Improved and standardized method for assessing years lived with disability after injury

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Objective To develop a standardized method for calculating years lived with disability (YLD) after injury.

Methods The method developed consists of obtaining data on injury cases seen in emergency departments as well as injury-related hospital admissions, using the EUROCOST system to link the injury cases to disability information and employing empirical data to describe functional outcomes in injured patients.

Findings Overall, 87 weights and proportions for 27 injury diagnoses involving lifelong consequences were included in the method. Almost all of the injuries investigated (96–100%) could be assigned to EUROCOST categories. The mean number of YLD per case of injury varied with the country studied. Use of the novel method resulted in estimated burdens of injury that were 3 to 8 times higher, in terms of YLD, than the corresponding estimates produced using the conventional methods employed in global burden of disease studies, which employ disability-adjusted life years.

Conclusion The novel method for calculating YLD after injury can be applied in different settings, overcomes some limitations of the method used to calculate the global burden of disease, and allows more accurate estimates of the population burden of injury.

Abstracts in عربي, 中文, Français, Русский and Español at the end of each article.

Introduction

The setting of priority in health care, surveillance and interventions is based increasingly on the results of studies on the burdens of disease and injury.[1,2] The burden of a disease is now generally expressed in disability-adjusted life years (DALYs) – a summary measure of population health that integrates mortality and disability.[3] Valid and representative data on the incidence of the disease or injury of interest, and the corresponding mortality rates, are essential in the calculation of DALYs. Disease- or injury-specific disability weights and information on the duration of the disability are equally important.

In many areas of medicine, disability weights are not tailored to the incidence or prevalence of the cause of the disability.[4–6] In addition, disability weights for certain health outcomes may not be available or appropriate. If, for example, the general health status of the population of interest is markedly better or worse than that represented by the "disability weights" used, data on the incidence of a disease cannot be accurately linked to the functional outcomes of that disease. This problem is magnified in the field of injury, since a single type of injury may lead to several forms of disability and those disabilities may vary from being mild and short-term to being severe and lifelong. To assess the burden of injury, the global burden of disease (GBD) study group developed a set of 33 disability weights for injuries.[7] Data on the incidence of injuries, which are typically classified into hundreds of different codes from the International Classification of Diseases (ICD), have to be collapsed before they can be linked to these 33 weights.

Information about the duration of injury-related disability is needed to calculate years lived with disability (YLD). The proportion of injuries that result in lifelong consequences is important, since it makes such a large contribution to the non-fatal burden of injury. Although the GBD studies defined a proportion of cases with lifelong disability for each category of injury, the empirical foundation of these proportions is questionable[8] and use of these proportions may lead to inaccurate estimates of the burden of injury.

This study aimed to refine the methods used to link data on injury incidence to empirically-derived disability information (i.e. disability weights and durations). Estimates of the burden of injury produced using the methods employed in GBD studies were then compared with the estimates produced, from similar incidence data, with the new methods. The data included in the study came from three countries on different continents and in different stages of economic development.

Methods

The calculation of injury-related YLD consists of three steps: (i) gathering data on the incidence and age distribution of the cases, (ii) breaking down the incidence data into injury categories that are each homogeneous at a functional level, and (iii) combining the grouped incidence data with the relevant disability weights and durations (Fig. 1). The challenge is to find the appropriate link between the epidemiological data and the disability weights and durations. In this process, the available epidemiological data should be leading.[9]

In this paper we provide a refined standardized method based on the three steps needed to calculate YLD due to injury. Once developed, this method was applied to assess the burdens of injury in the Netherlands, a South African town (Ceres) and Thailand. The results were then compared with the burdens

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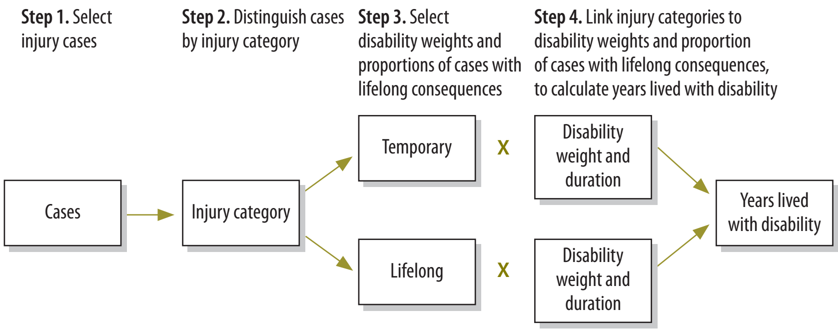
Fig. 1. **Conceptual model of the estimation of years lived with disability as the result of injury**



assessed, from similar incidence data, using the conventional GBD methods.[7]

