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# BMJ Open

## Developing a policy to reduce the salt content of food consumed outside the home in Malaysia: protocol of a qualitative study

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2020-044628
Article Type:	Protocol
Date Submitted by the Author:	08-Sep-2020
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Keywords:	PUBLIC HEALTH, QUALITATIVE RESEARCH, PREVENTIVE MEDICINE

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# Developing a policy to reduce the salt content of food consumed outside the home in Malaysia: protocol of a qualitative study

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Keywords: salt, salt reduction, salt qualitative analysis, food out of home

Word count: 2,491

## ABSTRACT

**Introduction** Current salt intake in Malaysia is high. The existing national salt reduction policy has faced slow progress and does not yet include measures to address the out of home sector. Dishes consumed in the out of home sector are a known leading contributor to daily salt intake. This study aims to develop a salt reduction strategy, tailored to the out of home sector in Malaysia.

**Methods and analysis** This study is a qualitative analysis of stakeholder views towards salt reduction. Participants will be recruited from five zones of Malaysia (Western, Northern, Eastern and Southern regions and East Malaysia), including policy makers, non-governmental organisations (NGO), food industries, school canteen operators, street food vendors and consumers, to participate in focus group discussion or in-depth interviews. Interviews will be transcribed and analysed using thematic analysis. Barriers will be identified and used to develop a tailored salt reduction strategy.

**Ethics and dissemination** Ethical approval will be sought from the Universiti Kebangsaan Malaysia Medical Research Ethics Committee, the Malaysian National Medical Research Ethics Committee and Queen Mary (University of London) Research Ethics Committee in the UK. Results will be presented orally and in report form and made available to the relevant ministries e.g. Ministry of Health, Ministry of Education and Ministry of Trade to encourage adoption of strategy as policy. The findings of this study will be disseminated through conference presentations, peer-reviewed publications and webinars.

## Article Summary

### Article focus

- This article describes the protocol of a qualitative study to determine barriers to reformulation in food consumed outside the home in Malaysia

### Key messages

- Excess salt consumption is a leading risk factor for raised blood pressure which increases the risk of cardiovascular disease (CVD). While several countries have salt reduction policies in place, no country has yet effectively lowered salt in food consumed outside the home
- Our study aims to determine potential barriers to salt reduction in this sector, with the goal of developing a tailored salt reduction strategy
- The study will involve key stakeholders across Malaysia, including policy makers, NGOs, food industry representatives and consumers

### Strengths and limitations of this study

- Our study is novel in that no country has yet developed an effective salt reduction strategy for food consumed outside the home. By gaining views of stakeholders across Malaysia we can ensure our salt reduction strategy will address all concerns and unite stakeholders in the goal of salt reduction
- Although the study will be conducted in Malaysia, many countries need to reduce salt in food consumed outside the home and so the findings could be adapted internationally

## 1. INTRODUCTION

Excess salt consumption is a leading risk factor for raised blood pressure (1, 2), which in turn increases the risk of cardiovascular disease (CVD), the major cause of death and disability globally (3). Excess salt intake is also linked to stomach cancer, osteoporosis and kidney disease (4). The Global Burden of Disease Study estimates that suboptimal diets led to 11 million deaths in 2017, with excess salt intake alone responsible for 3 million deaths (5).

In 2013, World Health Organization (WHO) member states pledged to work towards a 30% relative reduction in population salt intake by 2025 (6). The WHO have long highlighted salt reduction as a priority for population health, due to the impact and cost-effectiveness of the intervention, and recommended salt reduction as a 'best buy' intervention (7). The UK's salt reduction policy is often cited as a leading example, setting incrementally lower salt content

1 targets for the food industry with independent monitoring, leading to a 15% reduction in population  
2 salt intake between 2003 and 2011 which was accompanied by a fall in average blood pressure  
3 and cardiovascular disease mortality (8). More than 75 countries now have a salt reduction policy  
4 in place, following the lead of the UK. However global dietary salt intake remains much higher than  
5 the WHO recommended level of less than 5g per day (9).  
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10 In Malaysia, salt intake is also high (7.9g/d) and hypertension is prevalent, particularly in adults  
11 from rural areas (10, 11). Indigenous ethnic groups are less likely to be aware of hypertension or  
12 to be treated, and those earning less than MYR 1,000 have a forecasted higher level of 10-year  
13 CVD risk than those on higher incomes (11, 12). Therefore salt reduction in Malaysia would  
14 benefit the entire community, particularly the more socially-deprived. In 2015, the Malaysian  
15 Ministry of Health developed the Salt Reduction Strategy to Prevent and Control NCD for Malaysia  
16 (2015–2020), as part of their National Strategic Plan for Non-Communicable Diseases (2016–  
17 2025), with the aim of achieving a 15% reduction in salt intake by 2020 (13). The salt reduction  
18 strategy includes measures to reformulate high salt products and increase awareness in the  
19 population of the impact salt has on health. However, an interim analysis found slow progress, and  
20 six recommendations were made to strengthen the strategy, which included a recommendation to  
21 address salt levels in the out-of-home sector (restaurants, cafeterias, street food vendors) (14).  
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32 A baseline analysis found that out-of-home dishes are a leading contributor to daily salt intake,  
33 with dishes such as kolok mee, curry noodles and vegetables with soy/oyster sauce identified in  
34 the top five food sources (10). Foods sold in the out of home sectors are often seasoned by  
35 consumers with a variety of sauces and condiments with high salt content but approximately half  
36 of these sauces and condiments do not have salt content printed on nutrition labels, making it  
37 difficult for consumers to evaluate how much salt they are adding to their food (15, 16). Instant  
38 noodles, a popular food choice among the younger population, have a mean salt content of  
39  $4.3 \pm 1.5$  g per 100g which is nearly four times higher than the salt content of food classified in  
40 Malaysia as a high salt content ( $>1.2$  g salt per 100 g) (17). Evidence also shows that school  
41 canteen food and home cooked meals are a source of salt in the diets of children and adolescents  
42 (18). The main barriers for healthy eating at school identified by adolescents include the lack of  
43 healthy food options, the availability of unhealthy foods and issues around preferences and  
44 affordability (19). Furthermore, poor knowledge of the impact of salt on health and a lack of  
45 individual salt reduction practices contribute to high salt intake, even among health care staff in  
46 Malaysia (20).  
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60 The overall aim of this study is to develop a salt reduction strategy for the out of home sector in  
61 Malaysia. Our objectives are:

- 1 1. Investigate the views of stakeholders across Malaysia towards salt reduction, to identify  
2 potential or perceived barriers.
- 3 2. Develop a strategy to reduce salt levels in out of home food, incorporating all themes from  
4 stakeholder discussions, and present to government departments.
- 5 3. Conduct capacity building activities, including workshops, for chefs to increase awareness  
6 of salt reduction and methods.  
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## 10 11 12 **2. METHODS AND ANALYSIS**

### 13 **2.1 Overall Study Design**

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16 A qualitative study will be conducted, using in-depth interviews and focus-group discussions to  
17 determine the views of stakeholders across Malaysia towards salt reduction, with an emphasis on  
18 the out of home sector. This design will enable participants to describe their views on potential  
19 perceived or actual barriers, allowing researchers to develop a tailored strategy and increasing  
20 likelihood of its adoption as policy by key decision makers within the Ministry of Health, Ministry of  
21 Education and Ministry of Trade.  
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27 Qualitative research in this case is essential. While the methods of reducing salt in the population  
28 are well known, reducing salt in the out of home sector is a relatively new approach, without an  
29 existing successful model to replicate or adapt.  
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33 The study framework is illustrated in Figure 1 and will utilise a social ecological model and the UK  
34 Medical Research Council framework, with adaptations from the Theoretical Domains Framework,  
35 creating a comprehensive framework that will capture a range of information required to develop a  
36 salt reduction strategy (21-23).  
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41 **Figure 1: Study model developed by combining a social ecological model with adaptations from the UK Medical Research**  
42 **Council (MRC) framework and the Theoretical Domains Framework (TDF)**  
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### 46 **2.2 Study Setting**

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48 This study will be conducted across Malaysia, with participants recruited from five zones of the  
49 country to avoid a centralised and biased view. The target zones are:  
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- 52 • Western – Kuala Lumpur, Selangor, Perak
  - 53 • Southern – Johor, Melaka, Sembilan
  - 54 • Northern – Penang, Perlis, Kedah
  - 55 • Eastern – Pahang, Terengganu, Kelantan
  - 56 • East Malaysia - Sabah, Sarawak
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## 2.3 Participants

For this study, the sample was purposively selected and the sample size was determined based on the experience of similar studies, particularly a study in India (24). As this is a qualitative study, in-depth interviews and focus group discussions will continue until saturation of themes is achieved (25). We aim to recruit 285 participants to ensure all necessary stakeholders are represented.

We will engage numerous stakeholders across Malaysia, including policy makers from the Ministry of Health, Ministry of Education and Ministry of Trade; NGOs; catering operators including the Indian Muslim Restaurants Association, school canteen operators and workplace cafeteria caterers; food industry representatives including soy sauce manufacturers and global food companies; street vendors and consumers (Table 1).

**Table 1: Study sampling frame. FGD = Focus Group Discussion, IDI = In-depth Interview**

Group	Western	Southern	Northern	Eastern	East Malaysia	Sample Size	Data Collection Method
<b>Government, policy and NGO</b>	10	-	-	-	-	10	IDI/FGD
<b>Caterers</b>	10	10	10	10	10	50	IDI/FGD
<b>Food Industry</b>	5	5	5	5	5	25	IDI/FGD
<b>Street Vendors</b>	5	5	5	5	5	25	IDI/FGD
<b>Consumers</b>	35	35	35	35	35	175	IDI
<b>Total</b>	65	55	55	55	55	285	

## 2.4 Recruitment

Stakeholders will be recruited via email invitations, identified initially through existing contacts and networks and then moving to snowball recruitment.

Interested stakeholders will be screened for eligibility using inclusion and exclusion criteria and invited for an initial telephone meeting, where they will be given an overview of the study. Eligible participants will receive a written invitation to a focus group discussion or in-depth interview as appropriate, with an information sheet and a consent form. Forms will be made available in Malay and English. Only those participants who have signed a consent form will be allowed to participate in interviews or focus group discussions.

The inclusion and exclusion criteria are as described in Table 2.



**Table 2: Inclusion and exclusion criteria**

Stakeholder Group	Inclusion Criteria	Exclusion Criteria
Government, policy and NGO representatives	<p>Organisation with specific role in salt reduction of the population</p> <p>Officer in charge with salt reduction/ food based programme/ policy</p> <p>Officer working for the organization for at least 2-3 years</p>	
Food Industry	<p>Manufacturing foods identified as high salt sources</p> <p>Officer in charge with industry's production planning/ policy</p> <p>Officer working for the industry for at least 2-3 years</p> <p>Include CEO/policy team plus nutrition teams to get a full view of the support for salt reduction within the organization, as well as input from the key decision makers</p>	
Catering operators	<p>Indian Muslim Restaurants Association, Chef Association, franchised food vendors, wedding caterers and/or school canteen operators</p> <p>Operating food outlets at medium to large scale</p> <p>Officer in charge with industry's production planning/ policy</p> <p>Officer working for the industry for at least 2-3 years</p>	
Street Vendors	<p>Operating food on the street</p> <p>Operating for at least 2 to 3 years</p>	
Consumers	<p>Male or female</p> <p>Aged 18 to 59 years old</p> <p>Malay, Chinese or Indian ethnicity</p> <p>Consume foods outside the home at least three times a week</p>	<p>On low-salt diet</p> <p>Renal failure, heart failure, hypertension</p> <p>Eat outside the home less than three times a week</p>

## 2.5 Procedure

Interview guides for the focus group discussions and in depth interviews have been developed (Appendix 1) and will be piloted with a minimum of five individuals who are not involved in the study but who belong to the target stakeholder groups (24). The interview guides will be refined following the pilot. All researchers involved in data collection will be given appropriate training before conducting focus group discussions and/or in-depth interviews.

