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ORIGINAL REPORT

THE ASSOCIATION OF COMPENSATION AND LONG-TERM HEALTH STATUS FOR PEOPLE WITH SEVERE TRAUMATIC INJURIES

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Objective: **It was hypothesized that, for people with severe traumatic injuries, no association between long-term health status and receiving financial compensation would be detected.**

Design: **Two prospective cohort studies.**

Subjects: **A group of people with severe traumatic brain injury ($n=132$) and a group of people with traumatic spinal cord injury ($n=58$).**

Methods: **Health status and functioning were measured at baseline and at 5 years follow-up for both injury groups. Results per group were compared between those who received compensation and those who were non-compensable.**

Results: **In the brain injury cohort those receiving financial compensation showed a significantly worse Disability Rating Scale score after 5 years compared to the non-receiving group ($p=0.01$). Financial compensation was a modest predictor for being disabled (scores ≥4) after 5 years (Exp (B)=2.47, 95% confidence interval 1.03 to 5.93). In the spinal cord injury cohort those receiving financial compensation scored significantly lower with the Short-Form 36 General Health Survey/Physical Component Summarise scores after 5 years than those who did not ($p=0.04$). Again, receiving financial compensation had a modest predictive value for the Short-Form 36/Physical Component Summarise scores after 5 years (B=–4.72, SE=2.16, 95% confidence interval –9.05 to –0.38).**

Conclusion: **Financial compensation may have a small negative association with recovery, even for people with severe traumatic injury.**

Key words: compensation; severe traumatic brain injury; traumatic spinal cord injury; health status; long-term recovery; SPRS; DRS; SF-36; FIMTM.

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INTRODUCTION

Severe trauma is a significant cause of mortality and morbidity, particularly in young people. Millions of people each year will spend periods in hospital after sustaining severe injuries and many will never be able to live, work or enjoy leisure as they used to do (1). Many studies have explored possible predictors of physical and mental health outcome after physical trauma, including investigations focusing on the effect of compensation and future health outcomes (2). An association between compensation status and outcome is important, not only clinically, as it may influence clinical decision making, but also economically, because workers' compensation and other insurance costs form a significant part of the costs of government and business. The literature so far has speculated about the association between poor outcome and financial compensation for various health problems (2,3). For trauma patients, a relationship between compensation and poor physical health has been detected by several authors (2, 4–6).

Motor vehicle crashes are a frequent cause of major trauma. Littleton et al. (7) who examined longer term health status for people with musculoskeletal injuries following road traffic crashes found that claiming compensation and psychological factors were independent predictors of worse health status at 12 months. They also found that people who subsequently claim compensation already had a worse health status at baseline. The authors speculated that psychological factors associated with the crash such as anger, blame, and a sense of injustice could possibly explain the baseline differences of worse health status.

The extent to which claiming compensation may also have an association on the long term with the health status of people with more severe traumatic injury is much less clear. It has been suggested that the severity of a trauma has an inverse relation with the potential effect of seeking monetary incentives (3). This seems plausible as severe trauma such as traumatic brain injury (TBI) or spinal cord injury (SCI) has such repercussions for a person's life that receiving compensation is unlikely to negatively affect any potential improvement in disability or health status. In contrast, others have proposed that general health after major physical trauma is more strongly associated with factors relating to compensation than with the severity of the injury (6).

This study evaluates the relation between receiving compensation and health status or disability level for people with severe TBI and SCI 5 years after injury. The hypothesis was that for these injured people no association between compensation and long term recovery would be detected.

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METHODS

Study population

The study population were two prospective cohorts of severe trauma patients admitted to rehabilitation units in New South Wales (NSW), Australia. One cohort consisted of TBI patients who were recruited between 1999 and 2001. To be eligible for the study, individuals had to meet the following criteria: (*i*) be aged between 16 and 65 years, (*ii*) sustain a de novo TBI within the previous 6 months, (*iii*) have post-traumatic amnesia (PTA; in excess of 1 week), and (*iv*) be admitted to one of the participating units of the Brain Injury Rehabilitation Program for NSW. They were described in more detail in Tate et al.´s study (8). At 5 years follow-up 132 participants (67%) from the original 198 participants were followed-up.

