
Michael Bo Pedersen (1), Antonio Drago (2)

1. Psychiatric Unit West, Herning. Denmark
2. Department of Clinical Medicine, Aarhus University – Psychiatric Unit West, Herning. Denmark

Background
Strategies to reduce violence in psychiatric acute in-patient units have been of intense research in the last decades. Interventions may shift from education of the professionals, education of patients and implementation of de-escalation interventions. A meta-analysis was conducted in 2000 (1) to assess the efficacy of such interventions, but no conclusive result was retrieved. A meta-regression is missing, to the best of our knowledge, to identify the mediators of effectiveness of such interventions.

Aim. A meta-analysis and a meta-regression were conducted to test the efficacy of interventions to reduce violence in psychiatry and to identify the specific interventions’ aspects, that may influence the final outcome.

Hypothesis under analysis
Some specific intervention related, or patient related, or environment related characteristics of the interventions aimed at the reduction of the unwanted clinical interventions in psychiatry may influence the efficacy of those interventions.

Methods
The following key-words were used in combination to interrogate Pubmed, Embase and Google Scholar: “seclusion”, “restraint”, “de-escalation” “psych*”, “violence”, “acute in-patient unit”, “schiz*”, “bipol*”, “personality disorder” and “intervention”. Only English-written clinical trials published after 1999 were selected for the analysis. Bibliographies were manually searched for the identification of relevant published reports. Variables chosen for the meta-regression were: “quality of the study”, “diagnosis”, “kind of intervention”, “intervention has focus on the patient”, “intervention has focus on the operators”, “intervention promotes the patient’s independence in de-escalating strategies”, “duration of the trial”, “%males”, “study is focused on adult” and “outcome of choice”.

To be included in the analysis studies had to: 1) be a case control study or a cohort study; 2) be in English; 3) focus on clinical interventions aimed at the reduction of seclusion, forced medications or restraint (also referred to as unwanted clinical interventions in the text) in clinical psychiatric settings; 4) the articles were included adult patients with mainly a psychiatric diagnosis including Schizophrenia, Bipolar Disorder, Personality Disorder, Substance Abuse or Dependence related disorder, but mixed diagnostic groups were accepted. For qualitative analysis the outcome under analysis was the odds-ratio (OR) between cases and controls. For quantitative analyses the outcome under analysis was the mean difference of baseline vs. endpoint measures (for example number of unwanted clinical interventions). Covariates for the meta-regression were: % males included in the analysis, mean age of the sample, sample size and quality of the study. Funnel plots and tests for heterogeneity were used for testing the potential publication bias in the analysis. Both random and mixed effect models were applied to the analysis to test the possible influence of confounder towards the final result. P-values were two tailed and the significance threshold was put at 0.05. Statistical analyses were performed in R, metaphor package and related.

Results
17 published clinical trials were selected for the analysis. Analysis was restricted to dichotomous outcomes due to the lower quality of other reports. 13 articles were then analyzed. Under the random effect model a significant efficacy of interventions aimed at reducing violence in acute in-patient psychiatric unit could be inferred (Log Risk Ratio = -0.30 [-0.51, -0.09]) but the amount of heterogeneity (Q(df = 12) = 219.8877, p-val < .0001) prevented any conclusive consideration. Heterogeneity was significantly reduced but it was still present (QE(df = 8) = 26.1606, p-val = 0.0010) while performing the meta-regression.

Quality of the study was the single main significant variable to influence the meta-regression’s result (estimate = 0.2; p=0.0032).

Conclusions. Evidence in literature provides suggestive but not conclusive meta-analytic support for the effectiveness of any interventions to reduce violence in psychiatric acute in-patient units. It was not possible to extrapolate the single characteristics of any interventions, able to modulate the final outcome. Studies of higher quality are required to gain conclusive evidence in this field.