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Exploring Indonesia's "low hospital bed utilization-low bed occupancy-high disease burden" paradox

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Abstract

Indonesia's current hospital bed to population ratio of 6.3/10,000 compares unfavourably with a global average of 30/10,000. Despite low hospital bed-to-population ratio and a significant "double burden" of disease, bed occupancy rates range between 55% - 60% in both government and private hospitals in Indonesia, compared with over 80% hospital bed occupancy rates for the South-East Asian region. Annual inpatient admission in Indonesia is, at 140/10,000 population, the lowest in the South East Asian region. Despite currently low utilisation rates, Indonesia's Human Resources for Health Development Plan 2011-2025 has among its objectives the expansion of hospital bed numbers to 10/10,000 population by 2014. The authors examined the reasons for the paradox and analysed the following contributory factors; health system's shortcomings; epidemiological transition; medical tourism; high out-of-pocket payments; patronage of traditional medical practitioners, and increasing use of outpatient care. Suggestions for addressing the paradox are proposed.

Key words

Indonesia, Hospital bed to population ratio, Bed occupancy rate, Health system reform

1 Introduction

Hospital beds generally include acute and chronic care inpatient beds available in public, private, general, and specialized hospitals and rehabilitation centres. Most data on hospital beds do not include day care beds or private nursing home beds. Generally accepted hospital bed definitions centre on "physically available beds" in hospitals, defined in 2005 by the United States Department of Health and Human Services as; "Beds that are licensed, physically set up, and available for use. These are beds regularly maintained in the hospital for the use of patients, which furnish accommodations with supporting services (such as food, laundry, and housekeeping)" [1]. National and international comparability of hospital beds are problematic due to marked differences in definitions. In New South Wales, Australia, for example, hospital bed statistics currently include beds available to admit a patient from the emergency department as well as "other hospital beds", which comprise those in specialist units, those used for aged and home care, and "treatment spaces" such as recliner chairs used for oncology day procedures and renal dialysis. By including home care beds as part of hospital beds statistics, this definitional approach is not entirely inconsistent with the two definitions of "available hospital beds" provided by the

Australian Federal Government, which defines “available overnight beds” as; “The number of beds available to provide overnight accommodation for patients (other than neonatal cots and beds occupied by hospital-in-the-home patients), averaged over the counting period.”, and “available day beds” as; “The number of beds, chairs or trolleys available to provide accommodation for same-day patients averaged over a counting period.”[2]

Hospital bed density per 10,000 populations is one of the dozen key health care resources and services indicators utilised by the World Bank and the World Health Organization to evaluate and compare hospital administration practices among nations. Hospital beds are objective infrastructure outlays provided by healthcare facilities to care for complex health problems which require inpatient care. It is also a useful tool in health financing, based on assumptions of near-total hospital bed utilisation. In Australia for example, average lengths of stay in hospital beds are factored into Casemix funding formulas, which bundle patient care episodes into clinically coherent and resource homogeneous groups. The average cost of an Australian hospital bed in 2008 was $AU1,117 per day (based on 2008-9 average admission cost of $4,471 over four days) [3], compared with a total cost of between $110 - $143 per day for an Australian aged care bed as at June 2010 [4]. Due in part to rising cost of funding hospital beds, and in part to changing disease burdens and technologies for health care, there has been a general decline in hospital bed density in developing and developed nations. In the OECD nations for example, the hospital bed density fell from 64/10,000 population in 2002 to 58/10,000 population in 2009 [5]. In developing nations, increased emphasis on primary health care, shifting interface between hospital and social care, and public health care cost-cutting have resulted in stagnation or decline of hospital beds. From 1970 to 1994, hospital bed density fell in low and middle income countries by about 7%, but by 26% in high income countries [6].

Determining the optimal number of hospital beds required in any country is problematic as it is influenced by multiple factors including political ideology (e.g. former Soviet Union nations had significantly higher hospital bed density compared with other regions [7]) , epidemiological and demographic transitions, overall population health, efficiency of diagnoses and treatment, provision of alternatives to hospital care, changing demand for hospital-based health services, as well as availability and supply of care. (Figure 1) [8]:

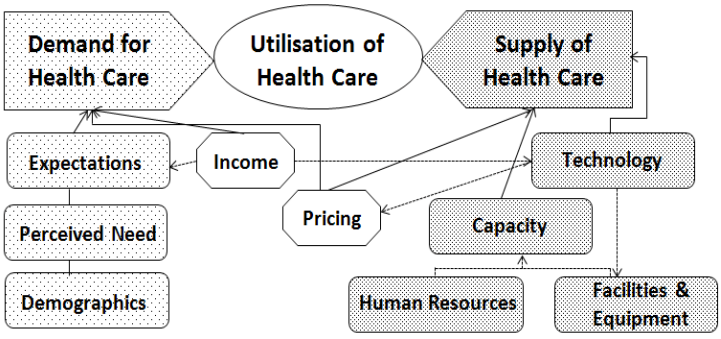

Figure 1. Factors influencing health care utilisation .

