

SHORT REPORT

Ageism in stroke rehabilitation studies

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Abstract

Background: stroke is predominantly a disease of older people. While age bias has been demonstrated in studies of pharmacological therapeutic interventions in stroke, the extent of discrimination by age in stroke rehabilitation studies is unknown. The aim of this study was to systematically review the literature to assess the extent of ageism in stroke rehabilitation studies.

Methods: all randomised control trials (RCT) on stroke rehabilitation entered in the Cochrane database which reported mean age were included. Patient gender and exclusion criteria were also recorded.

Results: of 241 RCT's identified, 182 were eligible for inclusion. The mean age of all patients was 64.3, almost a decade younger than those seen by stroke physicians in daily practice in global terms, and 11–12 years younger than encountered in hospital practice in the British Isles. Almost half (46%) of trials excluded patients with cognitive impairment, almost one-quarter (23%) patients with dysphasia and one-eighth (13%) excluded patients with multiple strokes.

Conclusion: we have identified a clear difference in the mean age of those included in stroke rehabilitation studies compared with the international mean age of stroke. In addition, a quarter of trials excluded dysphasic patients which may indicate omission of more severe strokes. This means that the evidence base for stroke rehabilitation is deficient in terms of matching the characteristics of patients encountered in clinical practice, and a more representative sample of older people and those with significant disability must be included in future trials.

Keywords: *ageism, stroke, rehabilitation, older people*

Introduction

Stroke is not only an illness of major global significance—15 million people suffer stroke worldwide each year, of which 5 million people die and a further 5 million are permanently disabled [1]—but is also predominantly a disease of older people. The average age of patients admitted to hospital each year with stroke in Ireland is 75 [2]. These figures are comparable with the United Kingdom National Stroke Audits that reports a mean age of 75.8 [3].

Existing research shows evidence of ageism in the clinical management of older people with acute stroke [4]. Ageism is also evident in the design and implementation of pharmacological, mechanical and surgical interventional research studies in stroke [5]. This needs to be addressed given the ensuing paradox that the treatments will be given mostly to older people among whom efficacy and safety has not been adequately assessed.

Rehabilitation is another critical component of recovery for many stroke survivors. While there is significant evidence of the efficacy of post-acute rehabilitation in reducing mortality and dependency of stroke patients [6], with post-stroke rehabilitation an ever-increasing focus of interest [7], it is not clear to what extent the populations of participants in these studies mirror the age profile of patients encountered in clinical practice.

We undertook a review of the current literature to evaluate whether ageism is also a feature in the design of studies in stroke rehabilitation. In addition, although all patients with stroke, except for those who either make a rapid and complete recovery or else die in the immediate aftermath, should benefit from rehabilitation, it is also not clear as to what proportion of those with more complex strokes has been excluded from trials of rehabilitation.

We analysed the mean ages, exclusion criteria and gender ratios of trials related to stroke rehabilitation included in the

Cochrane Collaboration Reviews, given that these are a key reference point in evidence-based medicine.

Methods

Using the Cochrane Database of Systematic Reviews, we evaluated all systematic reviews included under the search term ‘stroke rehabilitation’. Forty reviews were identified between the years 2003 and 2013.

The inclusion criterion for considering a systematic review was that it focussed on rehabilitation after stroke. The inclusion criteria for including a randomised controlled trial (RCT) within selected reviews were that it included only participants with stroke, reported the mean age of participants either in the paper, abstract or in the Cochrane review tables, and was published in English. We also analysed the gender ratio and exclusion criteria where the papers were available in the public domain.

We excluded any trial carried out whose subjects had sustained a brain injury from a cause other than stroke, and where the mean age was not clearly stated.

Results

Of the 40 systematic review papers, 23 were deemed relevant to our study: of the other 17, the rehabilitation covered a mixture of conditions. Within the 23 reviews, there were RCT of which 182 were included in our review, with publication dates from 1980 to 2012. Fifty-nine reviews were omitted in keeping with the exclusion criteria outlined above ($n = 33$) or secondary to insufficient data or inability to obtain the paper ($n = 26$).

The mean of the mean ages of patients included in the 182 studies was 64.3 years. The gender ratio in trials where it was specified was 57.2% male and 42.8% female.

Of the 182 trials, 149 specified exclusion criteria—68 (46%) excluded patients with significant cognitive impairment, 43 (29%) excluded patients with unstable hypertension or cardiovascular disease and 34 (23%) excluded patients with either a documented dysphasia or an aphasia. Patients with more than one stroke or transient ischaemic attack were excluded in 19 (13%) trials. Patients were also excluded if they had an orthopaedic condition in 24 (16%) trials as were those with a psychiatric condition in 18 (12%) trials (Table 1). We identified

Table 1. Exclusion criteria in stroke rehabilitation trials

Exclusion criteria	N (%) ($n =$ number of trials)
Cognitive impairment	68 (46)
Unstable hypertension or cardiovascular disease	43 (29)
Aphasia/dysphasia	34 (23)
Stroke/TIA	19 (13)
Ortho conditions	24 (12)
Psych conditions	18 (12)

TIA, transient ischaemic attack.

19 trials with older age as an explicit exclusion factor, 1 at >65, 2 at >70, 3 at >75, 8 at >80, 3 at >85 and 2 at >95.

Discussion

This review of the rehabilitation studies in stroke shows that the mean age of study participants is almost a decade younger than those seen by stroke physicians in their daily practice in global terms where the mean age is calculated at 73 [8]. The gap is even greater in the developed world, amounting to 11–12 years in Ireland and the United Kingdom [2]. While the gender ratio is however congruent with current clinical experience, [9] it is also clear that many of the trials also exclude very significant numbers with complex disability, particularly disorders of communication and cognition and co-morbidity. These differences mean that the application of trial data on efficacy of rehabilitation, as well as prognostication of outcome, is degraded by the absence of significant numbers of those who are affected by stroke in real clinical practice. The absence of an upper age in many of the studies reviewed is no guarantee against ageism, given existing evidence of ageism in the selection of participants in clinical trials generally, as well as in the delivery of stroke care.

There are likely to be multiple factors contributing to the discrepancy in mean age in the trials, but there are clearly pressing practical and moral reasons to ensure that the recruitment of participants in rehabilitation trials mirrors more closely that seen in clinical practice in both age and clinical profile. This in turn demands a greater degree of sophistication among trialists. The widespread exclusion of patients with cognitive and communication difficulties may be representative of an era where tools for measurement were less sophisticated, and where there was less sensitivity to the lived experience of those with dementia and cognitive impairment [10]. Clearly, greater inclusion of patients with cognitive and communication difficulties will require a more creative approach, including proxy measures, direct observation and measures which do not use a language-based approach, such as the Motor-Free Visual Perception Test [11]. Increasing frailty with advancing age, increasing prevalence of cognitive impairment and disorders of communication, which are in turn coupled with more complex consent and assessment processes are all elements which need to be factored into trial design. However, it is important that this more vulnerable cohort of patients is represented adequately in trials, not only because they reflect an appreciable proportion of patients suffering from stroke internationally but also to ensure that the development of evidence-based rehabilitation methods is both appropriate and applicable to this age group.

Key points

- Ageism exists in stroke rehabilitation studies.
- Wider inclusion criteria for further research.
- Focus further studies on older stroke populations.

Conflicts of interest

None declared.

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