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Review

Use and psychometric properties of the Reintegration to Normal Living Index in rehabilitation: A systematic review

Natacha Bourget [a,b], Anne Deblock-Bellamy [a,b], Andreanne K. Blanchette [b,c], Charles Sebiyo Batcho [b,c,*]

[a] Faculty of Medicine, Université Laval, Quebec City, Canada
[b] Center for Interdisciplinary Research in Rehabilitation and Social Integration (CIRRIS), Université Laval, Quebec City, Canada
[c] Department of Rehabilitation, Faculty of Medicine, Université Laval, Quebec City, Canada

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ABSTRACT

Background: Reintegration to Normal Living Index (RNLI) is a generic 11-item questionnaire-based instrument that measures the degree to which individuals achieve reintegration to normal social activities.
Objectives: This systematic review aimed to provide an overview of the use of this questionnaire in rehabilitation (objective 1) and to analyse its psychometric properties (objective 2).
Methods: We searched the literature in 4 electronic databases (MEDLINE via PubMed, Embase, CINAHL and Web of Science) for articles published in English or French between 1988 and 2017. Studies that used RNLI or investigated at least one of its psychometric properties were included and analyzed according to the PRISMA statement. Data extraction and critical methodological appraisal of the articles were independently performed by 2 authors.
Results: A total of 117 studies met the inclusion criteria for objective 1. Half of these studies were conducted in North America (50.4%), mainly with stroke patients. The RNLI was used according to 7 different response formats. The 0–10 visual analog scale and 3-point Likert scale were the most commonly used response formats. For objective 2, 10 studies had evaluated the psychometric properties of the RNLI. Their results suggested good test–retest reliability (intraclass coefficient: 0.83–0.87); good internal consistency (Cronbach α: 0.73–0.97); poor to good construct validity, with Pearson's or Spearman's correlation coefficients between the RNLI and scores for many other well-known questionnaires ranging from 0.25 to 0.77. Other types of psychometric properties (e.g., responsiveness) were poorly investigated.
Conclusion: Despite the increasing use of RNLI in clinical studies, some aspects of its psychometric properties are still poorly evaluated. In addition to the validity and reliability shown in different studies, further studies are needed to investigate other measurement properties such as responsiveness.

1. Introduction

Recent health surveys reported that the prevalence of activity limitations and restrictions in participation is growing worldwide due to the aging or disability of the population [1,2]. For health policy making, we must monitor the extent to which people with disability achieve full and satisfactory participation in their community. To achieve this goal, well-designed tools are needed to accurately monitor the social participation of people with disability [3–5]. Questionnaire-based instruments offer a valuable and low-cost option to assess latent variables such as participation and quality of life [3–5].

The Reintegration to Normal Living Index (RNLI) [6] is a generic questionnaire that measures the degree to which individuals with traumatic or neurological conditions achieve reintegration to normal social activities [7,8]. It contains 11 items that assess mobility, self-care, daily activity, recreational activity, and family roles. Each item is rated on a 10-point visual analog scale (VAS), a score of 1 indicating "no reintegration" and 10 "complete reintegration" [9]. Different versions of this questionnaire are available for various populations.

Since its development in 1988, the original RNLI [6] and subsequent adapted versions have been widely used in various rehabilitation programs and in several studies, mainly to evaluate the social integration of patients after discharge from health care

* Corresponding author at: Center for Interdisciplinary Research in Rehabilitation and Social Integration (CIRRIS), 525, Wilfrid-Hamel boulevard, Quebec City (Quebec), G1M 2S8, Canada.
E-mail address: charles.batcho@fmed.ulaval.ca (C.S. Batcho).

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services, to validate other newly developed instruments or to assess the effectiveness of rehabilitation interventions. Wilson et al. cited this questionnaire among the top 6 most-used tools in spinal cord injury [10] and Tse et al. among the top 10 frequently used instruments for stroke [11]. In 2009, a review by Noonan et al. [12] critically examined six instruments that assessed participation with spinal cord injury and reported that RNLI presented limited evidence regarding its psychometric properties. Since then, no other review has addressed the measurement properties of the RNLI. However, in the context of increasing consideration for participation and reintegration to normal life in rehabilitation, it is increasingly essential to thoroughly analyse the psychometric properties of instruments such as the RNLI. Indeed, the assessment of intervention outcomes requires the use of appropriate measurement tools that are at least reliable, valid, and responsive [13–15].

The present systematic review aimed to provide an overview of the use of the RNLI in rehabilitation fields (objective 1) based on how often it is reported in the literature as a primary or secondary outcome and to critically analyze current data on its psychometric properties (objective 2).