Most studies focused on determining ideal numbers of acute and longer term hospital beds required in hospitals have been conducted in developing countries, and many have produced inconsistent results on needed bed capacity required to place patients in appropriate beds in a timely manner, compared with approaches such as using 85% bed occupancy target as optimum [9].

Indonesia is a developing nation of 242.3 million people (2011 estimate) with a growing economy and significant population health challenges. The double burden of disease in Indonesia is exemplified by the fact that almost 90,000 people die every year from tuberculosis, with over half a million cases estimated to occur every year. Furthermore, half of all Indonesian adult males currently smoke tobacco, and 200 000 people die every year from smoking related diseases. As at 2008, about 1.2% of Gross National Income, and 2.2% of Gross Domestic Product, was allocated to the health

sector [10]. Despite increasing insurance coverage since 2004 following implementation of Social Security Law No. 40/2004 on Universal Health Insurance, 37% of Indonesians remain uninsured, and out-of-pocket payments for the insured generally exceed 35% of total cost of health services received in Indonesian hospitals [11]. There are four classes of Indonesian hospitals, based in part on bed numbers. Class A hospitals are highly specialized referral centres and have minimum 400 hospital beds. Class B hospitals usually operate 18 specialty and sub-specialty departments, and have minimum 200 hospital beds. The Class C general hospitals are designed to provide 4 basic specialist services in internal medicine, obstetrics and gynaecology, and paediatrics also have minimum 100 hospital beds. Class D hospitals are the lowest level hospitals. They provide general services 2 basic specialist services, and have minimum 50 hospital beds. Both Class C and D hospitals are mostly in rural areas and are owned by district governments (Figure 2) [12].

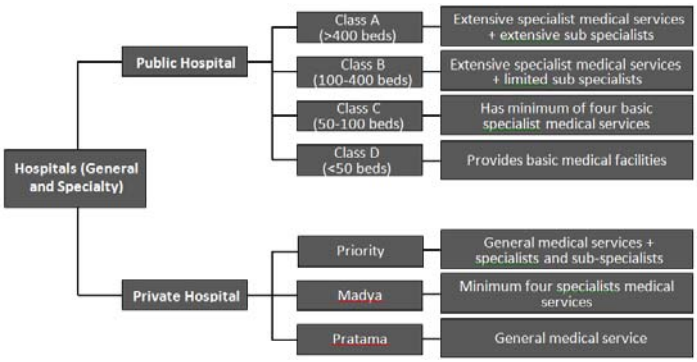

Figure 2. Indonesia hospital beds classification, 2010.

The bed distribution profile and associated funding from district and central governments are highly skewed towards high population areas in Java provinces, where 60% of the population reside. The inequity of historic funding patterns is exacerbated by the post-1999 decentralisation programs, which devolved health services funding to district governments. Consequently, although the yearly cost of providing basic health services range from $US15 in urban Yogyakarta to $US48 in sparsely populated North Maluku, funding, health infrastructure, hospital beds and adequate health workforce are scarce in North Maluku and other Eastern Provinces. Based on current funding arrangements, the proportion of total budget devoted to hospitals in Indonesian provinces varies from 11% to 76%. Indonesian budgeting approaches generally focus more on historical funding practices rather than service mix and care outcomes in hospital budget allocations [13].

As at 2011 there were 9,133 publicly owned community health centres and 1,765 hospitals in Indonesia (50% privately owned), with a combined total of 142,884 hospital beds. This equates to 6.3 hospital beds per 10,000 populations. The distribution of hospital beds by provinces is uneven, with East Nusa Tengerra province having a low as 2.5 beds/10 000 population, while Jakarta province has 16 beds/10 000 population. In-patient hospital use also varies by socio-economic status, with the poorer sections of the population using in-patient services 60% less than the better-off [10]. The hospital bed density in Indonesia is the third lowest in Asia, after Bangladesh and Myanmar. Private hospitals account for 52,288 (37%) of all hospital beds in Indonesia. Despite low hospital bed density, utilisation of hospital beds remain low, with bed occupancy rates ranging between 55% - 60% recorded for public and private hospitals in 2010. Nevertheless, the 2011-2025 Indonesia Human Resources Development Plan aims to increase hospital bed density to 10 beds/10 000 population by 2014, and to 20 beds/10 000 population by 2025 [14].

