Salt intake was higher among males and those with high BMI and waist circumference: introduction to the Malaysian Community Salt Survey (MyCoSS), a population-based salt intake survey in Malaysia

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Abstract

Background: Recognising that excessive dietary salt intake is associated with high blood pressure and adverse cardiovascular health, the Ministry of Health Malaysia conducted the Malaysian Community Salt Survey (MyCoSS) among Malaysian adults. This paper introduced MyCoSS projects and presented findings on the salt intake of the Malaysian adult population.

Methods: MyCoSS was a nationally representative survey, designed to provide valuable data on dietary salt intake, sources of salt in the diet, and knowledge, perception, and practice about salt among Malaysian adults. It was a cross-sectional household survey, covering Malaysian citizens of 18 years old and above. Multi-stage-stratified sampling was used to warrant national representativeness. Sample size was calculated on all objectives studied, and the biggest sample size was derived from the knowledge on the effect of high salt on health (1300 participants). Salt intake was estimated using a single 24-h urine collection and its sources from a food frequency questionnaire. Knowledge, attitude, and practice were determined from a pre-tested questionnaire. All questionnaires were fully administered by trained interviewers using mobile devices. Anthropometric indices (weight, height, and waist circumference) and blood pressure were measured using a standardised protocol. Ethical approvals were obtained from the Medical Research Ethics Committee, Ministry of Health Malaysia, and Queen Mary University of London prior to conducting the survey.

Results: Findings showed that the average sodium intake of Malaysian adults (3167 mg/day) was higher than the WHO recommendation of 2000 mg/day. Daily intake was significantly higher among males and individuals with higher BMI and higher waist circumference.

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Background
Cardiovascular diseases (CVD), including strokes, heart attacks, and heart failure, are the foremost cause of death in Malaysia and worldwide. Hypertension contributed to incidence of strokes (62%) and coronary heart disease (49%) [1]. There is irrefutable evidence that high salt intake is the major cause of hypertension. Reducing salt intake to the World Health Organization (WHO) recommended level of less than 5 g/day could prevent about 1.65 million CVD deaths per year globally [2]. A paper in the Lancet demonstrated that a 15% reduction in population salt intake could avert 8.5 million cardiovascular deaths over 10 years in 23 developing countries and result in major cost savings to individuals, their families, and the health services [3]. Indeed, a modest reduction in salt intake is more, or at the very least just, as cost-effective as tobacco control in terms of reducing CVD, the leading cause of death and disability in Malaysia and worldwide [4]. Salt reduction has shown other benefits on health [1], namely, reduced risk of stomach cancer [5], kidney disease, and osteoporosis [1], and lower risk of obesity [6] directly or indirectly through a reduction in soft drink consumption [7].

Salt intake has been included as an indicator under the Non-Communicable Disease Global Monitoring Framework [8] adopted at the World Health Assembly in 2014, with reporting requirements to the United Nations General Assembly in New York every 5 years, starting in 2015. Malaysia started a salt reduction initiative in 2010, and the Ministry of Health announced to reduce salt in 11 food items, e.g. soy sauce. A committee was set up under the Non-Communicable Disease (NCD) Section, Disease Control Division, Ministry of Health, in collaboration with several agencies to raise salt awareness and promote salt reduction in Malaysia.

The salt reduction initiative in Malaysia is timely, particularly in view of the rising trend of hypertension. The prevalence of hypertension in adults of over 18 years has increased from 21% in 1996 to 33% in 2011 [9]. This figure continues to rise. It is estimated that 7.6 million adults will have hypertension by 2020 [10]. Prior to MyCoSS, there was no national database on salt intake. A small study in 84 young adults (age 19–30 years) showed that average salt intake, measured by 24-h urinary (24HU) sodium, was 9.2 g/day in 2009 [11]. In 2012, a study was carried out in 445 individuals employed by the Ministry of Health (MOH) Malaysia which showed that average salt intake was 8.4 g/day, with over 70% of the participants having salt intake above the WHO recommended level of 5 g/day [12]. A more recent study in 2015 was conducted among 1116 individuals employed by MOH with 24-h urine (24HU) collection, 24-h diet recall, food frequency questionnaire (FFQ), and knowledge, attitude and practice (KAP) questionnaire [13]. The results showed that mean salt intake, measured using 24 HU sodium excretion, was 7.2 g/day. The main sources of dietary salt intake were soy sauce, fried rice, omelette, *nasi lemak* (Malay cuisine dish of fragrant rice cooked in coconut milk and pandan leaf, and served with a hot spicy sauce, fried anchovies, hard-boiled or fried egg, cucumber slices, and roasted peanuts), and *roti canai* (flat bread). By food groups, cooked grains and sauces were the primary contributors to dietary salt intake. Regarding knowledge, attitude, and practice, most of the participants had knowledge on serious health problems related to high salt intake, especially high blood pressure. More than half of the participants responded that lowering sodium intake was very important to them. The participants frequently controlled their salt intake, and most of them never added salt to the food at the dining table, but often or always used salt in cooking.