Another cohort consisted of traumatic SCI patients who were recruited between 2003 and 2005. Of the original 75 participants, 5 year follow-up data were collected from 58 (77%) patients. To be eligible for the study, individuals had to meet the following criteria: (*i*) be aged between 16 and 65 years at time of injury, (*ii*) be medically stable following SCI, (*iii*) have significant persistent neurological loss, (*iv*) likely to be discharged to a destination within NSW that was not a residential aged care facility or hospital, and (*v*) be Australian citizen or have permanent resident status. Individuals were excluded if they required permanent ventilation, or had (in addition to SCI) a severe TBI (PTA >7 days) or significant mental health disorder. Participants in the intervention group of the cohort received support from a community participation coordinator (CPC) during the first 2 years following discharge from hospital to facilitate resettlement into the community. More information about this trial can be found in the Community Participation Project report (9).

Data collection

Information concerning pre-morbid level of physical independence, accommodation status, and demographic details including age, gender, level of education, employment status and compensation were collected at baseline using a questionnaire. For the TBI cohort we used the duration of the PTA to classify the severity of the brain injury. For the SCI cohort we used the impairment level (high vs low) to classify the degree of neurological impairment. Low impairment is paraplegia American Spinal Injury Association (ASIA)A–C or tetraplegia D; high impairment is tetraplegia ASIA A–C (10).

Compensation schemes

There are several compensation scheme types in the state of NSW. Workers Compensation insurance payments are made for any employee who suffers a work-related injury or disease. The compensation is a no-fault with weekly benefits and lump-sum compensation. It covers medical and related expenses as well as lost earnings. Next there is motor vehicle crash Compulsory Third Party (CTP) insurance, which was a predominantly fault-based insurance scheme at the time the study data were collected. A person may claim for economic loss – this includes compensation for past and future loss of earning capacity and for past and future medical, treatment and care expenses. He or she may also claim for non-economic loss (general damages) – this includes payment for "pain and suffering", loss of enjoyment of life and any loss of expectation of life experienced as a result of the injuries. Other schemes are sports injury compensation, crime victim's compensation or personal injury compensation through income protection insurance. Although, no information was collected about whether or not legal advice was used for the claims settlement, due to the severity of the injury suffered by these participants, all participants are likely to have sought legal advice.

People who did not receive any form of financial compensation have to rely on the universal health insurance scheme in Australia (Medicare) together with government provided support services through the social security system supplemented by payments by the injured person or family members. A minority of severely injured people return to work and those who cannot not return to work are eligible for a social security pension.

For the purpose of this study, receiving a form of financial compensation was used as the predictor variable and the demographic and socioeconomic factors were used as covariates for physical and mental health status 5 years after injury. In the TBI cohort, health status was measured at baseline soon after injury and 5 years after injury using the Sydney Psychosocial Reintegration Scale (SPRS) and the Disability Rating Scale (DRS). In the SCI cohort, information about the physical and mental health status was collected at baseline (prior to discharge from hospital) and 5 years following discharge from hospital using the Functional Independence Measure (FIM) and the Short-Form 36 General Health Survey (SF-36).