Given the unusual concurrence of low hospital bed density and low bed utilization in the face of a double burden of diseases like malnutrition and tuberculosis which are disproportionately concentrated among the poor [15], it is prudent for Indonesia's health policy makers to explore reasons for current trends prior to implementing plans for opening more hospital beds, as proposed in the 2011-2025 human resources development plan. Otherwise, existing inefficiencies in Indonesia's hospital bed utilisation may be exacerbated. The authors discuss the contributions of Indonesia's health system, changes in disease profile, medical tourism, high out-of-pocket payments, and patronage of Traditional,

Complementary and Alternative healers, changes in healthcare financing, and increasing use of outpatient care services to explaining this paradox.

2 Contributors to Indonesia's concurrent low hospital bed density & low hospital bed occupancy

2.1 Indonesia's health system

Health systems are defined as comprising all the organizations, institutions and resources that are devoted to producing health actions. A health action is defined as any effort, whether in personal health care, public health services or through intersectoral initiatives, whose primary purpose is to improve health. Based on health status and equity, responsiveness and social safety net, the health system in Indonesia was ranked 92 out of 180 nations [16]. Despite increased funding since decentralisation of the health system commenced in 2001, health system performance has remained unsatisfactory in Indonesia. A recent survey on the level of satisfaction with public health services revealed that only 58 percent of people surveyed found the services satisfactory [10]. The best measure of a health system's performance is its impact on health outcomes. Although Indonesia has experienced modest increases in overall health outcomes over the past two decades, it is more likely that these improvements were attributable to improvements in public health interventions than to hospital services [10, 17, 18]. Poor health system functioning is likely to be a major contributor to Indonesia's low hospital bed utilization through reduction in consumer trust in the health system and consequent unwillingness to utilise its services, unsatisfactory referral systems, which encumber efforts to provide hospital beds to those who really need it, poor clinical governance and accountability, manifested in low quality of hospital services and high incidence of adverse health outcomes in hospital; administrative, operational and allocative inefficiencies, manifested as corruption by health officials, duplication of services, and unmet needs for hospital services in less affluent provinces and among mentally ill patients [19, 20].

2.2 Epidemiologic and demographic transitions

Epidemiological Transition describes changing disease profiles with socio-economic development, characterised by decreasing rates of infectious diseases and increasing rates of cardiovascular, respiratory and neurodegenerative diseases. Demographic transition describes the changing health needs of populations as births fall and the population ages. Indonesia's life expectancy at birth is currently 69 years, and the hospital bed needs of ageing populations are usually high. Currently, 8.5% of Indonesians are aged 60 years or older, and this cohort is expected to increase to 25% of the total population by 2950 [21, 22]. In Indonesia, the epidemiological transition is exemplified by Figure 3.

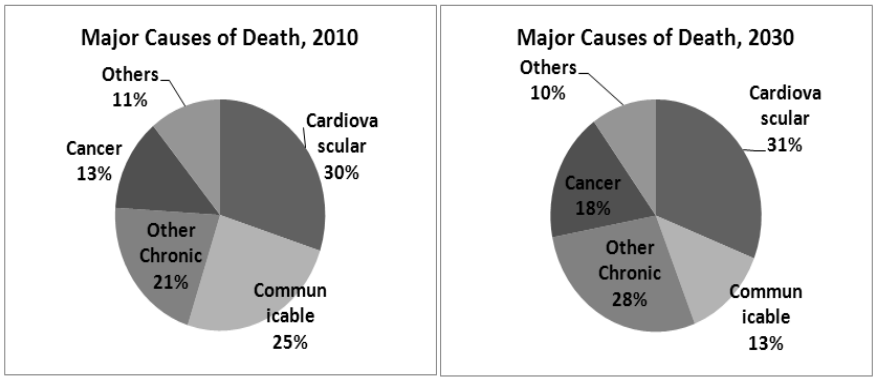

Figure 3. Epidemiological Transition in Indonesia.