The studies on health workers and others using small samples cannot be generalised to the wider population [13]. Hence, the Malaysian Community Salt Survey (MyCoSS) was conducted to determine the level of salt intake, main sources of salt in the diet, and knowledge, attitude, and practice (KAP) in a nationally representative sample of the Malaysian adult population. Our study will provide key data which are urgently required for effective implementation of Malaysia’s salt reduction programme. This paper introduced MyCoSS project and presented findings on the salt intake. This journal supplement also presented findings on other scopes of the study: sodium sources, KAP, anthropometric measurements, hypertension, potassium intake, and having meals away from home, and their associated factors. A sub-study on development of sodium equation to estimate sodium intake among the Malaysian adults was also included in this supplement.

Methods
Study design and sampling
MyCoSS was a nationally representative household survey. The target population was participants residing in

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**Conclusion:** Salt intake in the Malaysian population was higher than the WHO recommendation. MyCoSS’s findings will be used for the development and implementation of national salt reduction policy. A successful implementation of a national salt reduction programme in Malaysia will benefit the whole population.

**Keywords:** Urinary sodium, Salt intake, Malaysia, MyCoSS
non-institutional living quarters. Institutional residents (those staying in hospitals, hotels, hostels, prisons etc.) were excluded from the survey. The sample size was calculated using a formula for estimating population prevalence. Sampling was designed to cover both urban and rural areas for every state in Malaysia. Calculations were done on all objectives, and the biggest sample size was derived from the knowledge on the effect of high salt on health, with an estimated sample size of 1300 participants. To ensure national representativeness, this cross-sectional study applied a stratified cluster sampling method. Sampling was designed to cover both urban and rural areas for every state in Malaysia. Residential units were randomly selected by the Department of Statistics Malaysia, and one respondent was selected from a household. Sample size for each state was calculated proportionally to the state’s population size.

**Participant characteristics**

Malaysian citizens aged 18 years and above were included. Those who were pregnant; recently began diuretic therapy (<4 weeks); having menses; diagnosed to have kidney disease, heart failure, or liver disease; and with difficulty of urine collection were excluded from the study. Participants who agreed to participate in this study and had met the eligibility criteria were provided an information sheet that explained the purpose and detailed information of the study. They were asked to sign a consent form which included allowing IPH researchers to keep their urine sample for 10 years for future research.

**Data collection and study instruments**

Data collection started from October 2017 and completed in March 2018. There were two separate visits arranged for each respondent (Fig. 1). Data collections via face-to-face interviews were carried out at the respondent’s home using mobile tablets based on the system developed for this study. Questionnaires were pre-tested in the field, modified, and finalised for full survey implementation. Data was stored, backed up in the secure digital card, sent to the institute’s server, and saved in the dataset folders according to the downloaded completion time.

The study questionnaires consisted of personal information; medical and health history; physical activity; knowledge, attitude, and practice (KAP); and food frequency questionnaire (FFQ) (Table 1).

