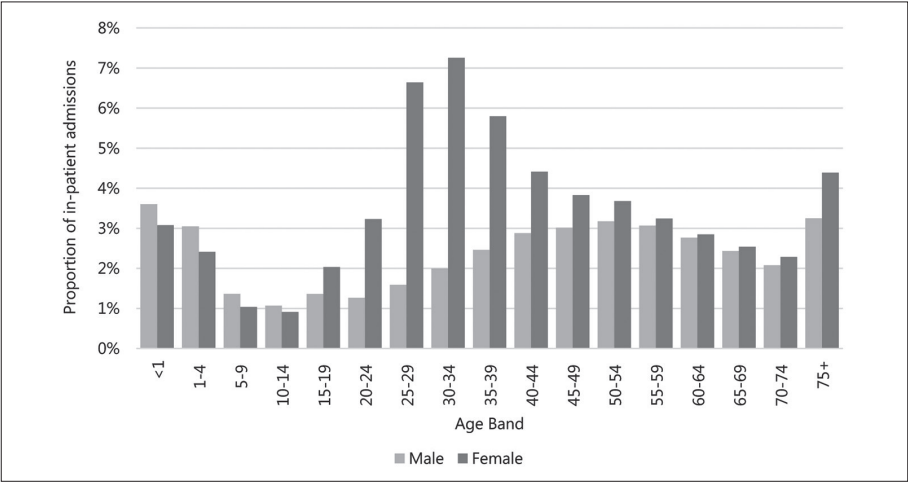
FIGURE 2 Age and gender distribution of in-patient admissions (HASA)
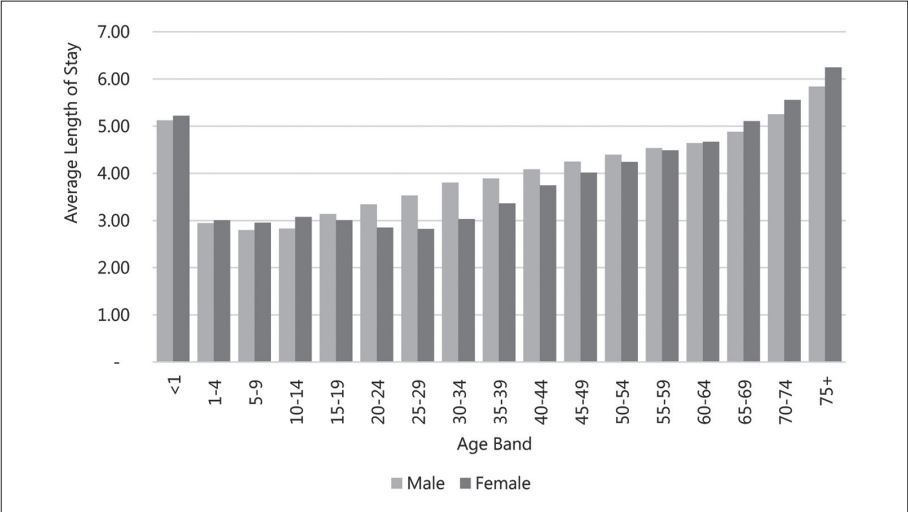
FIGURE 3 Age and gender distribution of average length of stay (HASA)

5.6.2.3 When we compare the age profile of the South African medical scheme population with the age profile of other countries, we notice that there are distinct differences between countries. The South African medical scheme population has a high proportion of children and a lower proportion of elderly lives (this reflects the generally young age profile of South Africa). However, due to the effects of anti-selection, there is a relatively low proportion of young adults (age 20–24) as they tend to opt out of the system.

5.6.2.4 The variations in average length of stay per clinical category can be seen in Figure 4.

5.6.2.5 The distribution of admissions across these categories varies substantially between countries (Figure 5). In part this can be explained by differences in the age and gender profile, but the burden of disease will also have an effect. Unfortunately, the disease chapters are organised anatomically and do not provide a "resource-use-homogenous" grouping (as would, for example, DRGs).

