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TITLE

FACTORS ASSOCIATED WITH MACROSOMIA AMONG SINGLETON LIVE-BIRTH: A COMPARISON OF CLASSIFICATION METHODS

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ABSTRACT

Context: Macrosomia with adverse outcomes for mother and infant is affected by several risk factors.

Objective: Classification methods are used to determine high risk groups for macrosomia.

Methods: Several risk factors were recorded. Performed methods were compared using tools such as sensitivity, specificity and accuracy.

Patients: This cross-sectional study was conducted on 4342 pregnant women who gave singleton live-birth in Tehran, Iran from 6-21 July 2015.

Intervention: A checklist was provided to collect the data on demographic characteristics of mother, midwifery and newborn information. A trained nurse fulfilled the checklists by an interview with mother and also checking her records in hospital delivery room

Main outcome: The outcome was the presence/absence of macrosomia.

Measures: Variable such as mother's age, mother's education, mother's occupation, Socio-economic status (SES), mother's body mass index, type of pregnancy, preeclampsia, history of abortion and history of stillbirth. Macrosomia and preeclampsia were determined by a weight over 4000 grams and blood pressure over 140/90 mmHg. A principle component analysis was performed on questionnaires about home appliances and digital goods and to find social-economic status of a family.

Results: Mother's BMI, SES, mother's education, parity, mother's age, gestational age and mother's occupation are the most important variables affecting macrosomia identified by RF method with the highest accuracy 0.89. The association of RF predictions and observed values using ϕ coefficient, contingency coefficient, Kendall tau-b and kappa were 0.43, 0.39, 0.43 and 0.31, respectively.

Conclusion: Based on our findings, random forest had the best performance to classify macrosomia comparing to artificial neural network and logistic regression and may be used as an appropriate method in such data.

INSTITUTE

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