The SPRS is used to examine participation. It is a 12-item scale sampling 3 domains (occupational activity, interpersonal relationships, and independent living skills). The total score ranges from 0 to 72, with higher scores indicating higher levels of psychosocial reintegration (11–14). For both types of patients form B was used, which measures the current level of competency. For the TBI cohort the SPRS was rated by a close relative; the SCI cohort used the self-rated form. The DRS comprises 4 domains: Arousability, measured by Glasgow Coma Scale (GCS), Dependence on Others, Cognitive Ability for Self-care Activities (including feeding, toileting and grooming), and Employability. The total score ranges from 0–29, with higher scores indicating higher disability (15). The FIM contains 18 items with total scores between 18 and 126. Thirteen of these items constitute the motor subscale and the remaining 5 items form the cognitive subscale (16). Higher scores on the FIM denote patients who have a higher level of independence and require less assistance. The SF-36 is a self-completion health related quality of life instrument sampling 8 health domains: physical functioning, role limitation due to physical problems, bodily pain, general perception of health, vitality, social functioning, role limitation due to emotional problems, and mental health. Two component scales, physical and mental component summaries (PCS and MCS), can be derived from the domain scales, which are standardised to a mean score of 50 (standard deviation [SD] 10) (17).

Both studies were approved by the relevant health research ethics committees.

Statistical analysis

At baseline, demographic and other characteristics of respondents who received and did not receive compensation were compared. Data were screened for normality using the Kolmogorov-Smirnov Test. We found that all outcomes, except for SF-36/PCS were not normally distributed and consequently used non-parametric tests for analyses with these variables. We used the χ^2 test for categorical variables and Mann-Whitney *U* test for continuous variables. Differences in outcomes (SPRS and DRS for TBI cohort and FIM and SF-36 for SCI cohort) measured at baseline and 5-year follow-up were tested using Wilcoxon Signed Rank Test for repeated measures.

To be able to perform multivariate logistic regression analysis we first dichotomized the outcome variables except SF-36/PCS. For DRS we used ≥ 4 points as cut-off point, for SPRS we used ≥ 40, for the FIM we used ≥ 113 points, and for SF-36/MCS we used ≥ 50 points as cut-off. These cut-off scores were based on the median at 5 years. Next, we performed univariate regression analysis to evaluate those baseline variables that were significantly associated with disability or health status at 5 years. Significant variables ($p < 0.05$) and receiving financial compensation were then included in a backward multiple logistic regression analysis (for SF-36/PCS we used linear regression analysis) with health and functioning outcome as dependent variable at 5 years. For the linear regression analysis statistical assumptions were checked using the residual analysis. We also performed a sensitivity analysis for type of financial compensation to analyse if there was any particular form of compensation that would show a stronger association with disability or health status after 5 years. We distinguished the financial compensation into 3 types: 1) workers compensation, 2) compulsory third party compensation and 3) 'other' forms of compensation including: sports injury, crime victim's and personal injury compensation. We performed all statistical analysis using SPSS version 16.0.

RESULTS

Brain injury cohort

For the TBI cohort almost half of the participants (62/132, 47%) had some form of compensation for their injury, and of these, the majority (53%) received motor vehicle crash CTP insurance. The mean age was 31 years, with the majority (75%) being male. Half of the group (51%) had more than 4 weeks of PTA, indicating extremely severe TBI. Mean length of stay in the acute hospital wards was 19 days (SD 17 days) before transfer to the rehabilitation units. Two thirds (65%) sustained their injuries as a result of a road traffic crash and 18% were due to falls. Those involved in road traffic crashes were significantly more likely to receive injury compensation (Fisher exact test; $p = 0.004$) compared to those with trauma of other causes. Severity of the injury as measured with the length of PTA showed no association with compensation (Table I).

For the TBI cohort, disability as measured with the DRS was significantly reduced from median 7.0 (interquartile range 7) at baseline to median 3.0 (IQR 3) at 5 years follow-up (Wilcoxon Signed Ranks test, $p < 0.001$). At baseline, 11% had minimal disability (DRS score 0–3), 37% moderate disability (DRS score 4–6), 27% moderate to severe disability (DRS score 7–11) and 25% severe disability DRS score > 12. After 5 years 52% of the participants had minimal levels of disability, 38% had moderate, and the remaining 10% had major levels of disability (DRS scores ≥ 7). Table I shows there was a significant difference in DRS scores after 5 years between the two groups (Mann-Whitney *U* test $p = 0.01$) with the compensation group having experiencing greater disability.