5.7   Maternity Cases and Newborns

5.7.1 In the van Eck and Besesar (2009) study an explicit adjustment was performed to allow for differences in the maternity rate. Differences between countries will arise due to differences in the underlying fertility rate, and the extent to which births take
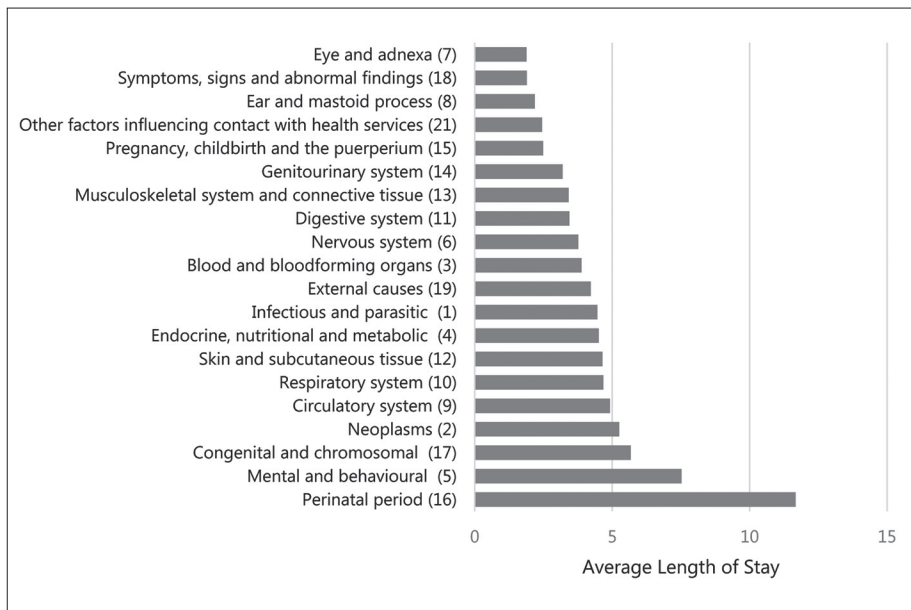

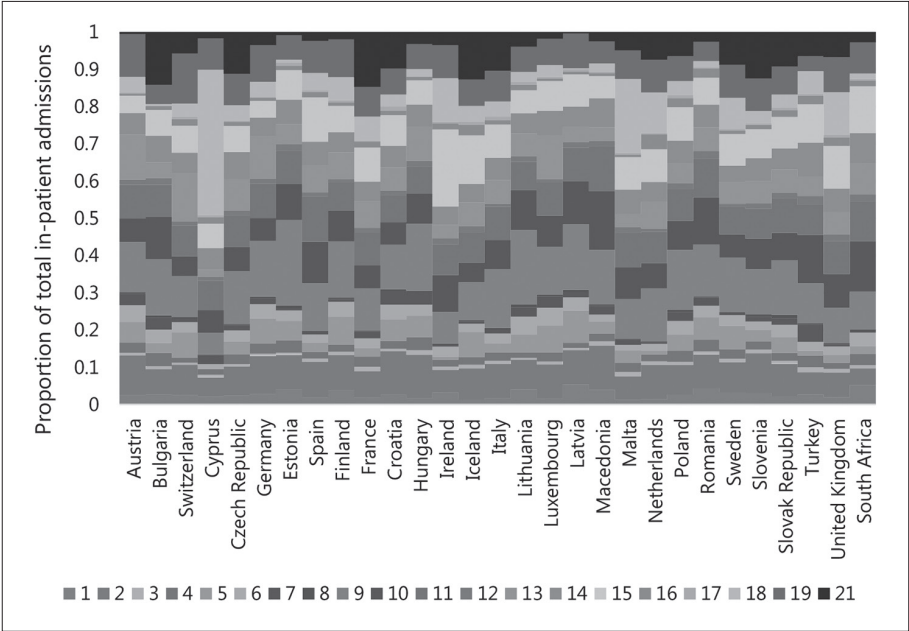FIGURE 4 Average length of stay per disease chapter (HASA)

FIGURE 5 Variation in the proportion of admissions for disease chapters 1 to 21 across countries

place in hospital. A higher than normal maternity rate is expected in the South African medical scheme environment due to high levels of anti-selection. This was not explicitly allowed for in this study, but is adjusted for to some extent in the risk adjustment (ISHMT chapter 15). Differences in the maternity rate also affect admission rates for under-1s. This is compounded by the differences in the way in which newborns are dealt with in the data. We provide a set of results where both maternity cases and newborns are removed.

