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A study of outcomes of patients treated at a UK Major Trauma Centre for moderate or severe injuries 1 to 3 years after injury

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Abstract

Objective: To assess return to work outcomes of major trauma patients treated at a level 1 UK major trauma centre and evaluate factors associated with improved outcomes.

Design: Cross-sectional cohort design.

Subjects: Ninety-nine Patients at 1, 2 or 3 years post-discharge from a Major Trauma Centre with an injury severity score above 9, in full time work or education prior to injury, aged 18 to 70 and discharged between April 2012 and June 2015.

Main Measures: Self report questionnaire including the Trauma Outcome Profile, the Multiple Sclerosis Neuropsychological Screening questionnaire and questions pertaining to work and education.

Results: Of the ninety-nine in full time work pre injury, sixty-five made a complete return to work, fifteen made an incomplete return to work, and nineteen did not return to work, where incomplete return to work was defined as working below 80% of previous working hours. Twenty-five participants scored below the cut-off point on physical disabilities, forty-six below the cut-off point on mental functioning and thirty-eight below the cut-off point on social interaction. Reduced anxiety and higher mental functioning was consistently associated with complete return to work.

Conclusions: Sixty-six percent of patients with moderate to severe injuries made a complete return to work. A range of psycho-social,

physical and functional health issues were persistent at long term follow up.

Introduction

One of the objectives of rehabilitation at Major Trauma Centres is to support patients of working age to return to, maintain or access employment[1]. Previous research indicates that the rate of return to work of major trauma patients ranges from 50% to 70% between studies[2]. Research with patients with less severe injuries indicate that 70% return to work at 1 year follow up[3], compared to 28% to 58% in studies with patients that have more severe injuries[4,5].

In the last four years, services for treating patients with multiple serious injuries in the UK have been re-organised into major trauma networks, with Major Trauma Centres providing specialised care. Whilst research has demonstrated improved mortality rates from centralised care[6,7], to the our knowledge there is no research assessing these patients' return to work or other health related outcomes. The aim of this study was to therefore assess the return to work rates and psycho-social, physical and functional outcomes of patients with moderate to severe injuries.

Method

This study was conducted at a Major Trauma Centre, which covers a population of 4.5 million and treats approximately 1600 major trauma patients annually. The study used a cross-sectional design and measured outcomes of three groups of patients based on the length of time since discharge from hospital: 1, 2 and 3 years post-discharge at time of the study.

The inclusion criteria for the study were patients who were discharged from the Major Trauma Centre between April 2012 and June 2015, aged 18 to 70 and had severe traumatic injuries, defined as an Injury Severity Score[8] greater than 9. The upper age limit of 70 reflects the repeal of retirement age provisions in the UK[9] and was to ensure patients over 65 needing to return to work for financial reasons were represented. There were no exclusion criteria.

Demographic variables, trauma-specific clinical variables and comorbidities at the time of injury were obtained from the Trauma Audit and Research Network (TARN)[10]. Injury severity was measured by the injury severity score, which uses the Abbreviated Injury Scale to score injuries to each body region by severity from an internationally recognised dictionary of injuries[8]. The body region with the highest score on the Abbreviated Injury Scale was recorded as the most severely injured body region. Comorbidities were recorded as additional disorders to the major trauma injuries.

Patient outcomes were assessed in each group by a self-report questionnaire booklet at the time of the study, 1, 2 or 3 years post-discharge. The primary outcome was the rate of return to work. Questions relating to work status pre injury, current work status and changes in roles or work were drawn from a study by Vestling and colleagues[11], which assessed return to work among stroke patients. Work was defined as paid or self-employment, permitted work, vocational training, adult education and voluntary work[12]. Type of work was recorded and categorised into five categories: own business/self-employed, large business in private sector, small local business in private sector, public sector or other, with a requirement for the participant to specify.

Return to work was assessed as a categorical factor of returning to the same work as pre-injury, and dichotomised into two categories of complete and incomplete return to work. Incomplete return to work was defined as returning to below 80% of previous working hours or not returning to work to make results comparable to previous studies using this definition[4].

Level of education, accommodation type, benefit status and involvement in litigation were assessed at the time of the study. Educational level was coded as the highest form of education, categorised as: primary school, secondary school without GCSEs, secondary with GCSEs, A Levels or University/higher learning. Accommodation type was recorded as living in a house flat or bungalow alone, or with someone, in a residential home or

in a nursing home. Benefit status and involvement in litigation as a result of the injury were dichotomised as either yes or no.

The Trauma Outcome Profile[13] was used to assess patient outcomes at the time of the study on measures of depression, anxiousness, Post-Traumatic Stress Disorder (PTSD), social interaction, level of pain, physical disabilities, daily activities and mental functioning. The Trauma Outcome Profile has been validated with major trauma patients[14,15] and has standardised cut-off points to indicate poor QOL on each subscale[14]. Cognition was assessed using the Multiple Sclerosis Neuropsychological Screening Questionnaire[16], which is a brief self-report measure comprising 15 questions measuring different aspects of cognition. The questionnaire was designed as a screening tool for people with multiple sclerosis, but was used in this study due to the lack of questionnaires available that provide a quick and effective postal screen of cognitive functioning for major trauma patients.

