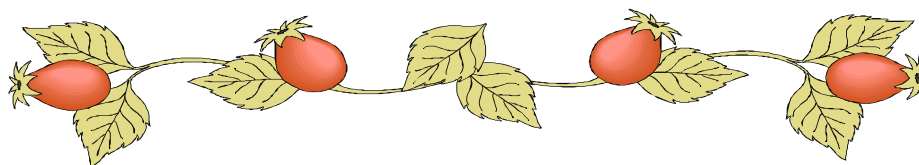


Submission of a research study

*A study of physical rehabilitation and
psychological state of patients who sustained limb
loss as a result of the
Northern Ireland Troubles 1969-2003*

for consideration for the Philip Nichols Prize.



**L.E.Graham * Specialist Registrar in Rehabilitation
Medicine**

R.C.Parke * Consultant in Rehabilitation Medicine

M.C. Paterson♦ Consultant Clinical Psychologist

M. Stevenson ∞ Senior Statistician

*Regional Disablement Service,
Musgrave Park Hospital, Stockman's lane, Belfast. Northern Ireland. BT9 7JB

♦Consultant Clinical Psychologist.
Trauma Management and Recovery Health Professionals. Pinewood House.
46 Newforge Lane, Belfast. BT 9 5NW

∞ Head of Statistics
Royal Victoria Hospital, Grosvenor Road. Belfast. Northern Ireland.

A study of the physical rehabilitation and psychological state of patients who sustained limb loss as a result of the Northern Ireland Troubles 1969-2003

Abstract

Objective: To benchmark the psychological state and physical rehabilitation of patients who have sustained limb loss as a result of the Troubles and to determine their satisfaction with the period of primary prosthetic rehabilitation and the artificial limb.

Method: All patients who sustained limb loss as a result of the Troubles and were referred to our rehabilitation center were sent a questionnaire. The main outcome measures were the SIGAM mobility grades, the General Health Questionnaire (GHQ12) and 3 screening questions for Post Traumatic Stress Disorder (PTSD).

Results: 64% response rate. 52 (69 %) patients felt that the period of primary prosthetic rehabilitation was adequate.

32 (54 %) lower limb amputees graded themselves SIGAM C or D.

45 (60%) patients stated that they were still having significant stump pain. Significant stump pain and symptoms of PTSD were both associated with poorer mobility.

9 (56 %) upper limb amputees used their prosthetic limb in a functional way.

33 (46 %) patients showed psychiatric caseness on the GHQ 12 and 50 (69 %) had symptoms of PTSD.

Conclusions: Most patients felt that the period of physical rehabilitation had been adequate those who did not were more likely to be having ongoing psychological problems. A high percentage of patients continue to have psychological problems and stump pain both of which were associated with poorer mobility.

Introduction

The Troubles in Northern Ireland have been ongoing since 1969 and have resulted in a total number of deaths in excess of 3500. The level of suffering which has taken place cannot be measured in numbers of deaths and injuries alone, but more realistically in the pain and distress felt by the individuals injured and their friends and family.^{1,2}

The Regional Disablement Services department in Musgrave Park Hospital has been the only centre in Northern Ireland during the Troubles where all patients who were deemed suitable for prosthetic limb fitting, attended for rehabilitation. Our patients are therefore from all over Northern Ireland and include those injured as children and also elderly people. In general injured army personnel would have been rehabilitated in England, except those from our locally based Ulster Defence Regiment now known as the Royal Irish Regiment.

With the recent development and validation of the SIGAM mobility grades for lower limb amputees we have benchmarked our patients physical rehabilitation status accordingly and for the upper limb amputees whether they use their prosthesis at all, for cosmesis only or for function.³

Limb amputation research in the past has mostly focused on physical adjustment and prosthetic rehabilitation, with the psychological aspects remaining comparatively unexamined.⁴ It is becoming increasingly apparent that there are psychological adaptations and coping strategies to be made by the patient following amputation and that counseling is beneficial for some.^{5,6} A recent study has highlighted that patients

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with amputations due to trauma and upper limb amputees are more vulnerable to emotional distress.⁶ We suspect that a number of our patients have ongoing psychological problems such as anxiety and depression, which have never been formerly addressed. Post Traumatic Stress Disorder, an anxiety disorder evidenced after exposure to trauma, is characterised by three primary symptoms:

1)re-experiencing the trauma, 2) avoidance of trauma reminders, 3)hyperarousal.⁷ It has been identified in patients and the staff involved with coping with the acute trauma of bomb blasts in Northern Ireland.^{8,9} Prior to 1999 our patients would not have been routinely offered counselling or a psychological consultation as part of the regular prosthetic rehabilitation, although some security force personnel might have had this offered by their own occupational health service during follow-up.