6. RESULTS

6.1 Results are presented separately for the two major data sources that were utilised: the EHMD and the OECD. This is because of the differences in the extent of risk adjustments that could be performed.

6.2 Results are risk-adjusted at various levels depending on the data available within each dataset used. Admission rates are adjusted for age and gender where this information is available. Length of stay is risk-adjusted for age, gender and ISHMT classification where this information is available (all comparator countries data are risk-adjusted to South Africa's mix of factors).

6.3   The results in this report are focused on how South Africa compares at an aggregate level to a set of other countries. The factors driving the utilisation of each individual country are complex, and require substantial understanding of each of the health systems. Factors influencing utilisation will include both those relating to the supply side and demand side. According to the OECD (2013): "Hospital activities are affected by a number of factors, including the demand for hospital services, the capacity of hospitals to treat patients, the ability of the primary care sector to prevent avoidable hospital admissions, and the availability of post-acute care settings to provide rehabilitative and long-term care services".

6.4   Comparison to Countries in the European Hospital Morbidity Database

6.4.1 Of the two data sources, the EHMD is the richer source and presents scope to adjust for age, gender and case-mix. We present the results of the comparison of South Africa with the countries in this dataset first.

6.4.2 In Figure 6, countries are sorted by the raw unadjusted length of stay. Two adjustments done: the first is just based on the high-level disease chapters. This is in line with the adjustments that were possible for the OECD countries. The second adjustment was more granular and took into account age, gender and the more detailed diagnosis codes as these are available from EHMD. Raw length of stay figures range from 5.6 to 11.1, whereas length of stay adjusted for age, gender and ISHMT
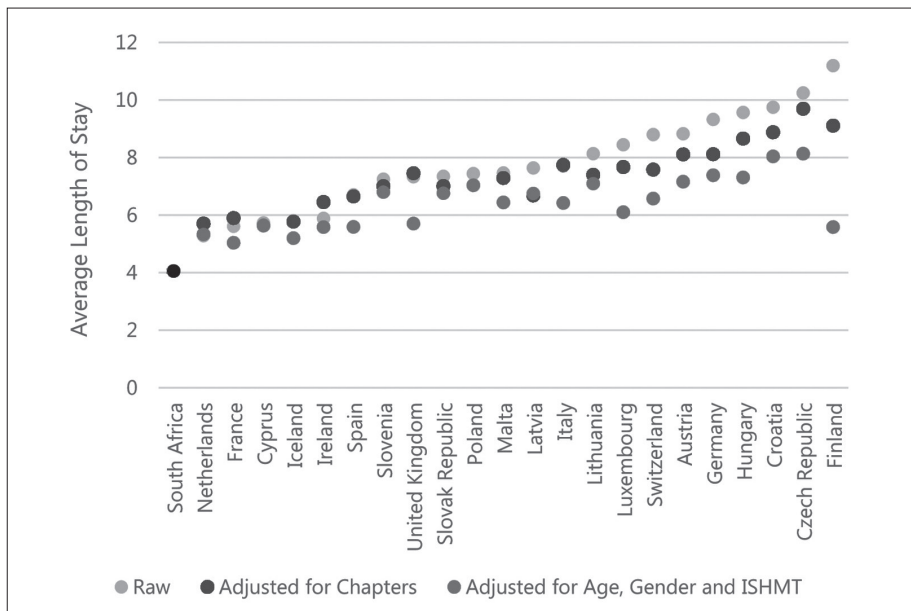

FIGURE 6 Impact of risk adjustments on average length of stay figures (EHMD)

range from 4.9 to 8. Risk adjustment narrows the range observed, or put another way, risk-profile differences explain some of the variation seen between countries.

