HEALTHCARE FORECASTING IN THE UNITED ARAB EMIRATES (UAE)

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ABSTRACT

This study has been designed to address the issue of the forecasting of the healthcare needs of the United Arab Emirate (UAE) from 1974 to 2011. This includes predicting the health system's need for hospitals and hospital beds, as well as the public health manpower (example, physicians, nurses) requirements. The analysis was based on historical data: the number of hospitals, number of nurses, number of hospital beds, which have been posited as the measures of life expectancy in the Emirate. The study found that, although significant changes designed to enhance public health outcomes in the UAE have been made, beds to population ratio was the most significant factor in enhancing healthcare and the public health.

INTRODUCTION

Since obtaining political independence in 1971, the UAE's healthcare sector has made tremendous progress in terms of the availability and quality of healthcare. UAE is a federation of seven emirates with federal and local budgets for each emirates. Abu Dhabi is the capital of the Emirate and the powerhouse of its economic development. Healthcare provisions differ from one emirate to another,
with federal funded healthcare in all emirates except Abu Dhabi.

This report primarily focuses on the improvements in health care in UAE, and mainly Abu Dhabi. Abu Dhabi consists of three regions, Abu Dhabi city, Al-Ain city and the Western region. The purpose of the study is to compare private sector and governmental expenditures in healthcare, measured by the number of hospitals and hospital beds. According to data from the Abu Dhabi Health Authority, there were a total of 35 hospitals with a bed-capacity of 3,659 beds in the region in 2011. Given that the population of Abu Dhabi during the same period was about 2,152,350 people, this translates to about 1.7 beds per 1,000 people. Additionally, there were 494 health centers, 265 clinics and 427 pharmacies in the emirate of Abu Dhabi by in 2011. The total number of physicians in the emirate of Abu Dhabi was 4,900 translating to about 2.3 physicians per 1,000 people. There were 864 dentists translating to about 0.4 dentists per 1,000 people in Abu Dhabi. The total number of nurses working in Abu Dhabi in 2011 was 10,504 which translate to 5.0 nurses per 1,000 people (Koornneef et al, 2012).

Secondary Data collected from the Abu Dhabi Health Authority was compared to data from the Al Ain Western regions respectively. In 1974, each of the three regions namely Abu Dhabi, Al Ain and Western region had two government hospitals but by 1999, the number of government hospitals in the three regions had increased to 16 (World Health Organization, 2011). However, two of these hospitals were decommissioned in 2000 and another two were decommissioned in 2001 bringing the total number of government hospitals in the three regions to 12 (Rahman et al., 2012).

Over the past two decades, healthcare investment in the UAE has shifted from the government to the private sector and as a result, the government has not built any
more hospitals in Abu Dhabi, Al Ain and Western region since 2001 (World Health Organization, 2011). Private investment in healthcare especially in Abu Dhabi and Al Ain has been higher than Western region. Consequently, government investment in Western region is higher than for Abu Dhabi and Al Ain. Thus, Western region hosts 5 of the 12 government hospitals in the three regions but in comparison, Abu Dhabi hosts around 70% of the private hospitals (Nasir & Kabir, 2011). Some regions of the Emirates have experienced faster growth in the healthcare sectors as compared to others and the government has adopted favorable policies to attract private investors in the healthcare sector.

Data for the other two regions of the country indicate that the city of Abu Dhabi hosts the bulk of UAE’s healthcare facilities. For example, out of a total of 35 hospitals in the three regions of the country, Abu Dhabi had 19 hospitals as compared to 10 for the Al Ain and 6 for Western region. Similarly, out of a total of 494 health centers, Abu Dhabi had 70.44% (348) as compared to 25.11% (124) for Al Ain and 4.45% (22) for Western region. Abu Dhabi has 180 clinics which is about 67.92% of the 265 clinics in the UAE at the end of 2011, compared to 81 in Al Ain and 4 in the Western Region out of a total of 265 clinics in the country. These data show that Abu Dhabi is the healthcare capital of the Emirates.

