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Scientific/Clinical Article

Adherence behavior in an acute pediatric hand trauma population: A pilot study of parental report of adherence levels and influencing factors



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ABSTRACT

Introduction: Descriptive and cross-sectional study.

Purpose of the Study: The hand is a common site of injury in children; however, little is known regarding adherence to hand trauma management in this population.

Purpose: This pilot study aimed to describe adherence to plaster slab immobilization, advice regarding return to sport, appointment attendance, and the factors influencing nonadherence.

Method: Forty-seven parents of children with hand trauma completed an online questionnaire reporting their child's adherence to the initial medical management.

Results: Parents reported that 34% (16 of 47) of children were adherent to all aspects of management. Nonadherence with plaster slab immobilization was reported by 38% (18 of 47), and 45% (21 of 47) reported nonadherence with advice regarding return to sport. Hygiene, discomfort, and restriction were the most common reasons for plaster removal. Belief that sport would not cause harm and social factors influenced return to sport against medical advice.

Conclusion: Nonadherence behavior is commonly reported in children with acute hand trauma.

Level of evidence: 4.

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Introduction

Injury to the upper limb in children and adolescents is a common reason for presentation to health services. Bone fragility secondary to rapid growth in adolescence combined with frequent participation in high-risk recreation activities may account for increased incidence of fractures in a pediatric population.^{1,2} Recommended postsurgical or conservative management of pediatric hand trauma is commonly a period of immobilization in a plaster slab or orthosis^{3,4} and avoidance of high-risk activities such as sports. Despite frequent presentation to health services worldwide,

little is known regarding adherence to acute hand trauma management in children and adolescents.

The World Health Organization defines adherence as follows:

"The extent to which a person's behavior – taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider."^{5(p3)}

An underlying tenant of the World Health Organization definition is the active involvement of the patient in treatment and acknowledgment of the multifactorial nature of adherence. The more traditional concept of compliance has implications of patient passivity, with deviation from treatment recommendations attributed to patient-related factors.

Nonadherence in acute hand injury has the potential to limit efficacy of therapy interventions, increase the risk of reinjury or malunion, in addition to distorting research outcomes.⁵ Research into acute hand injury suggests superior outcomes in adults who are adherent to therapy,^{6,7} whereas increased health costs result from nonadherence behavior.⁸

Conflict of interest: All named authors hereby declare that they have no conflicts of interest to disclose.

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Three components of adherence are of particular clinical importance: adherence to immobilization in plaster slab or orthosis, avoidance of sport, and attendance at outpatient appointments.^{3,4} No specific studies have investigated adherence to these components in pediatric hand injury.

Rates of adherence to therapeutic devices show great variability between samples in populations other than pediatric hand trauma. Average reported adherence rates for pediatric populations range from 32% (spinal orthoses⁹) to 53% (nonspecified orthoses for rheumatological conditions¹⁰). Adherence in acute adult hand trauma populations ranges from 32%¹¹ to 59%^{6,12} and 60%.¹³

A large proportion of high school athletes return to sport against medical advice after concussion.^{14,15} Acceptable outcomes are assumed for athletes returning to play soon after hand injury,¹⁶ despite a paucity of experimental evidence to support this claim.

Nonattendance at medical appointments may be less of a problem than other aspects of adherence behavior in pediatric populations, with 2 studies reporting approximately 91%¹⁷ and 80% outpatient clinic attendances.¹⁰ However, consequences of delayed treatment progression as a result of nonattendance may have clinical implications in hand therapy rehabilitation.⁶

Reported factors influencing adherence are many and varied. Stable marital union of parents,^{10,18} perceived benefit of treatment,¹⁹ severity of injury,¹⁷ parental relationship with therapist,¹⁹ orthosis interference with daily activities,^{6,11,12,19} appearance of orthosis,^{9,19} transportation difficulties,^{10,18} and forgetfulness^{10,18} have been identified.

Clinical observations at the tertiary center suggested that adolescents were typically less adherent to hand trauma management, which might be explained in part as resulting from reduced parental supervision.²⁰ Evidence from hand therapy and pediatric rheumatology studies has not shown a significant relationship between adolescence and nonadherent behavior.^{6,10,11,13} However, some medication studies do.²⁰ This aspect was explored in this study.

Purpose of the study

The purpose of this study was to explore the incidence of, and factors influencing, adherence behavior in children and adolescents with hand injuries. It was hypothesized that secondary school aged-children would have greater parental report of nonadherence than primary school aged-children.

Aims

The aims of this pilot study were to

1. Investigate the incidence of adherence to treatment recommendations through parental report, in a population of children aged 6–17 years with hand trauma;
2. investigate parents' perceptions of factors that influence nonadherence to initial treatment recommendations; and
3. investigate if parental report of adherence and influencing factors differ between primary school (6–11 year olds) and secondary school (12–17 year olds) children.

Methods

Design

An exploratory and cross-sectional survey design was used to provide a snapshot of frequency and characteristics of adherence to plaster slab immobilization, adherence to advice regarding return

to sport, attendance at hospital appointments, and factors that influenced nonadherence.

Adherence behavior and its influential factors may not be directly observable.

Parental report was sought in this pilot study as the concept of adherence is complex and may be too complicated for children to understand, interpret, and accurately report.²¹ Parental report alleviated ethical concerns of involving children in research. The respective university and hospital ethics boards granted ethical approval.

Method

The Plastic (Surgery) Dressing Clinic (PDC) manages most of the outpatient hand trauma at the tertiary hospital, accepting referrals from the emergency department, other health services, and local medical officers.

The PDC does not have a formal treatment protocol for management of hand injuries; rather medical staff considers general healing principles and patient factors. Patient factors that commonly influence decision making in this clinic include factors, such as family and patient wish for surgical intervention, occupational demands placed on individuals' hands through daily use and leisure activities, as well as family and social supports and important events. The plastic surgery team discusses care options with parents and their child before jointly agreeing a treatment course.

Plaster immobilization is a common treatment course, in which patients and their families are instructed not to remove their plaster and not to play sport after surgical or conservative management of hand trauma and plaster slab application by a member of the plastic surgery team. Follow-up appointments are booked for 1–3 weeks after initial presentation. Treatment and the associated instructions were not standardized for the pilot study to reflect the natural setting.

Parent participants were identified by occupational therapists working in the PDC at the tertiary hospital when their child was referred to the hand therapy service, with an acute hand injury (ie, approximately 2–4 weeks after injury). Prior notification regarding the trial was likely to influence the behavior being measured, therefore, not providing accurate data. Information concerning the trial was provided on the same day as consent was sought and data collected. It was felt that this was appropriate because of the low risk of harm to participants as the questionnaire was concise and anonymized.

Parents, carers, or guardians (collectively classified as parent for this study) meeting the inclusion criteria mentioned herein were invited to participate, and informed consent was gained.

Inclusion criteria

- Parent of school-aged child (6–17 years old) with hand trauma;
- child has at least 2 weeks of full-time plaster/fiberglass slab wear for a hand or forearm injury;
- child has no comorbid chronic musculoskeletal or neurological condition;
- parent proficient in written and spoken English; and
- parent confident using an iPad or computer.

After consent, parents completed the online questionnaire on an Apple iPad, on a single occasion after medical review and before hand therapy intervention, in the PDC area.

Sample

Data collection for the pilot study was completed over a 4-month period in 2013.

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