Statistical analysis

Numbers of patients that were not in full time work or education as defined above are presented but excluded from further analysis regarding return to work. Descriptive data of individual groups and overall group characteristics are presented as total numbers and percentages for categorical variables and means with standard deviations (SD) for continuous variables.

Pearson's chi-square tests were used to test for significant difference between outcomes of patients making a complete return to work and those with an incomplete return to work, and Fisher's exact test was used where expected frequencies were below 5 for over 20% of the cells. Logistic regression was used to assess for significant differences between these groups for continuous measures. Results are presented with the P-value to indicate statistical significance, and group values as number and percentage for categorical data and means with SD for continuous variables.

Results

During the study period, 853 patients met the inclusion criteria: 215 at 3 years, 317 at 2 years, and 321 at 1 year post-discharge. Questionnaires were sent to all eligible patients, with a response rate of 16% (n=133). Of the 133 respondents, 102 (77%) were in full time employment/education at the time of injury. Of these 102 patients, three retired following their injuries and were excluded from further analysis assessing return to work, figure 1. Due to the study design, it was not possible to record reasons for non-participation.

Of the 99 patients in full time work at the time of injury, 73 were men, the mean age at injury was 46.9 years (SD 13.6) and the mean time from discharge at the time of the study was 23.8 months (SD 9.4). Of this cohort, 50 patients sustained injuries from a vehicle incident/collision, 27

from falls under 2m, 16 from falls over 2m, 2 from blows, 2 from crushing, 1 from stabbing and 1 from another mechanism.

There were 59 patients (45%) with an injury severity score below 15, 31 (23%) with a score of 16-23 and 43 (32%) with a score above 23, which did not differ significantly from the overall sample of eligible patients, $\chi2(2)=0.83,p=0.662$. The overall proportion of responders that were male (68%) was comparable to the proportion of non-responders that were male (73%), $\chi2(2)=0.39,p=0.531$. The average age of responders (48.8 years, SD 14.7) was significantly higher than non-responders (42.0 years, SD 14.7), $t(851)=-4.93,p<0.0001$.

Overall, 19 patients did not return to work following injuries, 65 patients made a complete return to work and 15 an incomplete return to work. The average time to return to work was 4.2 months (SD 3.9), table 1.

A high proportion of patients scored below the cut-off score of 80 on the Trauma Outcome Profile measures of PTSD, anxiety and daily activities (table 1). Overall, patients with incomplete return to work had average scores below the cut-off points of the Trauma Outcome Profile, indicating increased levels of depression, anxiety, PTSD, pain and physical disabilities and reduced cognition, mental functioning, daily activities and social interaction. In comparison, patients with complete return to work scored on average above the cut-off points for all these measures except PTSD (table 2; supplementary online data of number of patients falling below cut off points on the Trauma Outcome Profile).

Univariate analysis compared complete and incomplete return to work. Patients that did not return to work were classified as incomplete. Statistical analysis with Bonferroni correction demonstrated that increased anxiety and pain and reduced social interaction and mental functioning were significantly associated with reduced complete return to work overall. Receiving benefits was also significantly associated with reduced complete return to work. No other factors were significantly associated with return to work overall or for individual groups after controlling for the number of statistical tests with a Bonferroni correction, (table 3; supplementary online data of the factors associated with return to work).

Discussion

This study explored the outcomes of major trauma patients treated at a UK major trauma centre up to 3 years post-injury. The results showed that the overall complete return to work remained similar at 1 to 3 years post discharge from hospital, with an overall average time to return to work of 4.2 months.

These results are comparable to other studies. Patients with an injury severity score above 15 in this study showed similar return to work rates as previous studies of patients with similar injury severity scores[4,17]. In a study with trauma patients with a mean injury severity score of 13.7 and similar spread of injury severity[3], patients showed overall return to work of 70% at 1 year, comparable to the overall return to work rate at 1 year

post-discharge in this study. In contrast to these results, Sohberg and colleagues[4] found a much lower return to work rate at 1 year (28%) which increased significantly to 49% at 5 years post-discharge with trauma patients with an injury severity higher than 15.

Direct comparisons between studies are difficult due to different inclusion criteria, follow up times and extraneous factors such as the economy and employment opportunities. Return to work rates may also vary according to the definition of return to work used. This study used the same definition as Holtslag et al[4], but other studies have failed to adequately define "complete" and "incomplete" return to work, making it difficult to compare return to work outcomes between studies[18]. There are limitations to this definition, as any type of return to work following major trauma is important. However, the focus of this study was to assess complete and incomplete return to work. Despite these issues, return to work rates of major trauma patients generally range from 50% to 70% between studies[2], with these results falling within this range.