The development of the new method to assess injury-related YLD was carried out within the framework of a European study called INTEGRIS (Integrating of European Injury Statistics), which aimed to improve the measurement of the incidence and burden of injury.[10]

Calculating years lived with disability

Step 1. Choosing cases to include

At the start of any attempt to quantify the burden of disability at the population level, one must begin by choosing the source or sources of incidence data to be used. Data on the rate of hospital admissions have proved very useful in quantifying the economic or health burdens of a disease or injury at the population level.[11–13] If, however, only hospitalized cases are considered, many cases of injury, including some that lead to substantial disability, are likely to be missed, including those cases only seen as outpatients at hospital emergency departments.

In the method proposed in this paper, cases of injury recorded by emergency-department-based systems for injury surveillance as well as those in hospital discharge registers and trauma-centre/trauma-network registries were included. Since they are routinely collected, such incidence data should be generally available at the national, regional and local levels.[14] Furthermore, the patient and injury characteristics that are needed to assess the disability component of the injuries are usually well documented in these data systems, generally in a way that makes linkage to disability weights possible.[14]

Step 2. Grouping cases into injury categories

The breaking down of the data on injury incidence into injury categories that are each homogeneous at a functional level is key to attempts to link incidence and disability information. The functional consequences of an injury vary widely according to the location, type and severity of the injury. In general, injuries to the head, spine and lower extremities have the largest impact on health-related quality of life[13,15–18] and patients with fractures of the lower extremities (particularly hip fractures) suffer from more severe consequences than patients with other lower-extremity injuries.[13,16,19] Compared with the injury severity scores – such as the Abbreviated Injury Scale (AIS) and Injury Severity Score (ISS) – that were developed to predict short-term death risks, injury location and type are better predictors of the functional consequences of an injury. Many studies have revealed only a weak association, if any, between severity scores and functional consequences,[15,17,20] indicating that the risk of death from any type of injury cannot be used to predict accurately the subsequent disability in the survivors of such an injury.

In an effective classification system for linking data on the incidence of an injury to information on that injury's functional consequences, both the type and anatomical location of the injury need to be considered. Injury type and location are combined within the codes of the International Classification of Diseases, the Barell Injury Diagnosis Matrix, the Classification by Body Region and Nature of the Injury Matrix, and the EUROCOST system for the classification of injury diagnoses.[21] The *International Classification of Diseases, tenth revision* (ICD-10), consists of 22 chapters that allow a detailed description of injury location and type, albeit with the use of hundreds of different codes. The Barell Injury Diagnosis Matrix uses three levels of anatomical location (each representing five, nine or 36 separate locations) and 12 classes of injury type.[22] The EUROCOST classification scheme identifies 39 injury groups.[18]

The detailed information needed to fit data on injury incidence to the 60 or more categories used in some of these systems of injury classification is often unavailable. For the purpose of calculating YLD, the EUROCOST classification is recommended because it can usually be fitted to the routine information that is generally available on injury incidence and it facilitates the linkage of such data to post-injury disability. The EUROCOST system has already been used in the follow-up of patients with injuries to assess the functional outcome of injury, and the feasibility of applying the EUROCOST classification to the information held in injury databases has been proven.[12] Appendix A (available at: http://www.rp7integris.eu/en/pages/downloads.aspx?pg=1&kat=15/Haagsma-BullWorldHealthOrgan-2012-AppendixA.pdf) shows the EUROCOST classifications corresponding to the ICD-10 (S and T) codes for the nature of the injury.