Interviews will be conducted using the piloted interview guide, which consists of open-ended questions, allowing for a flexible approach that can be adapted depending on points raised and debate streams during the process. Interviews will be recorded using a digital voice recorder and researchers will also take notes during and after each interview or discussion to capture observations which may benefit the analysis.

Demographic and professional information will be collected. Interviews and discussions will take place during working hours in a comfortable and private room to help ensure open discussion. Interviews are expected to last 30-45 minutes, with focus group discussions lasting 60 minutes

## 2.6 Data Analysis

Interviews and focus group discussion will be transcribed verbatim and processed in QSR International NVivo 11, a qualitative analysis software program. Inductive thematic analysis will be performed on transcribed interviews and discussions.

Using open coding, two researchers will code the transcripts and develop a coding framework which will be discussed and agreed by the research team. This will ensure consistent coding patterns. Themes and subthemes developed will be analysed critically and discussed among all researchers. A sample of the stakeholders involved in the interviews and discussions will be invited to read the findings and provide feedback to further refine the analysis.

A sub-sample of five transcribed interviews and/or discussions will be used for independent analysis by a researcher not involved in the interviews or coding to ensure the accuracy of developed themes and subthemes.

## 2.7 Salt Reduction Strategy Development

The themes and subthemes revealed through our study will be combined with existing knowledge of successful salt reduction interventions to develop a strategy to reduce salt levels in the out of home sector in Malaysia. All researchers will be involved in this process. Workshops will be organised to present various aspects of the strategy to relevant stakeholders to gain their feedback and strengthen the strategy.

In order to support implementation of the strategy as policy, researchers will also conduct capacity-building activities, such as workshops or lectures, for chefs and others working in the out of home sector. The content of these activities will be designed to address the barriers raised during the study.

## 2.8 Project Timelines

Project timelines are illustrated in Table 3. The framework for the project was developed in March 2020, which informed development of the interview guides for focus group discussions and in-depth interviews. Ethics applications were submitted in June 2020, and participant recruitment will begin once ethical approval is obtained. It is anticipated that participant recruitment will begin from August 2020, ending February 2021, with focus group discussions and in-depth interviews taking place from September 2020. With the current COVID-19 pandemic, interviews may be conducted virtually initially, with face to face interviews being conducted in 2021. Where interviews are conducted in person in 2020, national guidelines on social distancing and use of face masks will be adhered to.

Thematic analysis will take place in January 2021, with strategy development taking place from March 2021. Engagement with policy makers following strategy development is anticipated to begin in August 2021.

**Table 3: Project timeline**

Activities	2020									2021										
	Ma y	Jun e	Jul y	Au g	Se pt	Oc t	No v	Di s	Ja n	Fe b	Ma r	Ap r	Ma y	Jun e	Jul y	Au g	Se pt	Oct	No v	
Stakeholder analysis, framework development, interview guide development	X	X	X																	
Study registration and obtaining ethical approval from relevant ethical committees in Malaysia and UK		X	X																	
Invite stakeholders to participate				X	X	X	X	X	X	X										
Conduct focus groups and semi-structured interviews					X	X	X	X	X	X										

with stakeholders																			
Thematic analysis of responses and development of a comprehensive strategy to reduce salt in the out of home sector										X	X	X	X	X					
High level meetings with policy makers and key food industry representatives. Conduct capacity building activities															X	X	X	X	
Dissemination of results																		X	X
Journal publications																		X	X

## 2.9 Data Management

The study will be run in accordance with Good Clinical Practice (GCP). Data will be kept in accordance with the Data Protection Act, 1998 (DPA). Physical materials such as consent forms and interview notes will be stored in locked cabinets at the research centre within UKM. Electronic data, including interview and discussion recordings and transcriptions will be stored in shared drives with a specific password access within UKM. Only appropriately trained research team members will have access to the data.

All participants will be assigned a coded number and pseudonym. No participant names or other identifying features will appear in any form of data reporting, with pseudonyms used to identify quotes or comments made by interviewees. The coding system will be stored digitally and manually at UKM and will only be able to be accessed by a member of the research team. Data will be held securely for 10 years, according to Universiti Kebangsaan Malaysia Medical Research Ethics Committee policy.

All participant-identifiable data linked to the participant via their unique ID will be kept separately from anonymised research data in a password-protected file. Electronic data will only be stored with participant ID in a password-protected file on secure UKM servers.

## 2.10 Patient and Public Involvement

This protocol was designed with input from the Ministry of Health, Malaysia.

## 2.11 Ethics and Dissemination

Ethical approval will be obtained from the Universiti Kebangsaan Malaysia Medical Research Ethics Committee, the Malaysian National Medical Research Ethics Committee and Queen Mary (University of London) Research Ethics Committee in the UK. There are no substantive ethical issues associated with the conduct of our research project.

Written informed consent will be obtained from all participants. Every participant has the right to withdraw from the study at any time and participation is solely on a voluntary basis.

Pseudonyms will be allocated in all interviews and transcriptions of data will be anonymized, to ensure confidentiality. Participants' identifiable information will only be used for the purposes of arranging interviews and obtaining signed consent. Demographic data will be aggregated among participants and compiled in tables. Records will be stored securely on a password protected computer and paper copies of the consent form will be stored separately in a locked cabinet, only accessible by the researchers.

Results will be presented orally and in report form and made available to Ministry of Health, Ministry of Education and Ministry of Trade staff to encourage adoption of strategy as policy.

The findings of this study will be disseminated through conference presentations and peer-reviewed publications, as well as via webinars, newsletters and press releases through the World Action on Salt and Health (WASH) network of more than 600 international experts (26).

## 3. DISCUSSION

Given that Malaysia has a salt reduction strategy in place, as part of a wider strategy to reduce the burden of non-communicable diseases (NCD) in the country, it is likely that our strategy will be adopted by the Ministry of Health, the Ministry of Education and the Ministry of Trade and implemented as policy (10, 13).

The key strength of our study is the potential to create a strategy that could be adapted by many countries worldwide. Food eaten outside the home is forming an increasing portion of daily diets in many countries, however, salt reduction strategies traditionally focus on processed packaged food, or awareness programmes, due to the availability of data on salt content printed on pack (9, 27). Data on the nutrition content of food served outside the home is lacking, particularly for street food vendors, and therefore interviews will reveal potential barriers and solutions to addressing this. In addition, as school children buy food products from school canteen operators, our findings will benefit and strengthen healthy eating and salt reduction work by both the Ministry of Education

1 and the Ministry of Health. Strengthening collaborative work is essential to ensure the food  
2 environment is healthy for children.  
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4 The sample size is large for a qualitative study, but the involvement of a wide range of  
5 stakeholders from several zones across Malaysia will ensure a strong and comprehensive  
6 strategy, addressing all potential barriers raised during interviews.  
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9 Findings from this study will contribute to the wider salt reduction strategy in Malaysia, and will  
10 inform global salt reduction efforts. It is anticipated that our findings will also inform and improve  
11 the School Health Program. We also anticipate that as a result of our study, the Ministry of Trade  
12 will support those manufacturers producing more healthy product portfolios.  
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## Authors' Contributions

FJH, SS, HAM and MB conceived the project and designed the study. MB wrote the first draft of the manuscript. SS, VM, HAM, ZAM, NSS and YCC designed the questionnaires. All authors contributed to the refinement of the study protocol and approved the final manuscript.

## Funding

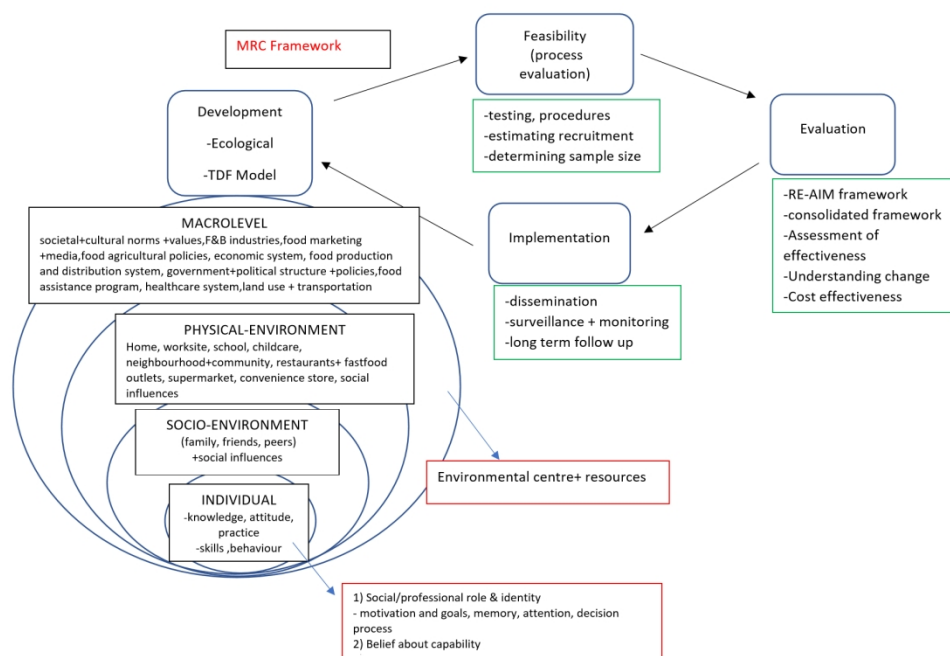
This work is supported as part of the Newton Fund Impact Scheme by the Medical Research Council on behalf of UK Research and Innovation in the UK and by the Malaysia Industry-Government Group for High Technology (MiGHT) (grant number: MR/V005847/1).

## Competing Interests

The authors declare they have no competing interests

## Ethics Approval

The study has been approved by the Research Ethics Committee, The National University of Malaysia (UKM PPI/111/8/JEP-2020-524) and the Medical Research and Ethics Committee, Ministry of Health Malaysia (NMRR-20-1387-55481 (IIR)). Ethics approval is pending from The Queen Mary Research Ethics Committee.





## Appendix 1

### INDEPTH INTERVIEW INFORMATION

<b>State</b>	
<b>Interview Number</b>	
<b>Stakeholder Organization/Sector</b>	
<b>Date</b>	
<b>Sociodemographic Information</b>	Age Gender Education qualification Position Years of service in the organization Nationality

Participants will be asked to suggest which actions need to be taken in terms of salt reduction to reduce the high burden of cardiovascular disease in Malaysia. In addition, they will be asked to comment on the pre-defined interventions.

Participants will be given background information about existing policy commitments nationally and regionally and relevant evidence of interventions. This will help inform the focus group.

### INTRODUCTION

Thank you for taking the time to join our focus group discussion/to be interviewed. The aim of this focus group/interview is to discuss salt intake and salt related actions/policy interventions in Malaysia. We want to get your opinions about different interventions to reduce salt consumption and how useful they might be.

We would also like to remind you that this discussion/interview is being audio- recorded.

**INDEPTH INTERVIEW TOPICS – GOVERNMENT/ NGO****1. Society and Culture**

- What do you think about salt consumption in Malaysia? Is it an issue?
- Why is salt intake high in Malaysia?
- What other dietary risk factors are you concerned about? Are you involved in policies to address these?
- Who is responsible for reducing how much salt the population eat?
- How best can we target industry/society to make salt reduction?