Where previous studies focus on specific injuries or patients with an injury severity score above 15, this study included patients reflecting the range of injury types and injury severity of patients treated at the Major Trauma Centre. Around a third of patients with an injury severity of 9-15 failed to make complete return to work, showing that recovery from major traumatic injuries is also a challenge for patients with lower severity injuries.

Current understanding of the long term course of health issues following major trauma is limited. The results of this study indicate persistent levels of mental health, physical and social functioning problems in all patients following treatment for severe injuries, comparable to previous research using the Trauma Outcome Profile[14,15,17]. The results also demonstrated that anxiety, pain, social interaction and mental functioning were significantly associated with not making a complete return to work. However, as the mental functioning subscale comprises questions about fatigue, cognition and changes in personality, which tend to be highly correlated in subjective reports of cognitive ability, it remains unclear exactly which aspects of mental functioning present the greatest problem to patients recovering from major trauma.

Patients with complete return to work also showed signs of poor quality of life outcomes. Many of these patients scored below the cut-off points on measures of PTSD, daily activities and mental functioning. These results indicate that patients who do achieve complete return to work also suffer reduced quality-of life. It remains unclear how these persistent issues affect patient's level of functioning at work or sickness absence. With limited research on the outcomes of patients with major traumatic injuries following the centralisation of treatment in the UK, these results provide an indication of the ongoing health issues requiring treatment. The results also suggest that complete return to work following major trauma is not an effective measure of outcome on its own.

This study has a number of limitations. The low response rate of 16% limits generalisability and may lead to biases in the results. Whilst the proportions of injury severity and gender were comparable between the responders and non-responders, the responders were significantly older than non-responders. It is not known whether patients with worse or improved outcomes are more likely to have responded to the questionnaire, and whether age had an impact on return to work or other outcomes.

There are a number of possible explanations for the poor response rate in this study. Improved mechanisms for identifying and treating people with major trauma may have resulted in a cohort of patients that are difficult to follow up, such as including older patients with cognitive issues and underlying comorbidities, patients where for whom English is not their first language, people who incur traumatic brain injury and younger people who move out of area.

The retrospective design of the study using questionnaires may also have resulted in lower a response rate, with the potential of patients moving on and not wanting to think about the impact of injuries on their lives. This may also bias results if patients that make better recoveries are more likely to respond. The amount of time from discharge to recruitment may also have affected response rates. Studies recruiting participants whilst still in hospital and shortly after discharge[3,4], or collecting data as part of routine care[17], have shown response rates of close to 60%. This suggests

that early recruitment and expectation of the follow up contact is important to improve response rates.

The use of self-reported questionnaires depend on participant's memory of returning to work potentially up to 3 years earlier, and accuracy in self-reports on the Trauma Outcome Profile, which may also bias the results. The low response rate also resulted in relatively low numbers of participants to power the statistical analysis, preventing any strong conclusions to be drawn.

Whilst the Trauma Outcome Profile covers a greater number of International Classification of Functioning[20] dimensions than other similar measures used in this population, it is limited in the proportion of health outcomes it covers, specifically regarding participation and environmental contextual factors[21]. Further research is required to develop measures that capture the range of health-related outcomes that are affected by major trauma and to establish which outcomes are specifically important to major trauma patients and which need targeted rehabilitation.

However, these findings have important implications for the development of rehabilitation programmes for patients following severe injury. The results from the Trauma Outcome Profile indicate that a range of psycho-social, physical, and functional issues persist at long term follow up in major trauma patients. Patients achieving complete return to work also demonstrated a range of health issues that require treatment, indicating the need for rehabilitation interventions to address a number of quality of

life outcomes in addition to work. Where major trauma networks have reduced mortality from severe injuries, developments in rehabilitation programmes are urgently needed to improve return to work and quality of life outcomes of these patients.

Clinical messages

- Following treatment for major trauma in the UK, sixty-six percent of people in full time work or education make a complete return to their former work
- Patients demonstrate considerable psychological health issues following major trauma up to 3 years post-discharge that may benefit from treatment.

