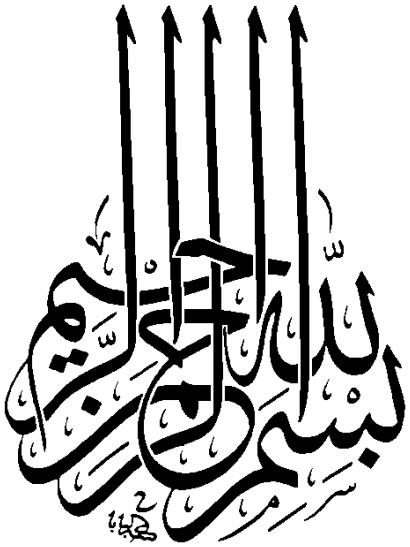

﴿قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا

إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ﴾

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Comparison of Severity of Illness Scoring Systems among Elderly Patients Admitted to Medical ICU

Thesis

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List of Abbreviations

AIDS	**:**	Acquired Immune Deficiency Syndrome
APACHE	**:**	Acute physiology and chronic health evaluation score
ARDS	**:**	Adult respiratory distress syndrome
CAP	**:**	Community-acquired pneumonia
CAPMAS	**:**	Central agency for public mobilization and Statistics
CKD	**:**	Chronic kidney disease
COPD	**:**	Chronic obstructive pulmonary disease
CP	**:**	Child-Pugh score
CURB65	**:**	Confusion, Urea, Respiratory rate, Blood pressure, Age 65 years
CVS	**:**	Cerebrovascular stroke
DM	**:**	Diabetes mellitus
DVT	**:**	Deep venous thrombosis
GFR	**:**	Glomerular filtration rate
GIT	**:**	Gastrointestinal tract
HTN	**:**	Hypertension
ICU	**:**	Intensive care unit
MELD	**:**	Model of end stage liver disease
MPM	**:**	Mortality probability model

MRI	**:**	Magnetic resonance imaging
SAPS	**:**	Simplified acute physiology score
SOFA	**:**	Sequential Organ Failure Assessment
TIPS	**:**	Trans-jugular intra-hepatic porto-systemic shunt
US	**:**	United states

Introduction

In almost every country around the world, the proportion of elderly people (60 years and above) is growing faster than any other age group.

In 2011 elderly people (60 years and above) represented 11% of population all over the world and this number is expected to rise to 22% by 2050 ***(CAPMAS, 2012).***

In 2011 in Egypt the elderly people represented 7.3% of the population and this number is expected to rise to 11.6% by 2030.

In 2011 the mortality of elderly citizens in Egypt (60 years and above) represented 57.8% of the total mortality ***(CAPMAS, 2012).***

It is clear that a sizeable proportion of intensive care unit (ICU) patients are older adults. In the United States, those aged 65 years or older constitute nearly 50% of ICU admissions, a percentage which will grow considerably with the aging of the population ***(Milbrandt et al., 2009).***

Concomitant with this there is an evolution in critical care medicine and there has been a growing focus on health care outcomes ***(Dasta et al., 2005).***

For many years, the performance was synonymous with the standard mortality ratio (SMR). But nowadays, other aspects of performance are considered from the patients, families, nurses and doctors' points of view. Several studies, on the other hand, have demonstrated the relationship between organization and performance ***(Gall and Azoulay, 2005).***

At the bedside, the clinician or the investigator focuses on pathophysiology of a sole patient but outcomes research addresses broader issues. Rather than being either centered on a particular disease or a physiologic measure, outcomes research deals with the overall results of care for the patient, for the family, and for society ***(Marshall, 2005).***

Outcomes research is now a key component of the medical system, it is no longer seen as an option or an add-on.

It fits with clinical work in building the power of information needed to translate research findings into clinical practice ***(Shorr et al., 2008).***

To address disease severity, multiple tools exist. They differ with respect to the variables they measure, when they measure these variables, and if they try to describe ICU mortality or hospital mortality. The acute physiology and chronic health evaluation (APACHE) score is commonly used in the United States and the simplified acute physiology score (SAPS) system is more regularly employed in Europe ***(Shorr et***

al., 2008).