**2. Government/organization practice and structure**

- Has the ministry/ organization conducted/ implemented any strategy/ programme to reduce salt intake of the population?
- Was the strategy/ programme effective? Why?
- What are other actions need to be taken?—Is there any target/ goal? Any implementation plan? (e.g. food labelling, law enforcement)
- Should salt targets be mandatory?
- Would reducing salt intake of the population feasible?
- What are the opportunities related to reducing salt intakes and salt levels in foods?
- Who should take the lead ?
- Who should be involve in making decision?/ who will support change?
- How can sectors outside of health help facilitate salt reduction?
- What is the expected impact of the proposed action?
- How can progress be monitored and who should do this? Would an independent body be useful in this case?

**3. Motivation and Goals**

- Would salt reduction benefit the population and communities? How? (i.e. do they realize there are economic benefits, as well as immediate health benefits)
- What does the ministry/ organization gain from participating/taking action?
- Does the ministry/ organization intend to measure and sustain the commitment for long term?

**4. Barriers**

- What is required to help the population change their practices, and how can you support this?
- How will you counter food industry opposition to reformulation policies?
- Does the ministry/ organization have the knowledge/capacity/ skills to take action?
- What additional resources would be needed to put a comprehensive salt reduction policy in place?
- How do you address/manage negative feedbacks?
- Does the current pandemic (COVID-19) affect any implementation that you plan to do? If yes, what is your mitigation plan/strategy?
- How can salt reduction be prioritized alongside ongoing sugar reduction and obesity policies?

**5. Additional Information**

- Are there any other issue that you would like to highlight in relation to salt reduction that have not already been covered?

## INDEPTH INTERVIEW TOPICS – FOOD INDUSTRY

### 1. Society and Culture

- What do you think about salt consumption in Malaysia?
- Do you think any relationship excessive salt consumption and health of the population?
- What part do products such as yours play in how much salt people eat?
- What do you think about the consumer's acceptance towards reduced salt products?
- What do you think about salt reduction policy? Should it be voluntary or mandatory? Why?

### 2. Practices and Actions

- How many of your products are high in salt?
- Has the company make any effort related to reduce salt content of the products?
- What are other efforts to be taken?—Is there any target? Implementation plan?
- Should salt targets be mandatory?
- Would reducing salt level in the product is feasible?
- Do you already practiced salt labelling in your product?
- Would reducing salt levels in foods be low cost to do?
- What supports do you need to reduce salt level in your product or to include salt in the product label?
- Do you currently use salt substitutes in your products? Would you be willing to do so?
- Do you use Himalayan salt, rock salt or similar salts in the production of your products? If so, why?

### 3. Motivation and Goals

- What do the industry gain from participating/taking action?
- Does the industry intend to measure and sustain that commitment for long term?
- Do you anticipate this salt reduction strategy as part of corporate social responsibility?
- What are the opportunities related to reducing salt intakes and salt levels in foods?
- (For global companies) Are you aware of the salt reduction efforts made by your company in the UK and South Africa?

### 4. Barriers

- Is salt reduction a company priority? What would be required to make it a priority?
- Does the industry has the knowledge/capacity/ skills to take action?
- How do you address/manage negative feedback ?
- Any comments on the cost associated implementing the salt reduction policy?

### 5. Additional Information

- Are there any other issue that you would like to highlight in relation to salt reduction that have not already been covered?
- What is the impact of COVID-19 on your operation and sales? (Any products more or less popular during this pandemic?)

## INDEPTH INTERVIEW TOPICS- VENDORS (MEDIUM TO LARGE SCALES)

### 1. Society and Culture

- What do you think about salt consumption in Malaysia?
- Do you think any relationship between excessive salt consumption and health?
- What part do meals eaten outside the home, such as yours, play in how much salt people eat?
- What do you think about the consumer's acceptance towards reduced salt products/ foods/ dishes?
- What do you think about salt reduction policy? Should it be voluntary or mandatory? Why?

### 2. Behaviours, Practices and Actions

- How many of your dishes are high in salt?
- What is your signature dish/ product? Popular food among your customer?
- Do you use any flavour enhancers (chicken cubes, oyster sauce, tauco) in your cooking?
- Do you make any changes to make your food healthier?
- If yes, what is the customer's acceptance toward healthier food option that you prepared? If no or not yet, why?
- With respect to salt reduction, what action need to be taken?—Is there any target/ goal? Implementation plan?
- Do you think you have a role in reducing salt intake of the population?
- Are you aware of alternatives to increase the flavor of food without adding more salt and other flavour enhancers?
- Do you currently use salt substitutes in your outlets? Would you be willing to?
- Do you use Himalayan salt, rock salt or similar salts in the production of your products? If so, why?
- Would reducing salt level feasible?
- What is the expected impact of the proposed action?
- (for global companies) Are you aware of the salt reduction efforts made by your company in the UK and South Africa?

### 3. Motivation and Goals

- What supports do you need to reduce salt level in your product or to include salt in the product label?
- What do your company gain from participating/taking action?
- Do your company intend to measure and sustain that commitment for long term?
- Do you anticipate this salt reduction strategy as part of social responsibility?

### 4. Barriers

- Is salt reduction a company priority? If not, what is needed to make it a priority?
- Do the company has the knowledge/capacity/ skills to take action?
- How do you address/manage negative feedback ?
- Is there any extra cost associated with implementing the salt reduction policy
- what is the impact of COVID-19 on your cost and sale?

### 5. Additional Information

- Are they any other issue that you would like to highlight in relation to salt reduction that have not already been covered?
- What is the impact of COVID-19 on your operation and sales?

**SOCIODEMOGRAPHIC QUESTIONNAIRE FOR CONSUMERS (ADAPTED FROM MANS/NHMS 2014)**

Please write or circle your answer

1.	Name Of Respondent	
2.	When is your date of birth ?	
3.	What is your identification card number ?	
4.	What is your passport number?	
5.	What other identification card number you have ? Army, police, birth certificate, others ?	
6.	How old are you ?	Completed years
7.	Landline telephone or mobile which can be contacted..	
8.	What is your Ethnicity?	Melayu Cina India Iban Kadazan Dusun Bidayuh Melanau Bajau Murut Bumiputra Sabah( lain) Bumiputra Sarawak(lain) Orang Asli (Semenanjung ) Lain- Lain
9.	What is your marital status?	Never married Married Separated Divorcee Widow/er Cohabiting

1		Others
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3		
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6		
7		
8	10	What is your highest education level?
9		No schooling
10		Did not complete primary school
11		Completed standard 6
12		Completed Form 3
13		Completed form 5
14		Completed form 6, certificate/diploma
15		Completed a bachelors degree
16		Completed a master degree
17		Completed a doctoral qualification
18		Other
19	11	Are you?
20		Government employee
21		Semi government employee
22		Private employee
23		Self employed
24		Unpaid worker
25		Not working
26		Retiree
27		Student
28	12	What is your average personal gross monthly income?
29		From salary
30		Other household income
31		Others?
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**QUESTIONNAIRE ON EATING OUT**

54	<b>1</b>	<b>In a typical week, how many days do you take breakfast?</b>	<b>Where do you normally get the food from?</b>	<b>Where do you usually eat?</b>	<b>With whom do you normally take breakfast?</b>
55		<ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> </ul>	<ul style="list-style-type: none"> <li>• At home</li> <li>• Buy from cafeteria</li> <li>• Buy from</li> </ul>	<ul style="list-style-type: none"> <li>• At home</li> <li>• At office</li> <li>• At cafeteria</li> </ul>	<ul style="list-style-type: none"> <li>• Alone</li> <li>• With family</li> </ul>

1	<ul style="list-style-type: none"> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> </ul>	<p>restaurant</p> <ul style="list-style-type: none"> <li>• Buy from stall</li> <li>• Buy from fast food outlet</li> <li>• Other</li> </ul>	<ul style="list-style-type: none"> <li>• At restaurant</li> <li>• At hotel</li> <li>• At stall</li> <li>• At fast food outlets</li> <li>• Others</li> </ul>	<ul style="list-style-type: none"> <li>• With friend</li> <li>• Other</li> </ul>
2	<p><b>In a typical week, how many days do you eat lunch?</b></p> <ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> </ul>	<p><b>Where do you normally get the food from?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• Buy from cafeteria</li> <li>• Buy from restaurant</li> <li>• Buy from stall</li> <li>• Buy from fast food outlet</li> <li>• Other</li> </ul>	<p><b>Where do you usually eat?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• At office</li> <li>• At cafeteria</li> <li>• At restaurant</li> <li>• At hotel</li> <li>• At stall</li> <li>• At fast food outlets</li> <li>• Others</li> </ul>	<p><b>With whom do you normally take lunch?</b></p> <ul style="list-style-type: none"> <li>• Alone</li> <li>• With family</li> <li>• With friend</li> <li>• Other</li> </ul>
3.	<p><b>In a typical week, how many days do you take dinner?</b></p> <ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> </ul>	<p><b>Where do you normally get the food from?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• Buy from cafeteria</li> <li>• Buy from restaurant</li> <li>• Buy from stall</li> <li>• Buy from fast food outlet</li> <li>• Other</li> </ul>	<p><b>Where do you usually eat?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• At office</li> <li>• At cafeteria</li> <li>• At restaurant</li> <li>• At hotel</li> <li>• At stall</li> <li>• At fast food outlets</li> <li>• Others</li> </ul>	<p><b>With whom do you normally take dinner?</b></p> <ul style="list-style-type: none"> <li>• Alone</li> <li>• With family</li> <li>• With friend</li> <li>• Other</li> </ul>

## FOCUS GROUP INTERVIEW TOPICS – CONSUMERS

### 1. Society and Culture

- What do you think about salt consumption in Malaysia?
- In your opinion, generally, how much salt is used in your cooking?
- In your understanding, what are the major food sources that are high in salt?
- Do you use any flavour enhancers (chicken cubes, oyster sauce, taucu) in your cooking?
- Are you aware of alternatives to increase the flavour of food without adding more salt and other flavour enhancers?
- Do you think any relationship between excessive salt consumption and health?
- How important do you think reducing salt intake in your diet is?
- What do you think about reduced salt products/ foods/ dishes?
- Why are you eating out?

### 2. Behaviours And Actions

- Have you make an attempt to reduce your salt intake, ie. the amount of salt you add in cooking? Or salty foods or snacks that you purchased? Or during eating out? If yes, please state the action. If no, why?
- When buying packaged food items, how often do you look for the nutrition information? Do you specifically look for the salt content? Do you think it would be helpful to have information about the salt content on food packages?
- Do you currently use salt substitutes in your cooking/ dishes ? Would you be willing to do so?
- Do you use Himalayan salt, rock salt or similar salts in the production of your products? If so, why?
- What type of programs/ policies should be made by the government for salt reduction among the population? Media role? Food industry role? Restaurants/ hotels/ street vendors role? (eg. Labelling sodium or salt content in food products, consumer awareness, development of symbols to identify low salt products, agreements with food industry to lower the salt content of food products, and regulations)

### 3. Motivation and Goals

- What action would encourage you to reduce the amount of salt you add in cooking? Or buying or eating out? (e.g. Media's role, doctors advice, traffic light labelling system?)
- What action would encourage you to cutting habit of using salt at the table?
- need to reduce your salt intake (through home prepared foods, processed foods and meals outside home) ?
- What are other help or support do you need to reduce your salt intake (through home prepared foods, processed foods and meals outside home)?