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Figures

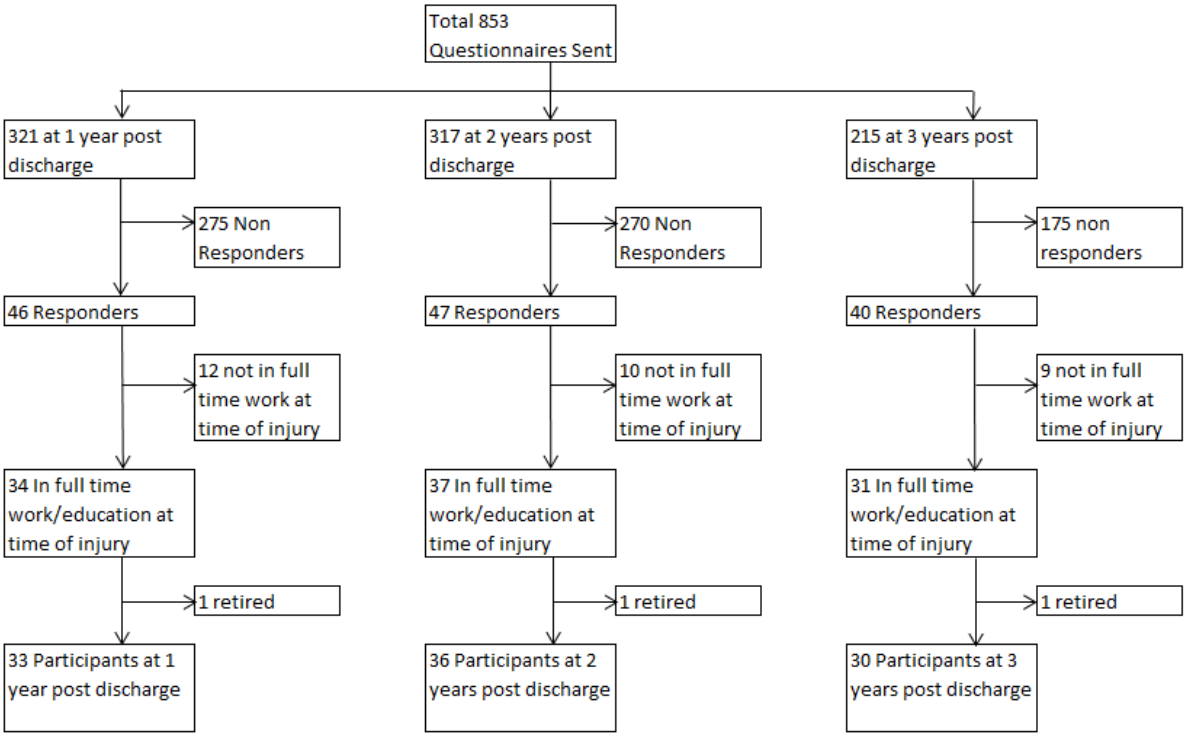

Figure 1. Flow diagram of patient inclusion.

Tables

Table 1. Return to work outcomes, demographics and characteristics of 99 major trauma patients who were in work/education before their injury, excluding patients who did not return to work due to retirement.

	Years since discharge			
	Overall	1 Year	2 Years	3 Years
Return to work				
Complete	65 (66%)	22 (67%)	23 (64%)	20 (67%)
Incomplete	15 (15%)	2 (6%)	8 (22%)	5 (17%)
Did not return to work	19 (19%)	9 (27%)	5 (14%)	5 (16%)
Average time to return to work, mean months (SD)	4.2 (3.9)	3.5 (1.7)	4.8 (3.6)	4.2 (5.4)
Gender				
Female	26 (26%)	9 (27%)	9 (25%)	8 (27%)
Male	73 (74%)	24 (72%)	27 (75%)	22 (73%)
Age at injury, mean in years (SD)	46.7 (14.4)	43.9 (15.4)	46.6 (9.3)	50.5 (13.6)
Educational Level				
Primary School	1 (1%)	0 (0%)	1 (3%)	0 (0%)
Secondary School +/- GCSEs	25 (27%)	4 (13%)	10 (31%)	11 (38%)
Secondary School A Levels/equivalent	28 (31%)	15 (50%)	9 (28%)	4 (14%)
University/college of higher learning	37 (41%)	11 (37%)	12 (38%)	14 (48%)
Type of work				
Own/business/Self employment	22 (22%)	6 (19%)	7 (19%)	9 (30%)
Large business in private sector	29 (30%)	10 (31%)	11 (31%)	8 (27%)
Small local business in private sector	25 (26%)	6 (19%)	14 (39%)	5 (17%)
Public sector	22 (22%)	10 (31%)	4 (11%)	8 (27%)
Injury Severity Score				
9 – 15	45 (45%)	14 (42%)	17 (47%)	14 (47%)
16 – 23	29 (29%)	11 (33%)	8 (22%)	10 (33%)
≥24	25 (25%)	8 (24%)	11 (31%)	6 (20%)
Most Severely Injured Body Region				
Abdomen	3 (3%)	0 (0%)	2 (6%)	1 (3%)
Chest	23 (23%)	9 (27%)	7 (19%)	7 (23%)
Head	27 (27%)	8 (24%)	9 (25%)	10 (33%)
Limbs	35 (35%)	11 (33%)	13 (36%)	11 (37%)
Multiple	5 (5%)	4 (12%)	1 (3%)	0 (0%)
Spine	6 (6%)	1 (3%)	4 (11%)	1 (3%)
Comorbidities				
Yes	26 (60%)	8 (50%)	12 (75%)	6 (55%)
No	17 (40%)	8 (50%)	4 (25%)	5 (45%)
Accommodation type at time of study				
House, flat or bungalow alone	22 (22%)	10 (30%)	7 (19%)	5 (17%)
House, flat or bungalow with someone	76 (77%)	22 (67%)	29 (81%)	25 (83%)
In a nursing home	1 (1%)	1 (3%)	0 (0%)	0 (0%)
In a residential home	0	0	0	0

