Literature review

Drug Prescription

PRIOR WORK

In Prior studies,Jennifer Corny, Asok Rajkumar, Olivier Martin, Xavier Dode, Jean-Patrick Lajonchère, Olivier Billuart, Yvonnick Bézie, Anne Buronfosse,used the same dataset to conduct a brief study on the dataset collected by pharmacists for over a period of 18 months to identify prescription with high risk of errors.

Data from electronic health records were collated over a period of 18 months. Inferred scores at a patient level (probability of a patient's set of active orders to require a pharmacist review) were calculated using a hybrid approach (machine learning and a rule-based expert system). A clinical pharmacist analyzed randomly selected prescription orders over a 2-week period to corroborate our findings. Predicted scores were compared with the pharmacist's review using the area under the receiving-operating characteristic curve and area under the precision-recall curve. These metrics were compared with existing tools: computerized alerts generated by a clinical decision support (CDS) system and a literature-based multicriteria query prioritization technique. Data from 10 716 individual patients (133 179 prescription orders) were used to train the algorithm on the basis of 25 features in a development dataset.

Incorrect use of drugs

Detecting polypharmacy from drug prescription records point at incorrect use of medicines. These incorrect use are mainly tesult of rough and imperfect suggestions from online forums,local peers and illicit pharmacists. According to estimates by the World Health Organisation (WHO) more than half of all medicines are prescribed, dispensed or sold inappropriately, and that half of all patients fail to take them correctly (WHO, 2012). In the scope of the third global patient safety challenge, WHO addresses three areas of medication-related harm—i.e., high-risk situations, polypharmacy and transitions of care (Sheikh et al., 2017). With the rapid introduction of the electronic health records (EHR), particularly at the primary healthcare level, it will be possible to effectively monitor and identify groups of patients or individuals at high risk for drug-induced or related health problems (Molokhia & Majeed, 2017).

A great majority of studies on pharmacy have focused on its potential negative consequences, e.g., nonadherence, interactions, and adverse drug reactions. Some researchers have also considered the effectiveness of interventions aimed at reducing polypharmacy, however, the factors and conditions leading to polypharmacy have received comparatively little attention. These factors can be broadly classified into four groups: (i) factors related to the health care system (e.g., life expectancy and novel therapies), (ii) factors related to patients (e.g., age and clinical conditions), (iii) factors related to physicians (e.g., guidelines and prescribing habits), and (iv) the interaction between patient and physician.

MATERIALS

In our study, we focused on drug prescription more specifically reviews on medications,given by online forum users taken within the pharmaceutical field. Online user reviews in this domain contain information related to multiple aspects such as effectiveness of drugs and side effects, which make automatic analysis very interesting but also challenging.The data was collected during 2017-18.

Machine learning is becoming indispensable for solving problems in many disciplines, including healthcare. At the moment, we are witnessing the introduction of various machine learning approaches in different fields of healthcare that can help the professionals in improvement of diagnosis or prognosis and even displacing a lot of work done by radiologists and anatomical pathologists (Obermeyer & Emanuel, 2016). However, despite the ever-increasing prediction performance of the novel predictive modelling techniques, most of them still lack interpretability to offer actionable support for healthcare experts (Holzinger et al., 2017; Stiglic et al., 2012). Therefore, this study aims to offer more insight into balancing the interpretability and predictive performance of the drugs in healthcare. More specifically, we evaluate different levels of user satisfaction based on there reviews on drugs for different diseases,and suggest which drugs are best and worst for a disease.Evaluation is based on user reviews