### 4. Barriers

- What would make it difficult for you to use less salt in cooking? (Family members, children's preferences)
- What would make it difficult for you to cutting habit of using salt/ sauces at the table?
- What would make it difficult for you to buy less salty foods? (non availability of low salt items, high price, preferences)
- What would make it difficult for you to choose less salt when eating out? (Family members' preferences)



## 5. Additional Information

- Are there any other issues that you would like to highlight in relation to salt reduction that have not already been covered?
- Is there any effect of COVID-19 pandemic on your eating habit?
- Does COVID-19 pandemic inhibit to enjoy eating out? Do you order food delivery? How often? What type?
- What types of food do you stock up during COVID-19 pandemic?

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# BMJ Open

## Developing a policy to reduce the salt content of food consumed outside the home in Malaysia: protocol of a qualitative study

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2020-044628.R1
Article Type:	Protocol
Date Submitted by the Author:	16-Apr-2021
Complete List of Authors:	<p>Brown, Mhairi; Queen Mary University of London Barts and The London School of Medicine and Dentistry, Wolfson Institute of Preventive Medicine</p> <p>Shahar, Suzana; Universiti Kebangsaan Malaysia, Faculty of Health Sciences</p> <p>You, Yee; Universiti Kebangsaan Malaysia, Faculty of Health Sciences</p> <p>Michael, Viola; Ministry of Health, Malaysia, Disease Control Division</p> <p>Majid, Hazreen Abdul; University Malaya, Centre for Population Health (CePH) and Department of Social and Preventive Medicine</p> <p>Manaf, Zahara; Universiti Kebangsaan Malaysia, Faculty of Health Sciences</p> <p>Haron, Hasnah; Universiti Kebangsaan Malaysia, Faculty of Health Sciences</p> <p>Sukiman, Noor Shahida; Universiti Kebangsaan Malaysia, Faculty of Health Sciences</p> <p>Chia, Yook Chin; Sunway University, Department of Medical Science; University of Malaya, Department of Primary Care Medicine</p> <p>He, Feng; Queen Mary University of London, Wolfson Institute of Preventive Medicine</p> <p>MacGregor, Graham; Queen Mary University of London, Wolfson Institute of Preventive Medicine</p>
<b>Primary Subject Heading</b>:	Qualitative research
Secondary Subject Heading:	Public health
Keywords:	PUBLIC HEALTH, QUALITATIVE RESEARCH, PREVENTIVE MEDICINE, NUTRITION & DIETETICS

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# Developing a policy to reduce the salt content of food consumed outside the home in Malaysia: protocol of a qualitative study

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Keywords: salt, salt reduction, salt qualitative analysis, food out of home

Word count: 3,655 including tables, abstract and article summary

## ABSTRACT

**Introduction** Current salt intake in Malaysia is high. The existing national salt reduction policy has faced slow progress and does not yet include measures to address the out of home sector. Dishes consumed in the out of home sector are a known leading contributor to daily salt intake. This study aims to develop a salt reduction strategy, tailored to the out of home sector in Malaysia.

**Methods and analysis** This study is a qualitative analysis of stakeholder views towards salt reduction. Participants will be recruited from five zones of Malaysia (Western, Northern, Eastern and Southern regions and East Malaysia), including policy makers, non-governmental organisations (NGO), food industries, school canteen operators, street food vendors and consumers, to participate in focus group discussion or in-depth interviews. Interviews will be transcribed and analysed using thematic analysis. Barriers will be identified and used to develop a tailored salt reduction strategy.

**Ethics and dissemination** Ethical approval has been obtained from the Universiti Kebangsaan Malaysia Medical Research Ethics Committee (UKM PPI/1118/JEP-2020-524), the Malaysian National Medical Research Ethics Committee (NMRR-20-1387-55481 (IIR)) and Queen Mary (University of London) Research Ethics Committee (QMERC2020/37). Results will be presented orally and in report form and made available to the relevant ministries e.g. Ministry of Health, Ministry of Education and Ministry of Trade to encourage adoption of strategy as policy. The findings of this study will be disseminated through conference presentations, peer-reviewed publications and webinars.

## Article Summary

### Article focus

- This article describes the protocol of a qualitative study to determine barriers to reformulation in food consumed outside the home in Malaysia

### Key messages

- Excess salt consumption is a leading risk factor for raised blood pressure which increases the risk of cardiovascular disease (CVD). While several countries have salt reduction policies in place, no country has yet effectively lowered salt in food consumed outside the home
- Our study aims to determine potential barriers to salt reduction in this sector, with the goal of developing a tailored salt reduction strategy
- The study will involve key stakeholders across Malaysia, including policy makers, NGOs, food industry representatives and consumers

### Strengths and limitations of this study

- Our study is novel in that no country in Asia has yet developed an effective and comprehensive salt reduction strategy for food consumed outside the home, and our methodology will enable the collection of data that will enable the development of such a policy
- Our recruitment strategy will ensure that we will gain views from a wide range of stakeholders across Malaysia including Government, consumers and food vendors and manufacturers
- The use of qualitative methodology with a well-established framework will allow us to address all concerns of stakeholders when developing the salt reduction strategy, ensuring support from all
- The study will be conducted in Malaysia only, however, the findings could potentially be adapted by many other countries in the region to reduce salt in food consumed outside the home

## 1. INTRODUCTION

Excess salt consumption is a leading risk factor for raised blood pressure (1, 2), which in turn increases the risk of cardiovascular disease (CVD), the major cause of death and disability globally (3). Excess salt intake is also linked to stomach cancer, osteoporosis and kidney disease

1 (4). The Global Burden of Disease Study estimates that suboptimal diets led to 11 million deaths in  
2 2017, with excess salt intake alone responsible for 3 million deaths (5).  
3

4 In 2013, World Health Organization (WHO) member states pledged to work towards a 30%  
5 relative reduction in population salt intake by 2025 (6). The WHO have long highlighted salt  
6 reduction as a priority for population health, due to the impact and cost-effectiveness of the  
7 intervention, and recommended salt reduction as a 'best buy' intervention (7). The UK's salt  
8 reduction policy is often cited as a leading example, setting incrementally lower salt content  
9 targets for the food industry with independent monitoring, leading to a 15% reduction in population  
10 salt intake between 2003 and 2011 which was accompanied by a fall in average blood pressure  
11 and cardiovascular disease mortality (8). Around 96 countries now have some form of a salt  
12 reduction policy in place, following the lead of the UK (9). However global dietary salt intake  
13 remains much higher than the WHO recommended level of less than 5g per day (10).  
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23 In Malaysia, salt intake is also high (7.9g/d) and hypertension is prevalent, particularly in adults  
24 from rural areas (11, 12). Indigenous ethnic groups are less likely to be aware of hypertension or  
25 to be treated, and those earning less than MYR 1,000 have a forecasted higher level of 10-year  
26 CVD risk than those on higher incomes (12, 13). Therefore salt reduction in Malaysia would  
27 benefit the entire community, particularly the more socially-deprived. In 2015, the Malaysian  
28 Ministry of Health developed the Salt Reduction Strategy to Prevent and Control NCD for Malaysia  
29 (2015–2020), as part of their National Strategic Plan for Non-Communicable Diseases (2016–  
30 2025), with the aim of achieving a 15% reduction in salt intake by 2020 (14). The salt reduction  
31 strategy includes measures to reformulate high salt products and increase awareness in the  
32 population of the impact salt has on health. However, an interim analysis found slow progress, and  
33 six recommendations were made to strengthen the strategy, which included a recommendation to  
34 address salt levels in the out-of-home sector, which is defined as anywhere food is consumed  
35 outside of the home, including but not limited to restaurants, street food vendors and hawkers,  
36 cafeterias, school canteens and hotels (15).  
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48 Around three quarters (64.1%) of adults eat outside the home at least once a day in Malaysia (16).  
49 A baseline analysis found that out-of-home dishes are a leading contributor to daily salt intake,  
50 with dishes such as kolok mee, curry noodles and vegetables with soy/oyster sauce identified in  
51 the top five food sources (11). Foods sold in the out of home sectors are often seasoned by  
52 consumers with a variety of sauces and condiments with high salt content but approximately half  
53 of these sauces and condiments do not have salt content printed on nutrition labels, making it  
54 difficult for consumers to evaluate how much salt they are adding to their food (17, 18). Instant  
55 noodles, a popular food choice among the younger population, have a mean salt content of  
56  $4.3 \pm 1.5$  g per 100g which is nearly four times higher than the salt content of food classified in  
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1 Malaysia as a high salt content (>1.2 g salt per 100 g) (19). Evidence also shows that school  
2 canteen food and home cooked meals are a source of salt in the diets of children and adolescents  
3 (20). The main barriers for healthy eating at school identified by adolescents include the lack of  
4 healthy food options, the availability of unhealthy foods and issues around preferences and  
5 affordability (21). Furthermore, poor knowledge of the impact of salt on health and a lack of  
6 individual salt reduction practices contribute to high salt intake, even among health care staff in  
7 Malaysia (22).  
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14 The overall aim of this study is to develop a salt reduction strategy for the out of home sector in  
15 Malaysia. Our objectives are:

- 16 1. Investigate the views of stakeholders across Malaysia towards salt reduction, to identify  
17 potential or perceived barriers.
- 18 2. Develop a strategy to reduce salt levels in out of home food, incorporating all themes from  
19 stakeholder discussions, and present to government departments.
- 20 3. Conduct capacity building activities, including workshops, for chefs to increase awareness  
21 of salt reduction and methods.  
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## 30 **2. METHODS AND ANALYSIS**

### 31 **2.1 Overall Study Design**

32 A qualitative study will be conducted, using in-depth interviews and focus-group discussions to  
33 determine the views of stakeholders across Malaysia towards salt reduction, with an emphasis on  
34 the out of home sector. This design will enable participants to describe their views on potential  
35 perceived or actual barriers, allowing researchers to develop a tailored strategy and increasing  
36 likelihood of its adoption as policy by key decision makers within the Ministry of Health, Ministry of  
37 Education and Ministry of Trade.  
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45 Qualitative research in this case is essential. While the methods of reducing salt in the population  
46 are well known, reducing salt in the out of home sector is a relatively new approach, without an  
47 existing successful model to replicate or adapt.  
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51 The study framework is illustrated in Figure 1 and will utilise a social ecological model and the UK  
52 Medical Research Council framework, with adaptations from the Theoretical Domains Framework,  
53 creating a comprehensive framework that will capture a range of information required to develop a  
54 salt reduction strategy (23-25).  
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59 **Figure 1: Study model developed by combining a social ecological model with adaptations from the UK Medical Research  
60 Council (MRC) framework and the Theoretical Domains Framework (TDF)**

## 2.2 Study Setting

This study will be conducted across Malaysia, with participants recruited from five zones of the country to avoid a centralised and biased view. The target zones are:

- Western – Kuala Lumpur, Selangor, Perak
- Southern – Johor, Melaka, Sembilan
- Northern – Penang, Perlis, Kedah
- Eastern – Pahang, Terengganu, Kelantan
- East Malaysia - Sabah, Sarawak

## 2.3 Participants

For this study, the sample was purposively selected and the sample size was determined based on the experience of similar studies, particularly a study in India (26). As this is a qualitative study, in-depth interviews and focus group discussions will continue until saturation of themes is achieved (27). We aim to recruit 285 participants to ensure all necessary stakeholders are represented.

We will engage numerous stakeholders across Malaysia, including policy makers from the Ministry of Health, Ministry of Education and Ministry of Trade; NGOs; catering operators including the Indian Muslim Restaurants Association, school canteen operators and workplace cafeteria caterers; food industry representatives including soy sauce manufacturers and global food companies; street vendors and consumers (Table 1).