Step 3. Choosing disability weights and proportions

For the original GBD study, 33 disability weights were derived for the consequences of injury (both short-term and lifelong).[7] The usefulness of these 33 disability weights has been much debated, mainly because each weight often has to be assigned to a fairly heterogeneous group of injuries. For instance, there is only one disability weight for "intracranial injury," a category that includes a spectrum of injuries varying from mild concussion to severe brain trauma. Although new disability weights are being derived for an update of the GBD study, they are not yet available.[23]

Increasingly, researchers believe that the best disability weights to use for estimating the burdens of injury are those derived from empirical follow-up data on the health-related quality of life of individual trauma patients.[24–26] In at least two studies, disability weights have been generated in this manner, with the

patients grouped by nature of injury to avoid heterogeneity within groups.[11,27]

For the present study, we used data from a study of functional outcomes in injury patients in the Netherlands[13] to generate a disability weight for each of the 39 injury-diagnosis groupings of the EUROCOST classification system. In this Dutch study, data on functional outcome and health-related quality of life were collected, using a generic health-status classification (EQ-5D) and a sample of over 8500 injury patients aged 15 years or older who had minor or severe injury, 2.5, 5 and 9 and 24 months after the patients had attended the emergency department of a hospital in the Netherlands.[13] These data have restrictions with regards to the short-lived consequences of minor injuries (i.e. injuries of low severity) that the patients may have experienced.[24] In the present study, therefore, the empirically-derived disability weights for 15 injury groups (e.g. concussion, eye injury, and fracture of facial bones) were supplemented with disability weights, from a different study, that were derived in such a way that the restrictions to measure the effects of any short-lived consequences of injury (i.e. temporary health states) should have been alleviated.[28] Appendix A includes the methodological details of the generation of the disability weights used in the new method.

Disability weights were determined separately for cases seen in emergency departments and those recorded in hospital discharge registers because these two groups of patients tend to differ in injury severity and associated disability.[13] Injury cases admitted to hospital tend to have more severe injuries than non-admitted cases with the same type of injury. The absence of routine measures of injury severity (such as the Abbreviated Injury Scale) in the data collected in emergency departments and hospital discharge registers made it impossible to use other discriminators of severity.

The recommended set of 87 disability weights (68 and 19 for the temporary and lifelong consequences of injury, respectively) is presented in Table 1.

Although the proportions of injuries with lifelong consequences were estimated in the GBD, the estimates were based on expert opinion rather than empirical data.[8] In the present study such proportions were re-estimated using data collected – in the same study on which disability weights were largely based – two years after injury cases had attended the emergency department of a Dutch hospital.[13] A patient was assumed to have long-term disability if, at the two-year follow-up, he or she still claimed to be experiencing injury-related health problems and also reported symptoms compatible with the injury suffered (e.g. reduced mobility after a fracture of a lower extremity).[29,30]

The proportions of patients with lifelong consequences were determined for each of the EUROCOST injury categories, separately for emergency department cases and inpatients recorded in hospital discharge registers. The proportions of patients with lifelong disability and the corresponding disability weights are presented in Table 1. Appendix A presents in detail how the proportions of patients with lifelong consequences were assessed.

Applying the new calculation method

Fig. 2 shows the conceptual approach of the new standardized method. For comparison, the burden of injury in each of three areas – the Netherlands, the South African town of Ceres, and Thailand – was estimated twice using similar incidence data: once using the commonly used GBD method[7] and once using the newly developed standardized method. The West Level 26 life-table[31] was used for all the calculations.

Incidence data and EUROCOST injury categories

National data on the incidence of unintentional injury in the Netherlands were provided by the Dutch Injury Surveillance System – a registry of injured patients who have been treated in a hospital's emergency department and/or required admission to hospital.[13] Each year, according to this registry, about 830 000 people attend the emergency departments of Dutch hospitals for unintentional injury and about 11% of these are admitted. In the present study, each of the recorded injuries could be assigned to a EUROCOST injury category.

Incidence data on patients hospitalized because of unintentional or intentional injury were obtained from government hospitals in Thailand, which together registered approximately 380 000 hospitalized injury cases in 2004. Incidence data on patients who were only treated in emergency departments because of unintentional or intentional injury were obtained from three tertiary hospitals (one each in the south, north and north-east of Thailand) that formed part of a national injury surveillance system. In 2004, approximately 43 000 people were treated for injuries in the emergency department of one of these three hospitals. Almost all (98%) of the cases included in the analysed data could be assigned to an injury category using the EUROCOST classification scheme.

