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Human Immunodeficiency Virus (HIV) Test Predictive Modeling and Identify Determinants of HIV Testing for People with Age above Fourteen Years in Ethiopia Using Data Mining Techniques: EDHS 2011

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Abstract : Introduction: Testing for HIV is the key entry point to HIV prevention, treatment, and care and support services. Hence, predictive data mining techniques can greatly benefit to analyze and discover new patterns from huge datasets like that of EDHS 2011 data. Objectives: The objective of this study is to build a predictive modeling for HIV testing and identify determinants of HIV testing for adults with age above fourteen years using data mining techniques. Methods: Cross-Industry Standard Process for Data Mining (CRISP-DM) was used to predict the model for HIV testing and explore association rules between HIV testing and the selected attributes among adult Ethiopians. Decision tree, Naïve-Bayes, logistic regression and artificial neural networks of data mining techniques were used to build the predictive models. Results: The target dataset contained 30,625 study participants; of which 16, 515 (53.9%) were women. Nearly two-fifth; 17,719 (58%), have never been tested for HIV while the rest 12,906 (42%) had been tested. Ethiopians with higher wealth index, higher educational level, belonging 20 to 29 years old, having no stigmatizing attitude towards HIV positive person, urban residents, having HIV related knowledge, information about family planning on mass media and knowing a place where to get testing for HIV showed an increased patterns with respect to HIV testing. Conclusion and Recommendation: Public health interventions should consider the identified determinants to promote people to get testing for HIV.

Keywords : data mining, HIV, testing, ethiopia
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