The team leader interviewed the participants using a pre-tested and validated FFQ, which was adapted from a previous salt study in Malaysia [13]. Responses were recorded on daily or weekly or monthly frequency, as well as portions consumed. The knowledge, attitude, and practice (KAP) questionnaire was adapted from the World Health Organization/Pan American Health Organization protocol for population level sodium determination [15]. All anthropometric measurements and blood pressure (weight, height, waist circumference) were done using validated and calibrated instruments. Body mass index (BMI) was calculated as the ratio of weight in kilogrammes to the square of height in metre (kg/m$^2$) and categorised based on the WHO 1998 guidelines of underweight (<18.5 kg/m$^2$), normal-weight (18.5–24.9 kg/m$^2$), pre-obese (25.0–29.9 kg/m$^2$), and obese (≥30.0 kg/m$^2$) [14]. High waist circumference was categorised as ≥90 cm for men and ≥80 cm for women (WHO/IASO/IOTF) [14, 16]. Blood pressure was measured using a digital blood pressure machine Omron HBP-1300 and referred to the Ministry of Health Clinical Practice Guideline [17]. Details methodology of the FFQ and KAP are highlighted in other articles in this supplement: S02 High sodium food consumption pattern among Malaysian population [18] and S03 Knowledge, Attitude and Behaviour on Salt Intake and its Association with Hypertension in Malaysian Population: Findings from the MyCoSS (Malaysian Community Salt Survey) [19].
Twenty-four-hour urine collection
The participants were given oral and printed instructions on the technique to accurately collect a single 24 HU. Each participant was provided with a 5-L screw-capped plastic collection bottle, a urine collection jug, plastic carrier bags, a safety pin for attaching to underclothes, and a poster (as a reminder for urine collection). The team leader made a phone call to remind participants of the urine collection. The participants discarded the first urine of the day in the morning and collected all urine for the following 24 h. The last urine collection was determined as the first urination on the second day of collection. The participants recorded the urine collection time and notified any missed collection to the data collectors. Sodium content in the urine was measured using indirect ion-selective electrode method, while urinary creatinine was measured using the Kinetic Jaffe method (alkaline picrate with Lloyd’s reagent) using the Architect C machine in a laboratory. Incomplete 24 HU sample was determined as urinary creatinine <4 mmol/day for women or <6 mmol/day for men, 24 HU volume of <500 ml for both sexes [20]. Conversion from mmol to grams of salt was made by dividing by a factor of 17, and the conversion from sodium (Na) to salt (NaCl) was by multiplying by a factor of 2.542 [20]. Sodium intake was compared to Malaysia’s sodium intake recommendation of less than 2000 mg/day.

Statistical analysis
This article focused on findings on the salt intake of the Malaysian adult population. Determination of salt intake was done using complex sample design analysis. Prevalence estimates and 95% confidence intervals of the studied variables were computed. The data was analysed using the complex sample functions in IBM SPSS version 20 and Stata version 14.

Results
Salt intake of the Malaysian adults
A total of 1047 participants were interviewed, 960 of whom provided urine samples. Based on the criteria for assessing the completeness of 24-h urine collection, 798 urine samples were complete and included in the analysis (76.2% inclusion). The participants aged between 18 and 85 years old with a mean age of 49 years (95% CI 47, 51). Mean body weight was 67.8 kg (95% CI 66.4, 69.3), and mean BMI was 26.6 kg/m² (95% CI 26.0, 27.1). Mean waist circumference for male was 91.1 cm (95% CI 89.4, 92.9) and female 88.6 cm (95% CI 86.6, 90.5). Total 24-h urine volume was between 500 and 5780 ml.

Table 2 presents the mean 24-h sodium intake level (mmol/day) by the characteristics of the participants. The mean 24 HU sodium intake was 3167 mg/day (95% CI 2987, 3346), which corresponds to 138 mmol/day or 7.9 g of salt or 1.6 tsp of salt. About 79% of the participants consumed high sodium (more than 2000 mg sodium per day). Sodium intake was significantly higher among males (3519 mg/day) compared to females (2790 mg/day) (t=4.21, p<0.001). Sodium intake was the highest among those aged 25–34 and 35–44 years and lowest among the elders (more than 65 years). Highest sodium intake was seen among never-married participants. Those working in the public sector, private sector, and self-employed showed higher sodium intake compared to other job categories. Overall those with higher BMI consumed significantly higher sodium compared to participants with lower BMI (F=18.19, p<0.001). Male and female with normal waist circumference showed a significantly lower sodium intake compared with high waist circumference (t=5.11, p<0.001 and t=4.86, p=0.001 respectively). Nevertheless, their sodium intake exceeded the recommended intake (>2000 mg/day).
Table 2: Study characteristics and mean sodium intake (mg/day) analysed using 24-h urinary excretion