Incidence data on injured patients in the South African town of Ceres were obtained from the unpublished results of the Ceres Injury Burden Study. Ceres is largely a farming community, with a population of about 40 000, in a rural area of the Western Cape. Data on all 1300 cases of unintentional injury that presented to government or private hospitals in the area of Ceres in 2008 were analysed. Again, almost all (96%) of the patients investigated could be assigned to a EUROCOST injury category.

The percentage of injury cases that could be successfully assigned to an injury category was higher with the EUROCOST classification system than with the GBD system. Only 54% of the injury cases investigated in Thailand, for example, could be assigned to a GBD category.

Years lived with disability

Table 2 shows the YLD values resulting from the application of the new method to the incidence data from the Netherlands, the South African town of Ceres, and Thailand.

In the Netherlands, 98% of the injury patients treated in emergency departments sustained short-term injuries and had a mean burden of just 0.03 YLD per case, whereas the remaining 2% suffered lifelong impairments and had a mean burden of 4.6 YLD per case. In both Thailand and Ceres, 99% of the injury patients seen in emergency departments had short-term injuries (with mean burdens of 0.02 and 0.05 YLD per case, respectively) and 1% had lifelong impairments (with mean burdens of 6.6 and 10.4 YLD per case, respectively). The mean burdens for all injury cases seen in emergency departments in the Netherlands, Ceres (South Africa) and

Table 1. **Mean disability weights[a] (DW) and proportions of injuries with lifelong consequences**

Injury group	DW for acute phase		Proportion with lifelong consequences (%)		DW for lifelong consequences
	ED	HDR	ED	HDR	
Concussion	0.015	0.100	4	21	0.151
Other skull–brain injury	0.090	0.241	13	23	0.323
Open wound on head	0.013	0.209	–	–	–
Eye injury	0.002	0.256	0	0	–
Fracture of facial bone(s)	0.018	0.072	–	–	–
Open wound on face	0.013	0.210	–	–	–
Fracture/dislocation/sprain/strain of vertebrae/spine	0.133	0.258	–	0[b]	–
Whiplash injury/sprain of cervical spine	0.073	ND	ND	ND	ND
Spinal-cord injury	ND	0.676	ND	100	ND
Internal-organ injury	0.103	0.103	–	–	–
Fracture of rib/sternum	0.075	0.225	–	–	–
Fracture of clavicula/scapula	0.066	0.222	2	9	0.121
Fracture of upper arm	0.115	0.230	17	10	0.147
Fracture of elbow/forearm	0.031	0.145	0	8	0.074
Fracture of wrist	0.069	0.143	0	18	0.215
Fracture of hand/fingers	0.016	0.067	0	0	0.022
Dislocation/sprain/strain of shoulder/elbow	0.084	0.169	0	18	0.136
Dislocation/sprain/strain of wrist/hand/fingers	0.027	0.029	0	0[b]	–
Injury to nerves of upper extremity	ND	ND	ND	0[b]	–
Complex soft-tissue injury of upper extremity	0.081	0.190	3	15	0.166
Fracture of pelvis	0.168	0.247	30	29	0.182
Fracture of hip	0.136	0.423	14	52	0.172
Fracture of femur shaft	0.129	0.280	46[b]	35	0.169
Fracture of knee/lower leg	0.049	0.289	23	34	0.275
Fracture of ankle	0.096	0.203	12	35	0.248
Fracture of foot/toes	0.014	0.174	8	39	0.259
Dislocation/sprain/strain of knee	0.109	0.159	8	0[b]	0.103
Dislocation/sprain/strain of ankle/foot	0.026	0.151	4	26	0.125
Dislocation/sprain/strain of hip	0.072	0.309	23	30	0.128
Injury to nerves of lower extremity	ND	ND	0	0[a]	–
Complex soft-tissue injury of lower extremity	0.093	0.150	10	13	0.080
Superficial injury (including contusions)	0.006	0.150	–	–	–
Open wound	0.013	0.093	–	–	–
Mild burn(s)[c]	0.055	0.191	0	0	–
Poisoning	0.245	0.245	0	0	–
Multitrauma	ND	ND	ND	ND	ND
Foreign body	0.044	0.060	–	–	–
No injury after examination	–	–	–	–	–
Other and unspecified injury	0.111	0.212	–	–	–

ED, cases recorded attending emergency department; HDR, cases recorded in hospital discharge registers; ND, not determined (because the relevant data were missing or too scarce).

