

ORIGINAL RESEARCH

Using In-Hospital Mortality as an Indicator of Quality Care and Hospital Performance

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ABSTRACT

The in-hospital mortality (MIH) is used as a performance indicator and quality healthcare in hospital. However, the majority of deaths resulted from an inevitable disease process (severity of cases and / or co-morbidity), and not medical errors or changes in the quality of care. This work aims to make a distribution of deaths in the Regional Hospital of Eastern, Al Farabi hospital and to highlight that more studies on the MIH are required consistently with detailed clinical data at the admission. The MIH showed its limitation as a health care indicator. The overall rate of in-hospital deaths within the Al Farabi hospital has averaged 2.4%, with 8.4% in the emergency unit, 28% in intensive care unit, 22% Neonatology unit, 1.6% in pediatric unit. The MIH may depend, firstly, on the condition of patients before hospitalization and secondly, on the conditions of their transfer from one institution to another that supports them as a last resort. Al Farabi hospital supports patients transferred from the provinces of the eastern region. Thus, 6% of patients who died in 2014 come from Berkane, 2% from Nador, 2% from Bouarfa, 4% from Taourirt and 2% from Jerrada. One might question about the procedures and the conditions of such transfers. In conclusion, the overall MIH measured from routine data do not allow proper comparison between hospitals or the assessment of the quality of care and patient safety in the hospital. To do so, we should ideally have detailed clinical data on admission (e.g. type of admission, age of patient, sex, comorbidity, ...). The MIH is however an important indicator to consider as a tool to detect potential problems related to admission procedures and to suspect an area of "non-quality" in healthcare. The MIH is interesting for the patient and for the hospital because it serves the improvement of quality healthcare.

KEY WORDS: in-hospital mortality - Al Farabi hospital - Oujda – Quality care – indicator.

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INTRODUCTION

Often the indicators used to measure and compare the performance and the quality care provided by hospitals are, among others, the volume of activity, hospital mortality, the attractiveness of the institution, the average length of stay, rate of caesarean sections and nosocomial infections. Outcome indicator, in-hospital mortality could be useful indicator of the quality of care in a hospital, but careful statistical analysis is required to avoid erroneously

attributing variation in mortality to differences in health care when it is due to differences in patient cases (1, 3). The in hospital mortality must be interpreted in association with clinical parameters at the admission (age, diseases, clinical antecedents...). Mortality can be useful for further investigation by managers, clinicians and regulators. This indicator has, on occasion, helped to identify organisations where there have been serious failures of care. On the other hand, the data may be used inappropriately, without

regard to the accompanying health warnings, and that some organisations may incorrectly be categorised as providing poor quality care. This can mislead patients and public, and erode the confidence in organisation (2). But statistics cannot entirely overcome the complexities of adjusting for the many factors – some unrelated to the quality of care- that contribute to deaths in hospital. No one would maintain that this indicator is an unequivocal marker of hospital quality (3,4). No single indicator ever is, given the complexity of patient mix and clinical activities and unfortunately there is many ifs and buts associated with this one (4).

The aim of this work is a critical analysis showing the complexity of using the in hospital mortality as an indicator of quality care. It highlights the multidimensional quality care concepts. Also, the need to put into perspective this indicator with the missions, the environment and the specific characteristics of each organisation. The data for this indicator should be interpreted taking into account the clinical information of each patient.

MATERIALS AND METHODS

The Al Farabi hospital is a referral hospital for seven provinces of the Eastern region with a bed capacity of 513, organized into five departments (Medical, Surgical, Mother-child Emergency – intensive care unit, Medico-technique). Al Farabi hospital serves a population of 2,314,346 inhabitants.

Data Sources

Data are collected from the database of the hospital admission service of Al Farabi hospital.

Method of Analysis

The data are used over 3 years (2012, 2013 and 2014) as death rate number or as percent of admission rates in concerned hospital unit. The maternal mortality rate is not discussed in this analysis, these deaths are systematically audited according to the national programme of maternal and neonatal mortality reduction.

RESULTS

The trend of evolution of admissions and the number of deaths is almost constant during the three years with a slight increase in 2014 (Fig. 1).

The January and August recorded a high mortality rate compared to other months of the year. The number of deaths is variable throughout the year with fluctuations from year to year (Fig. 2).

Within the Department of Medicine, the highest mortality rate was registered in the cardiology unit compared to other units. The number of deaths has decreased between 2012 and 2014 (Fig. 3).

