Is the Barthel Index an Adequate Assessment Tool for Identifying a Risk Group in Elderly People Living at Home?

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Functional Decline in Europe
Facts & Strategies

• **Long-standing public health policy goal** [3]
  Health promotion and measures to prevent or reduce functional decline in elderly people in Europe

• **Identification of risk groups as an important strategy**
  Basis for assessing the need of care and assistance - especially in the domestic setting by district nurses
Functional Decline
Explanation & Consequences

- ... the loss of independence in self-care activities (ADLs) or a deterioration thereof [8].

- **Consequences** [9,10]
  - Prolonged hospital stays
  - Nursing home placement
  - Hospital readmissions
  - Increasing mortality
Barthel Index
International View & Scientific Reputation

- **Internationally standardized ADL assessment tool worth over the past 50 years**
- **Translation into eight languages** [14]
- **Primarily used in acute care and in the rehabilitation of stroke patients** [15]
- **High Reliability & Validity**
  - Interrater reliability between two nurses in the total BI = Spearman r=.98) & all individual activities = kappa higher to .89 [15]
  - Predicts outcomes of rehabilitation and progress [15], Scores found to agree with other measures of physical disability [11,12], Compared with other ADL assessment scores, Predicts discharge home [9,10]
Barthel Index
Explanation of the Term

- **Reflection of the functional status of 10 ADLs** [17]
  10 activities of daily living (feeding, grooming, bathing, dressing, bowel and bladder care, toilet use, ambulation, transfers, and stair climbing)

- **Expression of the degree of independence of a person by means of a total score (TC)** [18].

- **4 categories - Hamburg Classification Manual** [21]
  
  **Scale range:**  0 (= total dependence) to 100 (= complete independence ) [22]
  
  - Category 1 - “dependent on care” (0 to 30 pts.)
  - Category 2 -“in need of care” (35 to 80 pts.)
  - Category 3 -“partly in need of care” (85 to 90 pts.)
  - Category 4 -“completely independent” (95 to 100 pts.)
Identification of a Risk Group for Living at Home

People Aged 70 (+)

“Dependent on Care” (0 to 30 points)
“In Need of Care” (35 to 80 points)

“Partly in Need of Care” (85 to 90 points)
“Completely Independent” (95 to 100 points)

Non-Independent Group (BI 0-80 pts.)

Independent Group (BI 85 – 100 pts.)
Conduct of the Study
Study Design, Sampling and Data Collection

- **Secondary analysis**

- **Data of an explorative-quantitative cross-sectional study** - “Preventive Senior Counselling in Tyrol”

- **Period of implementation** - 2011 to 2013

- **Recruitment** of a convenience sample of 345 people at home in Tyrol

- **Inclusion criteria** - age 70+, no cognitive impairments, a written declaration of consent, no legal care provider
Measurements and Variables
Based on the Theoretical Model of the WHO-ICF Classification (2001)

Functional Health

- Body functions
  - 23 Health Indicators
- Activities
  - Barthel & IADL Index (18 Items)
- Participation
  - 5 Health Indicators

Environmental Factors

- • Current Utilization of Home help & Nursing Care
- • Current Care Allowance Level

Personal Factors

- • Age
- • Sex
- • Family Status
- • Living Arrangement.
Measurements and Variables
Data Analysis

Non-Independent Group
BI TS of 0–80 points

- Body functions
  - 23 Health Indicators

- Environmental Factors
  - Current Utilization of Home help & Nursing Care
  - Current Care Allowance Level

Independent Group
BI TS of 85-100 points

- Activities
  - IADL Index (8 Items)

- Participation
  - 5 Health Indicators

- Personal Factors
  - Age
  - Sex
  - Family Status
  - Living Arrangement.
Functionality of Non-Independent vs. Independent People

Personal Factors

Age (MD)

- **independent (BI 85-100 pts.)** (n= 265)
- **non-independent (BI 0 - 80 pts.)** (n=79)
Functionality of Non-Independent vs. Independent People
Activities & Participation

Not driving a car themselves
(OR 10.3, 95% CI [2.46; 43.30])

Not living alone
(OR 2.8, 95% CI [1.63; 4.73])

No communication with others (phone)
(OR 13.6, 95% CI [6.53; 28.38])

Instrumental activities of daily living [TC 0-7 pts.]
(OR 1.4 (95% CI [1.31; 1.53])]
Functionality of Non-Independent vs. Independent People

Body functions – Physical Health Status

**Diagnosed diseases** (OR 4.7, 95% CI [1.83; 12.17])

**Affected by diseases** (OR 4.3, 95% CI [1.96; 9.50])

**Pain** (OR 2.5, 95% CI [1.43; 4.48])

**Intake of medication** (OR 1.3, 95% CI [1.24; 1.40])
Functionality of Non-Independent vs. Independent People

Body functions -Cognitive & Emotional Health Status

**Dissatisfaction with general health status**
(OR 5.1, 95% CI [2.99; 8.71])

**Dissatisfaction with life**
(OR 2.5, 95% CI [1.12; 5.33])

**Perception of unexplainable sadness or depression**
(OR 2.2, 95% CI [1.25; 3.77])

**Perception of difficulties concentrating**
(OR 2.7, 95% CI [1.62; 4.56])

**Difficulties sleeping through the night**
(OR 2.0, 95% CI [1.17; 3.38])

**Dyspnoea at night**
(OR 2.2, 95% CI [1.02; 4.72])

**Fear**
(OR 2.0, 95% CI [1.17; 3.43])
Functionality of Non-Independent vs. Independent people

Body Functions - Motor Performance

- **Difficulties in climbing stairs** (OR 18.6, 95% CI [6.62; 52.34])
- **Dyspnoea at rest** (OR 2.4, 95% CI [1.24; 4.71])
- **Insecurity when walking** (OR 7.5, 95% CI [3.14; 17.86])
- **Falls during the last year** (OR 2.9, 95% CI [1.69; 4.88])
- **Physical inactivity on a regular basis of 30 minutes at a time** (OR 6.6, 95% CI [3.83; 11.49])
- **Need of a walking aid** (OR 6.9, 95% CI [3.50; 13.68]).
Environmental Factors of Non-Independent vs. Independent People

Aim

Methods

Conclusion

Background

Results

Utilization of care
(OR 34.6 (95% CI [14.39; 83.03])

Utilization of home help
(OR 18.8 (95% CI [4.52; 78.4])

Care allowance level (1-6)
(OR 6.1 (95% CI [3.39; 11.05])
Summary of the Results

Non-Independent Group
BI TS of 0–80 points

Independent Group
BI TS of 85–100 points

Body functions
Activities
Participation

Environmental factors
Personal factors

25 out of 37 possible functional health indicators imply limitations
Critical View
Barthel Index Total Score

• Literature takes a critical view on the significance of the BI total score due to the ordinal scale [17, 26]

• Recommendations
  o For a basic tool or as a global parameter in the daily routine of district nurses [27]
  o *Barthel & Mahoney advised*: an analysis of the individual items should be conducted additionally to allow for a pinpoint identification of the deficits [13]
Many thanks for your attention
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References