This is the first study to explore the psychological state and symptoms of PTSD in amputee victims of the Troubles in Northern Ireland.

Method

Ethical committee approval was gained for the study protocol.

Using the LIMBSYS computer system, in the Regional Disablement Service Musgrave Park Hospital, names of all patients injured as a result of trauma were generated. The files of each of these patients were then checked manually to identify those who had amputations as a result of the Northern Ireland Troubles. Patients who had died or moved outside of Northern Ireland or who were under the age of 18 years were excluded from this study. Medical notes for each patient were then reviewed and demographical details noted. Each patient was then sent, by post, a Patient Information Leaflet, a questionnaire and a self-addressed envelope. The questionnaire asked specifically about satisfaction with the artificial limb and the rehabilitation process, lower limb amputees were asked to score themselves according to the SIGAM mobility grade, upper limb amputees were asked to select if they used their artificial limb in a functional way or only for cosmesis. Psychological symptoms not necessarily needing in-patient admission i.e. “psychiatric caseness” were explored using the General Health Questionnaire (12 item-GHQ-12) and 3 screening questions exploring symptoms usually seen in Post Traumatic Stress Disorder (avoidance, intrusive thoughts and physical symptoms).¹⁰ Those patients not wishing to participate were asked to return blank forms in the self-addressed envelope within two weeks.

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Any forms not received within one month were followed up by a telephone call to encourage return of the completed form.

Results were analysed using the SPSS statistical analysis system.¹¹

Results

129 patients were identified who had suffered limb amputation as a result of the Troubles, 110 males, 19 females. Nine patients are now deceased and five are living outside Northern Ireland. Two patients, who did not want to answer the questionnaire, said that it was too intrusive. Of the remaining 115 patients, 75 completed the questionnaire (59 males and 16 females) – 64% response rate.

The average age of the respondents at the time of completing the questionnaire was 53.5 years.

The years in which the traumatic events occurred ranged from 1969-2003 with peaks in the early seventies, early nineties and 1998 (Omagh bomb).

57 respondents were lower limb amputees, 16 were upper limb amputees and 2 had suffered an upper and a lower limb loss. The most common level of amputation was trans-femoral.

The causes of the injuries are shown in Figure 1.

52 (69 %) respondents felt that the period of primary prosthetic rehabilitation had been adequate and 53 (71 %) respondents did not have any significant medical problems.

Hours of use of the artificial limb ranged from 0-18 hours with the average being 11.2 hours. There was no significant difference between upper and lower limb amputees hours of use.

45 (60%) patients replied that they still had significant stump pain and the presence of stump pain was significantly associated with reduced hours of use ($t = 3.35$; $p < .01$).

For lower limb amputees the number of patients scoring A-F respectively in the SIGAM mobility grading (as judged by the patient) was 3 (5 %), 8 (13 %), 17 (28 %), 16 (27 %), 3 (5 %), 13 (22 %). Patients who stated that they had significant stump pain were more likely to be at the lower end of the SIGAM scale ($p < .01$) as were patients who stated that they had a significant medical problem ($t = 2.09$; $P < .05$). There was no significant correlation between the SIGAM grading and the patient's age, number of limbs amputated or if they considered the period of physical rehabilitation to have been adequate.

A question exploring patient satisfaction with how the artificial limb had been made revealed that 10 (16 %) of lower limb amputees were dissatisfied, 19 (31 %) were neither dissatisfied nor satisfied and 33 (53 %) were satisfied or very satisfied. There was no significant association between satisfaction and the age of the patient, gender, stump pain, psychiatric caseness or PTSD.

There was a significant association between lower limb amputees who had symptoms of PTSD and lower scores on the SIGAM scale ($t = 2.017$).

