Hospitalization costs due to road traffic injuries: Results from a 1-year long-term study in 3 European countries Germany, Greece and Italy (REHABIL-AID)

Otte, D. (1); von der Geest, M.(1); Wilhelmi, M.(1); Chliaoutakis, J. E.(2); Papadakaki, M.(2); Tzamalouka, G.(2); Montomoli, C.(3); Morandi, A.(3); Orsi, Ch.(3); Ottavia, F.(3);

(1) Hannover Medical School, Accident Research Unit and Surgeon Department, Germany
(2) Technological Educational Institute of Crete, School of Health and Social Welfare Department of Social Work, Laboratory of Health and Road Safety (LaHeRS), Greece
(3) Centre of Study and Research on Road Safety (CIRSS), University of Pavia, Italy

A large number of road users involved in road traffic crashes recover from their injuries, but some of them never recover fully and suffer from some kind of permanent disability. In addition to loss of life or reduced quality of life, road accidents carry many and diverse consequences to the survivors such as legal implications, economic burden, job absences, need of care from a third person, home and vehicle adaptations as well as psychological Consequences (1). Within an EU funded project *MOVE/C4/SUB/2011-294/SI2.628846 (REHABIL AID)* these consequences were analyzed more detailed.

Research strategy

A total of seven public hospitals were involved in all the study sites; five in Greece (Region of Crete), one in Italy (Pavia) and one in Germany (Hannover). The study participants were enrolled during a 12-month period starting from April 2013. Eligibility for participation in the study was based on the following list of inclusion criteria: (a) injury sustained at Road Traffic Causes independently of the type of vehicle, (b) hospitalization ≥1day in the intensive or sub-intensive care unit of the selected hospitals, (c) age ≥18 years. Patients who accepted the invitation to participate in the study were monitored for one year after the date of admission to the intensive or sub-intensive care unit and were interviewed at three different time-points as follows: (a) at one month (baseline data), (b) at six months (1st follow up), and (c) at twelve months (2nd follow up). In addition to the self-reported information, all the eligible participants provided information drawn from their medical records.

Procedures and Data Collection

All patients that were admitted in the intensive or sub-intensive care units within 12-month enrollment period and met the inclusion criteria were invited to participate in the study. Written consent was requested by all the eligible patients prior to participation in the study upon receiving information about the study objectives and procedures. All patients were informed that the completion of the questionnaire was optional, all information provided would be handled with confidentiality, and that the questionnaires would become available to the principal investigators only and would be strictly used for research purposes. The interviewers were notified by the appointed nurses in each hospital about new admissions and arranged a meeting at a convenient time for the patients and their carers, so that the interviewers could come and collect the baseline data. The baseline data collection was carried out either at a hospital unit (usually orthopedics or neurological clinic), where the patient was transferred after discharge from the intensive or sub-intensive care unit or at their house if no further hospitalization was needed. The first and second follow up were carried out at the patients' house upon telephone arrangement.

Research instruments

For the needs of the data collection process, three different research instruments were developed; two semi-structured questionnaires to solicit self-reported information on the participants' personal characteristics and their physical, psychosocial, emotional and financial condition, and one data extraction form to extract injury-related information from the participants' medical records, also to find the monetary costs of treatment.

Questionnaire#1

Questionnaire 1 included nine sections,

(a) **Socio-demographic information** (e.g. gender, age, education, occupation, marital status).

(b) **Driving characteristics** (e.g. possession of driver's license, annual mileage, reasons for travel, seatbelt/helmet use).

(c) **Lifestyle characteristics** (e.g. the number of cigarettes consumed per day, number of cigars consumed per week, type of drinks consumed, number of glasses consumed per day, type of physical activity, total hours spent on each physical activity per week).

(d) **Accident-related information** (e.g. road-user category, type of road, accident location).

(e) **Quality of life** was measured using the "Medical Outcomes Study 36-Item ShortForm Health Survey (SF-36)" a 36-item survey that assesses health-related quality of life in 8 health domains;

(f) **Disability** was examined using the interviewer-administered 12-item version of WHODAS II "Disability Assessment Schedule II", developed by the World Health Organization (WHO) to better understand the difficulties people may have due to their health conditions (WHO, 2010).