Psychosocial functioning for the TBI cohort as measured with the SPRS significantly reduced from median 45.0 (IQR 25) at baseline to median 40.0 (IQR 32) at 5 years follow-up (Wilcoxon Signed Ranks test, $p = 0.02$). Further analysis showed that this difference in SPRS score over time was mainly a result of the domain of interpersonal relationships with median score 20.0 (IQR 8.0) at baseline, and 12.0 (IQR 11) at 5 years (Wilcoxon Signed Ranks test, $p < 0.001$). Table I shows there was no difference in SPRS scores after 5 years between the two groups (Mann-Whitney *U* test $p = 0.06$).

Spinal cord injury cohort

For the SCI cohort one-third of the participants received compensation, divided between CTP (26%), workers compensation (42%) or some other form of financial compensation such as victims- or sports injury compensation (32%). The mean age of the participants was 35 years, again with the majority (85%) being male. Forty-two percent of the participants had a high impairment level (tetraplegia ASIA A-C (10). Injuries were caused by falls (20%), road traffic crashes (29%), diving into shallow water (14%) or other causes. No association was found between those receiving compensation and the cause of their trauma being a road traffic crash. The compensable and non-compensable groups were similar with regard to demographic variables and severity of injury (Table II).

The FIM score at baseline was median 86.0 (IQR 47) and significantly increased (Wilcoxon Signed Ranks test $p < 0.001$) at 5 years post discharge to median 111.0 (IQR 56.5). At baseline scores for the SF-36/PCS were mean 31.6 (SE 0.99) and significantly increase over 5 years to mean 35.9 (SE 1.11) (paired *t*-test $p = 0.002$). For SF-36/MCS no significant difference was measured between baseline median 54.6 (IQR 17.0) and after 5 years median 53.5 (IQR 15.5) (Wilcoxon Signed Ranks test, $p = 0.60$). Table II shows there was a significant difference in PCS scores after 5 years between the two groups

Table I. *Characteristics of participants for traumatic brain injury cohort*

Traumatic brain injury cohort ($n = 132$)	Receive compensation ($n = 62$)	No compensation ($n = 70$)	*p*-value
Type of compensation, *n* (%)			
CTP	33 (53)	Not applicable	
Workers vomp	14 (23)		
Other	15 (24)		
Age in years, mean (SD)	32.7 (13.1)	29.2 (11.8)	0.11
Male sex, *n* (%)	44 (71)	55 (79)	0.32
Marital status – married, *n* (%)	29 (47)	26 (37)	0.29
Home situation – living with spouse and/or family, *n* (%)	49 (79)	54 (77)	0.84
Educational level – university (started or finished), *n* (%)	12 (19)	19 (27)	0.31
Employed full time, *n* (%)	49 (79)	51 (73)	0.43
Occupational group – manager, professionals, *n* (%)	9 (15)	8 (11)	0.61
Duration of post traumatic			0.93
Amnesia, *n* (%)			
1–2 weeks	10 (16)	10 (14)	
2–4 weeks	21 (34)	23 (33)	
>4 weeks	31 (50)	37 (53)	
DRS at baseline, median (IQR)	6.0 (9)	7.0 (6)	0.77
DRS at 5 years follow-up, median (IQR)	4.0 (3)	2.5 (4)	0.01
SPRS at baseline, median (IQR)	43.5 (23)	47.5 (25)	0.10
SPRS at 5 years follow-up, median (IQR)	32.5 (26)	43.0 (30)	0.06

CTP: compulsory third party motor vehicle crash insurance; DRS: Disability Rating Scale (higher values indicate greater disability); SPRS: Sydney Psychosocial Rating Scale (higher values indicate better community participation); IQR: interquartile range.