[a] Varying from 0 for full health to 1 for worst possible health state.

[b] Value based on fewer than 10 cases.

[c] Patients with severe burns would have been treated at specialized burn units, which were not included in the study.

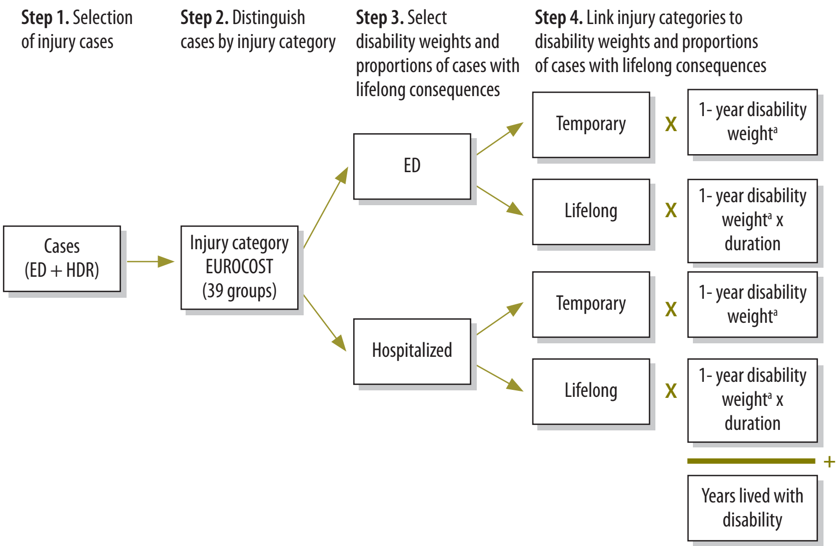
Thailand were 0.10, 0.07 and 0.13 YLD per case, respectively.

Of the injury cases hospitalized in the Netherlands and Thailand, 20.8% and 9.0% were considered to show lifelong consequences, respectively, with mean burdens of 3.4 and 10.3 YLD per case, respectively. The mean burdens for all patients hospitalized because of injury in the Netherlands, Ceres (South Africa) and Thailand were 0.9, 1.2 and 1.1 YLD per case, respectively.

Compared with the GBD method, the new method resulted in estimates of YLD that were between 2.7 and 8.2 times higher (Table 2).

Appendix A presents more detailed results of applying the newly developed standardized method to the assessment of injury-related YLD in the three study areas.

Fig. 2. **Conceptual model of the new standardized method for the estimation of years lived with disability as the result of injury**



ED, emergency department; HDR, hospital discharge register.
[a] Disability weights are adjusted for pre-injury health status, age and gender.

Discussion

This study aimed to refine the methods used to calculate injury-related YLD by using the EUROCOST classification to link incidence and disability information and developing a set of 87 injury-related disability weights and proportions of injuries with lifelong consequences for 27 categories of injury diagnoses tailored to the available incidence data. Unlike the older GBD method, which was largely based on expert opinion, the new method is based on a coherent set of empirical data. In all three study areas where the new method was applied to data on injury incidence, almost all cases of injury could be successfully assigned to one of the EUROCOST injury categories, and in this respect the EUROCOST system appeared far superior to the system of injury categorization employed in the GBD study.

Application of the new method resulted in estimates of the burden of injury (in YLD) which were 2.7 to 8.2 times higher than those produced using the older, GBD method. There are several possible reasons for these differences. First, the GBD method uses just 33 disability weights for injuries, whereas the new method uses 87 such weights. Compared with the GBD weights, the disability weights used in the new method can be linked to the epidemiological data more precisely and are more sensitive to differences between injuries. As an example, there is no separate disability weight for concussion in the GBD method. As a result, the disability weight and proportion of cases with lifelong consequences for intracranial injury have to be applied to concussion when using the GBD method, which results in an apparently enormous burden due to concussion. However, if we had chosen to exclude cases of concussion from the present study (rather than applying an inappropriate disability weight when using the GBD method), the total estimate of the burden of injury among the injury cases investigated in the Netherlands, as derived using the new method, would have almost halved, falling to 25 000 YLD. According to the estimates made using the new method, concussion contributed about 10% of all the DALY lost as a result of injury to the cases investigated in the present study. This example indicates the importance of disability weights that are tailored to the epidemiological data.