For upper limb amputees 9 (56 %) stated that they used the artificial limb in a functional way, 5 (34 %) used it for cosmesis only and 2 (10 %) preferred not to wear it. Of the 16 patients 6 were neither satisfied nor dissatisfied with how the prosthesis had been made, 9 were satisfied or very satisfied and 1 patient was very dissatisfied.

9 patients stated that they still had significant stump pain. 5 of the 16 patients had no symptoms of PTSD, 6 had 1 symptom, 4 had 2 symptoms and 1 had 3 symptoms.

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Regarding the psychological state of the group as a whole 33 (46 %) patients scored highly enough on the GHQ 12 to suggest psychiatric caseness. There was also a positive correlation with psychiatric caseness and significant stump pain ($t= 3.302$) but no correlation found with the time since the incident, the age of the patient, the number of limbs lost or upper/lower limb amputees.

12 (16 %) patients acknowledged all 3 of the major symptoms of PTSD – avoidance behaviour, intrusive thoughts and physical anxiety responses and 13 (18 %) patients 2 of the major symptoms, 25 (34 %) patients 1 of the major symptoms of PTSD.

Higher PTSD scores were associated with less time since the incident and also the presence of significant stump pain ($p=.05$, $p=.05$ respectively).

No association was found with PTSD and gender, multiple amputees or upper/lower amputees.

There was an overlap of 21 patients who showed evidence of both psychiatric caseness and PTSD symptoms. With increasing symptoms of PTSD there was a mirrored increasing score on the GHQ 12 ($p<.001$).

70.6% of patients felt that they had made overall the best possible recovery however patients with symptoms of PTSD and psychiatric caseness were significantly associated with feeling that they had not made the best possible recovery ($p=.05$, $p=.05$ respectively)

Discussion

This study has benchmarked the level of physical rehabilitation and the psychological state of the amputee survivors of the Northern Ireland Troubles. Comparing our results for mobility and artificial limb usage after lower limb traumatic amputation with another study reveals that the patients have attained a similar level of mobility, and artificial limb usage 76.3% > 7 hours per day.¹²

For upper limb prosthetic usage our respondents were wearing the limbs longer than in another study and using them more often for function and were more satisfied with them in general.¹³ Nonetheless a high number of our upper and lower limb patients are still having significant stump pain. The questionnaire specifically asked patients if

they considered that they had *significant* stump pain and 60% of patients said that they did. This questionnaire did not explore the possible physical/prosthetic reasons for this however we note that the majority also had symptoms of PTSD and psychiatric caseness. Stump (residual limb) pain is thought to be less common than phantom limb pain in the longer term, however it can be experienced for longer periods and with greater intensity and impact on daily lifestyle.^{14,15} It has been reported that stump pain is more frequent in people whose amputation resulted from trauma and considerable variation in the frequency of it is reported in the literature 21% -56%.^{14,16,17} Stump pain is mainly considered to be due to prosthetic fit,

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arthrogenic or neurogenic in cause however Sriwatanakul et al have also demonstrated the association between residual limb pain and depression/anxiety.¹⁸ We also have found that stump pain is significantly associated with both physical and psychological issues i.e. hours of use of the prosthetic limb, SIGAM grading, GHQ scores and PTSD symptoms.

To our knowledge this is the first study to explore symptoms of PTSD in amputees in the longer-term. There have been few studies looking at the level of PTSD very early after traumatic amputation. One study by Gunaratnam et al stated 72 % of their amputee patients had PTSD after relatively early follow-up.¹⁹ In our study we asked 3 questions exploring the cardinal symptoms of PTSD and found that 69 % of our patients had 1 or more symptoms and 16 % had all 3 symptoms. Although we have not made a firm diagnosis of PTSD, nevertheless for those patients who are having cardinal symptoms of this disorder we found that the symptoms reduce with

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increasing time since the incident. In addition we found that symptoms of PTSD were associated with reduced mobility and stump pain. The GHQ 12 is a validated questionnaire for use in amputees: it has indicated that the percentage of our patients with psychiatric caseness is 46 %, which is much higher than for the general population in Northern Ireland which for males is 17% and females 27%.²⁰ We postulate that if patients with symptoms of PTSD and/or psychiatric caseness had been identified earlier and received counselling/therapy they may have eventually had a better level of mobility and possibly less stump pain. Conversely, interventions designed to reduce the levels of stump pain could result in widespread benefits, resulting in a patient who uses their artificial limb more, has a better level of mobility and possibly a better psychological profile.