(g) **Post-traumatic Stress Disorder** (PTSD) was assessed using the "Impact of Event Scale" (Horowitz et al. 1979), which involved two subscales; the "Intrusion Scale" (7 items) and the "Avoidance Scale" (8 items).

(h) **Depression** was measured using the "Center for Epidemiologic Studies Depression Scale (CES-D Scale), a 20-item self-report measure designed to assess depressive symptoms over the previous week, including depressed affect, lack of hope, feelings of guilt and shame, and somatic symptoms (e.g., disrupted sleep or appetite) (Radloff,1977).

(i) **Social Support** was assessed using the "MOS Social Support Scale".

Questionnaire#2

Questionnaire 2 was administered two times (Months 6, 12) and included two sections referring to the post-injury time period as follows:

(a) **Health Care Expenditure** was assessed using the MUARC's framework for estimating the cost of injury (Watson & Ozanne-Smith, 1997) including the following measures:

Direct Costs: Costs relating to the treatment of injury such as inpatient and outpatient hospital costs (e.g. number of admissions/visits, length of staying, reason of admission/visit, means of transport and approximate mileage, transport fare, insurance coverage, etc) as well as paid carers' costs (e.g. weekly hours of in-hospital care by paid carers, cost of paid carers, etc), ambulance transport, prescribed and nonprescribed medication (generic name, course and cost of medication, insurance coverage, etc), equipment (e.g. cost of wheelchair), medical tests (e.g. cost of x-rays or blood tests), and treatment by health professionals other than medical doctors (number and cost per visit to physicians of various specialties, nursing services, social services, etc).

Indirect Costs: Costs relating to the loss, or partial loss, to society of the productive efforts (both paid and unpaid) of injury victims and care-givers in the case of children (e.g. changes in employment status of the injured person or a family member such as loss of employment or changes in position and salary, childcare arrangements such as change of school or need for paid

child-caregiver, in-house 12 adaptations such as ramp or stair lift or moving to a different house, etc.). In addition to the above, the questionnaire explored the participants governmental benefits and allowances due to disability.

(b) **Satisfaction from Medical Care** was measured using the "Short-Form Patient Satisfaction Questionnaire (PSQ-18)" (Marshall & Hays, 1993). The PSQ-18 comprises

The **Data Extraction Form** replicated an abbreviated structure and content of the national accident and injury database in Germany (German In-Depth Accident Study, GIDAS) for describing the detailed injuries with information on the body area of the injury (head, face, neck, thorax, abdomen, spine, upper extremities, lower extremities, and external), the type and the extent of the injury as well as information on the physical condition of the patient. The Abbreviated Injury Scale (AIS) was calculated for each participant based on AIS -2005 (Update 2008).

A **database Rehabil-Aid** was developed by the coordinating team using the statistical package SPSS v. 21.0 and was delivered to all the participating countries for the data storage

Description of participants in the study

In Greece, a total of 52 patients admitted in the ICU due to injuries caused in a road traffic accident during the 12 months enrollment period (1st April 2013-31st March 2014). Out of the total patients admitted in ICU, 42 enrolled in the study and 10 dropped out before baseline. Out of the 42 patients that enrolled in the study, 4 patients dropped out at various stages (9.7% drop-out). Medical data have been obtained for all the patients admitted in ICU upon official permission. A total of 38 patients completed all follow up questionnaires and provided full data.

In Germany, a total of 131 patients admitted in the ICU during the 12 months enrollment period (1st August 2013-31st July 2014). Out of the total patients admitted in ICU, 39 enrolled in the study and 92 dropped out before baseline (died, refused, in coma, foreigners unable to communicate, etc.). Out of the 39 patients that enrolled in the study, 19 patients dropped out at various stages (48.7% drop-out). Medical data have been obtained for all the patients admitted in ICU upon official permission. A total of 20 patients completed all follow up questionnaires and provided full data.

In Italy, a total of 56 patients admitted in the ICU due to injury caused in a road accident during the 12 months enrollment period (1st April 2013-31st March 2014). Out of the total patients admitted in ICU, 40 enrolled in the study and 16 dropped out before baseline. Out of the 40 patients that enrolled in the study, 5 patients dropped out at various stages (12.5% drop-out). Medical data have been obtained for all the patients admitted in ICU upon official permission. A total of 35 patients completed all follow up questionnaires and provided full data.