Table II. *Characteristics of participants for spinal cord injury cohort*

Traumatic spinal injury cohort ($n=58$)	Receive compensation ($n=19$)	No compensation ($n=39$)	p-value
Type of compensation, *n* (%)			
CTP	5 (26.3)	Not applicable	
Workers Comp	8 (42.1)		
Other	6 (31.6)		
Age in years, mean, (SD)	36.7 (15.7)	32.2 (11.7)	0.42
Male sex, *n* (%)	15 (79)	34 (87)	0.34
Marital status – married, *n* (%)	6 (32)	21 (54)	0.16
Home situation – living with spouse and/or family, *n* (%)	13 (68)	32 (82)	0.32
Educational level – university (started or diploma), *n* (%)	11 (60)	12 (31)	0.09
Employed full time, *n* (%)	15 (79)	26 (67)	0.38
Occupation group – manager, professional, *n* (%)	9 (47)	11 (28)	0.14
Impairment level			0.58
Low (paraplegia ASIA A–C or All ASIA D)	9 (47)	15 (38)	
High (tetraplegia ASIA A–C)	10 (53)	24 (62)	
Participating in the Community Participation Project, *n* (%)			0.27
Yes	8 (42)	23 (59)	
No	11 (58)	16 (41)	
FIM at baseline, median (IQR)	73.5 (47.5)	97.0 (49.0)	0.75
FIM at 5-years follow-up, median (IQR)	93.0 (57.8)	111.0 (56.5)	0.99
SF-36/ PCS at baseline, mean (SE)	29.7 (1.5)	32.3 (1.4)	0.24
SF-36/PCS at 5-years follow-up, mean (SE)	32.7 (1.5)	37.5 (1.4)	0.04
SF-36/ MCS at baseline, median (IQR)	53.3 (19.9)	55.9 (15.4)	0.33
SF-36/MCS at 5-years follow-up, median (IQR)	50.7 (20.3)	56.6 (14.8)	0.32

CTP: Compulsory Third Party motor vehicle collision insurance; ASIA: American Spinal Injury Association Impairment Scale classifies the degree of neurological impairment. Grade A refers to complete lesion with no motor or sensory function below the level of injury; Grade B–D refers to incomplete lesions with sensory sparing only, non-functional, and functional motor strength below the level of injury, respectively. Grade E represents recovery of normal sensation and muscle strength, but may have altered reflexes. (ASIA 1992); FIM: Functional Independence Measure; SF-36: Short-Form 36 General Health Survey; PCS: physical component summary; MCS: mental component summary; IQR: interquartile range.

(*t*-test, $p=0.04$) with the compensation group having less recovery from disability.

Predictors of outcomes for brain injury cohort

In the univariate analysis with total DRS scores ≥ 4 points at 5 years as dependent dichotomous variable, we found that not having a high educational level (started or finished university), lower baseline total SPRS scores, higher baseline total DRS scores, longer length of PTA, and receiving financial compensation were associated with moderate to severe disability at 5 years. We performed a backward multivariate logistic regression analysis with all the relevant variables from the univariate analysis and compensation status as predictor variables and DRS scores ≥ 4 points at 5 years as dependent variable. The final model explained 48% of the variance in total DRS scores at 5 years, with financial compensation explaining 3%. In this model length of PTA was excluded as this variable was no longer significant in multivariate analysis (Table III). Further analysis showed that the association between DRS scores ≥ 4 points at 5 years and receiving financial compensation was caused by the 'other' forms of financial compensation and not with CTP or workers compensation (B = 1.61, SE = 0.67, Exp (B) 5.00, 95% CI 1.34 to 18.66).

Similar baseline variables were also associated with total SPRS scores ≥ 40 points as dependent dichotomous variable at 5 years. A similar backward multivariate logistic regression analysis was performed with these variables including compensation status as the predictor variable. We found a model (high educational level, high baseline total SPRS scores, low baseline total DRS scores) explaining 42% of the variance in high SPRS scores at 5 years (SPRS scores ≥ 40 points) without the variable length of PTA. In this model receiving financial compensation was not a significant predictor variable (B = –0.73, SE = 0.44, Exp (B) 0.48, 95% CI 0.21 to 1.13).