| Characteristics                  | Unweighted count | %  | Population size | Mean  | 95% confidence interval |
|----------------------------------|------------------|----|-----------------|-------|-------------------------|
|                                  |                  |    |                 |       | Lower | Upper |
| **Malaysia**                     | 798              | 100| 14,243,927      | 3167  | 2987 | 3346  |
| **Gender**                       |                  |    |                 |       |       |       |
| Male                             | 340              | 51.7| 7,365,184       | 3519  | 3209 | 3828  |
| Female                           | 458              | 48.3| 6,887,075       | 2790  | 2650 | 2931  |
| **Age group (years)**            |                  |    |                 |       |       |       |
| 18–24                            | 53               | 6.6 | 955,086         | 3266  | 2748 | 3783  |
| 25–34                            | 117              | 14.7| 1,983,140       | 3556  | 3099 | 4013  |
| 35–44                            | 130              | 16.3| 2,447,950       | 3531  | 3083 | 3980  |
| 45–54                            | 175              | 21.9| 3,160,650       | 2955  | 2751 | 3159  |
| 55–64                            | 190              | 23.8| 3,232,280       | 3047  | 2790 | 3305  |
| 65+                              | 133              | 16.7| 2,473,153       | 2882  | 2507 | 3257  |
| **Location**                     |                  |    |                 |       |       |       |
| Urban                            | 319              | 40.0| 10,809,259      | 3254  | 3024 | 3483  |
| Rural                            | 479              | 60.0| 3,443,000       | 2894  | 2746 | 3041  |
| **Ethnicity**                    |                  |    |                 |       |       |       |
| Malay                            | 501              | 62.8| 9,480,360       | 3214  | 2992 | 3436  |
| Chinese                          | 87               | 11.0| 1,681,915       | 2926  | 2575 | 3278  |
| Indian                           | 44               | 5.5 | 1,205,438       | 3408  | 2399 | 4417  |
| Bumiputera Sabah                 | 89               | 11.1| 1,352,484       | 2879  | 2489 | 3270  |
| Bumiputera Sarawak               | 64               | 8.0 | 342,464         | 2992  | 2740 | 3244  |
| Others                           | 13               | 1.6 | 189,599         | 3772  | 2928 | 4616  |
| **Marital status**               |                  |    |                 |       |       |       |
| Never married                    | 94               | 11.8| 1,644,183       | 3407  | 3060 | 3754  |
| Married                          | 594              | 74.4| 11,056,754      | 3224  | 3018 | 3430  |
| Separated                        | 24               | 3.0 | 351,593         | 2374  | 1812 | 2937  |
| Widow/er                         | 86               | 10.8| 1,183,117       | 2528  | 2223 | 2833  |
| **Household income (RM)**        |                  |    |                 |       |       |       |
| < 1000                           | 239              | 29.9| 3,357,918       | 2943  | 2749 | 3137  |
| 1000–1999                        | 153              | 19.2| 2,516,305       | 3262  | 2901 | 3623  |
| 2000–2999                        | 131              | 16.4| 2,284,080       | 3162  | 2700 | 3624  |
| 3000–3999                        | 90               | 11.3| 1,707,701       | 2963  | 2487 | 3439  |
| > 4000                           | 185              | 23.2| 4,386,255       | 3365  | 3049 | 3682  |
| **Academic level**               |                  |    |                 |       |       |       |
| None                             | 64               | 5.1 | 731,726         | 2729  | 2112 | 3346  |
| Primary education                | 167              | 18.2| 2,587,785       | 3051  | 2667 | 3436  |
| Secondary education              | 383              | 51.1| 7,286,332       | 3232  | 2987 | 3476  |
| Tertiary education               | 184              | 25.6| 3,646,416       | 3207  | 2956 | 3457  |
| **Occupation group**             |                  |    |                 |       |       |       |
| Public sector                    | 117              | 14.7| 1,988,275       | 3326  | 2872 | 3780  |
| Private sector                   | 126              | 15.8| 2,451,061       | 3338  | 2990 | 3686  |
| Self-employed                    | 179              | 22.4| 3,278,506       | 3469  | 3038 | 3900  |
| Housewives                       | 214              | 26.7| 3,364,461       | 2905  | 2722 | 3088  |
| Unemployed                       | 113              | 14.2| 1,943,337       | 2887  | 2537 | 3237  |
The mean sodium intake reported in our study was lower than that estimated in other smaller studies in Malaysia: 3412 mg/day (19- to 30-year-old university students, \(n=84\)) [11], 3425 mg/day (18- to 59-year-old health staffs in 2012, \(n=445\)) [12]. The present study reported a lower intake of sodium as it included elderly participants aged more than 60 years old. The elderly consumed less sodium due to lower intake of food as they aged and medical restrictions [21]. This resulted in a lower population sodium intake. Malaysia’s sodium intake was also lower than reported by Singapore’s National Nutrition Survey 2018 (9.0 g/day) [22]. This is probably due to Malaysia’s main source of sodium consumption were from fried vegetables (adding salt during cooking), bread, and soy sauce (as highlighted in the article by Ahmad et al. in this supplement) [18], compared to Singapore’s sodium main consumption from seasonings, salt, and sauces used in food preparation [22]. Malaysia’s sodium intake was also lower than the adult (aged 19 to 64 years) UK population, 148 mmol/day [23]. Higher sodium consumption in the UK (8.4 g/day) was contributed from sodium added in the production processes (61%), whilst sodium added during cooking or eating contributed only 18% of the daily sodium intake. Cereals (and products) and meat (and products) contributed to the biggest sodium intake in the UK [24].