With such changing disease epidemiology and demographic trends, Indonesia's hospital bed allocations will need to be adapted accordingly. For example, with regards to cancer which is expected to increase from 13% to 18% of total disease

burden by 2050, there are currently no oncologists in the Eastern provinces of Indonesia – i.e. Maluku, East Nusa Tenggara and Papua. Nationwide there were 932 oncologists in Indonesia in 2011 for a population of 242 million people, and vital equipment for screening and treating cancer are inadequate. In relation to the quality of chronic disease management, hospital beds constitute a very poor measure of quality of care, given that with good public health practices adequate workforce and appropriate screening equipment, a third of cancers may be prevented and another third cured provided they are detected early, without any significant need for hospital beds. Chronic diseases' contributions to total burden of disease are also expected to increase in Indonesia over the coming decades. Experience with chronic disease management in developed countries like Australia [23] indicate that only a small percentage of patients with chronic diseases such as congestive heart failure and chronic obstructive pulmonary disease use the bulk of bed-days for treating chronic disease conditions. If such patients can be managed outside of hospital settings, the hospital bed requirements for chronic disease increases are likely to be low. Chronic obstructive pulmonary disease and congestive heart failure are strongly linked to tobacco smoking, and are thus preventable causes of hospitalization. Projected modest declines in communicable diseases in Indonesia [10] imply potentially less requirements for acute hospital beds, given that communicable diseases such as malaria account for 30%-50% of hospital visits and hospital admissions in sub-Saharan Africa [24]. In line with Indonesia's malaria eradication program, all health facilities currently have equipment for malaria diagnosis, and 2030 is the target year for Indonesia to be malaria-free [25]. Thus, Indonesia's Epidemiologic and Demographic Transitions indicate that the nation's low bed occupancy is unlikely to be due to low needs for in-patient care. Unlike in Western nations, there is a cultural inclination for families and communities providing elderly care and home-based care. Over the past decade, home based and community based care of non-acute conditions have intensified, in part as a cost-saving strategy by Indonesian families. This trend explains why epidemiologic and demographic transitions have not resulted in increased hospital bed needs in Indonesia

2.3 Medical tourism

The practice of travelling to different parts of the world to seek health care has been a feature of globalisation since the 17th century. However, the current avatar of medical tourism is characterized by higher volume of travellers, hospital chains designed with medical tourists as prime patients, and a shift of medical tourism from wealthy classes to bargain shoppers, at least in developed nations. Unlike the situation in the United States where some medical tourists are covered by American workplace insurance, almost all Indonesians with the exception of political leaders fund health care sourced through medical tourism out-of-pocket [26]. The most popular destination for Indonesian medical tourists is Penang, Malaysia, where Indonesians consistently account for over 70% of all medical tourists. Richer Indonesian patients travel to Singapore. According to a report published by the Frost and Sullivan business research and consulting firm, Malaysian hospitals treated 288,000 Indonesian patients in 2008, up from 221.538 patients in 2007 and 170,414 in 2006. Meanwhile, Singaporean hospitals treated 226.200 Indonesians in 2007, down from 266,500 in 2006. In 2011, Indonesians were estimated to have spent US$11.5 billion a year for healthcare costs abroad, according to the Indonesian Health Ministry. The perception of poor quality hospital services in Indonesia is reinforced by the fact that Indonesia has been unable to attract medical tourists. In contrast, neighbouring Malaysia is expected to receive about 689,000 medical tourists by the end of 2012 [27]. The major reasons for increased overseas health care spending are low quality and high cost of healthcare treatment locally. The high number of patients leaving the country to seek treatment overseas implies that bed density forecasts may need to be revised downwards to account for the growth in medical tourism by Indonesians.

2.4 High out-of-pocket payments

Despite improvements in health insurance coverage, Indonesia's out-of-pocket payments for health care remain high, accounting for 66% - 73% of total private expenditure on health. As total private expenditure on health account for 50% of total health expenditure on health, insured Indonesians pay a third of all health care costs as out-of-pocket expenses [28]. Studies in developing nations indicate that use of hospital in-patient services by poorer sections of the population is often associated with unpredictable and sizeable out-of-pocket payments and subsequent catastrophic health care costs [29]. Poorer Indonesians may thus avoid accessing hospital-based services in order to reduce the risk of borrowing or selling

assets in order to finance treatment. A reason for persistently high out-of-pocket payments despite improvements in health insurance coverage is that most of the insurance cover excludes medications, hospital admissions and chronic health conditions, which are more expensive to manage. Based on Ministry of health records for 2010, about 37% of Indonesians are not insured (Table 1). High out-of-pocket payment thus appears to be a major contributor to Indonesia's low hospital bed utilization.

