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# PREDICTING POOR SHORT-TERM OUTCOME OF PHYSIOTHERAPY INTERVENTION IN WOMEN WITH STRESS URINARY INCONTINENCE

Hypothesis / aims of study
Prediction of patient outcome can be useful as an aid to clinical decision-making. Furthermore, from a research perspective, it may also generate hypotheses about biological plausible mechanisms leading to poor outcome. Up until now, little research has been done on prognostic factors in women with stress UI who receive a physiotherapy intervention. The aim of this study was to develop a simple and easy to use prediction model involving only variables, which are easily achievable in routine clinical practice.

Study design, materials and methods
All consecutive patients, referred by general practitioners or urogynaecologists for physiotherapy intervention, with moderate or severe stress UI were enrolled in the study. Sixteen potential risk factors for stress UI were identified based on the literature. These candidate predictors were grouped in six distinct categories: [1] socio-demographic characteristics, [2] clinical history, [3] obstetric characteristics, [4] previous urogynaecological surgeries, [5] general health characteristics (e.g. self-assessed psychological distress and physical health, obesity and selected co morbidities by physician-diagnosis). The primary outcome was defined as poor outcome on a Global Perceived Effectiveness (GPE) score, with poor outcome defined as slightly better to very much worse after 12 weeks of physiotherapy intervention. Multivariable logistic regression analysis with backward selection was used to develop the prediction model. Results were presented as odds ratios and 95% CI. Standard procedures were used to assess global goodness of fit, calibration, and discrimination expressed as area under the ROC curve. Bootstrapping techniques (100 repetitions) were used to correct for possible overfitting of regression coefficients for the predictor variables (internal validity)

Results
267 patients were included in the study of which 99 (41%) had a poor outcome as defined on the GPE score. Multivariable logistic regression analysis resulted in a model containing severe baseline stress UI (OR= 0.48 [0.23 - 0.98], POP-Q stage III (0.10 [0.02 – 0.53]), poor outcome of physiotherapy intervention for a previous UI episode (0.10 [0.03 - 0.34]), three or more vaginal deliveries (0.37 [0.17 - 0.78]), prolonged second stage of labor (> 90 minutes) (0.39 [0.16 - 0.95]), BMI > 30 (0.21 [0.07 - 0.60]), high psychological distress (0.41 [0.17 - 0.99]) and poor physical health (0.20 [0.09 - 0.45]) as independently significant predictors of poor outcome. The model showed good discrimination ROC-AUC of 0.85 [95% CI=0.79-0.91], adequate calibration (p=0.16).

Interpretation of results
The bootstrap-derived ‘shrinkage factor’ yielded only a slight overoptimism in ROC-AUC of the original model of 2% (0.83 [95% CI= 0.79-0.88]). The data required to make predictions with the model are easily available to practitioners and will be presented as a simple nomogram after replication and external validation of the results.

Concluding message
To examine the robustness of the model future studies are also needed to replicate these findings in different populations and types of interventions

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| ***Is this a clinical trial?*** | **No** |
| ***What were the subjects in the study?*** | **HUMAN** |
| ***Was this study approved by an ethics committee?*** | **Yes** |
| ***Specify Name of Ethics Committee*** | **The Medical Ethics Committee of the Deventer Hospitals, the Netherlands, approved the study** |
| ***Was the Declaration of Helsinki followed?*** | **Yes** |
| ***Was informed consent obtained from the patients?*** | **Yes** |