6.4.3 It is important to note that the differences in average length of stay between countries are overstated if we do not adjust fully for age, gender and case-mix (Dreyer, 2013). It is also important to note that the average length of stay in South Africa is lower than all other compactor countries, even once the data for comparator countries has been risk-adjusted. The result of the risk adjustment is particularly extreme for Finland where the population has a very different age profile to South Africa. Finland spends 2.1% of GDP on long-term care which is likely to skew average length of stay figures.

6.4.4 In Figure 7 countries are sorted by the raw, unadjusted admission rate per 1 000. The risk adjustment was based on age and gender (i.e. the admission rates per age and gender category were reweighted based on the structure of the South African population). Admission rates range between 78.7 and 273.4 per 1 000, whereas risk-adjusted admission rates range between 49.8 and 228 per 1 000.

6.4.5 The impact of the adjustment is greatest for countries with an elderly population (for example, Finland, Germany and Austria). The in-patient admission rate per 1 000 for South Africa (175.76) is higher than the average (149.08) for comparator countries on a risk-adjusted basis, and closer to the 70th percentile (177.37).
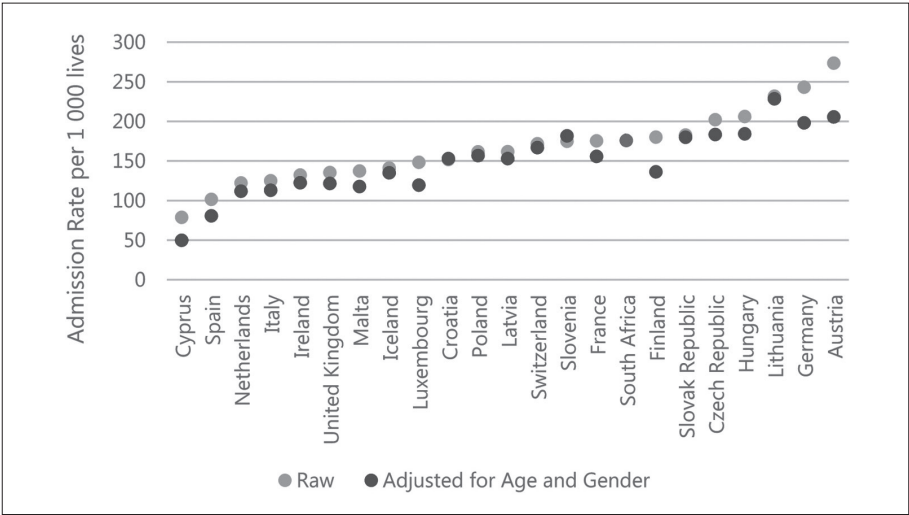

FIGURE 7 Impact of risk adjustments on in-patient admission rate per 1 000 (EHMD)

6.4.6 A relatively high admission rate would be expected in a market with private health insurance and private delivery, as compared to a publicly-funded or publicly-delivered system where rationing is likely to be tighter. All of the comparator countries have a large public sector coverage or a high percentage of healthcare expenditure in the public sector. Amongst the comparator countries, the average extent of public sector coverage is 77%, and the average percentage of healthcare expenditure in the public sector is 72%.

6.4.7 Rationing mechanisms such as waiting lists for elective procedures, strict gate-keeper and referral pathway rules, and exclusion from benefit packages serve to reduce the admission rate. When people buy private health insurance, they buy increased access and freedom of choice, and therefore it would be expected that admission rates may be higher than national systems.

6.4.8 It is also important to note that the South African medical scheme market is voluntary. There is evidence of adverse selection against schemes (Ramjee et al., 2014): a feature of the environment that would impact adversely on admission rates. The South African private sector also lacks supply-side rationing mechanisms – medical schemes have been criticised for not adequately engaging in active purchasing (McLeod and Ramjee, 2007).