**Table 1: Study sampling frame. FGD = Focus Group Discussion, IDI = In-depth Interview**

Group	Western	Southern	Northern	Eastern	East Malaysia	Sample Size	Data Collection Method
<b>Government, policy and NGO</b>	10	-	-	-	-	10	IDI
<b>Caterers</b>	10	10	10	10	10	50	IDI
<b>Food Industry</b>	5	5	5	5	5	25	IDI
<b>Street Vendors</b>	5	5	5	5	5	25	FGD
<b>Consumers</b>	35	35	35	35	35	175	FGD
<b>Total</b>	65	55	55	55	55	285	



## 2.4 Recruitment

Stakeholders will be recruited via email invitations, identified initially through existing contacts and networks and then moving to snowball recruitment.

Interested stakeholders will be screened for eligibility using inclusion and exclusion criteria and invited for an initial telephone meeting, where they will be given an overview of the study. Eligible participants will receive a written invitation to a focus group discussion or in-depth interview as appropriate, with an information sheet and a consent form. Forms will be made available in Malay and English. Only those participants who have signed a consent form will be allowed to participate in interviews or focus group discussions.

The inclusion and exclusion criteria are as described in Table 2.

**Table 2: Inclusion and exclusion criteria**

Stakeholder Group	Inclusion Criteria	Exclusion Criteria
Government, policy and NGO representatives	<p>Organisation with specific role in salt reduction of the population</p> <p>Officer in charge with salt reduction/ food based programme/ policy</p> <p>Officer working for the organization for at least 2-3 years</p>	
Food Industry	<p>Manufacturing foods identified as high salt sources</p> <p>Officer in charge with industry's production planning/ policy</p> <p>Officer working for the industry for at least 2-3 years</p> <p>Include CEO/policy team plus nutrition teams to get a full view of the support for salt reduction within the organization, as well as input from the key decision makers</p>	
Catering operators	<p>Indian Muslim Restaurants Association, Chef Association, franchised food vendors, wedding caterers and/or school canteen operators</p> <p>Operating food outlets at medium to large scale</p> <p>Officer in charge with industry's production planning/ policy</p>	

	Officer working for the industry for at least 2-3 years	
Street Vendors	Operating food on the street Operating for at least 2 to 3 years	
Consumers	Male or female Aged 18 to 59 years old Malay, Chinese or Indian ethnicity Consume foods outside the home at least three times a week	On low-salt diet Renal failure, heart failure, hypertension Eat outside the home less than three times a week

For most stakeholder groups, we will aim to recruit participants who have been in post for 2-3 years to ensure they have the knowledge and experience to have an in-depth discussion or participate in a focus group discussion. However, we will assess this on a case-by-case basis.

## 2.5 Procedure

Interview guides for the focus group discussions and in depth interviews have been developed (Appendix 1) and will be piloted with a minimum of five individuals who are not involved in the study but who belong to the target stakeholder groups (26). The pilot will take place in the Selangor (central) region where the majority of researchers involved are based. The interview guides will be refined following the pilot. All researchers involved in data collection will be given appropriate training before conducting focus group discussions and/or in-depth interviews.

Interviews will be conducted using the piloted interview guide, which consists of open-ended questions, allowing for a flexible approach that can be adapted depending on points raised and debate streams during the process. Interviews will be recorded using a digital voice recorder and researchers will also take notes during and after each interview or discussion to capture observations which may benefit the analysis.

Demographic and professional information will be collected. Interviews and discussions will take place during working hours in a comfortable and private room to help ensure open discussion. Interviews are expected to last 30-45 minutes, with focus group discussions lasting 60 minutes.

Data collection has started, but due to COVID-19 restrictions a hybrid data collection has been adopted. The majority of the interviews with the Government departments and NGOs will be conducted online. Sessions with food industry representatives and consumers will be conducted face-to face depending on approval by the local authorities.

## 2.6 Data Analysis

Interviews and focus group discussion will be transcribed verbatim and processed in QSR International NVivo 11, a qualitative analysis software program. Inductive thematic analysis will be performed on transcribed interviews and discussions.

Using open coding, two researchers will code the transcripts and develop a coding framework which will be discussed and agreed by the research team. This will ensure consistent coding patterns. Themes and subthemes developed will be analysed critically and discussed among all researchers. A sample of the stakeholders involved in the interviews and discussions will be invited to read the findings and provide feedback to further refine the analysis.

A sub-sample of five transcribed interviews and/or discussions will be used for independent analysis by a researcher not involved in the interviews or coding to ensure the accuracy of developed themes and subthemes. We will randomly select 2-3 representatives from each stakeholder group for this purpose.

## 2.7 Salt Reduction Strategy Development

The themes and subthemes revealed through our study will be combined with existing knowledge of successful salt reduction interventions to develop a strategy to reduce salt levels in the out of home sector in Malaysia. All researchers will be involved in this process. Workshops will be organised to present various aspects of the strategy to relevant stakeholders to gain their feedback and strengthen the strategy.

In order to support implementation of the strategy as policy, researchers will also conduct capacity-building and knowledge-transfer activities, such as seminars, lectures and practical workshops. The content of these activities will be designed to address the barriers raised during the study. Representatives from each of the stakeholder groups will be invited again to the capacity building activities.

## 2.8 Project Timelines

Project timelines are illustrated in Table 3. The framework for the project was developed in March 2020, which informed development of the interview guides for focus group discussions and in-depth interviews. Ethics applications were submitted in June 2020, and participant recruitment began once ethical approval was obtained. It is anticipated that participant recruitment will begin from August 2020, ending February 2021, with focus group discussions and in-depth interviews taking place from September 2020. With the current COVID-19 pandemic, interviews may be conducted virtually initially, with face to face interviews being conducted in 2021. Where interviews are conducted in person in 2020, national guidelines on social distancing and use of face masks will be adhered to.

Thematic analysis will take place in January 2021, with strategy development taking place from March 2021. Engagement with policy makers following strategy development is anticipated to begin in August 2021.

**Table 3: Project timeline**

Activities	2020									2021									
	Ma y	Jun e	Jul y	Au g	Se pt	Oct	No v	Di s	Ja n	Fe b	Ma r	Ap r	Ma y	Jun e	Jul y	Au g	Se pt	Oct	No v
Stakeholder analysis, framework development, interview guide development	X	X	X																
Study registration and obtaining ethical approval from relevant ethical committees in Malaysia and UK		X	X																
Invite stakeholders to participate				X	X	X	X	X	X	X									
Conduct focus groups and semi-structured interviews with stakeholders					X	X	X	X	X	X									
Thematic analysis of responses and development of a comprehensive strategy to reduce salt in the out of home sector											X	X	X	X	X				
High level meetings with policy makers and key food industry representatives																X	X	X	X

1	es. Conduct																		
2	capacity																		
3	building																		
4	activities																		
5	Disseminatio																	X	X
6	n of results																		
7	Journal																	X	X
8	publications																		
9																			

## 2.9 Data Management

The study will be run in accordance with Good Clinical Practice (GCP). Data will be kept in accordance with the Data Protection Act, 1998 (DPA). Physical materials such as consent forms and interview notes will be stored in locked cabinets at the research centre within UKM. Electronic data, including interview and discussion recordings and transcriptions will be stored in shared drives with a specific password access within UKM. Only appropriately trained research team members will have access to the data.

All participants will be assigned a coded number and pseudonym. No participant names or other identifying features will appear in any form of data reporting, with pseudonyms used to identify quotes or comments made by interviewees. The coding system will be stored digitally and manually at UKM and will only be able to be accessed by a member of the research team. Data will be held securely for 10 years, according to Universiti Kebangsaan Malaysia Medical Research Ethics Committee policy.

All participant-identifiable data linked to the participant via their unique ID will be kept separately from anonymised research data in a password-protected file. Electronic data will only be stored with participant ID in a password-protected file on secure UKM servers.

## 2.10 Patient and Public Involvement

While developing the funding application for this project, we approached the Ministry of Health Malaysia to present our plans and gain their feedback to strengthen our application. Their experience of overseeing salt reduction in Malaysia was beneficial to help us define the food industry representatives and other stakeholders crucial to involve in this project. We also gained their approval to be involved in interviews and dissemination of the results, as they will facilitate dissemination to other Government departments and their network of food industry representatives.

## 2.11 Ethics and Dissemination

Ethical approval has been obtained from the Universiti Kebangsaan Malaysia Medical Research Ethics Committee (reference UKM PPI/111/8/JEP-2020-524), the Malaysian National Medical

1 Research Ethics Committee (reference NMRR-20-1387-55481 (IIR)) and Queen Mary (University  
2 of London) Research Ethics Committee (reference QMERC2020/37). There are no substantive  
3 ethical issues associated with the conduct of our research project.  
4

5  
6 Written informed consent will be obtained from all participants. Every participant has the right to  
7 withdraw from the study at any time and participation is solely on a voluntary basis.  
8

9  
10 Pseudonyms will be allocated in all interviews and transcriptions of data will be anonymized, to  
11 ensure confidentiality. Participants' identifiable information will only be used for the purposes of  
12 arranging interviews and obtaining signed consent. Demographic data will be aggregated among  
13 participants and compiled in tables. Records will be stored securely on a password protected  
14 computer and paper copies of the consent form will be stored separately in a locked cabinet, only  
15 accessible by the researchers.  
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22 Results will be presented orally and in report form and made available to Ministry of Health,  
23 Ministry of Education and Ministry of Trade staff to encourage adoption of strategy as policy.  
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26 The findings of this study will be disseminated through conference presentations and peer-  
27 reviewed publications, as well as via webinars, newsletters and press releases through the World  
28 Action on Salt and Health (WASH) network of more than 600 international experts (28).  
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### 31 **3. DISCUSSION**

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34 Given that Malaysia has a salt reduction strategy in place, as part of a wider strategy to reduce the  
35 burden of non-communicable diseases (NCD) in the country, it is likely that our strategy will be  
36 adopted by the Ministry of Health, the Ministry of Education and the Ministry of Trade and  
37 implemented as policy (11, 14).  
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42 The key strength of our study is the potential to create a strategy that could be adapted by many  
43 countries worldwide. Food eaten outside the home is forming an increasing portion of daily diets in  
44 many countries, however, salt reduction strategies traditionally focus on processed packaged  
45 food, or awareness programmes, due to the availability of data on salt content printed on pack (10,  
46 29). Data on the nutrition content of food served outside the home is lacking, particularly for street  
47 food vendors, and therefore interviews will reveal potential barriers and solutions to addressing  
48 this. In addition, as school children buy food products from school canteen operators, our findings  
49 will benefit and strengthen healthy eating and salt reduction work by both the Ministry of Education  
50 and the Ministry of Health. Strengthening collaborative work is essential to ensure the food  
51 environment is healthy for children.  
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1 The sample size is large for a qualitative study, but the involvement of a wide range of  
2 stakeholders from several zones across Malaysia will ensure a strong and comprehensive  
3 strategy, addressing all potential barriers raised during interviews.  
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6 Findings from this study will contribute to the wider salt reduction strategy in Malaysia, and will  
7 inform global salt reduction efforts. It is anticipated that our findings will also inform and improve  
8 the School Health Program. We also anticipate that as a result of our study, the Ministry of Trade  
9 will support those manufacturers producing more healthy product portfolios.  
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## Authors' Contributions

FJH, SS, HAM, MKB and GAM conceived the project and designed the study. MB wrote the first draft of the manuscript. SS, YXY, VM, HAM, ZAM, NSS, YCC and HH designed the questionnaires. All authors contributed to the refinement of the study protocol and approved the final manuscript.

