

# Long-term outcome and quality of life after multiple trauma

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## Abstract

The mortality of polytraumatized patients is decreasing over the last decades due to improvements made in preclinical and clinical treatment. The question whether patients will survive after multiple trauma is consequently pushed into the background, whereas the question how patients survive increasingly take center stage. However, there are only a few studies focussing on long term-outcome and quality of life in multiply injured patients. Here, a brief review of current literature regarding long-term outcome after multiple trauma in terms of physical impairment, mental function as well as social and professional problems is given. Furthermore, influencing factors of long-term outcome in polytraumatized patients are presented.

## Introduction

The mortality of polytraumatized patients is decreasing over the last decades due to improvements made in preclinical and clinical treatment. The question whether patients will survive after multiple trauma is consequently pushed into the background, whereas the question how patients survive increasingly take center stage. However, there are only a few studies focussing on long term-outcome and quality of life in polytraumatized patients. Besides physical impairments, mental function as well as social and professional problems have to be taken into account.

## Physical consequences

Despite a gradual improvement in the time course multiple trauma leads to a long-term impairment of physical health status [1,2]. 10 years after trauma Soberg, *et al.* reported, bad "physical health (physical component of SF-36) in 45% [3], and Pape, *et al.* found posttraumatic disability in 20% 17.5 years after injury [4]. Additionally, in 62-73% long-term bodily pain is described [5-7].

## Mental consequences

Multiple trauma also results in a long-term reduction of mental health status [1,5,6]. 17-46% of multiply injured patients are mentally impaired 10 years after trauma [3,8]. Psychological problems include anxiety disorders in 28-62% [6,7,9], depression in 28-45% [6,7,9] and posttraumatic stress response in 32% [10]. In comparison to the normal population multiply injured patients more often commit suicide (10%) and secondary accidents (19%) leading to an increased overall mortality rate 10 to 20 year after trauma [11].

## Socio-economic consequences

In general, the long-term employment rate is reduced compared to the pretraumatic level. 3 months after trauma 12% of polytraumatized patients return to work, rising up to 53% within the first posttraumatic year [12,13]. No further increase of the employment rate could be found until the third year after trauma [5,12,14,15]. 5-6 years after trauma multiply injured patients return to work in 60-79% [6,16] and in 90%

after 12 years, respectively [17]. However, professional retraining is necessary in almost 50% [18]. The long-term disability rate amounts to 7-20% [4,17,19].

## Influencing factors

Pretraumatic factors having a negative impact on long-term outcome after multiple trauma include higher age at the time of accident, female gender, chronic diseases, lower educational levels and substandard social environment [1,6,7,20-22]. Among trauma-related factors the overall injury severity significantly influences the short- and mid-term outcome, but not the long-term quality of life in polytraumatized patients [6,12,15]. In contrast, traumatic brain injury and lower extremity trauma have a relevant impact on long-term disability [23-27]. Following posttraumatic factors have a tremendous impact on long-term outcome after multiple trauma: persisting pain, coping strategies, posttraumatic psychological disorders and unemployment [3,6,12,28]. Especially, these factors should be addressed during the rehabilitation period.

## Conclusions

Long-term outcome and quality of life become increasingly important in the treatment of multiply injured patients. Although long-term consequences after multiple trauma are tremendous, there is a lack of systematic data collection on this topic. Besides lower extremity trauma and traumatic brain injury, especially posttraumatic factors like persisting pain and psychological disorders play a major role. Therefore, a timely pain-relief therapy and psychological care should be part of a long-term rehabilitation.

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All authors have made substantial contributions to 1) conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; 3) final approval of the version to be published; and 4) agreement to act as guarantor of the work (ensuring that questions related to any part of the work are appropriately investigated and resolved).

## Conflict of interest statement

There is no conflict of interest. All authors disclose any financial or non-financial competing interests. The presentation of the issue is independent.

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