A **total of 120 patients enrolled in the study in all the partner countries (GR=41, DE=39, IT=40).** The majority of the respondents in all three countries were men. The Greek respondents were younger than the German and Italian. Most of the respondents in all the three countries were employed, with Germany having the highest percentage of employed respondents among the partner countries (table 1). The highest average number of km driven per year was recorded in the German respondents (p=0.03), while the highest percentage of road traffic crash involvement was recorded among the Greek and the Italian respondents (GR=41.5%, IT=37.5%) without this difference being statistically significant. The highest number of unemployed persons as patient were found for Greece (19.5%).

Table 1 *Respondents' sociodemographic profile*

	Greece		Germany		Italy		Total	
Gender	**n**	**%**	**N**	**%**	**n**	**%**	**n**	**%**
Men	36	87.8	27	69.2	30	75.0	93	77.5
Women	5	12.2	12	30.8	10	25.0	27	22.5
Age*	35.9 (SD15.9)		42.7 (SD16.4)		47.0 (SD16.4)		41.8 (SD16.7)	
Marital status								
Single	21	51.2	9	23.1	11	27.5	41	34.2
Married/cohabitating	15	36.6	27	69.2	23	57.5	65	54.2
Divorced	4	9.8	1	2.6	4	10.0	9	7.5
Widow	1	2.4	2	5.1	2	5.0	5	4.1
Education								
Low	33	80.5	2	5.1	12	30.0	47	39.2
High	8	19.5	30	76.9	21	52.5	59	49.2
Higher	0	0.0	7	18.0	7	17.5	14	11.8
Profession								
Unemployed	8	19.5	1	2.6	2	5.0	11	9.2
Employed	17	41.5	29	74.4	19	47.5	65	54.2
Self-employed	8	19.5	1	2.6	5	12.5	14	11.7
Retired	3	7.3	5	12.8	9	22.5	17	14.1
Other	5	12.2	3	7.7	5	12.5	13	10.8
Income								
Up to 15000	33	86.8	2	5.1	10	30.3	45	40.9
15.001-28.000	5	13.2	20	51.3	14	42.4	39	35.5
28.001-55.000	0	0.0	16	41.0	3	9.1	19	17.3
55.001-75.000	0	0.0	0	0.0	4	12.1	4	3.6
More than 75.000	0	0.0	1	2.6	2	6.1	3	2.7

	Greece		Germany		Italy		Total	
	n	%	n	%	n	%	n	%
Area								
Urban	12	29.3	5	12.8	15	37.5	32	26.7
Semi-urban	22	53.7	7	17.9	20	50.0	49	40.8
Rural	4	9.8	25	64.1	5	12.5	34	28.3
Other	3	7.3	2	5.1	0	0.0	5	4.17
Type of road								
City road	21	51.2	11	28.2	16	40.0	48	40.0
Rural road	1	2.4	20	51.3	20	50.0	41	34.2
Highway	14	34.1	7	17.9	1	2.5	22	18.3
other	5	12.2	1	2.6	3	7.5	9	7.5

	Greece		Germany		Italy		Total	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Type of road user								
Pedestrian	2	4.9	5	12.8	7	17.5	14	11.7
Cyclist	1	2.4	3	7.7	10	25.0	14	11.7
Motorcyclist	20	48.8	12	30.8	8	20.0	40	33.3
Driver four-wheel	14	34.1	16	41.0	10	25.0	40	33.3
Passenger four-wheel	4	9.8	3	7.7	5	12.5	12	10.0

In Greece the majority of the respondents were motorcyclists (47.6%), while in Germany most of the respondents were four-wheel drivers (41.0%). In Italy a large percentage of the respondents were cyclists (25.0%), four-wheel drivers (25.0%), and motorcyclists (20.0%). In all the partner countries most of the respondents reported a collision involving a car. Half of the Greek and Italian respondents were travelling in a semi-urban area (GR=52.4%, IT=50.0%), while the majority of the German respondents were travelling on a rural area (64.1%) when the incident occurred.

