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Factors that affect labour induction and its successfulness of pregnancies in Sri Lanka

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Induction of Labour (IOL) is an important practice that is carried out commonly in modern day obstetrics. In medium to large health care facilities, it is estimated that approximately 35.5% of all deliveries involve IOL in Sri Lanka. The main objective of this study, was to identify the factors that affect IOL and to assess the association between IOL and each pregnancy outcome.

In this study, we consider data of all women who were admitted to selected health care facilities for delivery in 3 randomly selected provinces in Sri Lanka, for the period from July to October 2011. Multinomial Logistic Regression model (MLR) and Fuzzy Expert System were used to identify the factors that affect IOL. MLR model predicts for spontaneous labour group and induced labour group, with reference to no labour (caesarean section/C-section) category. Obtained score under Fuzzy Expert System was appropriate to distinguish whether an individual should go through IOL or not. It also can be used to identify whether a new born would survive after seven days of life.

The MLR model predicts for IOL with a classification rate of 65.5% and the Fuzzy Expert System predicts for IOL with an accuracy of 55.10%. Results indicated that IOL was related to maternal age, number of previous caesarian sections, number of previous births, estimate gestational age, number of previous pregnancies, PreEclampsia, Placenta Preavia, Abruption Placenta, total number of neonates delivered, birth weight and Maternal Severity Index (MSI). Fuzzy Expert System also states that, if the score is between 0.8570 and 0.8854, then the patient will belong to induced group and the baby would be alive after seven days of birth. This study concludes that, MLR and Fuzzy models can be used to deal with decision making procedures related to IOL.

Keywords: Fuzzy expert system, Induction of labour, Multinomial logistic regression