Table 1. Health insurance coverage in Indonesia, 2010.

Scheme	Target Population	Funding Source(s)	Enrolment (% of insured)
Jamkesmas (Askeskin)	Poor and near poor, based on individual and household targeting	General revenue (100% funded by central government)	32.3
Jamkesda	Poor and near poor, homeless, orphans and non-civil service teachers	District/Out-of-Pocket, Based on affordability	13.5
Askes	Active civil servants and dependants, civil service and military retirees	Member contribution of 2 percent of salary plus government match of 2 percent	7.4
Jamsostek	Private formal sector employees (and dependants) of firms with ten or more employees	Member contribution of 3 percent of salary for singles, 6 percent for families	2.1
Private Health Insurance	Private formal sector employees and dependants	Out-of-pocket	7.7
Not Insured			37.0

The high out of pocket payments and relatively low quality of treatment in Indonesian hospitals contribute to making medical tourism in Malaysia an economically attractive option for many Indonesians. Such decisions result in lower requirements for hospital beds in Indonesia. It is puzzling that 37% of the population is uninsured despite the provision of insurance schemes for the poor and near-poor. The uninsured might represent the proportion of Indonesians with too little trust in the Indonesian health system to consider taking up any of the insurance schemes on offer.

2.5 Patronage of traditional and alternative health practitioners

The World Health Organization defines Traditional Medicine as "health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses or maintain well-being" [30]. The term complementary medicine relates to health care practices that are not part of a nation's mainstream health care practices, and includes Chinese traditional medicine practice in predominantly non-Chinese cultures such as Indonesia. About 70% of Indonesians use Traditional, Complementary and Alternative Medicine (TCAM). Unlike Myanmar, Nepal and Thailand, Indonesia has yet to integrate TCAM practitioners into its health care systems [31]. Medical treatments by TCAM practitioners do not involve hospital admissions, as most of the care is outpatient, usually in the patient's home. Despite high usage, TCAM does not receive adequate stakeholder support in Indonesia. The practice is largely unregulated; hence data on patient load and treatment outcomes are scarce. However, it is generally recognised that the bulk of mentally ill patients such as the over 200 chained and caged patients at Yayasan Galuh, a mental health facility on the outskirts of Jakarta are managed by traditional healers. A survey on Indonesia's TCAM conducted by Indonesia's health ministry in 1995 found that the number of TCAM practitioners increased sharply from 112,974 in 1990 to 281,492 in 1995. This number is more three time the number of registered Indonesian doctors in 1995. The survey also found that 96% of TCAM practitioners used traditional Indonesian methods of treatment, while the rest practiced other forms of alternative and complementary treatment [32]. Thus, continual patronage of TCAM practitioners by Indonesians is likely to be contributing to low utilization of hospital beds.

2.6 Hospital health care financing and health planning

Changes in healthcare financing appear to have contributed to expansion of beds despite declining utilization. In Indonesia, hospital funding is loosely tied to class of hospital, which is determined primarily by its number of beds. Such financing may have provided a perverse incentive for hospital bed expansion when demand for such hospital beds is low, as more hospital beds equate to more government funding [18]. Unlike developed economies which utilise casemix and other forms of efficiency funding mechanisms, hospital funding is based mainly on historical methods, and hospital autonomisation policies allow bigger hospitals to charge cost-recovery fees, making hospital affordability largely unregulated, and Indonesian hospitals examples of commercialised mixed health systems [33]. The increased funding of hospitals based on bed numbers has not resulted in improved health outcomes in the hospital and acute care sector mainly because the current bed capacity is largely under-utilised [17].

2.7 Increasing use of outpatient services

Due to changes in medical technology, improvements in community health support systems, strong extended family system and more competent health staff, Indonesia's outpatient health care systems continue to improve in quality, scope and equity [34]. Since decentralisation of health services commenced a decade ago, the expansion of out-patient treatment services by solo providers, public health centres and private out-patient providers is not adequately reflected in official records, in part because most of the operators of Indonesia's small scale out-patient services are government employees engaged in private practice [35]. With increasing patronage of patients at out-patient clinics, there are fewer requirements for in-patient care, and thus the need for hospital beds is less.