6.4.9 It is useful to consider admission rate and length of stay together. The figures are considered on a risk-adjusted basis below (Figure 8).
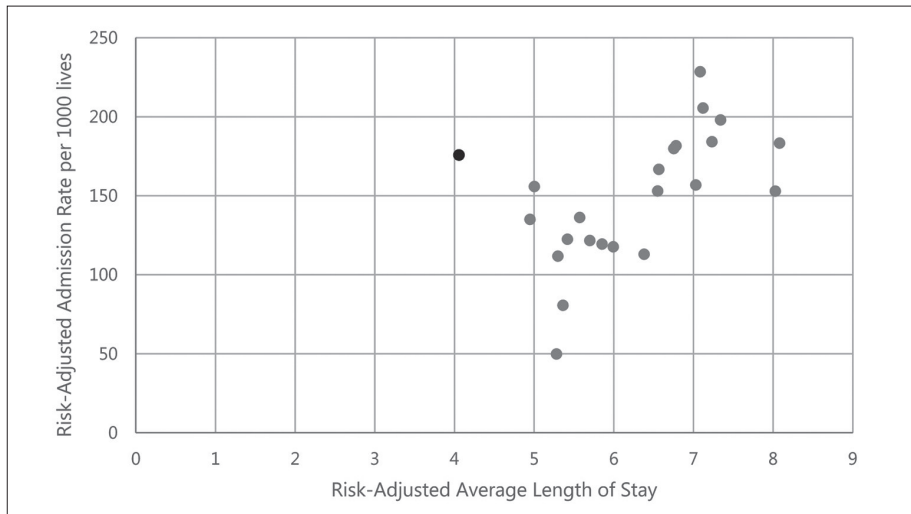

FIGURE 8 Relationship between risk-adjusted length of stay and risk-adjusted admission rate per 1 000 (EHMD)

6.4.10 On a risk-adjusted basis South Africa remains above average in terms of admission rate and the lowest in terms of length of stay. Admission rates and length of stay figures can be combined to derive bed days per 1 000 which indicates the overall utilisation level of hospital services across comparator countries (Figure 9).

6.4.11 South Africa ranks 8th out of 23 countries in terms of total bed days per 1 000 population, on a risk-adjusted basis. If we repeat this analysis but exclude maternity cases and newborns this shifts to a rank of 9th out of 23 countries. The biggest decreases in bed days per 1 000 are for those countries where newborns are counted as separate admissions and those where the maternity rate is high.

6.5 Comparison to OECD Countries

6.5.1 The OECD dataset does not have utilisation data by age and gender, or detailed clinical coding. For these countries the only risk adjustment done was to the average length of stay based on the high level disease chapters. No adjustment is possible for the admission rate, as demographic profile information is required for such an adjustment. Nevertheless, adjusting for the known clinical chapter differences causes some notable changes to observed country statistics (Figure 10).

6.5.2 On this larger comparator set, South Africa ranks 9th out of 42 countries at 713 bed days per 1 000 (Figure 11). Mexico shows the lowest figure in the comparator set at 234 per 1 000, and Korea is the highest at 2 486 per 1 000.
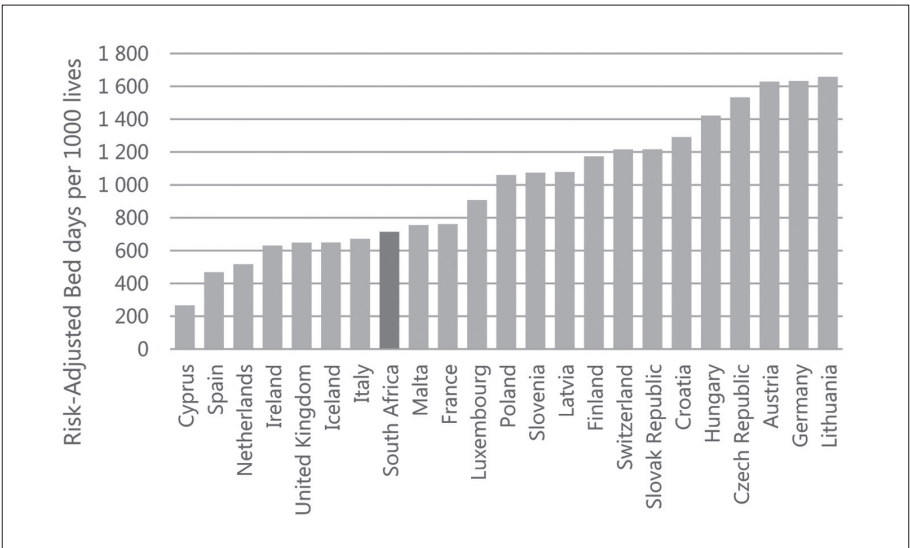

