



**Karolinska
Institutet**

From the Division of Global Health (IHCAR),
Department of Public Health Sciences
Karolinska Institutet

Road traffic injuries in the context of rapid motorization

Studies on access, provision and utilization of trauma care in Iran

ACADEMIC DISSERTATION

For the degree of PhD at Karolinska Institutet
The thesis will be defended in public at Samuelssonsalen, Tomtebodavägen 6,
Karolinska Institutet, Solna

At 13:00 on Monday, November 28th, 2011

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Stockholm 2011

Abstract

Background: Iran has one of the highest traffic-related mortality and morbidity rates in the world. Evidence shows that improvements in trauma care can prevent a substantial number of road traffic deaths and disabilities.

Aim: The overall aim of this thesis is to explore factors influencing access, provision and utilization of trauma care for road traffic injuries (RTIs) in Iran.

Methods: The thesis is based on four studies. Study I was a national ecological study in order to assess if the *distribution of pre-hospital trauma care resources* reflects the needs in terms of traffic-related mortality and morbidity in different provinces in Iran. Inequality measures and correlation analysis were used in the analysis. In Study II, qualitative interviews were conducted with 15 health professionals to explore factors influencing the *provision of pre-hospital trauma care* for RTI victims. In Study III, qualitative interviews were conducted with 15 health professionals and 20 RTI victims to explore factors influencing an effective trauma care delivery at *emergency departments (EDs)*. The grounded theory approach was used in both Study II and III. Study IV utilized the Iranian National Trauma Registry Database to assess *hospital resource utilization* (hospital charges and length of stay (LOS)) associated with RTIs in Iran and also to evaluate the association with the patients' socio-demographic characteristics, insurance status and injury-related factors. Univariable and multivariable analysis were used in this study.

Findings: There was no significant association between traffic-related mortality and morbidity and pre-hospital trauma care resources (I). Seven main factors that could hinder or facilitate an effective pre-hospital trauma care process were identified: administration and organization; staff qualifications and competences; availability and distribution of resources; communication and transportation; involved organizations; laypeople; and infrastructure (II). Lack of a systematic approach to providing trauma care at EDs emerged as the core category in Study III. Unclear national policies and poor organization of care at the ED were perceived as the main factors contributed to non-systematic approach but the contextual factors in the hospitals and those specific to the context of Iran also played a role. The mean (SD) total hospital charges and LOS for the patients were US\$ 165 (US\$ 290) and 6.8 days (8), respectively. Older age, being female, lower level of education, higher injury severity and longer LOS were associated with higher hospital charges. Longer LOS was associated with being male, lower education, having a medical insurance, being a farmer or a blue-collar worker and having more severe injuries (IV).

Conclusion: Pre-hospital trauma care resources across the country were not distributed based on needs in terms of traffic-related mortality and morbidity. For the provision of trauma care, the studies identified that there is a lack of interaction and common understanding among different actors involved in the pre-hospital trauma care and a non-systematic approach as the main barrier to managing trauma patients in the EDs. The findings indicated that the hospital resource utilization associated with RTI victims is substantial and varied based on the victims' socio-demographic characteristics, insurance status and injury-related factors. Both the pre-hospital and hospital organization, and interaction between them, need to be considered in order to reduce the high burden of RTIs in Iran.

Key words: Pre-hospital trauma care, emergency department, road traffic injuries, trauma care access, grounded theory, hospital resource utilization, low and middle-income countries