**Presentation title:** Lifestyle and occupational risks assessment of bladder cancer using machine learning-based prediction models

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**Presentation type:** (Oral presentation/ Poster presentation)

**Abstract (250-300 words):**

**Background:** Bladder cancer, one of the most prevalent cancers globally, can be regarded as considerable morbidity and mortality for patients. The bladder is an organ that comes in constant exposure to the environment and other risk factors such as inflammation.

**Aims:** In the current study, we used machine learning (ML) methods and developed risk prediction models for bladder cancer.

**Methods:** This population-based case–control study is focused on 692 cases of bladder cancer and 692 healthy people. The ML, including Neural Network (NN), Random Forest (RF), Decision Tree (DT), Naive Bayes (NB), Gradient Boosting (GB), and Logistic Regression (LR), were applied, and the model performance was evaluated.

**Results:** The RF (AUC = .86, precision = 79%) had the best performance, and the RT (AUC = .78, precision = 73%) was in the next rank. Based on variable importance analysis in RF, recurrent infection, bladder stone history, neurogenic bladder, smoking and opium use, chronic renal failure, spinal cord paralysis, analgesic, family history of bladder cancer, diabetic mellitus, low dietary intake of fruit and vegetable, high dietary intake of ham, sausage, can and pickles were respectively the most important factors, which effect on the probability of bladder cancer.

**Conclusion:** Machine learning approaches can predict the probability of bladder cancer according to medical history, occupational risk factors, and dietary and demographical characteristics.

**KEYWORDS:** bladder cancer, machine learning, predictive models

**Biography**:

I am urologist, assistant professor of Urology and Nephrology Research Center, Shahid Beheshti University of Medical Sciences. The most important idea that I believe in the field of medical treatment is that “prevention is better than cure”. In this regard, I am head of Labbafinejad stone prevention clinic which is a tertiary referral clinic in Tehran. It is clear that there are many risk factors in development and progression of all types of cancers. Although, identifying and expanding advanced treatments modalities in various surgical and non-surgical 9Chemotherapy, radiotherapy, …) approaches is necessary, it does not eliminate the need to identify various environmental and individual risk factors which contribute in development, progression or even response to above-mentioned approaches. In this regard, we conducted a study on bladder cancer which contributing many factors such as job, diet, medical history, etc. We have built this model after years of experience in research, evaluation, teaching, and administration both in hospital and educational institutions. I hope that identifying the cancers risk factors could create new pathways for improving healthcare.