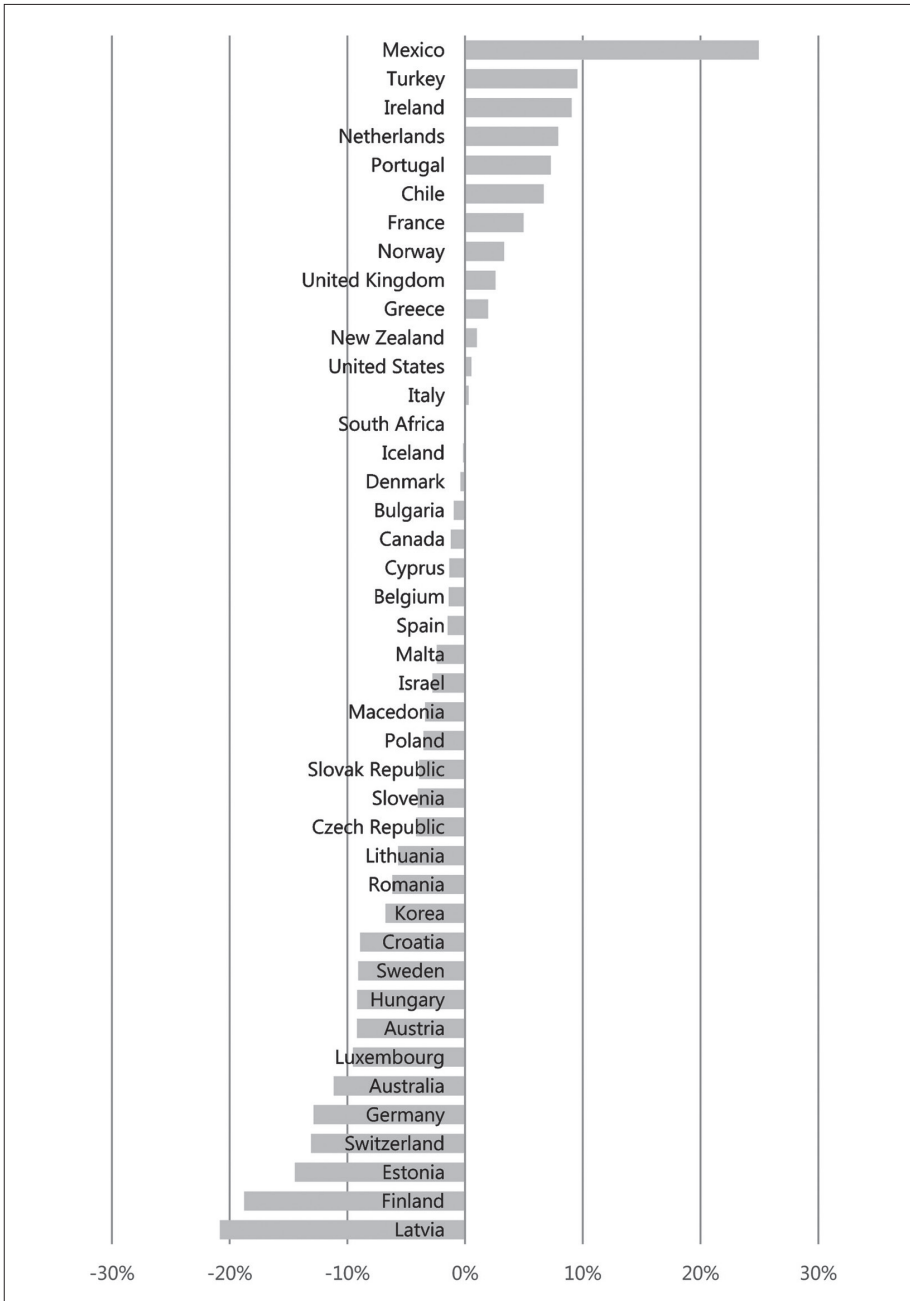FIGURE 9 Risk-adjusted bed days per 1 000 (EHMD)