Characteristics of treatment and hospitalization

The majority of the Greek and Italian respondents were transferred to the hospital with an ambulance either with or without a doctor. Half of the German respondents were transferred with a helicopter and the other half with an ambulance with a doctor. Respondents in all the partner countries were most often transferred to the hospital directly from the site of the road incident (GR=60.78%, DE=82.05%, IT=82.50%), while a large percentage of the Greek respondents

were transferred from another hospital (37.25%). The majority of the German and Italian respondents received first care both by an emergency doctor and a paramedic, while a larg e percentage of the Italian respondents were also treated by a nurse (37.5%). Many of the Greek respondents received first care by an emergency doctor (25.49%) but for a large percentage of them, this information was not known (27.45%). The duration of sta y in the intensive care unit was higher for the Greek and German respondents as compared with the Italian (GR=12.9, DE=11.6, IT=4.6, $p<0.01$). As regards to the Glasgow Coma Score, the German and Greek respondents suffered greater brain injury than the Italian respondents ($p<0.01$) with their GCS score being between 9-12 (moderate brain injury) while the Italian presented a GCS score above 13 (Minor brain injury). The respondents' distribution based on the characteristics of treatment and hospitalization are shown in Table 2.

Table 2: Characteristics of treatment - hospitalization

	Greece	Germany	Italy	Total
Mode of transport to hospital	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Ambulance with doctor	20 (50.0)	17 (43.6)	26 (65.0)	63(52.9)
Ambulance without doctor	16 (40.0)	0 (0.0)	14 (35.0)	30(25.2)
Helicopter	4(10.0)	21 (53.8)	0 (0.0)	25(21.0)
Other	0 (0.0)	0 (0.0)	0 (0.0)	0(0.0)
Unknown	0 (0.0)	1 (2.6)	0 (0.0)	1(0.8)
Transport from				
Site of road incident	30 (75.0)	32 (82.1)	33 (82.5)	95(79.8)
Other hospital	10 (25.0)	7 (17.9)	7 (17.50)	24(20.2)
First care delivered				
Emergency doctor	21 (51.2)	38 (97.4)	25 (62.5)	84(70.6)
None	3 (7.3)	0 (0.0)	0 (0.0)	3(2.5)
Nurse	3 (7.3)	0 (0.0)	15 (37.5)	18(15.1)
Paramedic	22(53.7)	38 (97.4)	40 (100.0)	19(16.0)
Other	1 (2.4)	0 (0.0)	0 (0.0)	1(0.84)
Unknown	0 (0.0)	1 (2.6)	0 (0.0)	1(0.83)
Duration of stay in intensive care (days)*	12.9 (14.9) Min/Max 1-81	11.6 (17.5) Min/Max 1-90	4.6 (7.5) Min/Max 1-30	9.6(14.2) Min/Max 1-90
Glasgow Coma Score*	11.2 (SD3.9)	10.2 (SD5.6)	14.7 (SD1.2)	12.0 (SD 4.4)

All the German respondents and the vast majority of the Greek and Italian respondents were shown to have undergone x-ray and Computed Tomography assessment (CT). A low number of respondents was found to have undergone Magnetresonance Tomography (MRT), most of them German (10.26%). A large number of Italian respondents were shown to have undergone a Cardiac Computed Tomography (CCT) (70.0%) while for the Greek respondents it was 50% and for the German 23.08%. The German respondents demonstrated the highest systolic pressure (128.83) and the Greek respondents presented the highest heart rate (99.3) at the time of arrival to the intensive care unit. As regards to the Glasgow Coma Score, the German and Greek respondents suffered greater brain injury than the Italian respondents with their GCS score being between 9-12 (moderate brain injury) while the Italian presented a GCS score above 13 (Minor brain injury).

Injury severity

Based on the analysis of the 120 cases recorded in the three partner countries, a total of 83 cases (69.1%) were classified as "MAIS 3+" (Graph 1) and a total of 51 cases were classified as "severe" or "critical" (42.5%) based on the ISS classification (Graph 2). MAIS scores are presented in Table 3.