This study conducted among health staff aged 18 to 59 years old in 2015 (2989 mg/day, \(n=1116\)) [13]. Overall, sodium intake of Malaysian males (153 mmol/day) and females (122 mmol/day) was lower compared to other countries such as the UK (males, 161 mmol/day; females, 127 mmol/day) [25], the USA (males, 180–190 mmol/day; females, 130–150 mmol/day) [25], China (males, 252 mmol/day; females 234 mmol/day) [26], and Singapore (males, 175 mmol/day; females 122 mmol/day) [22]. In addition, sodium intake was significantly higher among Malaysian males compared to females. These findings are consistent with most studies in other countries such as the USA [27], Spain [28], Sweden [29], and China [26]. This is possibly due to dietary behaviour differences of consuming food outside of home [30–32]. Moreover, male’s higher food intake requirement leads to higher sodium consumption [33].

By age, sodium intake was the highest among those aged 25–34 and 35–44 years, while the elders (more than 65 years) reported the lowest sodium intake. This echoes findings from Singapore whereby the highest sodium intake was reported among those aged 30–49 years age group and was lower for older age groups [22]. This might be due to decreasing food intake among older people, and consequently, lower sodium ingestion. The UK and Spanish population also showed a decreasing trend of sodium intake starting from a later age of 50 years [23, 28].

| Table 2 Study characteristics and mean sodium intake (mg/day) analysed using 24-h urinary excretion (Continued) |
|---------------------------------------------------------------|
| **Characteristics**               | **Unweighted count** | **%** | **Population size** | **Mean** | **95% confidence interval** |
|-----------------------------------|----------------------|------|---------------------|----------|---------------------------|
|                                   |                      |      |                     |          |                           |
| **Student**                       | 15                   | 1.9  | 280,201             | 2919     | 2183–3655                 |
| Others                            | 34                   | 4.3  | 946,419             | 2919     | 2426–3411                 |
| **Body mass indexa (kg/m²)**      |                      |      |                     |          |                           |
| Underweight (<18.5)               | 35                   | 4.5  | 640115              | 2029     | 1698–2361                 |
| Normal (18.5–24.9)                | 285                  | 35.2 | 5009039             | 2877     | 2671–3082                 |
| Pre-obese (25.0–29.9)             | 287                  | 37.5 | 5350422             | 3285     | 3007–3562                 |
| Obese (≥30.0)                     | 191                  | 22.8 | 3252684             | 3643     | 3216–4070                 |
| **Waist circumference (male)b (cm)** |                    |      |                     |          |                           |
| < 90                              | 410                  | 48.7 | 6,945,737           | 2811     | 2639–2982                 |
| ≥ 90                              | 387                  | 51.3 | 7,311,322           | 3506     | 3233–3777                 |
| **Waist circumferenceb (female)b  (cm)** |                |      |                     |          |                           |
| < 80                              | 180                  | 20.1 | 2,866,271           | 2675     | 2427–2923                 |
| ≥ 80                              | 620                  | 79.9 | 11,396,476          | 3291     | 3098–3483                 |
| **Blood pressurec (mmHg)**        |                      |      |                     |          |                           |
| < 140/90                          | 489                  | 61.3 | 8,986,647           | 3180     | 2952–3408                 |
| ≥ 140/90                          | 309                  | 38.7 | 5,265,613           | 3144     | 2927–3360                 |