The new method and the older, GBD method also differed in the number of injury categories that could have lifelong consequences. In the GBD method, lifelong disability was assumed to occur, in some of the cases, in each of eight injury categories (e.g. skull–brain injury, spinal-cord injury and traumatic amputation). In the development of the new method, however, analysis of the data on injury cases indicated that lifelong consequences occurred, in some of the cases, in each of 19 injury categories: 11 more categories than in the GBD study. The lifelong consequences of these 11 extra injury categories contributed approximately one third of the total burden of injury assessed with the new method. Although, in the GBD method, it was assumed that none of the injuries in these 11 categories resulted in permanent disability, this assumption now appears untenable.

In the present study, the mean number of YLD per injured case was found to vary with the study area. It was markedly lower in the Netherlands than in Thailand or the South African town of Ceres. This probably reflects geographical variation in access to health care and treatment seeking. Patients with superficial injury are more likely to seek treatment in a hospital if they live in the Netherlands than if they live in South Africa or Thailand. Even with the use of the new method, it is likely that the burden of injuries in developing countries will still be under-estimated because the disability weights for the consequences of injury and the proportions of injury cases with lifelong consequences have mostly been derived in high-income settings where health care is of good quality and easily accessible. To improve the new method for use in developing countries, there is an urgent need for follow-up studies of injury cases in low-income settings.

In the new method, YLD are primarily calculated as arising from incident cases of injury and take no account of any comorbidity. Further study of the link between existing disability and previous injury is required.

Although the new method provides solutions to some of the problems encountered in the application of GBD methods, the assessment of disability weights remains a cause of concern. Most of the disability weights used in the new method were derived empirically, from follow-up data collected using a generic health-status classification (EQ-5D). For the GBD method, however, disability weights were derived from the health-state valuations of a panel of judges, often health experts or members of the general public. A major advantage of the empirically-derived disability weights is that they capture the heterogeneity of the cases within an injury category. Moreover, when a new health state has to be included in estimates of the burden of injury (or disease), a dis-

Table 2. **Estimates of the years lived with disability (YLD) as the result of unintentional injury, in the Netherlands, South Africa (Ceres) and Thailand**

	Disability estimated using:					
	New method			GBD method		
	Short-term	Lifelong	All	Short-term	Lifelong	All
Netherlands						
Cases treated in ED						
Incidence	731 237	12 379	743 616	741 129	2487	743 616
YLD	20 436	56 861	77 297	7685	14 970	22 655
YLD per case	0.028	4.593	0.104	0.010	6.020	0.030
Hospitalized cases						
Incidence	66 703	17 523	84 226	81 645	2581	84 226
YLD	19 181	60 312	79 493	4835	24 765	29 600
YLD per case	0.288	3.442	0.943	0.059	9.594	0.351
Thailand						
Cases treated in ED						
Incidence	42 423	1908	42 711	42 603	108	42 711
YLD	1007	2915	2915	115	871	986
YLD per case	0.024	6.616	0.068	0.027	8.065	0.430
Hospitalized cases						
Incidence	344 180	37 131	381 311	369 515	11 796	381 311
YLD	73 097	370 630	443 727	4639	104 910	109 549
YLD per case	0.212	9.982	1.164	0.013	8.894	0.287
Ceres, South Africa						
Cases treated in ED						
Incidence	1103	8	1110	1107	3	1110
YLD	58	81	140	4	13	17
YLD per case	0.053	10.357	0.126	0.004	4.013	0.016
Cases treated in ED						
Incidence	152	15	167	164	3	167
YLD	29	155	184	3	29	33
YLD per case	0.194	10.344	1.105	0.021	10.632	0.195

ED, emergency departments; GBD, Global Burden of Disease.

ability weight for the new state can be easily derived from the data on health-related quality of life. Estimation of the same disability weight using the panel approach would, however, require a new, costly and time-consuming panel study.