## Funding

This work is supported as part of the Newton Fund Impact Scheme by the Medical Research Council on behalf of UK Research and Innovation in the UK and by the Malaysia Industry-Government Group for High Technology (MiGHT) (grant number: MR/V005847/1).

## Competing Interests

The authors declare they have no competing interests

## Ethics Approval

Ethical approval has been obtained from will be obtained from the Universiti Kebangsaan Malaysia Medical Research Ethics Committee (reference UKM PPI/111/8/JEP-2020-524), the Malaysian National Medical Research Ethics Committee (reference NMRR-20-1387-55481 (IIR)) and Queen Mary (University of London) Research Ethics Committee (reference QMERC2020/37).



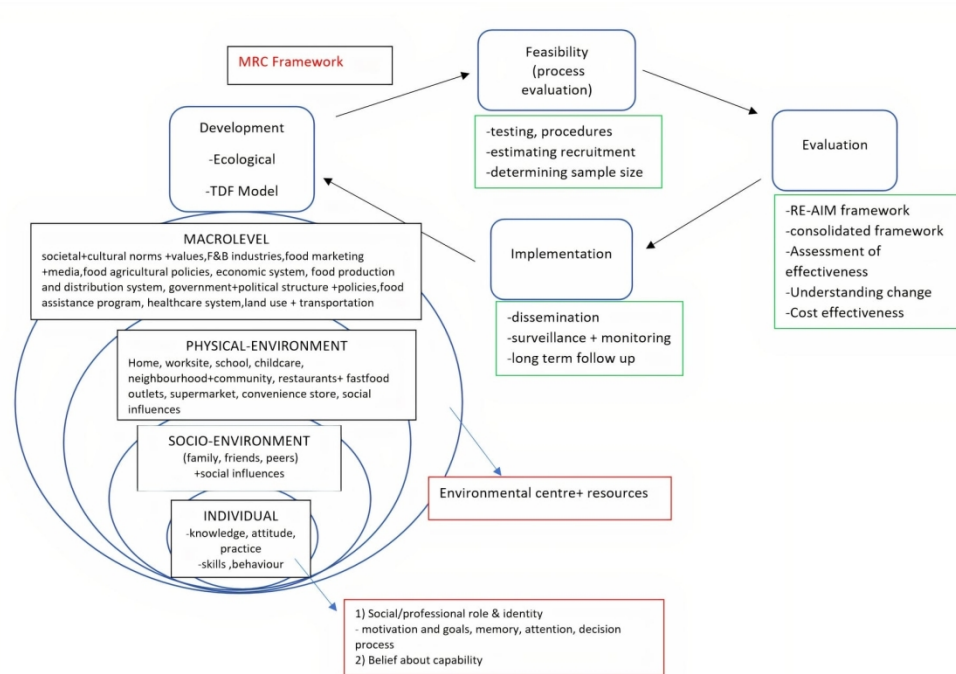


Figure 1: Study model developed by combining a social ecological model with adaptations from the UK Medical Research Council (MRC) framework and the Theoretical Domains Framework (TDF)

668x468mm (72 x 72 DPI)

## Appendix 1

### INDEPTH INTERVIEW INFORMATION

<b>State</b>	
<b>Interview Number</b>	
<b>Stakeholder Organization/Sector</b>	
<b>Date</b>	
<b>Sociodemographic Information</b>	Age Gender Education qualification Position Years of service in the organization Nationality

Participants will be asked to suggest which actions need to be taken in terms of salt reduction to reduce the high burden of cardiovascular disease in Malaysia. In addition, they will be asked to comment on the pre-defined interventions.

Participants will be given background information about existing policy commitments nationally and regionally and relevant evidence of interventions. This will help inform the focus group.

### INTRODUCTION

Thank you for taking the time to join our focus group discussion/to be interviewed. The aim of this focus group/interview is to discuss salt intake and salt related actions/policy interventions in Malaysia. We want to get your opinions about different interventions to reduce salt consumption and how useful they might be.

We would also like to remind you that this discussion/interview is being audio- recorded.

## INDEPTH INTERVIEW TOPICS – GOVERNMENT/ NGO

### 1. Society and Culture

- What do you think about salt consumption in Malaysia? Is it an issue?
- Why is salt intake high in Malaysia?
- What other dietary risk factors are you concerned about? Are you involved in policies to address these?
- Who is responsible for reducing how much salt the population eat?
- How best can we target industry/society to make salt reduction?

### 2. Government/organization practice and structure

- Has the ministry/ organization conducted/ implemented any strategy/ programme to reduce salt intake of the population?
- Was the strategy/ programme effective? Why?
- What are other actions need to be taken?—Is there any target/ goal? Any implementation plan? (e.g. food labelling, law enforcement)
- Should salt targets be mandatory?
- Would reducing salt intake of the population feasible?
- What are the opportunities related to reducing salt intakes and salt levels in foods?
- Who should take the lead ?
- Who should be involve in making decision / who will support change?
- How can sectors outside of health help facilitate salt reduction? **Which departments should be involved in salt reduction outside of the Ministry of Health?**
- What is the expected impact of the proposed action?
- How can progress be monitored and who should do this? Would an independent body be useful in this case?

### 3. Motivation and Goals

- Would salt reduction benefit the population and communities? How? (i.e. do they realize there are economic benefits, as well as immediate health benefits)
- What does the ministry/ organization gain from participating/taking action?
- Does the ministry/ organization intend to measure and sustain the commitment for long term?

### 4. Barriers

- What is required to help the population change their practices, and how can you support this?
- How will you counter food industry opposition to reformulation policies?
- Does the ministry/ organization have the knowledge/capacity/ skills to take action?
- What additional resources would be needed to put a comprehensive salt reduction policy in place?
- How do you address/manage negative feedback?
- Does the current pandemic (COVID-19) affect any implementation that you plan to do? If yes, what is your mitigation plan/strategy?
- How can salt reduction be prioritized alongside ongoing sugar reduction and obesity policies?
- **Does the ministry/department recognize the significance of salt reduction and the need to participate in the process?**
- **How should salt reduction be monitored and evaluated? Who should conduct this evaluation?**

### 5. Additional Information

- Are there any other issue that you would like to highlight in relation to salt reduction that have not already been covered?

## INDEPTH INTERVIEW TOPICS – FOOD INDUSTRY

### 1. Society and Culture

- What do you think about salt consumption in Malaysia?
- Do you think any relationship excessive salt consumption and health of the population?
- What part do products such as yours play in how much salt people eat?
- What do you think about the consumer's acceptance towards reduced salt products?
- What do you think about salt reduction policy? Should it be voluntary or mandatory? Why?

### 2. Practices and Actions

- How many of your products are high in salt?
- Has the company make any effort related to reduce salt content of the products?
- What are other efforts to be taken?—Is there any target? Implementation plan?
- Should salt targets be mandatory?
- Would reducing salt level in the product is feasible?
- Do you already practiced salt labelling in your product?
- Would reducing salt levels in foods be low cost to do?
- What supports do you need to reduce salt level in your product or to include salt in the product label?
- Do you currently use salt substitutes in your products? Would you be willing to do so?
- Do you use Himalayan salt, rock salt or similar salts in the production of your products? If so, why?

### 3. Motivation and Goals

- What do the industry gain from participating/taking action?
- Does the industry intend to measure and sustain that commitment for long term?
- Do you anticipate this salt reduction strategy as part of corporate social responsibility?
- What are the opportunities related to reducing salt intakes and salt levels in foods?
- (For global companies) Are you aware of the salt reduction efforts made by your company in the UK and South Africa?

### 4. Barriers

- Is salt reduction a company priority? What would be required to make it a priority?
- Does the industry has the knowledge/capacity/ skills to take action?
- How do you address/manage negative feedback ?
- **Are there any negative aspects to reducing salt levels?**
- **Are there any negative aspects to mandated salt reduction programs?**
- Any comments on the cost associated implementing the salt reduction policy?
- **How should salt reduction be monitored and evaluated? Who should conduct this evaluation?**

### 5. Additional Information

- Are they any other issue that you would like to highlight in relation to salt reduction that have not already been covered?
- What is the impact of COVID-19 on your operation and sales? (Any products more or less popular during this pandemic?)

**FOCUS GROUP DISCUSSION TOPICS- VENDORS (MEDIUM TO LARGE SCALES)****1. Society and Culture**

- What do you think about salt consumption in Malaysia?
- Do you think any relationship between excessive salt consumption and health?
- What part do meals eaten outside the home, such as yours, play in how much salt people eat?
- What do you think about the consumer's acceptance towards reduced salt products/ foods/ dishes?
- What do you think about salt reduction policy? Should it be voluntary or mandatory? Why?

**2. Behaviours, Practices and Actions**

- How many of your dishes are high in salt?
- What is your signature dish/ product? Popular food among your customer?
- Do you use any flavour enhancers (chicken cubes, oyster sauce, tauco) in your cooking?
- Do you make any changes to make your food healthier?
- If yes, what is the customer's acceptance toward healthier food option that you prepared? If no or not yet, why?
- With respect to salt reduction, what action need to be taken?—Is there any target/ goal? Implementation plan?
- Do you think you have a role in reducing salt intake of the population?
- Are you aware of alternatives to increase the flavor of food without adding more salt and other flavour enhancers?
- Do you currently use salt substitutes in your outlets? Would you be willing to?
- Do you use Himalayan salt, rock salt or similar salts in the production of your products? If so, why?
- Would reducing salt level feasible?
- What is the expected impact of the proposed action?
- (for global companies) Are you aware of the salt reduction efforts made by your company in the UK and South Africa?

**3. Motivation and Goals**

- What supports do you need to reduce salt level in your product or to include salt in the product label?
- What do your company gain from participating/taking action?
- Do your company intend to measure and sustain that commitment for long term?
- Do you anticipate this salt reduction strategy as part of social responsibility?

**4. Barriers**

- Is salt reduction a company priority? If not, what is needed to make it a priority?
- Do the company has the knowledge/capacity/ skills to take action?
- How do you address/manage negative feedback ?
- **Are there any negative aspects to reducing salt levels?**
- Is there any extra cost associated with implementing the salt reduction policy
- what is the impact of COVID-19 on your cost and sale?
- **How should salt reduction be monitored and evaluated? Who should conduct this evaluation?**

**5. Additional Information**

- Are there any other issue that you would like to highlight in relation to salt reduction that have not already been covered?
- What is the impact of COVID-19 on your operation and sales?