Receiving Benefits				
No	73 (73%)	22 (78%)	28 (79%)	23 (77%)
Yes	22 (27%)	8 (22%)	8 (21%)	6 (23%)
Involved in litigation for injury				
No	68 (69%)	20 (61%)	24 (67%)	24 (83%)
Yes	30 (31%)	13 (39%)	12 (33%)	5 (17%)
Physical Disabilities, mean score (SD)	81.2 (26.2)	78.8 (27.6)	78.7 (28.0)	86.9 (30.1)
Cognition, mean score (SD)	16.7 (13.7)	21.7 (14.8)	12.5 (11.8)	16.6 (13.4)
Depression, mean score (SD)	77.3 (28.1)	70.5 (29.3)	85.3 (21.6)	75.0 (32.0)
Anxiety, mean score (SD)	80.0 (24.6)	74.8 (27.0)	85.1 (21.5)	79.6 (24.8)
PTSD, mean score (SD)	71.4 (29.0)	64.3 (32.8)	72.9 (25.3)	77.3 (28.0)
Social Interaction, mean score (SD)	75.7 (30.3)	74.6 (30.9)	75.2 (29.1)	77.5 (31.9)
Mental Functioning, mean score (SD)	69.1 (32.4)	60.9 (34.1)	72.3 (32.8)	73.6 (29.5)
Daily Activities, mean score (SD)	81.1 (24.4)	80.8 (22.7)	75.5 (27.1)	87.8 (21.6)
Pain, mean score (SD)	74.7 (28.6)	70.9 (30.6)	71.1 (32.7)	83.2 (18.4)

Table 2. Number (percentage) of patients that fell below cut-off points on the Trauma Outcome Profile and cognition measures of 99 major trauma patients who were in work/education before their injury, excluding patients who did not return to work due to retirement. (Complete return to work: CRTW, Incomplete return to work: IRTW).

	Overall (n=99)	1 Year (n=33)	2 Years (n=36)	3 Years (n=30)
Physical Disabilities				
CRTW	10 (16%)	4 (19%)	2 (9%)	4 (20%)
IRTW	15 (45%)	6 (55%)	7 (54%)	2 (22%)
Overall	25 (26%)	10 (31%)	9 (25%)	6 (21%)
Cognition				
CRTW	9 (14%)	3 (15%)	1 (4%)	5 (25%)
IRTW	15 (50%)	6 (67%)	3 (27%)	6 (60%)
Overall	24 (26%)	9 (31%)	4 (12%)	11 (67%)
Depression				
CRTW	17 (27%)	9 (43%)	1 (4%)	7 (35%)
IRTW	21 (62%)	8 (73%)	8 (62%)	5 (50%)
Overall	38 (39%)	17 (53%)	9 (25%)	12 (40%)
Anxiety				
CRTW	18 (28%)	7 (33%)	5 (22%)	6 (30%)
IRTW	19 (58%)	8 (73%)	4 (33%)	7 (70%)
Overall	37 (38%)	15 (47%)	9 (26%)	13 (43%)
PTSD				
CRTW	31 (48%)	14 (67%)	9 (39%)	8 (40%)
IRTW	24 (71%)	8 (73%)	10 (77%)	6 (60%)
Overall	55 (56%)	22 (69%)	19 (53%)	14 (47%)
Social Interaction				
CRTW	16 (25%)	6 (29%)	5 (22%)	5 (25%)
IRTW	22 (65%)	8 (73%)	9 (69%)	5 (50%)
Overall	38 (39%)	14 (44%)	14 (39%)	10 (33%)
Mental Functioning				
CRTW	20 (31%)	10 (48%)	5 (22%)	5 (25%)
IRTW	26 (81%)	9 (90%)	11 (92%)	6 (60%)
Overall	46 (48%)	19 (61%)	16 (46%)	11 (37%)
Daily Activities				
CRTW	20 (31%)	6 (29%)	10 (43%)	4 (20%)
IRTW	19 (39%)	8 (80%)	8 (67%)	3 (30%)
Overall	39 (41%)	14 (45%)	18 (51%)	7 (23%)
Pain				
CRTW	15 (23%)	6 (29%)	4 (17%)	5 (25%)
IRTW	23 (68%)	8 (73%)	9 (69%)	6 (60%)
Overall	38 (39%)	14 (44%)	13 (36%)	11 (37%)

Table 3. Factors associated with return to work after major trauma (n=99). (Complete return to work: CRTW, Incomplete return to work: IRTW).