aBMI categories referring to WHO (1998) [14]
bWaist circumference referring to WHO/IASO/IOTF (2000) [16]
cBlood pressure referring to the Malaysian Ministry of Health Guideline [17]
The current study confirmed that sodium intake was significantly increased among adults with higher BMI and waist circumference. This could be explained by consumption of a larger amount of food and energy-dense food that is accompanied by more sodium in the daily diet [18]. Other studies have also observed high sodium intake among those with higher BMI and waist circumference [33, 34].

Findings showed no significant differences in sodium intake by location. Due to logistic problems in sending urine samples to laboratories and limited allocation, participants in secluded areas were not included in this study. Those studied still have access to ready-to-eat and local fast foods (which are high in calories, sugar, and salt) sold at street stalls, hawker centres, night markets, and convenient stores. This might explain why there was no difference in sodium intake by location in Malaysia [35]. The Malaysian Adult Nutrition Survey 2003 also reported no differences in sodium intake by location [36].

Malaysia is a multiracial nation with the Malay, Chinese, and Indian as major ethnicities. Hence, the cuisines are multicultural in nature. Cuisines from the Malays, Chinese, and Indians are available almost everywhere in Malaysia and eaten by all ethnicities in Malaysia. This might explain the insignificant result related to ethnicity. Further, there was an imbalance participant numbers according to ethnicity ratio, causing direct comparison to be difficult. Larger numbers of participants from other ethnicities are needed to represent the Malaysian population.

The strength of the study is its representativeness population and 24-h urine collection to determine population salt intake. A stringent protocol was deployed to minimise risk of incomplete collection of 24-h urine. The respondents were provided with instructions on urine collection and reported their start and end of urine collection. Further, the completeness of the urine was determined using the 24HU creatinine measurement and by the volume collected. MyCoSS carried out a sampling frame which is stratified by urban/rural living quarters and by states. Hence, this survey is considered to be nationally representative. However, this study has some limitations, e.g. para-aminobenzoic acid (PABA) tablet was not used to verify the completeness of the 24 HU. In spite of the stringent protocol, we cannot rule out incomplete collection of 24-h urine samples as it is very common and occurred in almost all population studies. Furthermore, for the assessment of salt intake, we did not include non-urine loss of sodium which accounts for approximately 10% of total salt intake. As such, the salt intake reported in our study represents an underestimated level. Despite this, 79% of the population has salt intake above the WHO recommended maximum. Urgent action is therefore needed to reduce salt intake across the population. In addition, secluded geographical areas had to be excluded from the sampling frame due to logistic reasons and budget limitation. Another limitation is that we collected a single 24-h sample despite repeated measurements of two or more urine samples are preferred to estimate day-to-day variations in diet intake and habitual intake.

Conclusion

The salt intake in Malaysian adults is higher than the WHO recommendation. Intake is higher among males, with high BMI and waist circumference. The information generated from this study is fundamental for strengthening the implementation of the national salt reduction programme in Malaysia. They will serve as baseline information in monitoring the trend of salt intake over time and in evaluating the effectiveness and cost-effectiveness of the country’s salt reduction programme. The results will be useful to inform policy makers, programme managers, health professionals, the food industry, non-governmental organisations and other stakeholders to make concerted efforts to reduce salt intake in Malaysian population. The findings will also provide an important data source to raise salt awareness among the general public, resulting in a successful public health campaign to reduce salt intake in Malaysia.

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Authors’ contributions

RA, FJH, FO, MFMY, VM and TA were responsible for the concept and project development. RA and FO supervised the project’s progress. RA and FJH designed the outline of the manuscript. FO, VM, MFMY and TA contributed to a critical review of the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable requests.

Declarations

Ethics approval and consent to participate
Ethical approvals for the study were obtained from the Medical Research Ethics Committee (MREC), Ministry of Health Malaysia (NMRR-17-423-34969) and Queen Mary (University of London) Research Ethics Committee (QMERC 2017/14) prior to conducting the study. Informed written consent was collected from all respondents at the beginning of the study.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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