

mediates the effect has not been resolved due to high linkage disequilibrium (LD). We used ENCODE data on regulatory transcription factor binding sites, and heterozygous positions in a liver cell line to determine variants that regulate *VKORC1*.

Methods: We sequenced the liver cell line HepG2 to locate all heterozygous positions in LD $r^2 > 0.8$ with the GWAS top hits, and used ENCODE data to find variants that bind transcription factors in an allele-specific way. The functional effect of these variants was evaluated using luciferase assays and over-expression of candidate transcription factors.

Results: *VKORC1* rs9923231 was not located in an ENCODE regulatory element, and luciferase assays did not show any difference in transcriptional activity between the two alleles. One allele-specific SNP, rs56314408, was on the same haplotype as rs9923231, and rs2032915 was located in the same liver enhancer 24 bp away. The C alleles of rs56314408 and rs2032915 showed higher transcriptional activity, which was further increased after over-expression of the transcription factors YY1 and USF1. We are currently evaluating the potential regulatory effect of rs56314408 and rs2032915 using CRISPR/Cas9.

Conclusions: The conventionally analyzed *VKORC1* -1639 G>A (rs9923231) is not located in a regulatory element in the liver, and has no evidence of being functional. The LD between rs9923231 and both functional candidates rs56314408 and rs2032915 is known to be high in Europeans. We propose that rs9923231 predicts warfarin dose adequately only in populations where it is in high LD with functional variants such as the candidates rs56314408 and rs2032915.

NON-ADHERENCE AND ASSOCIATED FACTORS AMONG TYPE 2 DIABETIC PATIENTS IN REPUBLIC OF SRPSKA (BOSNIA AND HERZEGOVINA)

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Background: Treatment non-adherence for chronic diseases such as diabetes is a common problem. The aim of the study was to assess the pattern of non-adherence among type 2 diabetic patients in Republic of Srpska.

Methods: Medication non-adherence was measured using pill counts in primary care setting. Univariate and multivariate logistic regression model was used to identify factors related to non-adherence. The study was approved by the Ethical Committees of the Medical Faculty in Novi Sad. Participants have signed an informed consent.

Results: Among the total of 323 publicly insured type 2 diabetic patients (mean age 66.5 ± 10.6) the prevalence of non-adherence was 47,7%. About 40% patients were on metformin monotherapy and 37% on metformin/sulphonylurea based combination therapy. Although univariate logistic regression model analysis revealed that the presence of lower education ($B = -0.479$; $p < 0.001$), widowed patients ($B = 0.704$; $p = 0.007$), longer duration of diabetes ($B = 0.445$; $p = 0.001$), higher BMI ($B = 0.508$; $p = 0.020$), copayments for prescriptions ($B = 0.727$; $p = 0.001$) were significantly associated with non-adherence, whereas in a multivariate logistic regression model analysis only patients with copayments were 1.9 fold more likely to be non-adherent ($OR = 1.89$, $B = 0.637$; $p = 0.015$) than those without copayment for prescription.

Conclusions: The present study revealed that publicly insured patients with type 2 diabetes could be especially susceptible to medication non-adherence when copayment is required. Patients with copayments were about two fold more likely to be non-adherent than those without copayment for prescription. Policy-makers should be wary of potential negative clinical outcomes resulting from non-adherence.

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LEBANESE PHARMACY STUDENTS RESPOND TO THE SYRIAN REFUGEES' HEALTH NEEDS AS PART OF THEIR CURRICULUM

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Background: The World Health Organization (WHO) has deliberately emphasized the role of pharmacists in global health. Academic institutions are encouraged to train its graduates to recognize and adequately address the social determinants of health as part of pharmacy professional education. Lebanon, a developing country of the Eastern Mediterranean region, is deeply affected by the Syrian crisis. As part of their ambulatory care rotation, pharmacy students responded to Syrian refugees' needs.