Table 3 Abbreviated Injury Score – distribution for the collective

	Greece		Germany		Italy		Total	
Max AIS score	n	%	n	%	n	%	n	%
1 (Minor)	2	4.9	0	0.0	0	0.0	2	1.7
2 (Moderate)	11	26.8	6	15.4	17	42.5	34	28.3
3 (Serious)	25	61.0	22	56.4	13	32.5	60	50.0
4 (Severe)	0	0.0	5	12.8	10	25.0	15	12.5
5 (Critical)	1	2.4	6	15.4	0	0.0	7	5.8
6 (Maximum)	1	2.4	0	0.0	0	0.0	1	0.8
9 (Not specified)	1	2.4	0	0.0	0	0.0	1	0.8

**Mean, Standard Deviation*

Most of the cases classified as "MAIS 3+" suffered injuries located at the lower extremities (n=53) and thorax (n=51) while many of them were injured at the head (n=39) and the upper extremities (n=38) (fig 1)

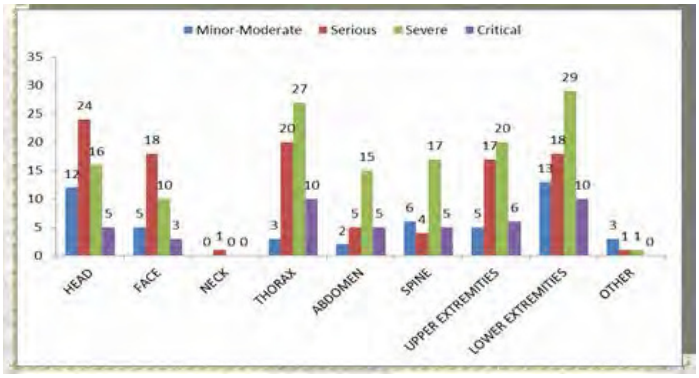


Figure 1 distribution of study participants based on MAIS and country for different injury location

Longterm consequenses

The Italian participants were more affected by pain as compared with the Greek and the German counterparts, with 1 in every 2 participants reporting this symptom 6 months after the injury. The majority of the participants suffering pain 12 months after the injury were men, in couple, with high education. Most of them sustained the injury as users of motorized four-wheel vehicles and many of them sustained the injury at a "straight road" incident. Many of them sustained serious injuries. The most severe injuries were at body regions other than the head and other than the low extremities for many of the participants affected by pain at 6 months after the injury. The vast majority sustained multiple fractures.

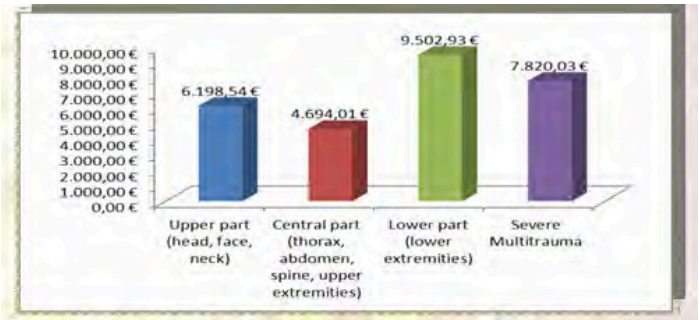
Hospitalization costs and injury location

Participants who sustained the most severe injuries at the upper part of their body demonstrated the highest hospitalization costs (1.568,70 €) as compared with those sustaining the most severe injuries at other parts of their body (Graph 102) in figure 2. This difference was not shown to be statistically significant (Kruskal Wallis: x2=1.751; df=3; p=.626).

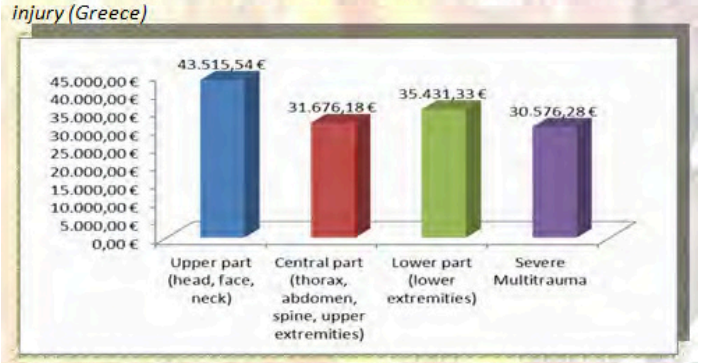
Looking at the hospitalization costs differences in terms of injury location within each country, it is evident that within Germany and Italy, the pattern is similar to the one demonstrated by the overall sample. In particular, those sustaining the most severe injuries at the upper part of their body demonstrated the highest hospitalization costs (43.515,54€ and

13.222,25 €, respectively) (Graph 104; Graph 105). This difference was not shown to be statistically significant neither in Germany (Kruskal Wallis: x2=.483; df=3; p=.923) nor in Italy (Kruskal Wallis: x2=3.250; df=3; p=.355).

