

# Mislabelling of nicotine content in electronic cigarette liquids in Malaysia: implications on public health

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## ABSTRACT

Electronic cigarette (e-cig) is a battery-operated device which vaporises nicotine solution into a form of inhalable aerosol. The level of nicotine in the liquid for e-cig (e-liquid) may vary and the typical nicotine concentration reported is between 6 to 24 mg of per ml. Based on the National Electronic Cigarette Survey (NECS) 2016, 83.9% of e-cig adult users in Malaysia preferred e-liquid with 6 mg/ml nicotine. In Malaysia, nicotine in products other than tobacco is regulated under the Poisons Act 1952, restricting its sale by licensed health professionals only. However, the sale of e-liquid containing nicotine is widespread and vapers are not assured of the accuracy of content versus that on the label of the e-liquid bottle. **OBJECTIVE:** To determine the actual nicotine concentration in selected e-liquid brands marketed in Malaysia. **Methods:** Samples (81 brands) obtained from respondents of the NECS 2016 were analysed using gas chromatography mass spectrometry (GC-MS) in selective ion mode (SIM) at a certified laboratory. **Results:** 15 samples labelled as no or zero nicotine were found to contain nicotine. Nine samples contained level of nicotine higher than what their labels indicated. Interestingly, 57 samples had nicotine concentrations that were lower than that indicated on the labels. The nicotine concentration percentage difference between labelled and result from analysis was found to be as low as from -99.16% to -1.28% in 64 samples, while in 4 samples the difference was higher; 0.083% to 163.0%, and the remaining 13 samples had no mention of nicotine concentration on their labels. **Conclusion:** Significant discrepancy was detected in nicotine concentration between the labelled and analysed values among the collected e-liquid samples. Strict regulation and enforcement is needed for e-cig liquids to ensure safety of users and compliance to current regulations on nicotine.

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## MOH Health Research Clusters: what's next?

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## ABSTRACT

**Introduction:** Five health research clusters have been determined for the Ministry of Health (MOH) Research Priority: 11th Malaysia Plan (MP). The clusters are: 1) National Health Surveys, 2) Burden of Diseases, 3) Non-communicable Diseases, 4) Sustainable Environment and Climate Change and 5) Universal Access to Quality Health Care. Trending from previous MP was used as a basis to determine these clusters. Allocations of funding for these prioritized health research clusters are crucial in ensuring research evidence produced supports the health transformation. **Methods:** Research gaps were analysed through a series of workshop between Head of Clusters and researchers. Gap analyses involved the identification of research dissemination levels, research progress and grant disbursement. Next, possible research areas to be conducted in the next five years (2016 - 2020) were identified and presented to the stakeholders through a series of research dialogues. The stakeholders included internal and external (universities and other ministries) decision makers. Feedbacks from the stakeholders were used to refine research scopes in each cluster. **Results and Discussion:** These five health research clusters serve as a basis for the researchers to conduct research of importance to the ministry to provide evidence supporting the health services. They also ensure financial allocations are based on current needs towards healthy community, disease prevention and treatment, improving health service delivery and accessibility. However, the research scopes were not ranked based on feasibility, potential impact and severity. **Conclusion:** Health research prioritisation processes were successfully applied in MOH. However, there are still rooms for improvement in ranking the research scopes. It will help the ministry in prioritizing grant allocation to the researchers. This process will encourage researchers to conduct policy driven research and improve communication between researchers and stakeholders.