Also several severities of illness scores had been developed for application in specific types of patients (e.g., pediatrics, trauma) and others try to deal with a broader range of subjects ***(Vincent et al., 1995).***

ICU severity models facilitate comparisons between intensive care units, and are most useful for retrospective analysis of performance, with limited but improving utility for real-time management ***(Higgins et al., 2007).***

Outcomes research remains an emerging field in critical care. As appreciation of patient-centered issues expands along with improved understanding of the diseases treated in the ICU, the need for more extensive and refined outcomes research will grow ***(Shorr et al., 2008).***

Outcomes research, fortunately, encompasses a wide area of interest, and patient-centered outcomes can now be better folded into end points of clinical trials. Although methodological issues continue to exist and further refinement in analytic techniques is required, the practicing intensivist needs to grasp the issues central to outcomes research ***(Shorr et al., 2008).***

Aim of the Work

- To compare different mortality and severity of illness scales in elderly patients (60 years and above) admitted to ICU with non-surgical causes.

- To assess mortality predictors in elderly patients (60 years and above) admitted to medical ICU.

Elderly Patients in the ICU

The Aging of the World's Population

The 21st century will witness an unprecedented focus on human aging on a global basis. The impact of an aging population on individual health and societal well-being will transcend all specialties of medicine, but the clinical and ethical issues of the elderly will be most evident in critical care medicine ***(Nagappan and Parkin, 2003).***

Elderly patients are our greatest consumers of health care resources. Critical clinical events among older patients lead to some of the most challenging situations for intensivists and other critical care professionals.

Yet, this growing subset of intensive care patient population has received little scientific attention ***(Nagappan and Parkin, 2003).***

The average age and life expectancy of the population are increasing and because of this, a growing number of much older patients are being admitted to the intensive care unit.

There is some evidence to suggest that age is a restrictive factor for ICU admission and that it determines treatment intensity.

Although an increased risk of mortality accompanies old age most studies suggest that age alone does not represent a strong predictor for mortality ***(Roch et al., 2011).***

However, few data concerning long-term survival after ICU admission in much older medical patients are currently available.

Since these may be the patients with the worst prognosis at the hospital and following discharge a better knowledge of factors associated with long-term outcome in this population is warranted ***(Roch et al., 2011).***

Elderly patients admitted in the ICU

Elderly patients are frequent users of critical care services, and a substantial proportion of patients in intensive care units (ICUs) are over age 65 ***(Carson, 2003).***

Also the demand for critical care services and admissions to intensive care units (ICUs) is also projected to dramatically rise in the next decade ***(Angus et al., 2004).***

Data from the United States estimates approximately 55% of all ICU bed-days are occupied by patients aged ≥ 65 years and an estimated 14% of those patients aged ≥ 85 years die in the ICU ***(Angus et al., 2004).***

Differences in care between old and young patients:

A brief scan of the results section of any recent major publication following a multicenter ICU study will confirm that most patients in the ICU are older than 60 years.

There are conflicting data on the short-term and long-term survival for older patients admitted to the ICU ***(Somme et al., 2003).*** This may reflect differences in the severity and type of illness.

In a large multicenter cohort study that gathered the data of 57 ICUs across New Zealand and Australia Bagshaw et al. reported an increasing number of admissions of elderly patients aged 80 years and older of roughly 6% per year between 2000 and 2005. In this cohort, the rate of admission of elderly aged 80 years and older represented approximately 14% of total admissions in 2005 and also they predicted that by 2015 the rate of elderly aged 80 years and older admitted to the intensive care unit will increase by 72%, representing roughly 1 in 4 admissions to the ICU ***(Bagshaw et al., 2009).***

In a cohort of 193 patients at least 55 years old who had been admitted to a medical intensive care unit, 74% of surviving patients were completely -100%- willing to undergo intensive care for any period of life prolongation, including 1