Methods: Since the outset of Syrian crisis in 2011 to date, the burden of the Syrian influx on the small country is immense. The characteristics of the Syrian refugee crisis in Lebanon reflect the global process of urbanization and the phenomenon of displacement in urban settings. Typical of urbanized refugees, the majority of the Syrians belongs to middle-income cities and resides in non-camp industrialized regions. Moreover, Syrian refugees experienced the epidemiological shift from infectious to chronic diseases. The pharmacy students' clinical activities addressed the major health needs of the refugees. Indeed, students were heavily involved in non-communicable disease programs, family planning education campaigns as well as polio vaccination campaigns in response to a possible polio outbreak.

Results: The learning outcomes of the described activities extend far beyond the traditional biomedical models in the training of health professionals; characterized by its clinical predominance. These clinical activities provided students with the opportunity to learn and practice important attitudes and soft skills like patients' advocacy, cultural sensitivity, effective communication, interprofessional collaboration, leadership as well as professionalism. Students also reflected on how individuals' socioeconomic, education, employment, and housing conditions are directly linked to their health outcomes.

Conclusions: This rotation is a first step towards the implementation of a comprehensive biosocial pharmacy curriculum that will prepare graduates to treat not only patients' biomedical factors but also address the underlying social determinants of health.

ANTIBIOTIC SELF-MEDICATION AMONG SCHOOL TEACHERS IN WESTERN PROVINCE, SRI LANKA

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Background: Self-medication with antibiotics is a major health problem. The objectives of this study were to describe the prevalence, knowledge, attitudes and practices of antibiotic self-medication among school teachers in Western Province, Sri Lanka.

Methods: This study was conducted as a descriptive cross-sectional study among government school teachers in Western Province, Sri Lanka. Samples were selected using simple random sampling and data was collected in 8 different schools. Data was collected using self-administered questionnaires and analyzed using SPSS version 16.

Results: 500 questionnaires were distributed and there was a 99.6% ($n = 498$) respondent rate. Of the respondents 76.7% ($n = 382$) were

females. 47.6% (n=237) had a degree-level education. Of the total respondents 406 (81.5%) have used drugs without a prescription and 286 (n=57.4%) have self-medicated with antibiotics. There was no statistically significant difference in gender and level of education in antibiotic self-medication. Knowledge regarding antibiotic self-medication was not statistically significant according to the gender. However the level of education had a significant effect on the level of knowledge on antibiotic self-medication. Common reasons for antibiotic self-medication were that they had been prescribed with same medicines when they got similar symptoms in the past 73.43% (n=210) or a family member had been given the same drugs for previous similar episodes 33.92% (n=97). 8.74% (n=25) have self-medicated from the information obtained from the internet. 30.1% (n=86) teachers used antibiotics without a prescription for common cold, 30.4% (n=87) for fever and 30.8% (n=88) for sore throat. Of 286 teachers who have self-medicated with antibiotics, 53.15% (n=152) stopped taking antibiotics when symptoms resolved. Amoxicillin was the most commonly used antibiotic in self-medication followed by co-amoxiclav and erythromycin.

Conclusions: ASM is a problem and the general public should be educated regarding the hazards of ASM.

USE OF NON-PRESCRIPTION ANALGESICS AND ITS ASSOCIATED FACTORS IN BORALASGAMUWA MEDICAL OFFICER OF HEALTH AREA

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Background: Self-medication with analgesics is a health problem. The objective of this study was to assess the non-prescription analgesic usage, factors associated with usage and knowledge regarding analgesics.

Methods: This study was conducted as a descriptive cross sectional in 3 randomly selected Gramaniladhari areas in Boralasgamuwa MOH area. Data was collected using an interviewer administered questionnaire and data were analyzed using SPSS version 20.

Results: Respondent rate was 93.93% (n=403) and 38.2% (n=154) were males. Analgesic use is significantly high among females ($p = 0.029$) and in unmarried people ($p = 0.036$). The unemployed reported a highest use of analgesics compared to retired and employed. Analgesic use decreased with increasing education but drastically increased again at degree level ($p < 0.05$).