	Group by Years from Discharge at study											
	Overall (n=99)			1 Year (n=33)			2 Years (n=36)			3 Years (n=30)		
	CRTW	IRTW	P	CRTW	IRTW	P	CRTW	IRTW	P	CRTW	IRTW	P
Gender												
Male	47 (64%)	26 (36%)	0.655	17 (71%)	7 (29%)	0.438*	17 (61%)	11 (39%)	0.536*	13 (57%)	10 (43%)	0.124*
Female	18 (69%)	8 (31%)		5 (56%)	4 (44%)		6 (67%)	3 (22%)		7 (88%)	1 (13%)	
Age at injury, mean in years (SD)	46.9(13.5)	46.6(14.0)	0.501**	45.7(14.7)	39.3(13.6)	0.037**	45.8(16.1)	47.8(14.4)	0.702**	49.2(8.3)	53.0(11.2)	0.952**
Educational Level												
Primary School	0 (0%)	1 (100%)	0.454*	0	0	0.736*	0	1 (100%)	0.268*	0	0	0.498
Secondary School +/- GCSEs	18 (72%)	7 (28%)		2 (50%)	2 (50%)		7 (70%)	3 (30%)		9 (82%)	2 (18%)	
Secondary School A Levels /equiv	18 (64%)	10 (36%)		11 (73%)	4 (27%)		5 (56%)	4 (44%)		2 (50%)	2 (50%)	
University/college higher learning	27 (73%)	10 (27%)		8 (73%)	3 (27%)		10 (83%)	2 (17%)		9 (64%)	5 (35%)	
Type of work												
Own business/Self employment	14 (64%)	8 (36%)	0.956	3 (50%)	3 (50%)	0.690*	4 (57%)	3 (42%)	1.000*	7 (78%)	2 (22%)	0.498*
Large business in private sector	18 (62%)	11 (38%)		6 (60%)	4 (40%)		7 (64%)	4 (36%)		5 (63%)	3 (37%)	
Small local private sector business	17 (68%)	8 (32%)		4 (67%)	2 (33%)		9 (64%)	5 (36%)		4 (80%)	1 (20%)	
Public sector	15 (68%)	7 (32%)		8 (80%)	2 (20%)		3 (64%)	1 (36%)		4 (50%)	4 (50%)	
Injury Severity Score												
9 – 15	32 (71%)	13 (29%)	0.587	10 (71%)	4 (29%)	0.144	11 (63%)	6 (35%)	0.153*	11 (79%)	3 (21%)	0.412*
16 – 23	18 (62%)	11 (38%)		9 (82%)	2 (18%)		3 (38%)	5 (62%)		6 (60%)	4 (40%)	
≥24	15 (60%)	10 (40%)		3 (38%)	5 (62%)		9 (82%)	2 (18%)		3 (50%)	3 (50%)	
Most Severely Injured Body Region												
Abdomen	3(100%)	0 (0%)	0.349	0	0	0.968*	2 (100%)	0 (0%)	0.535*	1(100%)	0 (0%)	0.742*
Chest	16 (70%)	7 (30%)		6 (67%)	3 (33%)		5 (71%)	2 (29%)		5 (71%)	2 (29%)	
Head	16 (59%)	11 (41%)		5 (63%)	3 (37%)		5 (56%)	4 (44%)		6 (60%)	4 (40%)	
Limbs	25 (71%)	10 (29%)		8 (73%)	3 (27%)		9 (69%)	4 (31%)		8 (73%)	3 (27%)	
Multiple	3 (60%)	2 (40%)		2 (50%)	2 (50%)		1 (100%)	0 (0%)		0	0	
Spine	2 (33%)	4 (67%)		1 (100%)	0 (0%)		1 (25%)	3 (75%)		0 (67%)	1 (33%)	
Comorbidities												
No	17 (65%)	9 (35%)	0.964	7 (87%)	1 (13%)	0.569*	5 (42%)	7 (58%)	1.000*	5 (83%)	1 (17%)	1.000*
yes	11 (65%)	6 (35%)		5 (63%)	3 (37%)		2 (50%)	2 (50 %)		4 (80%)	1 (20%)	
Accommodation type												
House/flat/bungalow alone	12 (55%)	10 (45%)	0.184	7 (42%)	3 (42%)	1.000*	2 (29%)	5 (71%)	0.073	3 (60%)	2 (40%)	1.000*
House/flat/bungalow with someone	53 (70%)	23 (30%)		15 (42%)	7 (42%)		21 (72%)	8 (28%)		17 (68%)	8 (32%)	
In a nursing home	0 (0%)	1 (100%)		0 (42%)	1 (42%)		0	0		0	0	
In a residential home	0	0		0	0		0	0		0	0	
Receiving Benefits												
No	57 (78%)	16 (22%)	**<0.0001**	17 (77%)	5 (23%)	0.028*	23 (42%)	5 (42%)	0.566*	17 (74%)	6 (26%)	0.339*
Yes	5 (23%)	17 (77%)		2 (25%)	6 (75%)		0 (0%)	8 (100%)		3 (50%)	3 (50%)	
Litigation												