FIGURE 10 Percentage change in average length of stay due to risk adjustment (OECD)
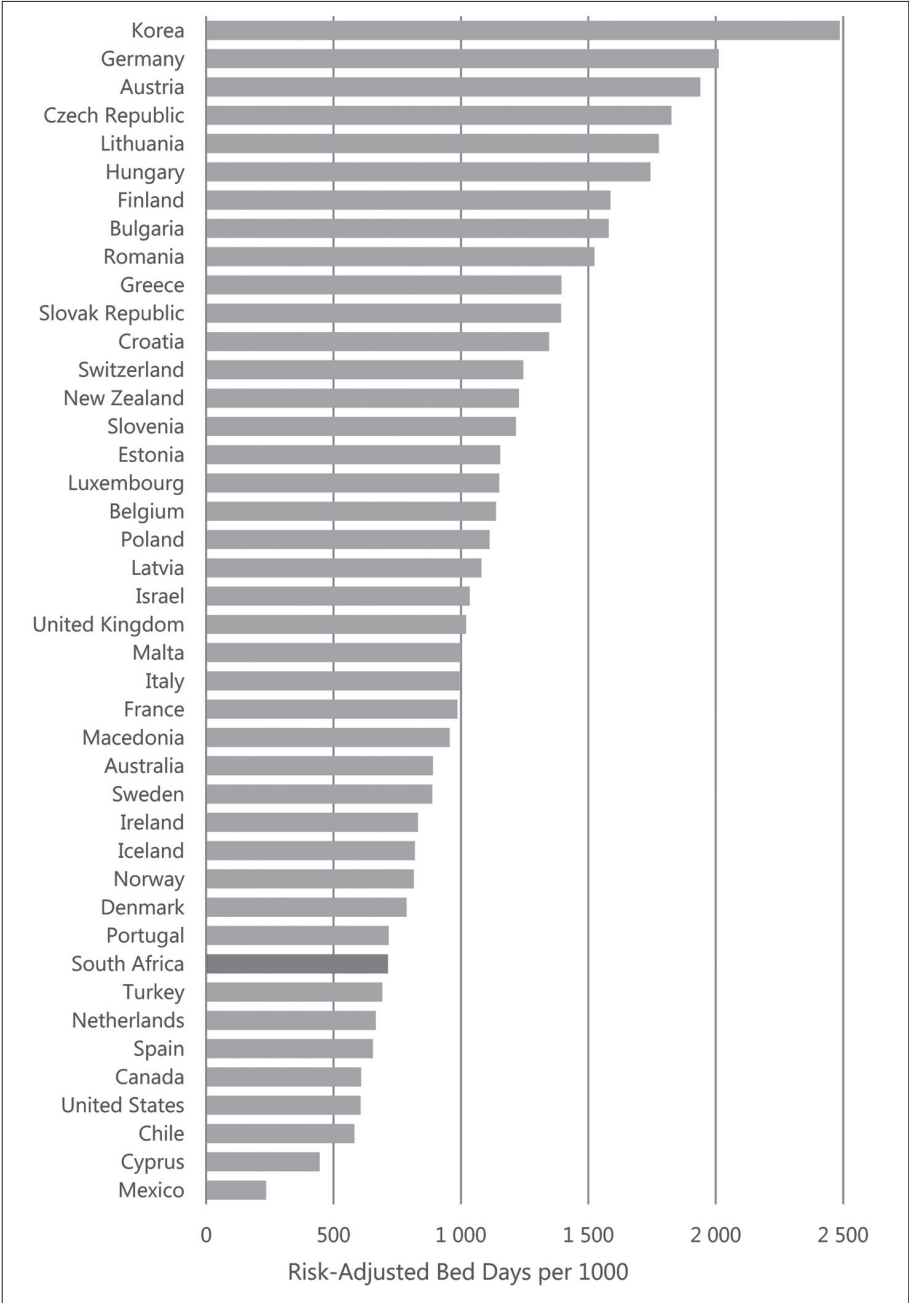
FIGURE 11 Risk-adjusted bed days per 1 000 (OECD)

6.5.3 The OECD dataset also contains information on the hospital beds available in each comparator country. Plotting this against the bed days used per 1 000 a very clear pattern emerges (Figure 12). Bed days used correlates very highly with available beds per 1 000 (80%). South Africa is aligned with this correlated pattern, with comparatively low available beds and bed days used. Note that we have not adjusted the available beds downward to reflect the use of these beds in South Africa for same-day admissions, as has been discussed above.