The overall rate of in-hospital deaths within the Al Farabi hospital averaged 2.4%, the most frequented hospital units recorded average rates of 8.4% in the emergency unit, 28% in the intensive care unit, 22% Neonatology unit, 1.6% in the pediatric unit with a decrease between 2012 and 2014 (Fig. 4).

The number of deaths is high at the surgery and neurosurgery unit compared to other units of the Department of Surgery. Surgical department showed a decrease of the number of deaths in 2012 (Fig. 5)

Al Farabi hospital supports patients transferred provinces of the eastern region: 6% of patients who died from Berkane, Nador 2%, 2% Bouarfa, 4% and 2% Taourirt Jerrada. These transfers differ from one year to another (Fig. 6).

These results showed variations in hospital mortality between the hospital units. Does this mean that the units with a higher mortality rate provide a poor quality care? Unfortunately these data as presented here don't allow to compare the quality of care between the hospital units.

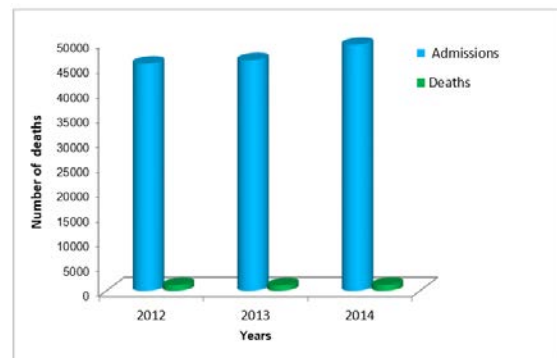


Figure 1: Evolution admissions and death rates in Al Farabi hospital between 2012 – 2014.

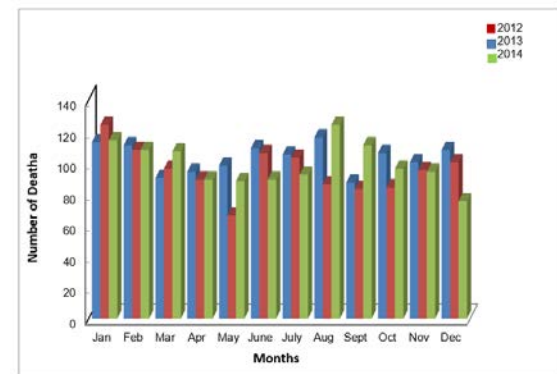


Figure 2: Month distributed in hospital mortality rates in Al Farabi hospital between 2012 – 2014.

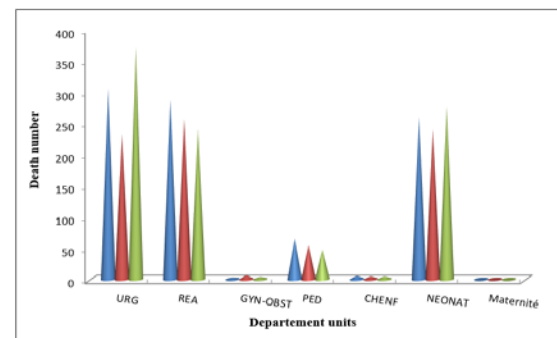


Figure 3: The in hospital mortality within the emergency - intensive care Department and the mother-child Department.

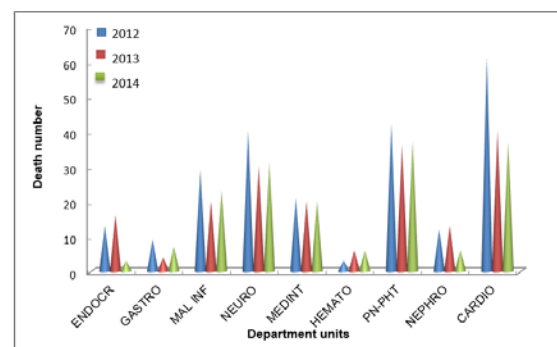


Figure 4: In hospital mortality rate within the Medical Department of Al Farabi hospital between 2012 – 2014

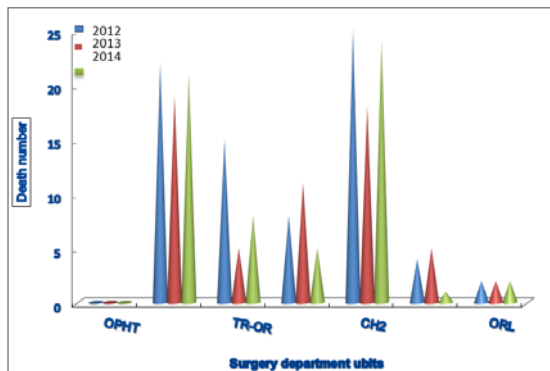


Figure 5: In hospital mortality within the surgery Department of Al Farabi hospital between 2012-2014.

