

# Diarrhoea among children in Malaysia: Are we at fault?

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## ABSTRACT

**Introduction:** Diarrhoea is a major causes of morbidity and mortality among children globally. This study aimed to explore factors associated with diarrhoea in children aged under 5 years in Malaysia. **Methods:** Data from National Health and Morbidity Survey 2016 conducted by Ministry of Health was analysed. This nationwide cross sectional survey involved 15,164 children below five years old and was carried out using two stage stratified sampling design to ensure national representativeness. Questionnaire from UNICEF Multiple Indicator Cluster Survey (MICS) was adapted to suit local requirement. Descriptive and multivariate analysis was done to identify associated factors. **Results:** The prevalence of diarrhoea among children under five in Malaysia was 4.4% (95%CI: 3.8,5.2) which can be inferred to 110486 children. Analysis showed that by ethnicity, Indians, Other Bumiputeras and other ethnicities were more likely to have diarrhoea compared to the Malays. By education level, children of parents with lower education levels were more prone to have diarrhoea as compared to parents with tertiary education levels. In term of household income, the poorest were the most vulnerable to diarrhoea. Populations that used untreated water and/or unsanitary latrines and/or waste disposal were more likely to have diarrhoea as compared to those who used treated water, sanitary latrines and/or waste disposal. Analysis using logistic regression indicated that only ethnicity and usage of untreated water were significantly associated with diarrhoea among children while controlling for other factors. By ethnicity, Indians were almost twice as likely, Others Bumiputeras 2.5 times more likely followed by Other ethnicities at 1.5 times higher risk of having diarrhoea compared to Malays. Children from households that used untreated water Supply were twice more likely to develop diarrhoea. **Discussion and Conclusion:** Strategies to reduce diarrhoea among children should be targeted towards the population at risk

## KEY WORDS:

*Diarrhoea, children, survey, Malaysia, National Health and Morbidity Survey (NHMS)*

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# Digital photography based food intake prediction using artificial neural network

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## ABSTRACT

**Introduction:** Many wearable devices monitoring have been proposed to complement self-reporting of users' caloric intake and eating behaviours. These devices comprise varying sensing modalities, such as acoustic, visual, inertial, EEG, EMG, capacitive and piezoelectric sensors. In this research, food intake will be predicted from the input of digital photography using ANN. **Methods:** In this study, image of selected food or leftovers are captured using digital camera or smartphone. These two images are later compared with images of averaged portions of food. Area based comparison or trained artificial neural network could then predicted the calorie and nutrient intake. **Results:** Preliminary results show the effectiveness of measuring food intake using digital photography. It is found that more images are required to train the artificial neural network for various image capturing position to improve the prediction accuracy. **Discussion:** The proposed method is rather simple and easy and provides quick feedback on food intake and dietary recommendations to achieve weight loss goal. It is believed that such findings would allow general public to better achieve and maintain their healthy lifestyle.