7.   CONCLUSION

7.1   Undertaking an international comparison of hospital utilisation is potentially useful as a means of establishing expectations for South Africa and identifying characteristics of the environment that are particularly unusual. However, it is clear that it is important to undertake such comparisons carefully. It is particularly important that comparisons are on a like-for-like basis, and do not ignore differences in data definitions, patient demographics and clinical case-mix.

7.2   It is also important to select a relevant comparator set. We have used an economic basis for comparison as opposed to a health-systems basis. Given that the private sector in South Africa typically serves higher-income individuals, we have used the income differentials between covered and uncovered lives as a proxy for GNI. Comparator countries were chosen that are in a similar GNI per capita bracket as the South African private sector. This does not address the issues of inequity between the public and private sectors, and does not engage with whether the private sector should be serving a different population.
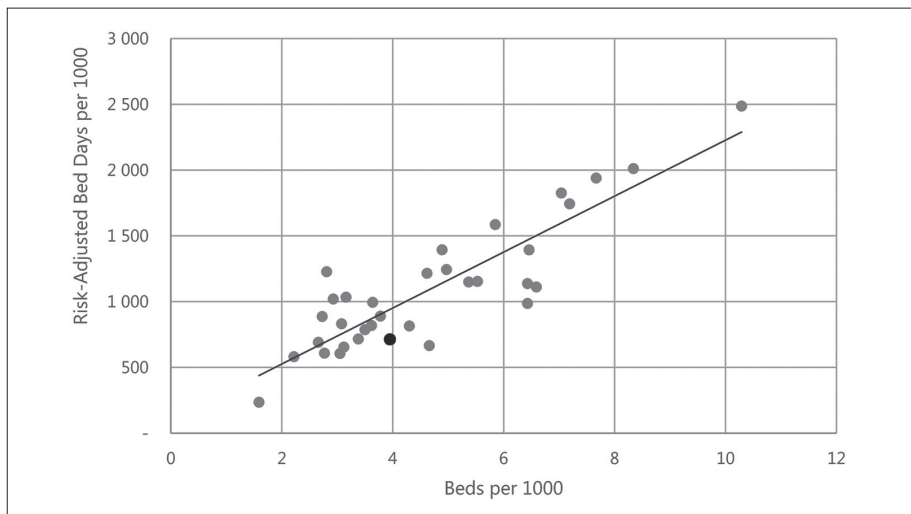

FIGURE 12 Relationship between bed days per 1000 and beds per 1000

7.3   For these comparator countries we can compare the utilisation of hospital services by looking at overnight admission rates per 1 000 and average length of stay (and the combined bed days per 1 000). Results are risk-adjusted to make them more directly comparable. Considering two separate data sources, South Africa appears to have mid- to high-range admission rates with low length of stays. On a combined basis, the bed days used per 1 000 for South Africa appears near the lower end of the spectrum which would indicate South Africa is making fairly efficient use of its hospital resources.

7.4   The high admission rates can be understood in the context of privately-funded and -provided care, with the concomitant rationing mechanisms. However, further analysis is required to understand the relatively low average length of stay. One possibility is that medical schemes manage length of stay more actively than they do admission rates.

7.5   Other dimensions, such as level-of-care and waiting times are also of interest and should be considered in further research.

7.6   In interpreting the results it is necessary to consider structural differences between countries, for example, the extent to which care is rationed and prioritised, the split between types of facilities, the availability and access to facilities and the way in which care is financed. For example, some countries may have a large number of nursing homes and step-down facilities which may impact average length of stay.

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