There were limitations with this study: in order to encourage as many responses as possible we kept our questionnaire brief and some areas were not explored in depth e.g. phantom pain. In addition we foresee that some patients might overestimate their level of physical rehabilitation or psychiatric symptoms and others might underestimate it. We felt however that this questionnaire was the least intrusive way of inviting patients to participate and the results have highlighted some interesting points.

Conclusions

While most respondents were satisfied that they had made the best possible recovery those who were not were more likely to be having symptoms of PTSD and psychiatric caseness. Stump pain was associated with both poorer mobility and negative psychological symptoms. All of these findings highlight that the management of traumatic amputees requires an holistic approach.

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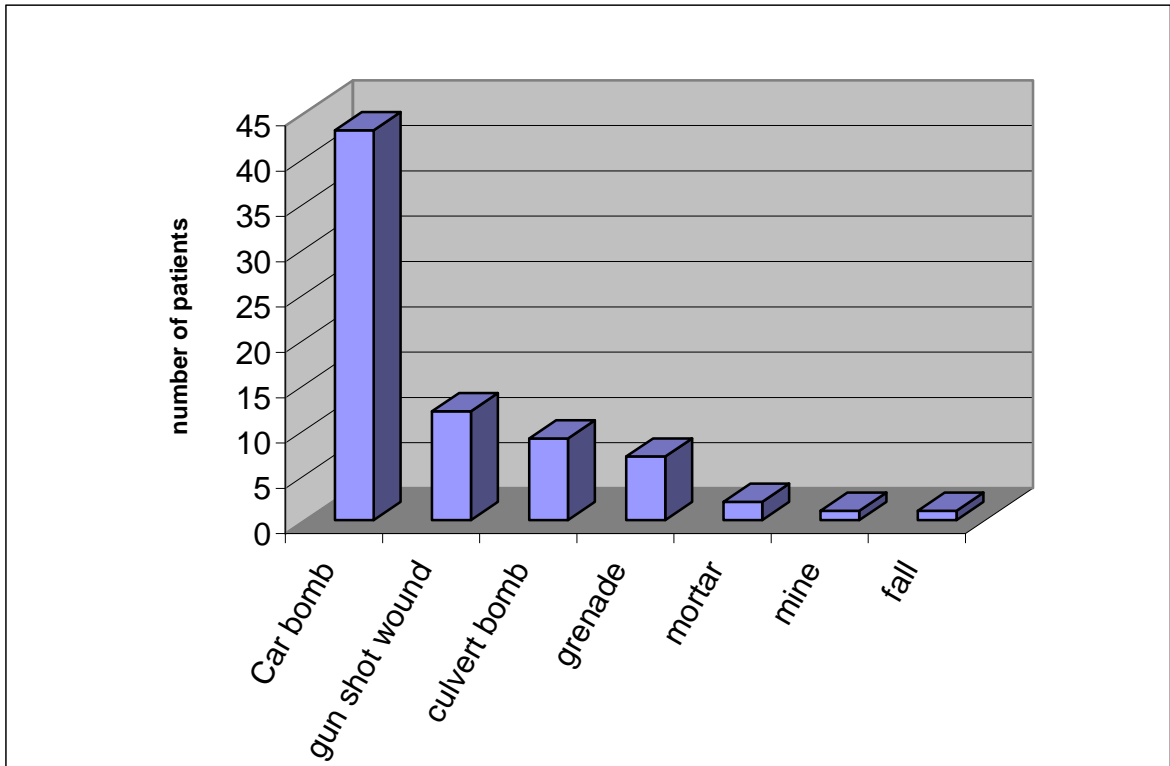
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Figure 1. Causes of injuries resulting in amputation 1969-2003



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Table 1. Demographic characteristics of respondents (n=75)

Gender	
Male	59
Female	16
Amputees	
Single	54
Double	19
Triple	2
Age at time of injury	
	12-55 years
Mean	32.1 years
Amputation level	
Transfemoral	25
Transtibial	16
Transradial	13