Supplementary

Figure S1: Interface for data collection and during the on-site Medical Record Review

Characteristics and injury patterns of road traffic injuries in two hospitals in urban and rural Uganda in 2016

ID: 1
Hospital [SFH / KMH]
Patient identifier
Admission Date [dd.mm.2016]
Age [years]
Gender [m / f]
Duration of hospital stay [days]
Trauma [yes / no]
RTA [yes / no]
Fatal outcome [yes / no]
Mode of transport
Road user
Accident counterpart
Boda-Boda involved [yes / no]

Additional information on injuries
Additional information on severity (e.g. GCS)
Remarks

Data collection finished ☐   Inconsistent - remove ☐

Head injury [yes / no]
Head: type of injury 1
Head: type of injury 2
Head: type of injury 3
Face injury [yes / no]
Face: type of injury 1
Face: type of injury 2
Face: type of injury 3
Neck injury [yes / no]
Neck: type of injury 1
Neck: type of injury 2
Neck: type of injury 3
Spine injury [yes / no]
Spine: type of injury 1
Spine: type of injury 2
Spine: type of injury 3
Thorax injury [yes / no]
Thorax: type of injury 1
Thorax: type of injury 2
Thorax: type of injury 3
Abdomen injury [yes / no]
Abdomen: type of injury 1
Abdomen: type of injury 2
Abdomen: type of injury 3

Injury Severity Score

Upper arm injury [yes / no]
Upper arm: type of injury 1
Upper arm: type of injury 2
Upper arm: type of injury 3
Lower arm injury [yes / no]
Lower arm: type of injury 1
Lower arm: type of injury 2
Lower arm: type of injury 3
Hand injury [yes / no]
Hand: type of injury 1
Hand: type of injury 2
Hand: type of injury 3
Upper leg injury [yes / no]
Upper leg: type of injury 1
Upper leg: type of injury 2
Upper leg: type of injury 3
Lower leg injury [yes / no]
Lower leg: type of injury 1
Lower leg: type of injury 2
Lower leg: type of injury 3
Foot injury [yes / no]
Foot: type of injury 1
Foot: type of injury 2
Foot: type of injury 3
Other injury [yes / no]
Other: type of injury 1
Other: type of injury 2
Other: type of injury 3

Mode of transport / counterpart	
1	Pedestrian
2	Bicycle
3	Motorcycle
4	Car incl. Vans
5	Heavy transport
6	Bus
999	Unknown / not classified

Road user	
1	Pedestrian
2	Driver
3	Passenger
999	unknown

Type of injury	
1	Superficial wound
2	Deeper wound
3	Fracture closed
4	Fracture open
5	Fracture not classified
6	Luxation / strain / sprain
7	Contusio / blunt trauma
8	Bleeding / raised ICP
9	Not classified

Yes / No (trauma, RTA; outcome; injuries)	
1	Yes
2	No

Table S1: Proportion of incomplete Medical Reviews for mode of transportation, road user and crash counterpart in the urban and rural hospital

Data incomplete for:	Urban Hospital 1	Rural Hospital 2
Mode of transportation	7.2%	47.6%
Road user	9.2%	52.0%
Crash counterpart	35.5%	72.1%

Table S1: Calculation of the Injury Severity Score (ISS) – adapted to MRR with limited information