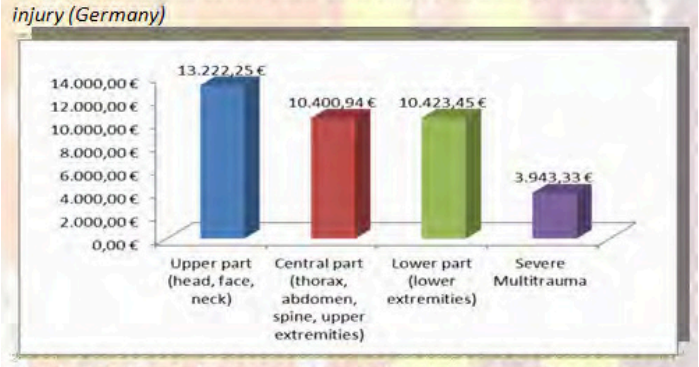
In Greece, those who sustained the most severe injuries at the lower extremities reported the highest hospitalization costs (9.502,93 €) as compared with those sustaining the most severe injuries at other body parts (Graph 103). This difference was not shown to be statistically significant (Kruskal Wallis: x2=.805; df=3; p=.848).



***Graph 103**. Hospitalization costs according to location of most severe injury (Greece)*



***Graph 104**. Hospitalization costs according to location of most severe injury (Germany)*



***Graph 105**. Hospitalization costs according to location of most severe injury (Italy)*

Figure 2: Hospitalization costs for different countries

People sustaining an injury classified as "MAIS 3+" presented higher total hospitalization costs as compared with those whose injuries were classified as "MAIS 1,2" (21.265,33 € and 7.886,09 €, respectively) (Graph 100). This difference was found to be statistically significant (Man Whitney U=852.500; p=.0001).

There has been a gender difference in terms hospitalization costs due to road traffic injury, with women demonstrating a higher total cost than men (18.871,04 € and 16.566,11 €, respectively). This difference was not statistically significant (Man Whitney U=1201.000; p=.732).
As regards to the age, it seems that the age group of 50-64 years presented the highest total

hospitalization costs (23.346,48€) followed by the age group of >65 years (17.597,35 €). This difference was shown to be statistically significant (Kruskal Wallis: x2=8.002; df=3; p=.046) (Graph 98). Upon further analysis, statistically significant differences were demonstrated between the age groups “15-24 years” and “50-64 years” (Man Whitney U=220.000; p=.054) as well as between the age groups “25-49 years” and “50-64 years” (Man Whitney U=458.000; p=.005).
As for the type of road user, it seems that those sustaining the injury as motorcyclists demonstrated the highest total hospitalization costs (23.766,83 €) as compared with those sustaining an injury as drivers or passengers of other means of transport (Graph 99). This difference was not shown to be statistically significant (Kruskal Wallis: x2=7.000; df=6; p=.321).

Summary

It is not surprising that Mediterranean countries have high proportions of motorcycle crash involvement with Greece, Malta, Cyprus, Italy and France having the highest proportions of deaths of motorized two-wheeler users among victims of road crashes, exceeding 1 in 4.

A remarkable finding of this study is that the Italian respondents were less severely injured as compared with the Greek and the German respondents since the majority of them had a MAIS <3, a higher Glasgow Coma Score and a lower duration of stay in the intensive care unit than the Greek and German respondents. The characteristics of the road incident that caused the injury could explain this variation as many Italian respondents were pedestrians and cyclists and had a single collision, which was not very often the case for the Greek and German counterparts.

