INTENSIVE CARE UNIT CAPACITY IN LOW-INCOME COUNTRIES: A SYSTEMATIC REVIEW

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Introduction: Access to critical care is a crucial component of a healthcare system. In low-income countries, the burden of critical illness is substantial, but the capacity to provide care for critically ill patients in intensive care units (ICUs) is unknown.

Objectives: To systematically review the published literature to estimate the current ICU capacity of hospitals in low-income countries.

Methods: With a librarian’s assistance, we searched 11 databases and included studies of any design, published 2004-2013, with data on ICU capacity for pediatric and adult patients in 36 low-income countries (defined by World Bank criteria; total population 850 million). Neonatal, temporary, and military ICUs were excluded. Data on ICU bed numbers, capacity for mechanical ventilation, and information about the hospital, including referral population size, public accessibility, and the source of funding were extracted. Two reviewers independently searched for relevant articles and extracted data from included studies; a third reviewer resolved disagreements. Analyses were descriptive, with continuous data summarized as mean (standard deviation, SD) or median (interquartile range, IQR) and categorical data as number (percent).

Results: Of 1,759 citations, 43 studies from 15 low-income countries met inclusion criteria (Figure 1). They described 36 individual ICUs in 31 cities, of which 16 had population greater than 500,000 and 14 were capital cities. The median annual ICU admission rate was 401 (IQR 234-711, 24 ICUs with data) and median ICU size was 8 beds (IQR 5-10, 32 ICUs with data). The mean ratio of adult and pediatric ICU beds to hospital beds was 1.5% (SD 0.9%; 15 hospitals with data). Nepal and Uganda, the only countries with national ICU bed data, had 16.7 and 1.0 ICU beds per million population respectively, in contrast to high-income countries (Figure 2). Despite exhaustive search strategies, capturing national data in other countries was not possible due to the lack of relevant publications.

Conclusion: Low-income countries lack ICU beds, and more than 50% of these countries lack published data on ICU capacity. Most ICUs in low-income countries are located in large referral hospitals in major cities. A central database of ICU resources is required to evaluate health system access and performance, both within and between countries, and may help to develop related health policy.

Figure 1: Thirty-six low-income countries included in the search strategy with (n=15, red) and without (n=21, yellow) published data on ICU resource availability.

Figure 2: Comparison of the relationship between ICU beds:Hospital beds in low versus selected high-income countries. Circle size corresponds to health care expenditure per capita in each country.