Predictors of outcomes for the spinal cord injury cohort

For the SCI cohort we found that having a high impairment and low baseline FIM score were the only baseline variables significantly associated with low total FIM scores (FIM scores<113 points) at 5 years. Receiving financial compensation was not associated with total FIM scores 5 years. In the backward multivariate logistic regression analysis only baseline FIM score was significantly predictive for FIM scores ≥ 113 points explaining 73% of the variance at 5 years (B = 0.12, SE = 0.08, Beta = 0.91, 95% CI 1.03 to 1.33).

We found that receiving financial compensation was associated with lower SF-36/PCS scores at 5 years, together with having a high impairment and low baseline FIM scores for the SCI cohort. In contrast, baseline SF-36/PCS scores were not associated with SF-36/PCS scores at 5 years. In the backward multivariate linear regression analysis we found that receiving financial compensation and the baseline FIM score were significant predictors for SF-36/PCS at 5 years, explaining 18% of the variance, with financial compensation explaining 7% (Table IV). Further analysis showed that the association between SF-36/

Table III. *Multiple logistic regression analysis for brain injury cohort with disability scores ≥4 points at 5 years as outcome measure*

Outcome measure	Variable	B coefficient	SE	Exp (B)	95% CI
Moderate or severe disability at 5 years	Total DRS at baseline	0.12	0.04	1.13	1.04 to 1.23
	Total SPRS at baseline	–0.04	0.01	0.96	0.93 to 0.98
	Started or finished University	–2.47	0.67	0.08	0.02 to 0.31
	Receiving financial compensation	0.90	0.45	2.47	1.03 to 5.93
	Constant	0.93	0.67	2.52	

DRS ≥4 points.
DRS: Disability Rating Scale; SPRS: Sydney Psychosocial Reintegration Scale.

PCS scores at five years and receiving financial compensation was again caused by the 'other' forms of financial compensation (B = –7.68, SE = 3.47, Beta = –0.29, 95% CI –14.63 to –0.73).

For SF-36/MCS scores ≥50 at 5 years for the SCI cohort we found that only age was marginally associated (B = –0.04, SE = 0.02, Exp (B) = 0.96, 95% CI 0.09 to 1.00). None of the other variables including receiving financial compensation showed an association.

DISCUSSION

Literature has so far speculated a great deal on the relationship between financial incentives and recovery from various types of injuries (2, 3, 6). A substantial number of these studies reported that financial compensation could have a negative effect on recovery (5, 18). However, the majority of these studies included patients with only mild or moderate types of injury. In this current study we analysed the influence on recovery from receiving financial compensation in people experiencing major trauma. For people with a severe TBI we found a significant difference in disability measured with the DRS at 5 years between those who received financial compensation and those who did not. Furthermore, receiving financial compensation was a small but relevant predictor, next to baseline disability and total years of education, in the multivariate logistic regression analysis with DRS scores ≥4 points as dependent dichotomous variable. For people with SCI SF-36/PCS scores were significantly lower at 5 years for those receiving financial compensation compared with those who did not. Receiving financial compensation and baseline FIM score were both small but significant predictors for SF-36/PCS scores after 5 years.

These present findings contradict our hypothesis expecting to find no association between receiving financial compensation and recovery for severely injured patients. Our hypothesis was supported by Wood et al. (19) who examined recovery in people with severe brain injuries after 10 years and found no difference between those who were litigant and those who were not. In line with this, a meta-analysis of studies reporting outcomes in patients with traumatic brain injuries by Binder et al. (3) suggested that in patients with more severe injuries less effect of financial compensation could be demonstrated. For patients with SCI no studies were found concerning recovery and financial compensation. However, there were many studies on whiplash or chronic pain and financial compensation (2, 4, 20).