No	51 (75%)	17 (25%)	0.006	18 (90%)	2 (10%)	0.001*	16 (67%)	8 (33%)	0.720*	17 (71%)	7 (29%)	0.633*
Yes	14 (47%)	16 (53%)		4 (31%)	9 (69%)		7 (58%)	5 (42%)		3 (60%)	2 (40%)	
Physical Functioning, mean score(SD)	88.3(19.4)	67.4(32.0)	0.006**	89.5(13.4)	58.5(36.2)	0.097**	89.0(19.9)	60.4(31.7)	0.012**	86.2(24.3)	88.6(16.7)	0.787**
Cognition, mean score(SD)	14.9(10.7)	24.7(15.9)	0.004**	16.0(9.4)	34.6(17.1)	0.104**	9.4(9.2)	18.8(14.3)	0.043**	13.7(12.8)	22.3(13.3)	0.107**
Depression, mean score(SD)	85.4(22.2)	62.2(31.9)	0.001**	78.6(23.7)	55.1(33.8)	0.191**	95.5(6.8)	67.3(26.9)	0.004**	80.8(28.2)	63.4(37.3)	0.165**
Anxiety, mean score(SD)	90.0(14.9)	62.6(30.0)	**<0.0001****	87.4(12.0)	50.7(31.8)	0.016**	92.1(10.5)	71.5(30.0)	0.031**	87.0(21.0)	65.0(26.4)	0.037**
PTSD, mean score(SD)	79.0(22.5)	57.1(34.3)	0.004**	75.2(19.0)	53.5(43.4)	0.086**	82.1(19.1)	56.6(27.4)	0.009**	79.5(29.1)	72.9(26.5)	0.535**
Social Interaction, mean score(SD)	87.5(18.8)	53.6(35.4)	**<0.0001****	87.2(17.7)	50.4(36.9)	0.031**	89.5(14.3)	50.0(31.8)	0.002**	85.5(24.3)	61.7(40.2)	0.065**
Mental Functioning, mean score(SD)	83.3(19.6)	40.7(34.5)	**<0.0001****	75.4(25.3)	30.5(30.6)	0.026**	89.5(15.6)	39.4(32.1)	0.002**	84.3(14.1)	52.3(40.4)	0.016**
Daily Activities, mean score(SD)	84.7(24.1)	73.8(23.7)	0.078**	88.4(20.7)	65.0(19.0)	0.040**	77.5(27.4)	71.7(27.4)	0.546	89.1(22.6)	85.2(20.4)	0.638**
Pain, mean score(SD)	84.2(21.3)	56.9(32.2)	**<0.0001****	83.0(20.1)	47.6(34.5)	0.058**	82.6(26.5)	50.8(33.7)	0.011**	87.4(15.7)	74.9(21.4)	0.099**

Note: Bold indicates statistically significant associations after Bonferroni correction. All determinants were analysed by Pearson's chi-square unless otherwise indicated.

*Fishers Exact Test.

**Logistic Regression.

Appendix

Questions relating to work status pre injury, current work status and changes in roles/work drawn from Vestling et al[11]

Opening Section

Today's Date:…….

Are you filling in the questionnaire yourself? (Please tick one box)

Yes ☐

No, it is being completed by:

My husband, wife or partner ☐

Another relative, please specify ☐

A friend ☐

A paid carer ☐

Other, please specify:…… ☐

At present do you live: (Please tick one box)

In a house, flat or bungalow alone ☐

In a house, flat or bungalow, with someone ☐

In a residential home ☐

In a nursing home

Are you filling in the form: (Please tick one box)

At home ☐

In hospital ☐

At a relative's house ☐

Section 1: Returning to Work

This section is to explore issues about returning to work. If you are not able to find an answer that accurately describes your situation then please tick the one that is nearest to it.

1. Did you have a regular job before you had the injury?

Yes ☐
No ☐

2. Were you unemployed or receiving benefits before you had your injury?

Yes ☐
No ☐

Answer questions 3-8 only if you were working before your injury, otherwise please skip to question 9 on page 5.

3. Where did you work? (Please tick one box)

Own business/Self employment ☐
Large business in private sector ☐
Small local business in private sector ☐
Public sector e.g. police service ☐
Other, please describe:_____ ☐

4. What was your job title? _____

5. Were you working: (Please tick one box)

Full time (minimum 35 hours/week) ☐
Part time (less than 35 hours a week) ☐

6. How many hours a week did you work?_____

7. Did you like your work?

Yes ☐
No ☐

8. Did you return to work since your injury?

Yes ☐
No ☐

8a. Are you currently working?

Yes ☐
No ☐

8b. If you're not still working, why did you stop? **(Please tick one box)**

Retirement due to age ☐
Ill health/medical reason reasons ☐
Other, please describe:_____ ☐

8c. When did you stop working? MONTH_____ YEAR _____

Section 1: Returning to Work

Answer question 9 only if you did <u>not</u> have a regular job before your injury, otherwise please skip to question 10 below.