Injury location	Injury type	severity
Head	Contusion without loss of consciousness (LOC) / "mild closed head injury (CHI)"	1
Head	Contusion with LOC < 15 min / un-displaced skull or facial bone fracture / "moderate CHI"	2
Head	Closed head injury (with radiological evidence) / displaced closed skull fracture without LOC / "severe CHI"	3
Head	Open head injury with (radiological) signs of intracranial injury	4
Head	Bleeding / oedema / pneumocranium / raised intracranial pressure (ICP)	5
Face	Dislocation of teeth	1
Face	Fractures of facial bones (single / multiple)	2 / 3
Neck	Contusion / blunt trauma	1
Neck	Cervical fracture without cord damage	3
Neck	Cervical spine injury with partial paralysis	4
Neck	Cervical spine injury with quadriplegia	5
Thorax	Contusion / blunt trauma	1
Thorax	Rib fracture (single / multiple)	2 / 3
Thorax	Bleeding / haematothorax / rupture of diaphragm	3
Thorax	Cardiac arrest	5
Abdomen	Contusion / blunt trauma	1
Abdomen	Kidney haematoma	2
Abdomen	Urethral laceration / spleen rupture / bladder injury	3
Abdomen	Bleeding / haematoperitoneum	4
Extremity and pelvis		
	Fractures	
	Clavicle / radius / scapula / single digits	1
	Clavicle + scapula / radius + ulna / tibia + fibula / humerus	2
	Femur / Pelvis / multiple fractures	3
	Multiple long-bone (e.g. both legs)	4
	Dislocations	
	Elbow / digits	1
	Shoulder / knee	2
	Pelvis / femur	3
	Laceration of major nerves / vessels of extremities	3
	Amputation of limbs	4
	Multiple open limb fractures	5

External		
All	Superficial wound / abrasion	1
All	Open / deeper wound / laceration / open fracture	2
All	Multiple deep open wounds (≥ 3) / "de-gloving" wounds	3
All	Severe lacerations with dangerous haemorrhage	4
All	Burns 1°	1
All	Burns 2°/3° involving 10-20% BSA	2

All	Superficial wound / abrasion	1
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All	Multiple deep open wounds (≥ 3) / "de-gloving" wounds	3
All	Severe lacerations with dangerous haemorrhage	4
All	Burns 1°	1
All	Burns 2°/3° involving 10-20% BSA	2

Table S2: Descriptive analysis

Variables	Levels and values calculated	Descriptive statistics						
		Demographic data						
		Urban Hospital 1		**Rural Hospital 2**		**combined**		**Significance** (p; _test utilized_)
AGE (Continuous / ordered categorical)	Mean [Years]	29.21		31.68		30.67		_Mann-Whitney_
	Mean for no-RTC	26.93		31.29		29.59		**0.018**
	Mean for RTC	30.83		32.0		31.50		**0.004**
								0.499
	Age groups [n / %]							
	0 – 4	54	7.8	44	4.4	98	5.8	_Chi-squared:_
	5 – 14	70	10.2	97	9.7	167	9.9	**0.003**
	15 – 24	150	21.8	215	21.6	365	21.7	0.774
	25 – 34	208	30.2	304	30.6	512	30.4	0.924
	35 – 44	94	13.7	136	13.7	230	13.7	0.888
	45 – 54	56	8.1	88	8.8	144	8.6	0.997
	55 – 64	25	3.6	39	3.9	64	3.8	0.611
	> 65	31	4.1	72	7.2	103	6.1	0.763
								0.022
GENDER (Categorical, nominal)	**all trauma**							_Chi-squared:_
	n / % Male	500	72.7	746	75.0	1,246	74.0	0.290
	n / % Female	188	27.3	249	25.0	437	26.0	
	RTC							_Chi-squared:_
	n / % Male	278	69.0	407	74.3	685	72.0	0.073
	n / % Female	125	31.0	141	25.7	266	28.0	
	no-RTC							_Chi-squared:_
	n / % Male	222	77.9	339	75.8	561	76.6	0.522
	n / % Female	63	22.1	108	24.2	171	23.4	
		Hospital admission data						
		Urban Hospital 1		**Rural Hospital 2**		**combined**		**Significance** (p; _test utilized_)
HOSPITAL	Total	5,018		9,735		14,753		