In terms of hospital distribution by region and sector, both Abu Dhabi and Al Ain have one military hospital each while Western region has none. However, Western region is home to 5 of the 12 government hospitals in the UAE compared to 4 in Abu Dhabi and 3 in Al Ain. There is a disproportionate distribution in private sector investments in healthcare in the UAE where 14 of the 21 private hospitals in the country are located in Abu Dhabi. This represents 66.67% of the private sector investments in hospitals in the UAE. Al Ain has a total of 6 private
hospitals which is about 28.57% of the total number of hospitals in the country and Western Region has only one private hospital.

The number of doctors, dentists and nurses working in government hospitals in the three regions has grown over the years with the number of dentists for example increasing from nine in 1974 to 143 in 2005. Many more dentists work in private hospitals mainly in Abu Dhabi and Al Ain.

There were a total of 131 doctors working in the two private hospitals in Abu Dhabi and Al Ain in 1974. This number has risen gradually over the years and at the end of 2011, there were a total of 1,966 doctors working in the 12 government hospitals in Abu Dhabi, Al Ain and Western region. The number of nurses and nursing assistants has also increased significantly. According to the Abu Dhabi Health Statistics, there was a total of 5,328 nurses and nursing assistants working in the 12 government hospitals in the three regions at the end of 2011.

The UAE healthcare market is arguably one of the fastest growing and best organized not only in the GCC but globally (Rowland-Jones, 2012). The country rapidly improved its healthcare infrastructure over the past few years and this has substantially increased life expectancy from about 51.6 years in 1960 to about 76.4 years in 2009.

According to Loney et al (2013), UAE has been recording an increasing rate of development. The population of UAE is diverse with an equally diverse educational attainment, religious affiliations, as well as cultural practices. Such diversity, according to Loney et al (2013), brings about a huge challenge in offering public health and especially when it comes in coming up with appropriate strategies in the healthcare industry. The increasing morbidity and rising mortality rates that have been witnessed in the UAE is attributed to a number of issues in the public health sector. In a study that was
commissioned by a UAE panel of medical as well as other specialists in the public sector, a systematic search of literature was conducted. The study sought to investigate the status of UAE healthcare system. The study found that cardiovascular disease was rated as the issues in the public health sector with the highest priority. This was followed by injuries that accounted for 17% of the mortality across the UAE. Third in the ranking of illnesses that caused the largest number of deaths were cancers which accounted for 10% of the deaths. Cancers have been projected to increase by 100% by 2020,( Loney et al 2013) The fourth was respiratory disorders that were ranked as a very common health issue even though it was not categorized as fatal. This study revealed that there is a need to create an international network that would help in addressing these health issues. This also means that all the healthcare specialists in the UAE healthcare system needed to come together and offer their services in collaboration before the collaboration was taken to an international level since, according to Loney et al (2013), these healthcare challenges were also global (Loney et al, 2013).

As Rushdi and Kamal (2011) observed, UAE has already started building the collaboration to ensure that patients get quality healthcare in any hospitals in the UAE. One of the issues that have been identified as important in achieving the dream of a healthy UAE population is strategic planning managerial improvement in the country. A good example is the Al Maliha Polyclinic, which is a private healthcare center that offers multi-specialty primary healthcare services in cooperation with several general public clinics pooling together specialists from different fields as well as dentists. According to Rushdi and Kamal (2011), Al Maliha Polyclinic offers dental services and eye care services. It also hosts several investigational facilities. Al Maliha Polyclinic has taken measures to enhance the standards of care for the citizens, especially those living in
remote areas. Its services are considered the economic benefits. These benefits include health insurance that has enabled people who have the coverage to pay their bills (Rushdi & Kamal, 2011). In the light of these findings, the challenge becomes the identifying the factors that determine the quality of services in the healthcare sector.

Aagja and Garg (2010) conducted a study designed to identify a suitable scale that could be used in measuring service quality in public hospitals. The study made use of both literature review as well as Delphi method in collection of the data. It also involved the use of survey method that played a key role in the development and validation of the scale. The study led to the emergence of public hospital service quality (PubHosQual) scale. Among the parameters that the scale targeted were overall service, social responsibility, discharge process, admission, and medical service. This indicated that the quality of public healthcare or what can be seen as overall service in any country heavily relied on the staff and the facilities available (Aagja & Garg, 2010). UAE’s public health sector can therefore use the scale in identifying those areas that required improvements besides identifying the services in the public hospitals whose modification was imminent. In line with these findings, the current study used historical data in forecasting health care needs of United Arab Emirates.