9. If you did not have a job prior to the injury, were you: (Please tick <u>one</u> box)

- A Homemaker/housewife ☐
- In full time or part time education ☐
- Unemployed or participating in a Government funded program for the unemployed ☐
- Living with a long term medical condition (lasting more than 6 months) ☐
- On early pension ☐
- Unemployed due to other reason ☐
  Please state: _____

Section 1: Returning to work, Questions 10-15

Answer question 10-15 if you <u>have</u> gone back to or started work after your injury. Otherwise skip to question 16 on page 7.

10. Did you go back to work through a government founded scheme?

- Yes ☐
- No ☐

10a. If yes, which one?

- Work Choice ☐
- Access to Work ☐
- Other, please state: …… ☐

10b. Have you received help in returning to work from a NHS service?

- Yes ☐
- No ☐

If yes, please describe what help you have been given:_____
_____

Can you tell us the name of the person who helped:_____

10c. Have you received help in returning to work from anybody else?
(such as solicitors, private sector companies or case managers)

Yes ☐
No ☐

If yes, please specify:_____
_____

11. How long after your injury did you go back to work, for example how long was it until you received part or full payment (wages) from your employer?

After _____ YEARS _____MONTHS

12a. Do you do the same job now as before your injury?

Yes ☐
No ☐
Partially ☐

12b. Do you have the same duties as before your injury?

Yes ☐
No ☐
Partially ☐

13. Do you work as many hours as before your injury?

Yes ☐
No ☐
If **no**, how many hours do you now work?_____

14. Do you have the same employer as before your injury?

Yes ☐
No ☐

15a. How do you get to work? Please indicate which alternative you use:

	Always	Sometimes	Never
Walk	☐	☐	☐
Wheelchair	☐	☐	☐
Bicycle	☐	☐	☐
Car	☐	☐	☐
In a car with others	☐	☐	☐
Bus/Train	☐	☐	☐
Special transport	☐	☐	☐
Other transport which is:	☐	☐	☐

_____

15b. Do you receive financial help in getting to work, e.g. Access to work?

Yes ☐
No ☐

If yes, please state what:_____

15c. Have you been provided with any equipment to assist you in your work?

Yes ☐
No ☐

15d. Has your work place been physically adapted to meet your needs?

Yes ☐
No ☐

If yes, how? _____
_____

15e. Has your job/role been modified to meet you needs?

Yes ☐
No ☐

If yes, how:

Change in role ☐
Change in responsibilities ☐
Extra support ☐
Flexible breaks ☐
Other, please state:_____ ☐

Section 1: Returning to work, Questions 16-19

Answer question 16-19 if you have <u>not</u> gone back or started work since your injury. Otherwise skip to question 21 on page 8.

16. Have you tried to go back to work?

Yes ☐
No ☐

17. Does your previous work place still exist?

Yes ☐
No ☐

If **YES**, is your previous position/job still open to you?

Yes ☐
No ☐

If **NO**, is a similar position available to you?

Yes ☐
No ☐

18. Do you have any other kind of work today?

Yes ☐
No ☐

If **Yes**, what? Indicate which alternative(S) is current for you:

Educational Course/College/University ☐

Domestic work ☐
Voluntary work ☐
Carer/Homemaker ☐
Other, which is:_____ ☐

19. What do you see as the most important reason why you have not gone back to work?_____
_____

20. Would you be better off financially if you returned to paid work?
Yes ☐
No ☐

Section 1: Returning to work

Please complete all further questions.

21. Are you, or have you been, involved in any legal action as a result of your injuries?
Yes ☐
No ☐

22. What benefits do you currently claim as a result of your injuries?

None ☐
Income Support ☐
Job seekers allowance ☐
Statutory sick pay (SSP) ☐
Disability living allowance ☐
Employment and Support Allowance (ESA) ☐
Carers allowance ☐
Permitted Work ☐
Industrial injuries disablement benefit (IIDB) ☐
Personal independence payment (PIP) ☐
Housing benefit ☐
Council tax benefit ☐
Tax credits ☐
Universal Credit ☐

Other, please specify:_____ ☐

Section 1: Returning to work

23. There are many reasons why a job can be important, here is a list of some of those reasons.

Please prioritise them as they apply to you by putting 1 next to the most important, 2 by the second most important:

+Most Important						**Least Important-**
1	2	3	4	5	6	7

	Number 1-7
Source of financial income	
Contact with people at work	
To be occupied/busy	
Sense of self-fulfilment/achievement	
Freedom to be able to plan and take decisions at work	
To be of use and to be able to use your trade and skills	
Other, please state	

24. What is the highest form of education you have completed? (Please tick <u>one</u> box)

Primary school ☐
Secondary school up to age 16 – without GCSE ☐
Secondary school up to age 16 – with GCSE ☐
Secondary school up to age 17 or college (with "A" – levels or Equivalent, e.g. BTEC) ☐
University or college of higher learning ☐

25. Any comments regarding your experiences in trying to return to work