Most importantly, the current study revealed several variations in the initial injury assessment and first care offered to the injured, which could be attributed to differences in the organization of the trauma care, the levels of investments in the trauma care infrastructure, the level of maturation of trauma systems and the level of enhancement of care protocols. In Greece for example, a large number of respondents were transferred from another hospital, which was not the case for Germany and Italy. In addition, rural health centres in Greece are often used as the first point of care in non - urban settings, without having the capacity to treat trauma patients. This implies that valuable time is lost from patient pre-hospital care and underlines the lack of appropriate units to treat trauma patients. Greece, in contrast with Germany and Italy, lacks an organized trauma system at the present moment and this is a serious shortcoming preventing optimized care and outcomes for trauma patients. This is evident also from the fact that a variety of health care providers were involved in the initial assessment and care of the respondents in Greece, while in the case of German and Italy this task was almost always under the responsibility of an emergency doctor along with a nurse or a paramedic. It has been noted that the composition of the health care providers treating trauma patients differs from country to country and that the level of training and the degree of professionalism involved can show wide variation.
In Europe, the multi-specialist trauma team usually comprises anesthesiologists, surgeons, radiologists, emergency physicians etc. while trauma team leaders tend to be either emergency physicians, surgeons (orthopedic surgeons, neurosurgeons, general surgeons) or anesthesiologists and specialists in intensive care. The emergency dispatch centre is considered to play a critical role in the efficient use of trauma systems especially in order not to lose time for adequate treatment of the severely injured patients. Further to this, a two-tiered system with emergency medical technicians as the first tier and a MICU-team (mobile intensive care units) as the second tier has been set up in some countries in Europe (such as in Belgium, Germany, France, Italy) with promising outcomes. In fact trauma registries exist in Germany and Italy and many other European countries but not in Greece, even though this has been included among the national strategic action plan for road safety of 2008-2012.

There were some interest results in the health conditions after treatment, i.e.

DEPRESSION: There is a different risk, at 6 and 12 months after the injury, if the subject was already depressed before the injury and also having depression at 12 months increased by age. The risk of having depression at 12 months is lower for those who sustained the injury as users of motorized 4-wheel vehicles as compared with vulnerable users, such as pedestrian or cyclists adjusted for the same severity of the injury and age. In general the subjects seem to recover from the initial state of depression due to the injury.

PHYSICAL DISABILITY: There is a different risk of sustaining physical disability 6 and 12 months after the injury, if the subject suffered a trauma at the lower extremities as compared with those that sustained injuries at other location of the body. At 6 months, there is also a higher risk of having physical disability if the subject sustained an severe or critical injury (MAIS score ≥4) as compared with those who sustained an injury of minor or moderate severity (MAIS 1,2). At 12 months, the marital status of the injured is important with the divorced and widow having a slower rehabilitation than the single, adjusted for their physical condition before the injury.

SUBJECTIVE STRESS: The risk of sustaining "subjective stress" 6 months after the injury seems to be associated with the presence of subjective stress at baseline. Moreover, if the low extremities are involved in the injury the recovery from stress is slower

SOCIAL SUPPORT: The risk of having a "low social support" 6 months and 12 months after the injury, increased with age. Six months after the injury, a low social support is more common for people with minor or moderate injuries (MAIS 1,2) as compared with people whose injuries were more severe (MAIS >3). One year after the injury, the risk of having a low social support is more common for the vulnerable road users, such as pedestrians and cyclists

PAIN: The risk of sustaining "pain" is reduced if the location of the crash is other than an intersection, probably due to the speed at the moment of the crash. Six months after the injury, subjects with severe or critical injuries (MAIS ≥4), have increased risk of sustaining pain. Singles are shown to run a lower risk of having pain at 12 months as compared with other subjects. Finally, it seems that pain and physical disability have a slow recovery process while depression and subjective stress seem to have good recovery if not complete recovery one year after the injury. For low social support, we have a situation less stable, due to low proportion of cases reporting low levels of support

References

1 Social and Economic consequences of road traffic crashes in Europe, European Transport Safety Council 2007, Available at: http://etsc.eu/wp-content/uploads/Social-and-economic-consequences-of-road-traffic-injury-in- Europe.pdf, Accessed 10 August 2015.

2 all literature sources can be seen in report REHABIL-AID 2016-216801-15/01/2016, MOVE/C4/SUB/2011-294/SI2.628846(REHABIL-AID) - http://ec.europa.eu/transport/road_safety/pdf/projects/rehabil-aid.pdf