ADMISSIONS DURING STUDY PERIOD (w/o maternity ward) (Categorical, ordinal)	Prevalence trauma Prevalence of RTC from total Admissions **Prevalence of RTC from all trauma admissions**	688 403 58.6%	13.7 8.0	995 548 55.1%	10.2 5.6	1,683 951 56.5%	11.4 6.4	*Chi-squared:* 0.154
TRAUMA MORTALITY (Categorical, ordinal)	**no-RTC**	20 no-RTC trauma	7.0	13 no-RTC cases	2.9	33 no-RTC cases	4.5	*Chi-squared:* **0.009**
	RTC	17 RTC trauma	4.0	17 RTC cases	3.1	34 RTC cases	3.6	0.360
	Total number of fatal cases	37 of all trauma cases	5.4	30 of all trauma cases	3.0	67 of all trauma cases	4.0	**0.015**
DURATION OF HOSPITAL STAY (Continuous / ordered categorical)	**all trauma** [days] Short (0-3 days) Moderate (4-9 days) Long (> 10 days)	Mean: 5.0 Median: 3.0 353 262 73	 51.3 38.1 10.6	Mean: 7.1 Median: 4.0 435 379 181	 43.7 38.1 18.2	Mean: 6.3 Median: 4.0 788 641 254	 46.8 38.1 15.1	*Mann-Whitney U* **< 0.001** *Kruskal-Wallis* **< 0.001**
	RTC [days] Short (0-3 days) Moderate (4-9 days) Long (> 10 days)	Mean: 4.92 Median: 3.0 207 153 43	 51.4 38.0 10.7	Mean: 7.9 Median: 5.0 215 218 115	 39.2 39.8 21.0	Mean: 6.7 Median: 4.0 422 371 158	 44.4 39.0 16.6	*Mann-Whitney U* **< 0.001** *Kruskal-Wallis* **< 0.001**
	no-RTC [days] Short (0-3 days) Moderate (4-9 days) Long (> 10 days)	Mean: 5.13 Median: 3.0 146 109 30	 51.2 38.2 10.5	Mean: 6.11 Median: 4.0 220 161 66	 49.2 36.0 14.8	Mean: 5.73 Median: 3.50 366 / 50.0% 270 / 36.9% 96 / 13.1%		*Mann-Whitney U* 0.681 *Kruskal-Wallis* 0.330

RTC characteristics

		Urban Hospital 1	Rural Hospital 2	combined	Significance (p; _test utilized_)
					Chi-squared:
MODE OF TRANSPORT (Categorical, ordinal)	Pedestrian	139 / 37.2%	84 / 29.3%	223 / 33.7%	**p = 0.033**
	Bicycle	8 / 2.1%	10 / 3.5%	18 / 2.7%	p = 0.292
	Motorcycle	171 / 45.7%	157 / 54.7%	328 / 49.6%	**p = 0.022**
	Car (including vans)	38 / 10.2%	26 / 9.1%	64 / 9.7%	p = 0.635
	Heavy transport vehicle	13 / 3.5%	6 / 2.1%	19 / 2.9%	p = 0.291
	Bus	5 / 1.3%	4 / 1.4%	9 / 1.4%	p = 0.950
	Others / unknown*	29 / 403 (7.2%)	261 / 548 (47.6%)	290 / 951 (30.5%)	
ROAD USER (Categorical, ordinal)					Chi-squared Test: (others excluded)
	Pedestrian	139 / 38%	84 / 35.5%	223 / 35.5%	p = 0.118
	Driver	102 / 27.9%	58 / 22.1%	160 / 25.4%	p = 0.099
	Passenger	125 / 34.2%	121 / 46.0%	246 / 39.1%	**p = 0.003**
	Unknown	37 / 403 (9.2%)	285 / 548 (52%)	322 / 951 (33.9%)	
Crash COUNTERPART (Categorical, ordinal)					Chi-squared Test: (others excluded)
	Pedestrian	7 / 2.7%	1 / 0.7%	8 / 1.9%	p = 0.147
	Bicycle	5 / 1.9%	3 / 2.0%	8 / 1.9%	p = 0.979
	Motorcycle	81 / 31.2%	92 / 60.1%	173 / 41.9%	**p < 0.001**
	Car (including vans)	147 / 56.5%%	52 / 34.0%	199 / 48.2%	**p < 0.001**
	Heavy transport vehicle	16 / 6.2%	5 / 3.3%	21 / 5.1%	p = 0.197
	Bus	4 / 1.5%	0 / 0%	4 / 1.0%	p = 0.123
	Others / unknown*	143 / 403 (35.5%)	395 / 548 (72.1%)	538 / 951 (56.6%)	