3 Discussion

The apparent paradox of low hospital bed density and low hospital bed occupancy rate in Indonesia is largely attributable to the following factors (a) poorly functioning health system which is being abandoned by citizens due to high out-of-pocket expenses, low equity, sub-optimal responsiveness to community expectations, high cost for expected level of healthcare quality and gross inefficiencies; (b) epidemiological and demographic transitions, with less need for acute care beds, and greater opportunities for patients to self-manage chronic degenerative diseases with support of community health teams; (c) medical tourism, through which thousands of Indonesians seek treatment overseas, especially in Malaysia and Singapore; (d) high out-of-pocket payments, which account for 30%-40% of health care services provided at Indonesian hospitals, thus discouraging hospital utilisation; (e) hospital care financing mechanisms which allocates greater weights to bed numbers rather than efficiency of in-patient health care provision, as well as mechanistic health planning approaches which do not consider the strengths, weaknesses, opportunities and threats of Indonesia's health system; (f) increasing use of outpatient services, due to improved workforce and technologies, expanded network of small-scale out-patient service providers as well as greater responsiveness of out-patient services to community expectations. Collectively, these factors reduce the need for hospital beds, but not necessarily for the right reasons. For example, Indonesia's poorly performing health system requires urgent attention in order to restore citizens' trust in the quality and equity of health services provided. Structural reform of Indonesia's health system entails addressing its six key facets simultaneously: service delivery, health workforce, information systems and health technologies, medical products and vaccines, leadership and governance [36]. Monitoring health system performance may be undertaken through assessing trends in health improvement, responsiveness, social and financial risk protection, and improved efficiency [37].

Although epidemiological transition will lead to reduced need for acute care beds, the likely expansion of chronic care beds should be anticipated. Such beds do not have to be hospital based. There is general consensus by stakeholders to optimise Indonesians' preference for community-based and home-based care through the use of frameworks such as the 1999 "Healthy Indonesia 2010" strategy [38] and the World Health Organization's Comprehensive Community and Home-based Health Care Model [39]. Many innovative community-based programs have been developed to manage chronic care outside of the hospital system in developed nations, from which Indonesia's policy makers may adapt, given

the low quality of ambulatory chronic care in Indonesia currently [34]. Medical tourism deprives Indonesia of at least $US11.5 billion dollars every year as hundreds of thousands of patients travel to Malaysia, Singapore and other medical tourism hotspots for treatment. Such "patient drain" may also indirectly increase hospital care in Indonesia due to unfavourable economies of scale. Indonesian Law 44 of 2009 (Hospital Law) was crafted in part to improve the quality of Indonesian hospitals by encouraging reputable private hospital chains to open branches in Indonesia (where they can own up to 67% of the equity of their business) and hopefully encourage Indonesians to seek quality treatment locally. Indonesia's health insurance system requires urgent reforms, as its prime function of financial risk protection is not being achieved, given that even insured patients have to pay 30%-40% of total health care costs, while uninsured patients are liable for 100% payment. Although Hospital law 44 of 2009 contains a clause compelling all hospitals to provide treatment without requesting upfront payment, the reality in commercialised mixed health care systems is that they will prioritise service provision to those able to pay for such services. Mechanistic health plans which rigidly link increased health workforce with hospital beds need to be reconsidered given the complex factors which influence the need for hospital beds. Indonesia's outpatient services appear to be of high quality and coverage. More Indonesians have confidence in out-patient services than in hospital services. With improved health technologies, may ailments that hitherto required prolonged hospital stays can now be conducted on outpatient basis. This is a positive development as it facilitates efficient utilisation of scarce healthcare resources. Conversely, with only about 500 psychiatrists and less than 200 dedicated beds for mentally ill patients, there is scope for expansion of mental health cancer care and pain management hospital services, preferably in partnership with traditional healers.

4 Conclusion

At 6.3/10,000 population, Indonesia has the third lowest hospital bed density in Asia after Myanmar and Bangladesh. Unlike almost all Asian nations, Indonesia's bed occupancy rate of 55%-60% is very low. Yet Indonesian citizens experience major health challenges, including a double burden of disease. This article has highlighted the multiple factors influencing this paradox. The authors posit that a revitalisation of Indonesia's health system should be accorded high priority in order to optimise the use of hospital beds and provide quality health care. Rather than project a 140% increase in hospital beds between 2010 and 2025 when the current hospital beds remain underutilised, more efficient use of hospital beds, reflected in decreases in average length of stay, greater utilisation of medical technologies which reduce the need or length of hospital stays through, for example, day surgeries, expansion of post-hospital community services and greater use of efficiency focussed funding mechanisms such as casemix –based funding are important strategies. Regulation of TCAM practices will provide opportunities for improving the quality of health services provided to over 70% of Indonesians by this group of health practitioners. Thus, the primary solution to clarifying Indonesia's low bed density – low bed occupancy-high disease burden paradox is not provision of more beds but examination of the factors discussed above which influence the paradox, and development of culturally appropriate, evidence based policies and interventions to address structural deficiencies within the health system.