It has been argued that the value of EQ-5D disability weights is limited by an assumption that underlies the calculation of such weights. This assumption, that health remains constant for relatively long periods of time, is untenable for injuries with very short duration and low severity. We therefore used panel-derived disability weights for some conditions[24] in the development of the new method. This conservative approach may have resulted in underestimates of the burdens associated with these conditions (Appendix A).

Although the global use of the same set of disability weights has advantages in terms of comparability, diseases and injuries rated as less severe by experts in high-income settings may be considered much more burdensome by health-care workers in resource-poor settings. Two studies have shown that the ranking of health states is generally similar across countries[32,33] but that there are clear intercultural differences in the ways people perceive health problems and how such problems affect their lives.[34–36] Further research on the effects of cultural differences on disability weights is needed.

Conclusion

The newly developed method for calculating YLD after injury overcomes some of the limitations of the older, GBD method. Our approach includes the analysis of emergency-department data (rather than only data on hospital admissions), a classification of injury that was specifically designed to assess functional outcome among homogeneous groups of injured patients, and the use of empirical data to describe functional outcomes for injured patients. Use of the GBD method to calculate YLD after injury apparently led to highly inaccurate estimates of the burden of injury. The use of such poor estimates could adversely affect resource allocation and the identification of important prevention priorities.

The new, improved and standardized method for calculating YLD after injury could be applied in future burden-of-injury studies in populations across the world. ■

Competing interests: None declared.

ملخص

أسلوب محسن وموحد لتقييم سنوات العمر المقضية مع العجز بعد الإصابة

الغرض وضع أسلوب موحد لقياس سنوات العمر المقضية مع العجز (YLD) بعد الإصابة.

الطريقة يتكون الأسلوب الذي تم وضعه من الحصول على البيانات المتعلقة بحالات الإصابة التي يتم مشاهدتها في أقسام الطوارئ بالإضافة إلى حالات دخول المستشفى المرتبطة بالإصابات، باستخدام نظام EUROCOST لربط حالات الإصابة بمعلومات العجز واستخدام البيانات التجريبية لوصف الحصائل الوظيفية لدى المرضى المصابين.

النتائج تضمن الأسلوب 87 مقياسًا ونسبة لسبع وعشرين تشخيصاً بالإصابة تشتمل على عواقب طوال العمر. ويمكن ربط كل الإصابات التي تم فحصها تقريبًا (96 – 100 ٪) بفئات EUROCOST. وتباين متوسط عدد سنوات العمر المقضية مع العجز لكل حالة إصابة وفق البلد موضع الدراسة. وأدى استخدام الأسلوب الجديد إلى تقدير أعباء الإصابة التي كانت أعلى من 3 إلى 8 مرات، فيما يتعلق بعدد سنوات العمر المقضية مع العجز، من التقديرات المناظرة الناتجة باستخدام الأساليب التقليدية المستخدمة في العبء العالمي لدراسات المرض، الذي يستخدم سنوات العمر المصححة باحتساب مدد العجز.

摘要

改进和标准化的伤后残疾寿命年评估方法

目的 制定计算伤后残疾寿命年（YLD）的标准化方法。

方法 制定的方法包括获得紧急部门以及伤害相关入院的伤害案件相关数据，使用EUROCOST系统链接伤害案件和残疾信息，采用经验数据描述受伤病人的功能结果。

结果 总体而言，方法中包含涉及终身后果的27 例伤害诊断的权重和比例87。几乎所有调查的伤害（96-100%）可以归属于EUROCOST类目。每个伤害案例的YLD平均数因受研究的国家而异。就YLD而言，较之使用在全球疾病研究中采用的传统方法得出的相应估计，使用新方法得出的伤害负担估计要高出3 至8 倍，传统方法使用的是残疾调整寿命年。

结论 计算伤后YLD的新方法可以在不同的环境中使用，克服了用于计算全球疾病负担的方法的一些限制，提供的受伤人口负担估计更精确。

Résumé

Méthode améliorée et normalisée pour évaluer les années vécues avec une incapacité après une blessure

Objectif Mettre au point une méthode normalisée de calcul des années vécues avec une incapacité (AVI) après une blessure.

Méthodes La méthode développée consiste à obtenir les données relatives aux blessures des services d'urgence, ainsi que celles relatives aux hospitalisations liées à des blessures, en utilisant le système EUROCOST pour relier les cas de blessures à l'information relative à l'invalidité, et en utilisant des données empiriques pour décrire les résultats fonctionnels chez les patients blessés.