The results of the current study showed that financial compensation seems to have an association with functional recovery, even for patients with a severe traumatic injury. The actual predictive effect on the variance in DRS scores ≥4 points, or in SF-36/PCS scores after 5 years was relatively small (3% and 7%, respectively), but may have some clinical value. We have no good explanation for this result. Why, in particular only a small effect was found for "other forms" of financial compensation needs further research. These forms of compensation are sports injury compensation, crime victim's compensation or personal injury compensation. The difference between these types of financial compensation and workers compensation or CTP insurance is possibly that people with catastrophic injuries who have access to CTP and workers compensation insurance have more extensive and effective treatment than people with the other types of compensation. However, it is acknowledged that this explanation is speculative. In general, the potential relationship between poor outcome and seeking compensation is still not resolved. Some authors have reported that receiving compensation is a predictor for poor outcome; in contrast others could not demonstrate such an association (2).

Results showed that for both types of injury there was a significant improvement in the level of disability and functioning 5 years after injury. DRS improved significantly for the TBI group, FIM increased significantly for the SCI group. The psychosocial reintegration for the TBI group as measured with the SPRS decreased significantly over the 5 years, mainly as a result of the domain of interpersonal relationships. This finding will also need further research. Overall, the distribution of scores over the 3 domains was comparable to a similar group of TBI patients who were scored after 10 years (14). A limitation in this study is that a SCI specific disability measure was

Table IV. *Multiple linear regression analysis for spinal cord injury cohort with disability at 5 years as outcome measure*

Outcome measure	Variable	B coefficient	SE	Beta	95% CI interval
SF-36/PCS	Constant	27.9	3.97		19.95 to 35.90
	Total FIM score at baseline	0.11	0.04	0.32	0.02 to 0.19
	Receiving financial compensation	–4,72	2.16	–0.27	–9.05 to –0.38

FIM: Functional Independence Measure; CI: confidence interval; SF-36: Short-Form 36; PCS: physical component summaries.

not included in the available dataset. It is possible that such a measure might have responded differently to the included baseline variables such as receiving financial compensation. The reason that in the SCI group we only found an association between financial compensation and the SF-36/PCS scores after 5 years, but not for the total FIM scores after 5 years, may be explained by ceiling effects of FIM and/or concepts, such as pain and general health, which are broader than simply activity limitation and mobility being captured by SF-36/PCS. It could also be that by dichotomizing the outcome variables, except for SF-36/PCS, for the multivariate regression analysis information was lost. The cut-off points selected were the median scores after 5 years, and it is arguable whether other cut-offs scores may have been more appropriate.

Strengths of this study were the inclusion of physical and socioeconomic factors for two different cohorts of people with severe traumatic injuries that have major long term effects on health. The questionnaires used in the study were all validated and well used in these types of trauma. However, a weakness of the study was that the same outcome measures were not available for the two groups. Future studies need to realize that different health outcome measures may influence the measured association between financial compensation and recovery. In this study, the focus was on health status at 5 years and not on work status or financial situation at 5 years. Although, there is increasing literature on long term return to work, social benefits and financial situation after serious illness or injuries, there is still a high need for good qualitative longitudinal studies to evaluate what determines these outcome measures.

Another potential weakness of this study is the relatively small sample size per injury group. Because patients with the level of injury severity as occurred in the present cohorts are fortunately relatively rare, this will probably remain a problem in future studies. In this study, lack of statistical power may also be a reason for no baseline differences between the two compensation groups. Further, no differentiation was made between those who pursued compensation using a lawyer and those who received compensation without use of a lawyer or involvement with any compensation related factors. Engagement of a lawyer has previously been associated with poor outcome after trauma (5, 21, 22). Although, it is likely that the two groups of patients in this study for the most part have had lawyer involvement, future studies may need to differentiate for this covariate.

In conclusion, even for severely injured patients receiving financial compensation may have some small relation with recovery after 5 years. More research is necessary to confirm this finding, and to further analyse what form of financial compensation may have an association with long term health status for different types of patients.

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