Conflict of interests

This study was self-funded. We declare that we have no conflict of interest in relation to this manuscript. This manuscript was submitted exclusively to the Journal of Hospital Administration.

References

[1] United States Department of Health and Human Services. Standardised hospital bed definitions. Washington DC: Agency for Healthcare Research and Quality [Internet]. September 2005. Available from: http://archive.ahrq.gov/research/havbed/definitions.htm. Accessed 26 October 2012.

[2] Australian Institute of health and Welfare. National health data dictionary, version 15. Canberra: Department of Health and Ageing, 23 August, 2010.

[3] Australian Government Department of health and Ageing. State of our public hospitals: June 2010 report. Canberra: Commonwealth of Australia, 2010.
[4] Ansell C, Davey E, Henry V. Australian Cost of residential Aged care Research: costs of modern residential aged fare facilities. Sydney: Grant Thornton, January 2012.
[5] Organisation for Economic Cooperation and Development. Health care Resources data, 2010. Paris: OECD, 2010.
[6] Hensher M, Edwards N, Stokes R. International trends in the provision and utilisation of hospital care. British Medical Journal. 1999; 319: 845-848. PMid:10496836 http://dx.doi.org/10.1136/bmj.319.7213.845
[7] Healy J, McKee M. Implementing hospital reform in Central and Eastern Europe. Health Policy. 2002; 61: 1-19. http://dx.doi.org/10.1016/S0168-8510(01)00213-5
[8] Layte R, Morgenroth E, Normand C. The complex task of projecting the demand for and delivery of Health Care. In Layte R. (Ed): Projecting the impact of demographic change on the demand for and delivery of health services in Ireland. Dublin: Economic and Social Research institute Series 13, October 2009, pp1-20.
[9] Green LV. How many hospital beds? Inquiry. 2002; 39: 400-412. PMid:12638714 http://dx.doi.org/10.5034/inquiryjrnl_39.4.400
[10] World Bank. Investing in Indonesia's health: challenges and opportunities for the future. Health Public Expenditure Review. Washington DC: World Bank, 2008.
[11] Rokx C, Schieber G, Harimurti P, Tendon A, Somanathan A. Health Financing in Indonesia: A Reform Road Map. Washington DC: The World Bank, 2009. http://dx.doi.org/10.1596/978-0-8213-8006-2
[12] Profil Kesehatan Indonesia (Indonesia Health Profile). 2009. Departemen Kesehatan Republik Indonesia (Ministry of Health).
[13] Ensor T, Firdaus A, Dunlop D et al. Budgeting based on need: a model to determine sub-national allocation of resources for health services in Indonesia. Cost Effectiveness and Resource Allocation. 2012; 10: 11. PMid:22931536 http://dx.doi.org/10.1186/1478-7547-10-11
[14] Ministry of Health, Indonesia. Indonesia human resources for health development plan, 2011-2025. Jakarta, MoH, 2011.
[15] Corsi DJ, Finlay JE, Subramanian SV. Global Burden of Double Malnutrition: Has Anyone Seen It? PLoS ONE. 2011; 6(9): e25120. PMid:21980384 http://dx.doi.org/10.1371/journal.pone.0025120
[16] World Health Organization. World Health Report 2000. Health systems: improving performance.
[17] Heywood P, Choi Y. Health system performance at the district level in Indonesia after decentralization. BMC International Health and Human Rights. 2010; 10: 3. PMid:20205724 http://dx.doi.org/10.1186/1472-698X-10-3
[18] Lieberman SS, Alkatiri A. Autonomization in Indonesia: the wrong path to reduce hospital expenditures, in Preker AS & Harding A (Eds). Innovations in health service delivery: the corporatization of public hospitals, Washington: World Bank, 2003; pp511-532. PMid:14626987
[19] WHO. 2007. Everybody's business. Strengthening health systems to improve health outcomes. WHO's framework for action. Geneva: WHO.
[20] World Health Organization. Indonesia Health System [Internet]. Jakarta: WHO Country Office, October 2012. Available from: http://www.ino.searo.who.int/en/Section3_24.htm. Accessed 26 October 2012.
[21] Gribble, James N., & Preston, Samuel H (editors) (1993), The Epidemiological Transition: Policy and Planning Implications for Developing Countries, Washington, DC: National Academy Press, ISBN 0-309-04839-7.
[22] Imison C, Poteliakhoff E, Thompson J. Older people and emergency bed use: exploring variation. London: The King's Fund, August 2012.
[23] Bureau of Health Information. Technical Supplement: Healthcare in Focus 2010, how NSW compares internationally [Internet]. BHI. 2010. Cited 3 Oct 2012. Available from: www.bhi.nsw.gov.au/__data/assets/pdf_file/0014/133403/Annual-Performance-Report-2010_Healthcare-In-Focus_TECHINAL-SUPPLEMENT.pdf Accessed 3 October 2012.
[24] Barofsky, J,. Chase, C., Anekwe, T., Farzadfar, F. Harvard Initiative for Global Health. The economic effects of malaria eradication: Evidence from an intervention in Uganda [Internet]. May 2011. Available from: http://www.hsph.harvard.edu/pgda/WorkingPapers/2011/PGDA_WP_70.pdf. Accessed 3 October 2012.
[25] Elyazar IRF, Hay SI, Baird JK. Malaria Distribution, Prevalence, Drug Resistance and Control in Indonesia. Advanced Parasitology. 2011; 74: 41-175. PMid:21295677 http://dx.doi.org/10.1016/B978-0-12-385897-9.00002-1
[26] Buckett L. Medical Tourism: concerns, benefits, and the American legal perspective. Journal of Legal Medicine. 2007; 28: 223-245. PMid:17558794 http://dx.doi.org/10.1080/01947640701357763
[27] Rajah R, Rosnah N, Tumi WAM. Markets and Healthcare Services in Malaysia: Critical Issues. International Journal of Institutions and Economics. 2011; 3: 467-486.