**SOCIODEMOGRAPHIC QUESTIONNAIRE FOR CONSUMERS (ADAPTED FROM MANS/NHMS 2014)**

Please write or circle your answer

1.	Name Of Respondent	
2.	When is your date of birth ?	
3.	What is your identification card number ?	
4.	What is your passport number?	
5.	What other identification card number you have ? Army, police, birth certificate, others ?	
6.	How old are you ?	Completed years
7.	Landline telephone or mobile which can be contacted..	
8.	What is your Ethnicity?	Melayu Cina India Iban Kadazan Dusun Bidayuh Melanau Bajau Murut Bumiputra Sabah( lain) Bumiputra Sarawak(lain) Orang Asli (Semenanjung ) Lain- Lain
9.	What is your marital status?	Never married Married Separated Divorcee Widow/er Cohabiting

1		Others
2		
3		
4		
5		
6		
7		
8	10	What is your highest education level?
9		No schooling
10		Did not complete primary school
11		Completed standard 6
12		Completed Form 3
13		Completed form 5
14		Completed form 6, certificate/diploma
15		Completed a bachelors degree
16		Completed a master degree
17		Completed a doctoral qualification
18		Other
19	11	Are you?
20		Government employee
21		Semi government employee
22		Private employee
23		Self employed
24		Unpaid worker
25		Not working
26		Retiree
27		Student
28	12	What is your average personal gross monthly income?
29		From salary
30		Other household income
31		Others?
32		
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## QUESTIONNAIRE ON EATING OUT

1	<b>In a typical week, how many days do you take breakfast?</b>	<b>Where do you normally get the food from?</b>	<b>Where do you usually eat?</b>	<b>With whom do you normally take breakfast?</b>
	<ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> </ul>	<ul style="list-style-type: none"> <li>• At home</li> <li>• Buy from cafeteria</li> <li>• Buy from</li> </ul>	<ul style="list-style-type: none"> <li>• At home</li> <li>• At office</li> <li>• At cafeteria</li> </ul>	<ul style="list-style-type: none"> <li>• Alone</li> <li>• With family</li> </ul>

	<ul style="list-style-type: none"> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> </ul>	<p>restaurant</p> <ul style="list-style-type: none"> <li>• Buy from stall</li> <li>• Buy from fast food outlet</li> <li>• Other</li> </ul>	<ul style="list-style-type: none"> <li>• At restaurant</li> <li>• At hotel</li> <li>• At stall</li> <li>• At fast food outlets</li> <li>• Others</li> </ul>	<ul style="list-style-type: none"> <li>• With friend</li> <li>• Other</li> </ul>
<p><b>2</b></p>	<p><b>In a typical week, how many days do you eat lunch?</b></p> <ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> </ul>	<p><b>Where do you normally get the food from?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• Buy from cafeteria</li> <li>• Buy from restaurant</li> <li>• Buy from stall</li> <li>• Buy from fast food outlet</li> <li>• Other</li> </ul>	<p><b>Where do you usually eat?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• At office</li> <li>• At cafeteria</li> <li>• At restaurant</li> <li>• At hotel</li> <li>• At stall</li> <li>• At fast food outlets</li> <li>• Others</li> </ul>	<p><b>With whom do you normally take lunch?</b></p> <ul style="list-style-type: none"> <li>• Alone</li> <li>• With family</li> <li>• With friend</li> <li>• Other</li> </ul>
<p><b>3.</b></p>	<p><b>In a typical week, how many days do you take dinner?</b></p> <ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> </ul>	<p><b>Where do you normally get the food from?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• Buy from cafeteria</li> <li>• Buy from restaurant</li> <li>• Buy from stall</li> <li>• Buy from fast food outlet</li> <li>• Other</li> </ul>	<p><b>Where do you usually eat?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• At office</li> <li>• At cafeteria</li> <li>• At restaurant</li> <li>• At hotel</li> <li>• At stall</li> <li>• At fast food outlets</li> <li>• Others</li> </ul>	<p><b>With whom do you normally take dinner?</b></p> <ul style="list-style-type: none"> <li>• Alone</li> <li>• With family</li> <li>• With friend</li> <li>• Other</li> </ul>



## FOCUS GROUP INTERVIEW TOPICS – CONSUMERS

### 1. Society and Culture

- What do you think about salt consumption in Malaysia?
- In your opinion, generally, how much salt is used in your cooking?
- In your understanding, what are the major food sources that are high in salt?
- Do you use any flavour enhancers (chicken cubes, oyster sauce, taucu) in your cooking?
- Are you aware of alternatives to increase the flavour of food without adding more salt and other flavour enhancers?
- Do you think any relationship between excessive salt consumption and health?
- How important do you think reducing salt intake in your diet is?
- What do you think about reduced salt products/ foods/ dishes?
- Why are you eating out?

### 2. Behaviours And Actions

- Have you make an attempt to reduce your salt intake, ie. the amount of salt you add in cooking? Or salty foods or snacks that you purchased? Or during eating out? If yes, please state the action. If no, why?
- When buying packaged food items, how often do you look for the nutrition information? Do you specifically look for the salt content? Do you think it would be helpful to have information about the salt content on food packages?
- Do you currently use salt substitutes in your cooking/ dishes ? Would you be willing to do so?
- Do you use Himalayan salt, rock salt or similar salts in the production of your products? If so, why?
- What type of programs/ policies should be made by the government for salt reduction among the population? Media role? Food industry role? Restaurants/ hotels/ street vendors role? (eg. Labelling sodium or salt content in food products, consumer awareness, development of symbols to identify low salt products, agreements with food industry to lower the salt content of food products, and regulations)

### 3. Motivation and Goals

- What action would encourage you to reduce the amount of salt you add in cooking? Or buying or eating out? (e.g. Media's role, doctors advice, traffic light labelling system?)
- What action would encourage you to cutting habit of using salt at the table?
- need to reduce your salt intake (through home prepared foods, processed foods and meals outside home) ?
- What are other help or support do you need to reduce your salt intake (through home prepared foods, processed foods and meals outside home)?

### 4. Barriers

- What would make it difficult for you to use less salt in cooking? (Family members, children's preferences)
- What would make it difficult for you to cutting habit of using salt/ sauces at the table?
- What would make it difficult for you to buy less salty foods? (non availability of low salt items, high price, preferences)
- What would make it difficult for you to choose less salt when eating out? (Family members' preferences)

## 5. Additional Information

- Are there any other issues that you would like to highlight in relation to salt reduction that have not already been covered?
- Is there any effect of COVID-19 pandemic on your eating habit?
- Does COVID-19 pandemic inhibit to enjoy eating out? Do you order food delivery? How often? What type?
- What types of food do you stock up during COVID-19 pandemic?

For peer review only

# BMJ Open

## Developing a policy to reduce the salt content of food consumed outside the home in Malaysia: protocol of a qualitative study

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2020-044628.R2
Article Type:	Protocol
Date Submitted by the Author:	09-Jun-2021
Complete List of Authors:	<p>Brown, Mhairi; Queen Mary University of London Barts and The London School of Medicine and Dentistry, Wolfson Institute of Preventive Medicine</p> <p>Shahar, Suzana; Universiti Kebangsaan Malaysia, Faculty of Health Sciences</p> <p>You, Yee; Universiti Kebangsaan Malaysia, Faculty of Health Sciences</p> <p>Michael, Viola; Ministry of Health, Malaysia, Disease Control Division</p> <p>Majid, Hazreen Abdul; University Malaya, Centre for Population Health (CePH) and Department of Social and Preventive Medicine</p> <p>Manaf, Zahara; Universiti Kebangsaan Malaysia, Faculty of Health Sciences</p> <p>Haron, Hasnah; Universiti Kebangsaan Malaysia, Faculty of Health Sciences</p> <p>Sukiman, Noor Shahida; Universiti Kebangsaan Malaysia, Faculty of Health Sciences</p> <p>Chia, Yook Chin; Sunway University, Department of Medical Science; University of Malaya, Department of Primary Care Medicine</p> <p>He, Feng; Queen Mary University of London, Wolfson Institute of Preventive Medicine</p> <p>MacGregor, Graham; Queen Mary University of London, Wolfson Institute of Preventive Medicine</p>
<b>Primary Subject Heading</b>:	Qualitative research
Secondary Subject Heading:	Public health
Keywords:	PUBLIC HEALTH, QUALITATIVE RESEARCH, PREVENTIVE MEDICINE, NUTRITION & DIETETICS

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# Developing a policy to reduce the salt content of food consumed outside the home in Malaysia: protocol of a qualitative study

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Keywords: salt, salt reduction, salt qualitative analysis, food out of home

Word count: 3,790 including tables, abstract and article summary

## ABSTRACT

**Introduction** Current salt intake in Malaysia is high. The existing national salt reduction policy has faced slow progress and does not yet include measures to address the out of home sector. Dishes consumed in the out of home sector are a known leading contributor to daily salt intake. This study aims to develop a salt reduction strategy, tailored to the out of home sector in Malaysia.

**Methods and analysis** This study is a qualitative analysis of stakeholder views towards salt reduction. Participants will be recruited from five zones of Malaysia (Western, Northern, Eastern and Southern regions and East Malaysia), including policy makers, non-governmental organisations (NGO), food industries, school canteen operators, street food vendors and consumers, to participate in focus group discussion or in-depth interviews. Interviews will be transcribed and analysed using thematic analysis. Barriers will be identified and used to develop a tailored salt reduction strategy.

**Ethics and dissemination** Ethical approval has been obtained from the Universiti Kebangsaan Malaysia Medical Research Ethics Committee (UKM PPI/1118/JEP-2020-524), the Malaysian National Medical Research Ethics Committee (NMRR-20-1387-55481 (IIR)) and Queen Mary (University of London) Research Ethics Committee (QMERC2020/37). Results will be presented orally and in report form and made available to the relevant ministries e.g. Ministry of Health, Ministry of Education and Ministry of Trade to encourage adoption of strategy as policy. The findings of this study will be disseminated through conference presentations, peer-reviewed publications and webinars.

## Article Summary

### Strengths and limitations of this study

- Our study is novel in that no country in Asia has yet developed an effective and comprehensive salt reduction strategy for food consumed outside the home, and our methodology will enable the collection of data that will enable the development of such a policy
- Our recruitment strategy will ensure that we will gain views from a wide range of stakeholders across Malaysia including Government, consumers and food vendors and manufacturers
- The use of qualitative methodology with a well-established framework will allow us to address all concerns of stakeholders when developing the salt reduction strategy, ensuring support from all
- The study will be conducted in Malaysia only, however, the findings could potentially be adapted by many other countries in the region to reduce salt in food consumed outside the home

### 1. INTRODUCTION

Excess salt consumption is a leading risk factor for raised blood pressure (1, 2), which in turn increases the risk of cardiovascular disease (CVD), the major cause of death and disability globally (3). Excess salt intake is also linked to stomach cancer, osteoporosis and kidney disease (4). The Global Burden of Disease Study estimates that suboptimal diets led to 8 million deaths in 2019, with excess salt intake alone responsible for 2 million deaths (5).

In 2013, World Health Organization (WHO) member states pledged to work towards a 30% relative reduction in population salt intake by 2025 (6). The WHO have long highlighted salt reduction as a priority for population health, due to the impact and cost-effectiveness of the intervention, and recommended salt reduction as a 'best buy' intervention (7). The UK's salt reduction policy is often cited as a leading example, setting incrementally lower salt content targets for the food industry with independent monitoring, leading to a 15% reduction in population salt intake between 2003 and 2011 which was accompanied by a fall in average blood pressure and cardiovascular disease mortality (8). Around 96 countries now have some form of a salt reduction policy in place, following the lead of the UK (9). However global dietary salt intake remains much higher than the WHO recommended level of less than 5g per day (10).

In Malaysia, salt intake is also high (7.9g/d) and hypertension is prevalent, particularly in adults from rural areas (11, 12). Indigenous ethnic groups are less likely to be aware of hypertension or to be treated, and those earning less than MYR 1,000 have a forecasted higher level of 10-year

1 CVD risk than those on higher incomes (12, 13). Therefore salt reduction in Malaysia would  
2 benefit the entire community, particularly the more socially-deprived. In 2015, the Malaysian  
3 Ministry of Health developed the Salt Reduction Strategy to Prevent and Control NCD for Malaysia  
4 (2015–2020), as part of their National Strategic Plan for Non-Communicable Diseases (2016–  
5 2025), with the aim of achieving a 15% reduction in salt intake by 2020 (14). The salt reduction  
6 strategy includes measures to reformulate high salt products and increase awareness in the  
7 population of the impact salt has on health. However, an interim analysis found slow progress, and  
8 six recommendations were made to strengthen the strategy, which included a recommendation to  
9 address salt levels in the out-of-home sector, which is defined as anywhere food is consumed  
10 outside of the home, including but not limited to restaurants, street food vendors and hawkers,  
11 cafeterias, school canteens and hotels (15).