One hundred and fifty respondents (37.2%) used analgesics to alleviate pain within the last 4 weeks. From total analgesic users (n=150) 90.6% (n=136) used only one analgesic within last for weeks. Of those 96.3% (n=131) used paracetamol, 1.5% (n=2) aspirin and 1.5% (n=2) diclofenac. One person stated that he used loratadine to alleviate pain. From total analgesic users (n=150), 9.3% (n=14) used two analgesics together. Eight (57.1%) stated that they used paracetamol and chlorpheniramine as analgesics. and others used paracetamol and diclofenac 7.1% (n=1), paracetamol and ibuprofen 14.3% (n=2) paracetamol and mefenamic acid 14.3% (n=2) and paracetamol and paracetamol+codeine phosphate 7.1% (n=1).

From all analgesic users (n=150), 96.7% (n=145) used paracetamol. 70.3% of the respondents obtained paracetamol from a pharmacy. 13.1% (n=19) used paracetamol prophylactically. 49.7% (n=72) paracetamol users stated that paracetamol overdose causes kidney damage and 40% (n=58) knew it causes liver damage. From the total sample only 22.1% (n=89) were aware that it could cause liver damage in overdose.

18.1% (n=62) people indicated paracetamol and panadol as separate drugs and this percentage was 1.2% (n=4) for paracetol. 11.6% (n=8) identified aspirin and disprin as separate drugs. Amoxicillin

which is an antibacterial drug was identified as an analgesic by 3.5% (n=14) of people.

Conclusions: Analgesic self-medication is a problem in the study area and awareness regarding analgesic use needs to be improved.

ANTIBIOTIC SELF-MEDICATION (ASM) AMONG NON-ACADEMIC STAFF MEMBERS OF A SRI LANKAN UNIVERSITY; A DESCRIPTIVE CROSS SECTIONAL STUDY

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Background: This study aimed to determine the knowledge, associating factors and utilization patterns of self-medication with antibiotics among non-academic staff members of a Sri Lankan University.

Methods: This study was conducted as a descriptive cross sectional study in a selected university in Sri Lanka among those who were permanently attached to the university as non-academic staff. Consecutive sampling was done. Data were obtained using a self-administered questionnaire. Data were analyzed with SPSS, version-23

Results: Three hundred and twenty participated in the study (response rate - 80%). Of them 61.5% were females and the mean age was 36.8 ± 8.8 years. 40.2% self-medicated with antibiotics at least once during the past 12 months. Out of them 73.6% had used amoxicillin. Common diseases that were treated were common cold (68.2%), sore throat (52.7%) and fever (31.0). Common reasons for antibiotic self medication were that they had been prescribed with same medicines when they got similar symptoms in the past (78.2%), considering as a minor illness (43.4%) and to get a quick relief (40.3%). 78.3% had self medicated on their own and 92.2% had got them from a community pharmacy. 87.6% had stopped taking the antibiotics when their symptoms disappeared. 64.0% kept the leftover antibiotics at home for future usage. 91.3% consulted a doctor if the symptoms didn't resolve after taking the antibiotic for few days. 43.4% got more than 60 marks in the questionnaire used to assess their knowledge on antibiotics.

Conclusions: ASM is high among the sample we tested. They had inappropriate and harmful practices. ASM is a problem and the general public should be educated regarding the hazards of ASM.

PRECLINICAL SCREENING OF COUMARIN AND 2H-CHROMENE SUBSTITUTED HYDRAZIDE-HYDRAZONE DERIVATIVES, AS POTENTIAL ANTICONVULSANTS

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Background: Epilepsy is one of the most prevalent neurological diseases. Despite the high number of antiepileptic drugs (AED) available for usage, one third of patients still remain pharmacoresistant. The aim of our study was to undertake a screening of coumarin and chromene derivatives as potentially new anticonvulsant.

Methods: Series of coumarin and 2H-chromene substituted hydrazide-hydrazone derivatives were synthesized and tested with application of maximal electroshock (MES), subcutaneous pentyl-enetetrazol (scPTZ), rotarod and 6Hz "psychomotor" seizure tests in ICR mice. Time to peak effect (TPE), median effective (ED50) and toxic (rotarodTD50) doses and protective index (PI) as rotarodTD50/ED50 were evaluated with probit analysis.