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The aims of this study were to explore pharmacists' perception towards the contributing factors for the existence of unregistered drugs in the market, the reasons for the public to select the unregistered drugs, to determine the association between the awareness of general retailers and the offences as well as to develop and validate a knowledge tool towards registered drugs and to identify the association with the knowledge of the public and socio-demographics. This study used the action research concept. Three types of participants were involved; pharmacist, public and general retailers and the setting around Klang Valley area. Two different semi-guided and face-to-face interviewed and purposive selection criteria were used to explore the pharmacist (n=16) and public (n=21) perception. The retrospective data (n=1441) from inspection report in Selangor was used to determine the association of awareness and offences amongst general retailers. The instrument constructed by analysing the specific literature in the area of registered drugs information in Malaysia. Then the involvement of expert panel (n=10) expertise to validate the content and public (n=10) for the reproducibility. Then, followed by the pilot test (n=100), and continued with a final survey (n=466) by using a convenient sample. The reproducibility obtained via the intraclass correlation coefficient by using the test-retest method. Internal consistency assessed using Cronbach's alpha and construct validity used exploratory factor analysis. The thematic content analysis for both of the perceptions identified pharmacists' perception (25 themes) and publics' perception (7 themes). The majority of the pharmacists believed that low health literacy is one of the primary reasons of the contributing factors for the existence of unregistered drugs. Moreover, the majority of the public believed that the reason they select the unregistered drugs is because of the familiarity of the products and appearance of the packaging. Instead, a majority of the public who did not select the unregistered drugs believed the absence of certain characteristics of the packaging and the authorised sticker. In total, only 32.9% of general retailers were aware of registered drugs and 67.1% general retailers were not aware of registered drugs. The result showed there was an insignificant association (p=0.226) between awareness and offences. The final version of the questionnaire had 12 questions which divided into five areas of information that needed for educating the consumer on registered drugs. This questionnaire had a clarity index of 8.78 ± 0.51. The intraclass correlation coefficient was 0.96, and Cronbach's alpha, 0.866. Factor analysis revealed five factors associated with the knowledge areas. The final survey conducted and the final scores compared with the socio-demographic participants showed that age, race, the level of education and occupation significantly associated with levels of knowledge except for gender (p=0.485). This study has found that by exploring and investigating pharmacist, public and general retailers regarding these issues give a convergent answer that the main contributor of the unregistered drugs is the low level of knowledge and awareness towards registered and unregistered drugs. Thus enhancement of consumers' knowledge is one of the leading solutions that government can improve in the future.

Despite complex pharmacotherapy management in neonates, the epidemiology of drug utilization, drug related problems (DRPs) and their predictors in hospitalized neonates in Malaysia are unknown. Thus, the aims of this study were to examine the drug utilization profile, DRPs and their predictors in hospitalized neonates. A systematic review was conducted prior to the actual study to determine the prescribing patterns and methodologies used for reporting drug utilization in hospitalized neonates. Two projects were undertaken under this study. Project I was conducted at Hospital Sultanah Aminah, Johor Bahru. Project I was carried out in Medical Record Office (retrospective) and neonatal intensive care unit (NICU) and neonatal wards (prospective). Patients' medication charts, ward notes and laboratory data were reviewed daily and progress of the selected patients in the ward were documented. Logistic regression was used to analyse potential risk factors associated with use of ≥ 5 drugs and DRPs occurrence. As Adverse Drug Reaction (ADR) is a subset of DRPs, Project II was carried out at National Pharmaceutical Regulatory Agency (NPRA) using the data from the national pharmacovigilance database, QUEST2 system to examine the characteristics and prevalence of ADRs in neonates in contrast to other paediatric population. The systematic review revealed that neonates are exposed to a high number of drugs, with antifungives for systemic use being the most predominantly prescribed. Various methods have been used to quantify drug consumption in neonates but no study from Malaysia was identified. In project I, a total of 302 neonates were included in the study. The majority of neonates admitted to NICU and neonatal wards were preterm (63.2%, n=191) and LBW infants (64.6%, n=195). On average, the neonates were admitted for 28.4 days and there were 2715 drugs documented. Antifungives for systemic use (n=1235, 45.5%) were the most commonly prescribed drugs, with benzylenicillin (n=293) and gentamicin (n=275) being the most predominant. Number of diagnoses or problems was found to be a significant predictors for neonates to be prescribed with ≥ 5 drugs. In total, 766 DRPs were identified for 269 patients, whom had at least one DRP. The overall incidence of DRPs was 87.7% and treatment safety which relates to adverse drug events had the highest frequency amongst the reported problems, 67.1% (n=515). A retrospective analysis of ADRs reports received by the national pharmacovigilance centre in project II found that antibacterial for systemic use were commonly associated with ADRs in Malaysian children with majority of them manifested through skin reactions. ADRs reported for neonates was lower than other children age categories. Inappropriate dose, 60.0% (n=572) and drug selection 21.4% (n=204) were the common causes for DRPs identified. The number of drugs prescribed was the only potential risk factor that was found to be significant for the occurrence of DRPs. Neonates are exposed to high number of drugs and are at risk of developing DRPs. Pharmacists should set priority for the preterm and LBW neonates who have multiple diagnoses and prescribed with multiple drugs in order to minimize the risks of DRPs and subsequently improve efficiency of clinical pharmacy services.