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Prediction of quality of life in schizophrenia using machine learning models on data from clinical antipsychotic trials of intervention effectiveness (CATIE) schizophrenia trial

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Introduction: Schizophrenia is a chronic and severe mental disorder. While research focus remains mainly on negative outcomes, it is questionable whether we are placing enough emphasis on improving their sense of well-being and functioning. This could be accessed through the study of the quality of life (QoL). To date, QoL prediction models mainly focused on neurocognition and psychotic symptoms, but their predictive power remained limited. **Objectives:** The aim is to accurately predict the QoL within schizophrenia using unsupervised learning methods.

Methods: We computed variables from 952 patients from the CATIE study, a randomized, double-blind clinical trial for schizophrenia treatment. QoL was measured using the Heinrichs-Carpenter Quality of Life Scale and potential predictors included almost all available variables: symptoms, neurocognition, medication adherence, insight, adverse effects, etc. By optimizing parameters to reach optimal models, three linear regressions were calculated: (1) baseline predictors of 12-month QoL, (2) 6-month predictors of 12-month QoL, and (3) baseline predictors of 6-month QoL. Adjustments were made to ensure that included variables were not collinear nor redundant with QoL.

Results: Calculated models had adjusted R-squared of 0.918, 0.922 and 0.913, respectively. Best predictors were medication side effects, sociodemographic and neurocognitive variables. Low psychotic and depressive symptoms were also included, as well as lab values suggesting the absence of problems with chloremia and calcemia.

Conclusions: Calculated predictive models explain almost all subsequent QoL. It appears that physical health variables, generally omitted from mental health-related studies, have an important impact on patients' QoL. Therefore, interventions should also consider these aspects.

Disclosure: No significant relationships.

Keywords: schizophrénia; quality of life; machine learning; predictive models

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Efficacy and tolerability of lurasidone in schizophrenia: A systematic review and meta-analysis of short-term, randomized, placebo controlled trials

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Introduction: Lurasidone is an atypical antipsychotic approved for the treatment of patients with schizophrenia. We report on a meta-analysis focusing on both the efficacy and safety/tolerability of lurasidone in the treatment of patients with schizophrenia.

Objectives: To obtain pooled estimates from placebo-controlled clinical trials on the efficacy and safety/tolerability of lurasidone in schizophrenia.

Methods: We selected acute, randomized placebo-controlled trials of lurasidone for schizophrenia. Primary outcome for efficacy was the Positive and Negative Syndrome Scale (PANSS) change and for "acceptability" was all-cause discontinuation. Secondary outcomes included specific adverse events, body weight change, $\geq 7\%$ weight gain, and glucose and lipid parameter change.

Results: Across 10 RCTs ($n=3,963$, $\text{age}=40.5\pm 2.3$ years, $\text{males}=64.7\%$, $\text{trial duration}=6.0$ weeks), lurasidone outperformed placebo regarding the PANSS total score ($N=10$, $n=3,354$, $\text{SMD}=-0.34$, 95% CI: -0.47 – -0.21 , $p<0.001$). Stratifying the analysis by dose, lurasidone significantly outperformed placebo at doses 40-160 mg/day. Lurasidone was associated with significantly lower all-cause discontinuation than placebo ($N=10$, $n=3,410$, $\text{RR}=0.87$, 95% CI: 0.78 – 0.97 , $p=0.014$). Lurasidone had significantly higher body weight change compared with placebo ($N=10$, $n=3,359$, $\text{SMD}=0.17$, 95% CI: 0.09 – 0.24 , $p<0.001$), but without significant differences regarding $\geq 7\%$ body weight gain ($N=9$, $n=3,186$, $p=0.112$). Lurasidone did not differ from placebo in total cholesterol ($N=10$, $n=3,140$, $p=0.439$), LDL-cholesterol ($N=7$, $n=2,414$, $p=0.849$), triglycerides ($N=10$, $n=3,140$, $p=0.238$), and fasting glucose change ($N=10$, $n=3,112$, $p=0.633$).

Conclusions: In short-term trials, lurasidone was efficacious, acceptable and safe, having minimal effect on body weight gain and glucose and lipid metabolism.

Disclosure: K. Hagi is a full time employee of Sumitomo Dainippon Pharma Co., Ltd.

Keywords: lurasidone; meta-analysis; RCT; schizophrénia

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Schizophrenia hospitalizations - a big data approach

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Introduction: Schizophrenia is characterized by long hospitalizations and a recurrent use of chronic and acute psychiatric care.

Objectives: The aim of this study was to analyze schizophrenia related hospitalizations in Portugal.

Methods: A retrospective observational study was conducted using a nationwide hospitalization database containing all hospitalizations registered in Portuguese public hospitals from 2008 to 2015.