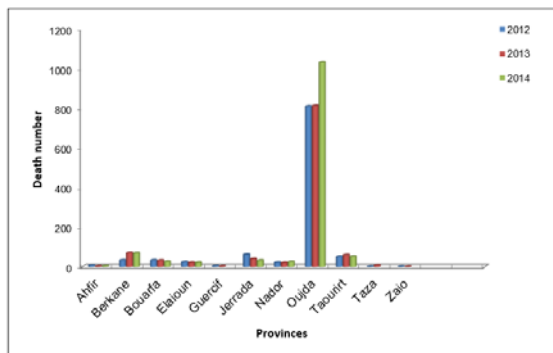


Figure 6 : Distribution of the in hospital mortality of the Al Farabi hospital coming from provinces of the eastern region between 2012 - 2014

Hospitals that treat sicker or older patients may be unfairly compared to other hospitals that treat patients in relatively better conditions. It is very important to make adjustments for differences in patient characteristic such age, sex, comorbidities, severity of illness,...etc so that hospitals may be compared fairly (4,5). For example, if a patient has a pre-existing chronic illness before admission to the hospital, this condition may increase the risk of that patient not surviving the procedure or treatment. Advanced age is another example of a characteristic that may increase the risk of death. The transfers present another risk time and procedures are not respected (5).

DISCUSSION

The quality of care is a major concern for patients, physicians, health care providers, insurers and individuals involved in the management and planning of health systems (1,6). Improving the quality of care requires an evaluation system to monitor care quality indicators. A care quality indicator is a measurable element that quantitatively assesses and aims to improve the quality of care. The data of in hospital mortality presented here may be censured because they don't provide a causal link between a pathology, or a procedure and the death. The interpretation of in hospital mortality rates using this data showed its limitations (7). Should ideally have detailed clinical data on admission.

The quality of care is a multidimensional concept: as defined by the World Health Organization (WHO) evaluation of care should help "ensure that each patient receives the combination of diagnostic and therapeutic procedures that will ensure him best result in terms of health, in accordance with the current state of medical science at the lowest cost for the same result at the least iatrogenic risk and for his greatest satisfaction in terms of

procedures, outcome and human contacts with the within the care system. "

Referring to this definition, the rate of in-hospital mortality, measurable from routine data can not provide specific information on the case of death. An adjustment according to the risk specific to each patient should be based on detailed clinical information of the patient's health status at admission including patient records of clinical data (age, sex, pathology, medical history) (4, 8). Little or no correlation exists between how well a hospital performs on one standard of safe and effective care and how well it performs on another; differences in the quality of care within hospitals are much greater than differences between hospitals (9, 10)

Intra-hospital mortality is a rare event, it is an outcome indicator is analyzed taking into account the clinical, events before admission, conditions for transfer, (refer to the patient record). It is important to consider a tool for suspecting an area of "non-quality" (4) and therefore to signal a potential problem. The in hospital mortality indicator is interesting for the patient and for the hospital since it aims the improvement of the quality care and patient safety.

Investigations are required into ways in which feedback of information on hospital mortality can be used effectively to reduce problems in care and understand how to drive improvement (7,8,11, 12). Finally, the suggestion of a process based on clinical audit data of mortality in the hospital for measuring and reporting on quality could: Firstly allow an objective comparison of hospitals based on quality care. Secondly, provide a basis for informing patients and the public about the quality of care provided by an organisation (1, 4, 5). Such a policy has two significant advantages over hospital mortality rates, as the basis for quality improvement.

AUTHORS' CONTRIBUTIONS

The participation of each author corresponds to the criteria of authorship and contributorship emphasized in the [Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals](#) of the [International Committee of Medical Journal Editors](#). Indeed, all the authors have actively participated in the redaction, the revision of the manuscript and provided approval for this final revised version.

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COMPETING INTERESTS

The authors declare no competing interests.

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