**ANALYSIS OF DATA**

The data presented in the appendix section was analyzed using linear regression analysis using SPSS. The descriptive statistics in Table 1 shows that the mean value for hospitals was 11.88. These hospitals were served by an average of 977 doctors, 91 dentists, and 2702 nurses. These hospitals had an average bed capacity of 224. This analysis
was based on data that was collected annually for a period of 25 years from 1974 to 2011.

Table 1
Descriptive Statistics for Independent Health Indicators

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
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<tbody>
<tr>
<td>Hospitals</td>
<td>11.88</td>
</tr>
<tr>
<td>Doctors</td>
<td>977.00</td>
</tr>
<tr>
<td>Dentists</td>
<td>91.88</td>
</tr>
<tr>
<td>Nurses</td>
<td>2702.08</td>
</tr>
<tr>
<td>Beds</td>
<td>2331.96</td>
</tr>
</tbody>
</table>

Abu Dhabi Healthcare authority

As indicated in Figure 1, the number of nurses and their assistants in the region has been increasing since 1980s. It was also revealed that the number of nurses and their assistants has been on the increase since 1992. The number of beds has also been increasing to keep pace with the increasing number of patients. Additionally, the number of physicians has also been increasing over the period under study.
Figure 1
Trends from 1974 – 2011

Stepwise regression analysis of data was conducted, independent variables were number of hospitals, number of beds, number of nurses and number of beds per 100,000 population. The study found that infant mortality is mainly affected by number of beds per 100,000 of population. Table 2 shows that the infant mortality rate is influenced by bed population ratio and number of nurses, with adjusted R-squared of 0.961, Table 2. Similar results for mortality under 5 shows that the same factors are significant explanation with adjusted R-square of 0.961. This was expected as the covariance between these two variable was
almost 1. Running regression for other dependent variables such as life expectancy and death rate did not reveal any significant factors other than total beds per 100,000 of population and nurse assistant. Under normal circumstances, as the number of beds increased, the number of doctors should also increase. But increases in medical doctors may not necessarily imply an increase in total number of beds.

A significant limitation of study is the lack of private medical data. However most of private hospitals are not highly equipped to handle critical or life threatening cases and such medical cases are transferred to public hospitals.

**Table 2**

*Regression analysis Infant mortality and factors*

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
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<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>37.141</td>
<td>1.984</td>
<td>18.725</td>
<td>.000</td>
</tr>
<tr>
<td>Beds</td>
<td>-.021</td>
<td>.002</td>
<td>-.137</td>
<td>-.000</td>
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<tr>
<td>Beds Population</td>
<td>6.396</td>
<td>.740</td>
<td>.582</td>
<td>.000</td>
</tr>
<tr>
<td>Nurses Assistant</td>
<td>.003</td>
<td>.001</td>
<td>.404</td>
<td>.001</td>
</tr>
</tbody>
</table>
Regression analysis Mortality LT 5 and factors.

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized</th>
<th>Standardized</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>49.013</td>
<td>17.605</td>
</tr>
<tr>
<td>Beds</td>
<td>-.029</td>
<td>-1.165</td>
</tr>
<tr>
<td>Beds_Population</td>
<td>7.963</td>
<td>.554</td>
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<tr>
<td>Nurses_Assistant</td>
<td>.004</td>
<td>.422</td>
</tr>
</tbody>
</table>

CONCLUSION

In the United Arab Emirates, healthcare progresses from few missionary hospitals to state of the art hospitals under the management of renowned hospitals in the West such as Cleveland Clinique in Abu Dhabi SKH medical city. The study found that the number of hospital beds per 100,000 of population is an important factor in determining population health. While the number of public hospitals has not increased in Abu Dhabi in last few years, private hospitals have filled the gap by taking care of most of small non-critical inpatient procedures.
REFERENCES


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