



POST POLIO SYNDROME – a challenge of today

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Fatigue in patients with late onset sequelae of polio

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1. Background

Introduction

- Fatigue is the most frequent and most debilitating complaint of patients with postpolio syndrome.
- The reported fatigue is severe and interferes with activities of daily life and may lead to restrictions in participation in social activities and limitations in work duties.
- Insight into the factors that contribute to fatigue is needed to design intervention strategies.

1. Background

Objectives of the study

- To investigate the severity and course of fatigue.
- Identify physical and psychosocial determinants of fatigue in patients with late onset sequelae of poliomyelitis.

2. Methods

CARPA-study

- Prospective cohort study during 5 years, with assessments at 0, 1, 2, 3 and 5 year.
- Outcomes were described using the International Classification of Functioning, Disability and Health (ICF) as a theoretical framework.
- Opportunity to study fatigue and physical and psychosocial factors associated with fatigue, in a large sample using a longitudinal study design.

2. Methods

Study population

- **168 polio survivors with:**
 - residual paresis in at least one extremity.
 - consultation of a neurologist or rehabilitation specialist in the previous five years.
 - age 45-85 years.
 - life expectancy of more than one year.

2. Methods

Outcome measures

- **Fatigue** (Fatigue Severity Scale)
- Factors potentially associated with fatigue:
 - Age, gender
 - Physical factors
 - Physical Functioning (SF 36 physical functioning)
 - Pain (SF 36 pain)
 - Extent of paresis (MRC grading, sumscore)
 - Comorbidity (Cumulative Illness Rating Scale)
 - Walking capacity (2 minute walking test)

2. Methods

Outcome measures

- Factors potentially associated with fatigue:
 - Psychosocial and behavioral factors:
 - Mental Health (SF 36 mental health)
 - Sleeping disorders (NHP sleep)
 - Social support (Social Support Scale)
 - Coping (Coping Inventory for Stressful Situations)

2. Methods

Statistical Analysis

- Longitudinal analysis with linear multivariable regression (Generalized Estimating Equations).
- Univariate associations between fatigue and potential determinants.
- Factors that were significantly associated with fatigue were entered in the multivariable regression model.

3. Results

Course and severity of fatigue

168 patients (67 men), mean age 59 (SD 8, range 45 – 81 yrs)

FSS score (1 to 7)	N	Mean (SD)
Baseline	167	5,1 (1,4)
T1 (1 year)	160	5,2 (1,4)
T2 (2 years)	160	5,2 (1,4)
T3 (3 years)	156	5,1 (1,4)
T4 (5 years)	148*	5,0 (1,5)

*5 patients died, 14 patients lost-to-follow-up

3. Results

Independent factors

Age and gender: not associated with fatigue

Physical factors	Mean (SD) at baseline	Change during follow-up	Association with fatigue (p-value)
SF36-Physical Functioning (0-100)	39 (24)	Decrease	.000
Walking capacity (m)	126 (34)	Decrease	.024
Sumscore MRC* (0 – 130)	109 (20)	Decrease	.483
Comorbidity CIRS total score (0-52)	6,5 (3,7)	Increase	.070
SF36-Pain (0-100)	56 (22)	No change	.000

* Sumscore MRC: extent of paresis

3. Results

Independent factors

Psychosocial and behavioural factors	Mean (SD) at baseline	Change during follow-up	Association with fatigue (p-value)
Mental Health (0-100)	75 (17)	No change	.001
Sleeping disorders (0-100)	22 (30)	No change	.001
Social Support (0-60)	55 (8)	No change	.331
Emotional Coping	17 (6)	No change	.000
Avoidance coping	14 (6)	No change	.022
Task-oriented coping	25 (6)	No change	.002