Résultats Au total, 87 poids et proportions pour 27 diagnostics de blessures impliquant des séquelles à vie ont été inclus dans la méthode. Presque toutes les blessures étudiées (96 à 100%) pouvaient être attribuées aux catégories EUROCOST. Le nombre moyen d'AVI par cas de blessure variait selon le pays étudié. L'utilisation de la nouvelle méthode a entraîné des charges estimées des blessures 3 à 8 fois supérieures en termes d'AVI que les estimations correspondantes résultant des méthodes classiques utilisées dans les études de charge globale de la morbidité, employant les années vécues ajustées à l'incapacité.

Conclusion La nouvelle méthode de calcul d'AVI après une blessure peut être appliquée dans des contextes différents, surmonte certaines des limites de la méthode utilisée pour calculer la charge globale de la morbidité et permet d'effectuer des estimations plus précises de la charge des blessures de la population.

Отрывок

Усовершенствованный стандартизированный метод оценки периода жизни с неполноценными физическими возможностями после перенесенной травмы

Цель Разработать стандартизированный метод подсчета количества лет, прожитых с неполноценными физическими возможностями после перенесенной травмы.

Методы Разработанный метод заключается в том, чтобы с помощью системы EUROCOST получать данные о случаях получения травм, регистрируемых в отделениях реанимации, а также данные о приемах пациентов с травмами в больницах. Затем случаи получения травм связываются с данными о физической неполноценности, и в дальнейшим применяются эмпирические данные для описания фактического исхода случаев получения травм пациентами.

Результаты В общей сложности, в данные о методе было включено 87 значений веса и пропорций тела для 27 диагнозов полученных травм, а также их возможные последствия, влияющие на состояние здоровья пациентов в течение жизни. Почти все исследуемые травмы (96–100%) можно найти в категориях травм системы EUROCOST. Среднее число случаев дальнейшей жизни с неполноценными физическими возможностями после перенесенной травмы варьируется в зависимости от страны. Новый метод позволяет дать оценку последствий получения травмы в 3-8 раз эффективнее (в плане подсчета лет жизни с неполноценными физическими возможностями после получения травмы), чем соответствующие стандартные методы оценки, используемые в мировой практике при проведении исследований заболеваний, при которых осуществляется подсчет лет жизни с поправкой на физическую неполноценность (инвалидность).

Вывод Новый метод подсчета лет жизни с неполноценными

физическими возможностями после получения травмы можно применять для различных параметров. Он является более эффективным, так как превосходит некоторые ограничения используемого метода подсчета случаев инвалидности в мировом масштабе и позволяет дать более точную оценку таких случаев среди населения.

Resumen

Método mejorado y estandarizado para evaluar los años vividos con una discapacidad después de un traumatismo

Objetivo Desarrollar un método estandarizado para calcular los años vividos con una discapacidad (YLD, por sus siglas en inglés) después de un traumatismo.

Métodos El método desarrollado consiste en la obtención de datos acerca de los casos de traumatismos vistos en los servicios de urgencias y en hospitalizaciones relacionadas con traumatismos por medio del sistema EUROCOST para relacionar los casos de traumatismos con la información sobre la discapacidad y utilizar los datos empíricos para describir los resultados funcionales en pacientes con traumatismos.

Resultados En total, se incluyeron en el método 87 pesos y proporciones de 27 diagnósticos por traumatismo con consecuencias para toda la vida. La mayoría de los traumatismos investigados (96–100%) pudo asignarse a una de las categorías de EUROCOST. El número medio de YLD por traumatismo varió en cada país estudiado. El uso del método novedoso dio como resultado cargas estimadas de traumatismo que fueron de 3 a 8 veces más altas, desde el punto de vista de los YLD, que los cálculos correspondientes obtenidos a través de los métodos convencionales empleados en los estudios mundiales sobre la carga de traumatismos, que utilizan los años de vida ajustados por discapacidad.

Conclusión El método novedoso para calcular los YLD después de un traumatismo puede aplicarse en entornos distintos, supera algunas de las limitaciones del método empleado para calcular la carga global de morbilidad y permite realizar estimaciones más exactas de la población con traumatismos.

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