2. Methods

We searched four electronic databases (MEDLINE via PubMed, Embase, CINAHL and Web of Science) for articles published in English or French from 1988 to 2017. A comprehensive search strategy was adapted for each database, combining keywords and MeSH terms where applicable. Additionally, published reviews and retrieved study reference lists were hand-searched. The full literature search is presented in Appendix 1. Articles were included if they had (1) reported on the use of the RNLI to evaluate reintegration to normal living or (2) investigated at least one of its psychometric properties. Two authors selected potentially relevant articles based successively on titles, abstracts and full texts (Fig. 1). Then, descriptive (Table 1) and psychometric (Table 2) data were extracted from relevant articles. In case of missing data, emails were sent to authors, requesting them to provide missing information. To standardize data extraction across studies, psychometric properties were defined and interpreted according to the international consensus on taxonomy, terminology and definitions of measurement properties for health-related patient-reported outcomes (COSMIN) [14,15]. Specifically for articles that investigated psychometric properties of the RNLI, 2 authors independently performed a critical methodological appraisal by using the standardized MacDermid tool (Supplementary online Table), a checklist designed to evaluate the methodological quality of psychometric studies by 12 criteria divided into 5 categories (study question, study design, measurements, analyses, and recommendations). Each criterion can be scored "0", "1" or "2", a higher score indicating better methodological quality [16]. Scores were discussed until consensus was reached. This critical appraisal tool was used in previous systematic reviews [17–19].

3. Results

3.1. Overall description of included studies

The search strategy identified 117 eligible citations that had reported investigating the RNLI in different studies (objective 1)

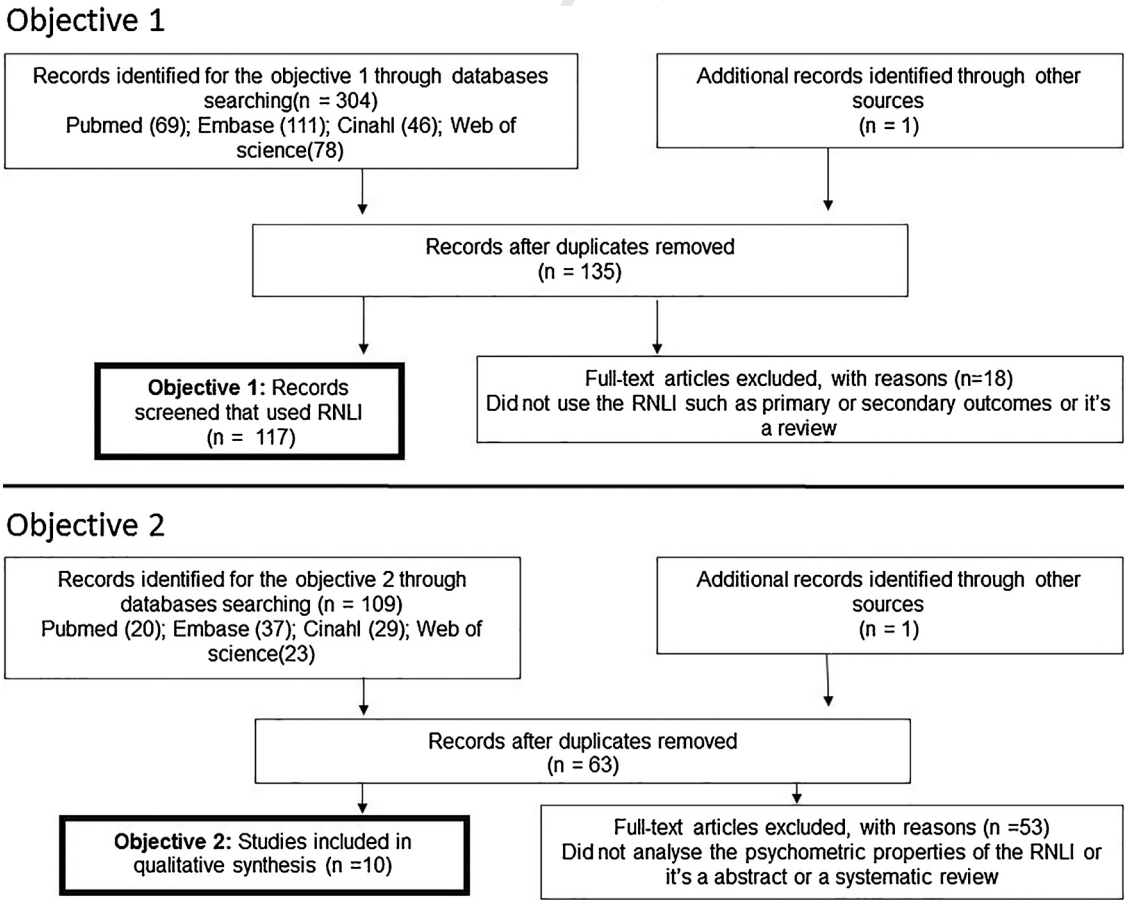

Fig. 1. Selection of articles in the review. Objective 1, use of the Reintegration to Normal Living Index (RNLI) questionnaire in rehabilitation; Objective 2, analysis of the psychometric properties of the RNLI.

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