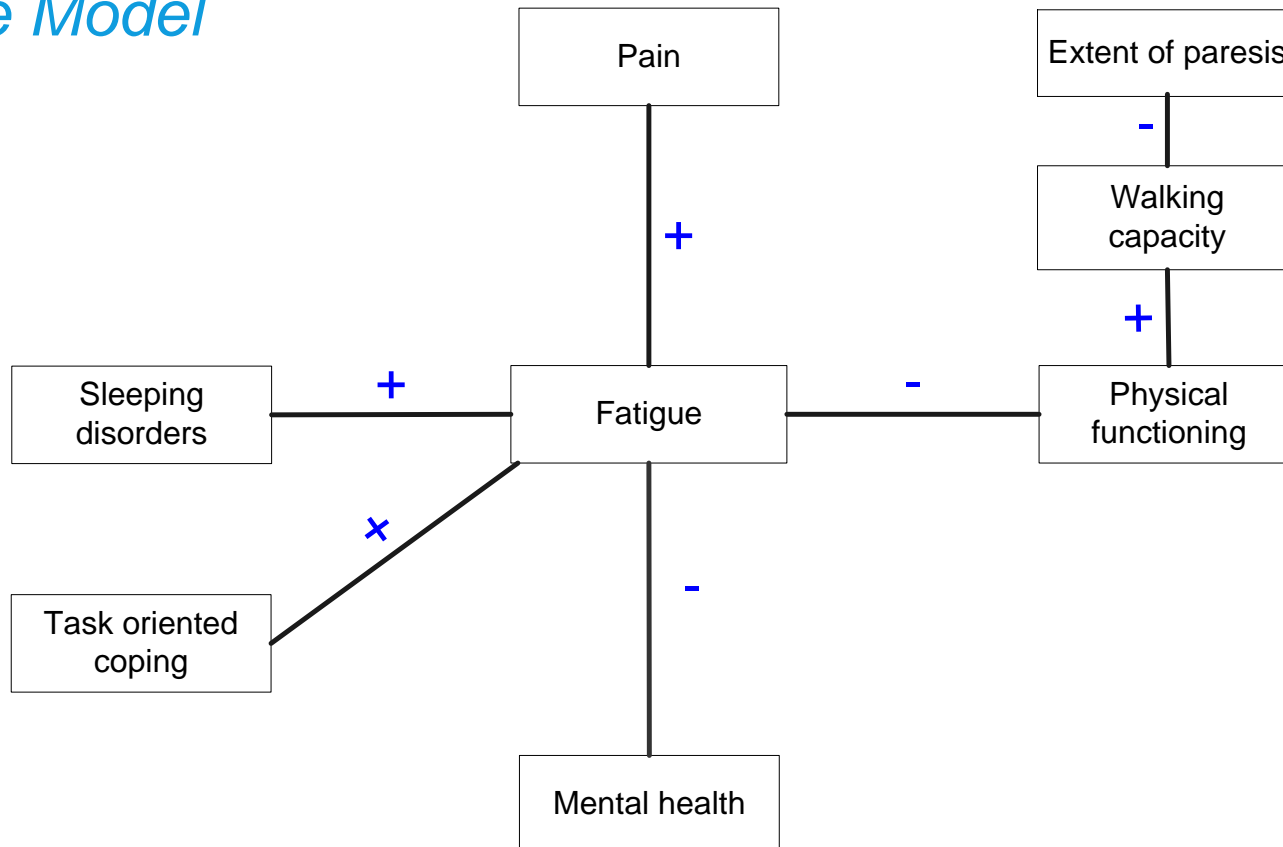
3. Results

Multivariable model

Factor	Standardized Beta	P-value
Physical Functioning (SF-36 PF)	-0,305	,000
Pain (SF-36 BP)	-0,161	,000
Task oriented coping (CISS)	0,155	,000
Mental health (SF-36 MH)	-0,100	,008
Sleeping disorders (NHP sleep)	0,084	,023

3. Results

Fatigue Model



4. Discussion

Major findings of the study

- Fatigue in polio survivors is a severe and persistent problem.
- Fatigue is associated with physical and psychologic factors.

Study limitations

- Association \neq causality
- Not all potential determinants of fatigue in polio survivors were studied:
 - daily physical activity was not measured

4. Discussion

Conclusion

- Fatigue in polio survivors is a multidimensional problem.
- Physical and psychologic determinants may provide opportunities for treatment
- Further study is needed on the effect of multidisciplinary treatment directed at modifying physical and psychological factors in polio survivors.

Tersteeg et al. A 5 year longitudinal study of fatigue in patients with late-onset sequelae of poliomyelitis. *APMR* 2011;92:899-904



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