Hala Fakhro, J Pharmacogenomics Pharmacoproteomics 2017, 8:4 (Suppl)
DOI: 10.4172/2153-0645-C1-018

Clinical decision support system to reduce the incidences of venous thromboembolism among patients treated with combined oral contraceptives according to personalized medicine approach

Hala Fakhro
University of Aleppo, Syria

Background: The implementation of evidence-based clinical decision support system has shown the potential to increase the safety, quality and the efficiency of health care services and the patient outcomes. This research investigated the possibility of developing the Clinical Decision Support System Regarding Prescribing Combined Oral Contraceptives (CDSS-COCs) to decrease Venous Thromboembolism (VTE) incidences among the users of Combined Oral Contraceptives (COCs) based on the guidelines from World Health Organisation (WHO), UK Medical Eligibility Criteria For Contraceptive use (UKMEC), and Centres for Disease Control and Prevention in America (CDC), and further evaluated with specific guidelines. This research also checked the feasibility of implementing the proposed system in the Health Information System (HIS) in Finland.

Methodology: Narrative literature review was followed by using Google Scholar, PubMed, Mendeley Software, Tallinn University of Technology databases and the Tampere University of Technology databases. Also, quantitative and qualitative methods were employed by conducting deep semi-structured interviews with application developer and expert clinician, and conducting an online and paper-based questionnaire among the expected future users.

Results: This research managed to develop the proposed system CDSS-COCs by considering the existence of these six risk factors "age ≥35 years old, body mass index (BMI)>25 kg/m^2, smoker, personal history of VTE, family history of VTE and the genetic factor V Leiden mutation" before describing COCs. This consideration will decrease the incidences of VTE by providing the user with the alternative treatment suggestion in case the risk exists. Also, this research managed to examine the reliability and the usability of the proposed system from different aspects: Technical, user, and partially from the clinical aspect. The applicability of the proposed system is restricted to implement the proposed algorithm instantly due to the missing structured data in EHR: The smoking and family history factors. Moreover, the genetic factor V Leiden mutation is not available in all patients, because there is no official policy in Finland that requires screening this genetic factor except in very specific cases.

Conclusion: This proposal has been designed to be a practical tool to provide clinical decision makers with a direct consultation based on the electronic patients data which are retrieved from the digitalized data repository. Therefore, the proposed system will provide clinicians with the proper hormonal treatment suggestion based on personalized medicine approach.

Biography

Hala Fakhro is currently working in the University of Aleppo. She has published numerous research papers and articles in reputed journals and has various other achievements in the related studies. She has extended her valuable service towards the scientific community with her extensive research work.

halafakhro@outlook.com

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