Injury characteristics

		Urban Hospital 1	Rural Hospital 2	combined	Significance (p; _test utilized_)
INJURY SEVERITY SCORE (ISS)		Mean: 13.79 Median: 10.0	Mean: 7.1 Median: 5.0	Mean: 9.9 Median: 8.0	_Mann-Whitney U_ **p < 0.001**

(Continuous / ordered categorical)					
	Mild (ISS < 9)	163 / 40.4%	358 / 65.4%	521 / 54.8%	Kruskal-Wallis Test
	Moderate (ISS 9-15)	79 / 19.6%	142 / 26.0%	221 / 23.3%	
	Severe (ISS 16-25)	98 / 24.3%	41 / 7.5%	129 / 14.6%	**p < 0.001**
	Profound (ISS > 25)	63 / 15.6%	6 / 1.1%	69 / 7.3%	
INJURY LOCATION (Categorical, ordinal)	Head	259 / 64.3%	140 / 25.5%	399 / 42.0%	_Chi-squared:_ **p < 0.001**
	Face	111 / 27.5%	142 / 25.9%	253 / 26.6%	p = 0.558
	Neck	0 / 0%	2 / 0.4%	2 / 0.2%	p = 0.225
	Spine	13 / 3.2%	6 / 1.1%	19 / 2.0%	**p = 0.020**
	Head/face/neck/spine (combined)	284 / 70.5%	239 / 43.6%	523 / 55.0%	**p < 0.001**
	Thorax	56 / 13.9%	45 / 8.2%	101 / 10.6%	**p = 0.005**
	Abdomen	31 / 7.7%	13 / 2.4%	44 / 4.6%	**p < 0.001**
	Thorax / Abdomen (combined)	77 / 19.1%	58 / 10.6%	135 / 14.2%	**p < 0.001**
	Shoulder / upper arm	68 / 16.9%	76 / 13.9%	144 / 15.1%	p = 0.201
	Elbow / lower arm	27 / 6.7%	56 / 10.2%	83 / 8.7%	p = 0.057
	Hand wrist / hand	21 / 5.2%	17 / 3.1%	38 / 4.0%	p = 0.101
	upper extremity (combined)	104 / 25.8%	139 / 25.4%	243 / 25.6%	p = 0.877
	Hip / femur	65 / 16.1%	128 / 23.4%	193 / 20.3%	**p = 0.006**
	Knee / lower leg	74 / 18.4%	175 / 31.9%	249 / 26.2%	**p < 0.001**
	Ankle / foot	26 / 6.5%	39 / 7.1%	65 / 6.8%	p = 0.688
	lower extremity (combined)	129 / 32.0%	293 / 53.5%	422 / 44.4%	**p < 0.001**
	all extremities (combined)	197 / 48.9%	389 / 71.0%	586 / 61.6%	**p < 0.001**
	Others / not classified	57 / 14.1%	48 / 8.8%	105 / 11.0 %	(p = 0.01)
MULTIPLE INJURY LOCATIONS	1	147 / 36.5%	298 / 54.4%	445 / 46.8%	_Chi-squared_ **p < 0.001**
	2	148 / 36.7%	174 / 31.8%	322 / 33.9%	p = 0.109
	3	78 / 19.4%	65 / 11.9%	143 / 15.0%	**p = 0.001**
	4	22 / 5.5%	9 / 1.6%	31 / 3.3%	**p = 0.001**
	5	5 / 1.2%	2 / 0.4%	7 / 0.7%	p = 0.118
	6	3 / 0.7%	0 / 0%	3 / 0.3%	**p = 0.043**
INJURY TYPE					_Chi-squared_