[28] McIntyre D, Thiede M, Dahlgren G, Whitehead M. What are the economic consequences for households of illness and of paying for health care in low- and middle-income country contexts? Social Science & Medicine. 2006; 62: 858-65. PMid:16099574 http://dx.doi.org/10.1016/j.socscimed.2005.07.001

[29] Chee G, Borowitz M, Barraclough A. Private Sector Health Care in Indonesia. Bethesda, MD: Health Systems 20/20 project, Abt Associates Inc., 2009.

[30] World Health Organization, WHO Traditional Medicine Strategy 2002-2005. Geneva: World Health Organization, 2002.

[31] Payyappallimana U. Role of Traditional Medicine in Primary Health Care: an Overview of perspectives and challenges. Yokohama Journal of Social Sciences. 2010; 14: 723-743.

[32] Ministry of Health, Indonesia. Survey on Traditional Medicine/Complementary and Alternative Medicine, 1995. Jarkata: Indonesia MoH, 1995.

[33] Hort K, Annear PL. The growth of non-state hospitals in Indonesia and Vietnam: market reforms and mixed commercialised health systems. Melbourne University: Nossal Innstitute of Global Health, Australia, 2012.

[34] Barber SL, Gerther PJ, Harimati P. Differences in Access to High-Quality Outpatient Care in Indonesia. Health Affairs. 2007; 26: w352-w366. PMid:17389632 http://dx.doi.org/10.1377/hlthaff.26.3.w352

[35] Heywood P, Harahap NP. Health facilities at the district level in Indonesia. Australia and New Zealand Health Policy. 2009; 6: 13.

[36] De Savigny D, Adam T. Systems thinking for health systems strengthening. Geneva: WHO, 2009. PMid:19445728 http://dx.doi.org/10.1186/1743-8462-6-13

[37] Berendes S, Heywood P, Oliver S, Garner P. Quality of Private and Public Ambulatory Health Care in Low and Middle Income Countries: Systematic Review of Comparative Studies. PLoS Medicine. 2011; 8(4): e1000433. PMid:21532746 http://dx.doi.org/10.1371/journal.pmed.1000433

[38] Indonesia Ministry of Health. Health Development Plan towards Healthy Indonesia 2010. Jakarta, MoH, 1999.

[39] World Health Organization. Comprehensive Community and Home-based Health Care Model. New Delhi. WHO South East Asia Regional Office Publication 40, 2004.