Authors' objectives
To provide a quantitative analysis of behavioural research on the treatment of self-injurious behaviour (SIB) from 1964 to 2000.

Searching
Current Contents was searched as part of a broader review of this topic area (see Other Publications of Related Interest). In addition, PsycINFO and ERIC were searched. The keywords used were 'self-injurious behavior' and 'SIB'. The search was conducted for the period 1964 to 2000.

Study selection

Study designs of evaluations included in the review
Single-subject experimental designs were eligible for inclusion. About 65% of the included studies used replication, which was defined as conditions being repeated within-subject or a multi-element design. The follow-up after termination of the intervention ranged from 2 weeks to 7 years in the few studies that reported it.

Specific interventions included in the review
Any behavioural intervention as a treatment for SIB was eligible for inclusion. Studies that used pharmacological interventions alone or in conjunction with behavioural interventions were excluded. Also excluded were studies in which SIB was assessed but treatment was not implemented. The types of treatment included in the review were broadly defined as reinforcement-based, punishment-based, or other (e.g. extinction, mechanical restraint, antecedent manipulation, response block, exercise). Single and combination treatments were included. The majority of the included studies were conducted in institution or group settings; there were fewer in the community.

Participants included in the review
Participants treated for SIB alone or in conjunction with other problem behaviours were eligible for inclusion. This included people diagnosed with developmental disabilities such as mental retardation or autism. Both male and female participants, adults and children, were included. More than 70% had severe or profound retardation, and almost 60% had a secondary diagnosis such as autism, or visual or hearing impairment. The most common types of SIB in the included participants were head-banging/hitting (49%), biting (30%), hand-mouthing (14%) and body-hitting (11%).

Outcomes assessed in the review
The requirement for inclusion appeared to be the reporting of individual behavioural data for each participant. No details were reported about how the outcome (the occurrence or non-occurrence of behaviour) was actually measured in each study.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors noted whether or not each study reported statistics for inter-observer agreement on the occurrence or non-occurrence of behaviour, as an indication of the potential for observer bias. They also noted whether the studies assessed transfer of treatment effects across setting or therapists. The authors did not state how the papers were assessed for validity, or how many reviewers performed the validity assessment.

Data extraction
Treatment effectiveness was estimated using the last five data points from the baseline and the treatment phases (or the
maximum equal number if less than five were available). Data from the final phase were used for studies that reported multiple replications of the baseline and/or treatment conditions. Values for each data point were estimated from graphs and used to calculate a mean for the baseline and treatment phases for each participant. The mean treatment value was then subtracted from the mean baseline value and divided by the mean baseline value (x100) to obtain a percentage change in SIB. This was not done if the data were reported as averages, were based on rating scales, or did not include a baseline.

Information was also collected for the categories of study demographics, procedure and treatment. A second reviewer rated the data sets for 96 (13.6%) of the participants and the percentage agreement within each category, excluding treatment effectiveness, was calculated.

Methods of synthesis
How were the studies combined?
In the assessment of effectiveness, the interventions were grouped as antecedent, extinction, reinforcement, punishment, response blocking and mechanical restraint. The mean percentage change in SIB was presented for each intervention type alone and for each intervention in conjunction with another of the intervention types. These mean changes appeared to be simple averages of the mean change from baseline calculated for each individual.

How were differences between studies investigated?
The studies were categorised by age (1 to 10 years, 11 to 18, 19 and over, no data), retardation (severe/profound, moderate, mild, no data), setting (seven categories) and topography of SIB (11 categories). However, the mean percentage changes in SIB by intervention type did not include an assessment of the differences in treatment effect between participants who received similar interventions in different studies.

Results of the review
Data from 706 participants reported in 396 articles were included in the review. Data in the format required to estimate the effectiveness of treatment in each category of intervention, or combination of intervention types, were available from one to 195 participants; the majority were based on less than 40 participants.

The following is a summary of the results of the effectiveness of the treatments. A description of the characteristics of the literature over time is available in the paper.

Most treatments showed at least an 80% reduction in SIB from baseline, with the exception of reinforcement-based interventions used alone and in conjunction with response blocking, which both showed reductions of about 73%. The number of participants providing data for these analyses ranged from one to 195. Over time there was a trend towards less variability in effectiveness, but the mean values remained similar.

Authors’ conclusions
The authors concluded that SIB persists despite an abundance of research showing that most treatments have been highly effective.

CRD commentary
The inclusion criteria for this review were broad in terms of the interventions of interest. This may be because the authors’ aim was to describe changes in this research field over the past 35 years, as well as quantifying the treatment effect. Several appropriate databases were searched to identify relevant studies, but the review only included published literature. The authors’ conclusion that most treatments have been highly effective is consistent with the results presented, but the entirely positive findings may reflect publication bias since unpublished data were not sought. No details were provided about how the review was conducted, so the potential for bias in the review itself cannot be determined. The authors did assess some of the characteristics expected to influence bias in single-subject studies. They showed that most of the included studies were flawed or provided insufficient information. Study quality was not taken into account when the data from different studies were pooled.
Overall, the review appears to lack sufficient rigour to inspire confidence in the conclusions about the effectiveness of treatment. In terms of applicability, the country in which each of the included studies was conducted was not reported.

**Implications of the review for practice and research**

Practice: The authors stated that SIB continues to be very difficult to treat and suggested that greater emphasis be placed on prevention.

Research: The authors stated that well-controlled research on combined behavioural and biological interventions (such as pharmacology) was needed to compare that approach with those used to date. They also suggested a change in emphasis towards the prevention of SIB, including the identification of predictive factors. Studies of programmes that put emphasis on things like social stimulation, communication training and leisure skills for people with severe disabilities might be useful to evaluate preventive effects.

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