(Categorical, ordinal)	Superficial wound (e.g. abrasion)	142 / 35.2%	181 / 33.0%	323 / 34.0%	p = 0.478
	Open (deeper) wound (e.g. laceration)	124 / 30.8%%	229 / 41.8%	353 / 37.1%	**p = 0.001**
	STI (TOTAL)	232 / 57.6%	373 / 68.1%	605 / 63.6%	**p = 0.001**
	Fracture (closed)	17 / 4.2%	52 / 9.5%	69 / 7.3%	**p = 0.002**
	Fracture (open)	23 / 5.7%	71 / 13.0%	94 / 9.9%	**p < 0.001**
	Fracture (not classified)	222 / 55.1%	201 / 36.7%	423 / 44.5%	**p < 0.001**
	Fractures (TOTAL)	249 / 61.8%	308 / 56.2%	557 / 58.6%	p = 0.084
	Fractures (TOTAL without head)	186 / 46.2%	300 / 54.7%	486 / 51.1%	**p = 0.009**
	Fractures (only head)	88 / 21.8%	10 / 1.8%	98 / 10.3%	**p < 0.001**
	Fractures upper leg	45 / 11.2%	107 / 19.5%	152 / 16.0%	**p = 0.001**
	Fractures lower leg	62 / 15.4%	126 / 23.0%	188 / 19.8%	**p = 0.004**
	Luxation / sprain / strain	18 / 4.5%	29 / 5.3%	47 / 4.9%	p = 0.562
	Contusion / blunt trauma	296 / 73.4%	139 / 25.4%	435 / 45.7%	**p < 0.001**
	bleeding / raised intracranial pressure	135 / 33.5%	10 / 1.8%	145 / 15.2%	**p < 0.001**
	Others / not classified	0 / 0%	1 / 0.2%	1 / 0.1%	p = 0.391
MULTIPLE INJURIES	Number of all injuries in one patient				Chi-squared
	1	55 / 13.6%	217 / 39.6%	272 / 28.6%	**p < 0.001**
	2	121 / 30.0%	192 / 35.0%	313 / 32.9%	p = 0.104
	3	114 / 28.3%	102 / 18.6%	216 / 22.7%	**p < 0.001**
	4	62 / 15.4%	28 / 5.1%	90 / 9.5%	**p < 0.001**
	5	30 / 7.4%	6 / 1.1%	36 / 3.8%	**p < 0.001**
	6	15 / 3.7%	3 / 0.5	18 / 1.9%	**p < 0.001**
	7	3 / 0.7%	0 / 0%	3 / 0.3%	**p = 0.043**
	8	2 / 0.5%	0 / 0%	2 / 0.2%	p = 0.099
	9	1 / 0.2%	0 / 0%	1 / 0.1%	p = 0.243
	Number of fractures in one patient (total)				Chi-squared
	0	154 / 38.2%	240 / 43.8%	394 / 41.4%	p = 0.084
	1	179 /44.4%	267 /48.7%	446 / 46.9%	p = 0.189
	2	59 / 14.6%	38 / 6.9%	97 / 10.2%	**p < 0.001**
	3	11 / 2.7%	3 / 0.5%	14 / 1.5%	**p = 0.006**

Number of fractures in one patient (without head)				Chi-squared:
0	217 / 53.8%	248 / 45.3%	465 / 48.9%	**p = 0.009**
1	136 / 33.7%	260 / 47.4%	396 / 41.6%	**p < 0.001**
2	44 / 10.9%	38 / 6.9%	82 / 8.6%	**p = 0.031**
3	6 / 1.5%	2 / 0.4%	8 / 0.8%	p = 0.061
Number of STI in one patient				Chi-squared
0	171 / 42.4%	175 / 31.9%	346 / 36.4%	**p = 0.001**
1	153 / 38.0%	253 / 46.2%	406 / 42.7%	**p = 0.012**
2	53 / 13.2%	92 / 16.8%	145 / 15.2%	p = 0.123
3	22 / 5.5%	25 / 4.6%	47 / 4.9%	p = 0.528
4	3 / 0.7%	3 / 0.5%	6 / 0.6%	p = 0.705
5	1 / 0.2%	0 / 0%	1 / 0.1%	p = 0.243