19  
20 Around three quarters (64.1%) of adults eat outside the home at least once a day in Malaysia (16).  
21 A baseline analysis found that out-of-home dishes are a leading contributor to daily salt intake,  
22 with dishes such as kolok mee, curry noodles and vegetables with soy/oyster sauce identified in  
23 the top five food sources (11). Foods sold in the out of home sectors are often seasoned by  
24 consumers with a variety of sauces and condiments with high salt content but approximately half  
25 of these sauces and condiments do not have salt content printed on nutrition labels, making it  
26 difficult for consumers to evaluate how much salt they are adding to their food (17, 18). Instant  
27 noodles, a popular food choice among the younger population, have a mean salt content of  
28  $4.3 \pm 1.5$  g per 100g which is nearly four times higher than the salt content of food classified in  
29 Malaysia as a high salt content ( $>1.2$  g salt per 100 g) (19). Evidence also shows that school  
30 canteen food and home cooked meals are a source of salt in the diets of children and adolescents  
31 (20). The main barriers for healthy eating at school identified by adolescents include the lack of  
32 healthy food options, the availability of unhealthy foods and issues around preferences and  
33 affordability (21). Furthermore, poor knowledge of the impact of salt on health and a lack of  
34 individual salt reduction practices contribute to high salt intake, even among health care staff in  
35 Malaysia (22).

48  
49 Food eaten outside the home is forming an increasing portion of daily diets in many countries,  
50 however, salt reduction strategies traditionally focus on processed packaged food, or awareness  
51 programmes, due to the availability of data on salt content printed on pack (10, 23). Data on the  
52 nutrition content of food served outside the home is lacking, particularly for street food vendors,  
53 and therefore interviews will reveal potential barriers and solutions to addressing this.

58  
59 The overall aim of this study is to develop a salt reduction strategy for the out of home sector in  
60 Malaysia. Given that Malaysia has a salt reduction strategy in place, as part of a wider strategy to  
reduce the burden of non-communicable diseases (NCD) in the country, it is likely that our

strategy will be adopted by the Ministry of Health, the Ministry of Education and the Ministry of Trade and implemented as policy (11, 14).

Our objectives are:

1. Investigate the views of stakeholders across Malaysia towards salt reduction, to identify potential or perceived barriers.
2. Develop a strategy to reduce salt levels in out of home food, incorporating all themes from stakeholder discussions, and present to government departments.
3. Conduct capacity building activities, including workshops, for chefs to increase awareness of salt reduction and methods.

## 2. METHODS AND ANALYSIS

### 2.1 Overall Study Design

A qualitative study will be conducted, using in-depth interviews and focus-group discussions to determine the views of stakeholders across Malaysia towards salt reduction, with an emphasis on the out of home sector. This design will enable participants to describe their views on potential perceived or actual barriers, allowing researchers to develop a tailored strategy and increasing likelihood of its adoption as policy by key decision makers within the Ministry of Health, Ministry of Education and Ministry of Trade.

Qualitative research in this case is essential. While the methods of reducing salt in the population are well known, reducing salt in the out of home sector is a relatively new approach, without an existing successful model to replicate or adapt.

The study framework is illustrated in Figure 1 and will utilise a social ecological model and the UK Medical Research Council framework, with adaptations from the Theoretical Domains Framework, creating a comprehensive framework that will capture a range of information required to develop a salt reduction strategy (24-26).

**Figure 1: Study model developed by combining a social ecological model with adaptations from the UK Medical Research Council (MRC) framework and the Theoretical Domains Framework (TDF)**

### 2.2 Study Setting

This study will be conducted across Malaysia, with participants recruited from five zones of the country to avoid a centralised and biased view. The target zones are:

- Western – Kuala Lumpur, Selangor, Perak
- Southern – Johor, Melaka, Sembilan
- Northern – Penang, Perlis, Kedah



- Eastern – Pahang, Terengganu, Kelantan
- East Malaysia - Sabah, Sarawak

## 2.3 Participants

For this study, the sample was purposively selected and the sample size was determined based on the experience of similar studies, particularly a study in India (27). As this is a qualitative study, in-depth interviews and focus group discussions will continue until saturation of themes is achieved (28). We aim to recruit 285 participants; while this is a large sample size for a qualitative study, the involvement of a wide range of stakeholders from several zones across Malaysia will ensure a strong and comprehensive strategy, addressing all potential barriers raised during interviews.

We will engage numerous stakeholders across Malaysia, including policy makers from the Ministry of Health, Ministry of Education and Ministry of Trade; NGOs; catering operators including the Indian Muslim Restaurants Association, school canteen operators and workplace cafeteria caterers; food industry representatives including soy sauce manufacturers and global food companies; street vendors and consumers (Table 1).

**Table 1: Study sampling frame. FGD = Focus Group Discussion, IDI = In-depth Interview**

Group	Western	Southern	Northern	Eastern	East Malaysia	Sample Size	Data Collection Method
<b>Government, policy and NGO</b>	10	-	-	-	-	10	IDI
<b>Caterers</b>	10	10	10	10	10	50	IDI
<b>Food Industry</b>	5	5	5	5	5	25	IDI
<b>Street Vendors</b>	5	5	5	5	5	25	FGD
<b>Consumers</b>	35	35	35	35	35	175	FGD
<b>Total</b>	65	55	55	55	55	285	

## 2.4 Recruitment

Stakeholders will be recruited via email invitations, identified initially through existing contacts and networks and then moving to snowball recruitment.

Interested stakeholders will be screened for eligibility using inclusion and exclusion criteria and invited for an initial telephone meeting, where they will be given an overview of the study. Eligible participants will receive a written invitation to a focus group discussion or in-depth interview as

appropriate, with an information sheet and a consent form. Forms will be made available in Malay and English. Only those participants who have signed a consent form will be allowed to participate in interviews or focus group discussions.

The inclusion and exclusion criteria are as described in Table 2.

**Table 2: Inclusion and exclusion criteria**

Stakeholder Group	Inclusion Criteria	Exclusion Criteria
Government, policy and NGO representatives	Organisation with specific role in salt reduction of the population  Officer in charge with salt reduction/ food based programme/ policy  Officer working for the organization for at least 2-3 years	
Food Industry	Manufacturing foods identified as high salt sources  Officer in charge with industry's production planning/ policy  Officer working for the industry for at least 2-3 years  Include CEO/policy team plus nutrition teams to get a full view of the support for salt reduction within the organization, as well as input from the key decision makers	
Catering operators	Indian Muslim Restaurants Association, Chef Association, franchised food vendors, wedding caterers and/or school canteen operators  Operating food outlets at medium to large scale  Officer in charge with industry's production planning/ policy  Officer working for the industry for at least 2-3 years	
Street Vendors	Operating food on the street  Operating for at least 2 to 3 years	
Consumers	Male or female  Aged 18 to 59 years old	On low-salt diet

	<p>Malay, Chinese or Indian ethnicity</p> <p>Consume foods outside the home at least three times a week</p>	<p>Renal failure, heart failure, hypertension</p> <p>Eat outside the home less than three times a week</p>
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For most stakeholder groups, we will aim to recruit participants who have been in post for 2-3 years to ensure they have the knowledge and experience to have an in-depth discussion or participate in a focus group discussion. However, we will assess this on a case-by-case basis.

## 2.5 Procedure

Interview guides for the focus group discussions and in depth interviews have been developed (Appendix 1) and will be piloted with a minimum of five individuals who are not involved in the study but who belong to the target stakeholder groups (27). The pilot will take place in the Selangor (central) region where the majority of researchers involved are based. The interview guides will be refined following the pilot. All researchers involved in data collection will be given appropriate training before conducting focus group discussions and/or in-depth interviews.

Interviews will be conducted using the piloted interview guide, which consists of open-ended questions, allowing for a flexible approach that can be adapted depending on points raised and debate streams during the process. Interviews will be recorded using a digital voice recorder and researchers will also take notes during and after each interview or discussion to capture observations which may benefit the analysis.

Demographic and professional information will be collected. Interviews and discussions will take place during working hours in a comfortable and private room to help ensure open discussion. Interviews are expected to last 30-45 minutes, with focus group discussions lasting 60 minutes.

Data collection has started, but due to COVID-19 restrictions a hybrid data collection has been adopted. The majority of the interviews with the Government departments and NGOs will be conducted online. Sessions with food industry representatives and consumers will be conducted face-to face depending on approval by the local authorities.

## 2.6 Data Analysis

Interviews and focus group discussion will be transcribed verbatim and processed in QSR International NVivo 11, a qualitative analysis software program. Inductive thematic analysis will be performed on transcribed interviews and discussions.

Using open coding, two researchers will code the transcripts and develop a coding framework which will be discussed and agreed by the research team. This will ensure consistent coding patterns. Themes and subthemes developed will be analysed critically and discussed among all

researchers. A sample of the stakeholders involved in the interviews and discussions will be invited to read the findings and provide feedback to further refine the analysis.

A sub-sample of five transcribed interviews and/or discussions will be used for independent analysis by a researcher not involved in the interviews or coding to ensure the accuracy of developed themes and subthemes. We will randomly select 2-3 representatives from each stakeholder group for this purpose.

## 2.7 Salt Reduction Strategy Development

The themes and subthemes revealed through our study will be combined with existing knowledge of successful salt reduction interventions to develop a strategy to reduce salt levels in the out of home sector in Malaysia. All researchers will be involved in this process. Workshops will be organised to present various aspects of the strategy to relevant stakeholders to gain their feedback and strengthen the strategy.

In order to support implementation of the strategy as policy, researchers will also conduct capacity-building and knowledge-transfer activities, such as seminars, lectures and practical workshops. The content of these activities will be designed to address the barriers raised during the study. Representatives from each of the stakeholder groups will be invited again to the capacity building activities.

## 2.8 Project Timelines

Project timelines are illustrated in Table 3. The framework for the project was developed in March 2020, which informed development of the interview guides for focus group discussions and in-depth interviews. Ethics applications were submitted in June 2020, and participant recruitment began once ethical approval was obtained. It is anticipated that participant recruitment will begin from August 2020, ending February 2021, with focus group discussions and in-depth interviews taking place from September 2020. With the current COVID-19 pandemic, interviews may be conducted virtually initially, with face to face interviews being conducted in 2021. Where interviews are conducted in person in 2020, national guidelines on social distancing and use of face masks will be adhered to.

Thematic analysis will take place in January 2021, with strategy development taking place from March 2021. Engagement with policy makers following strategy development is anticipated to begin in August 2021.

**Table 3: Project timeline**

Activities	2020									2021										
	Ma y	Jun e	Jul y	Au g	Se pt	Oc t	No v	Di s	Ja n	Fe b	Ma r	Ap r	Ma y	Jun e	Jul y	Au g	Se pt	Oct	No v	

1 2 3 4 5 6	Stakeholder analysis, framework development, interview guide development	x	x	x															
7 8 9 10 11 12 13 14 15 16 17	Study registration and obtaining ethical approval from relevant ethical committees in Malaysia and UK		x	x															
18 19 20 21	Invite stakeholders to participate				x	x	x	x	x	x									
22 23 24 25 26 27 28	Conduct focus groups and semi-structured interviews with stakeholders					x	x	x	x	x									
29 30 31 32 33 34 35 36 37 38 39 40	Thematic analysis of responses and development of a comprehensive strategy to reduce salt in the out of home sector										x	x	x	x	x				
41 42 43 44 45 46 47 48 49 50 51	High level meetings with policy makers and key food industry representatives. Conduct capacity building activities															x	x	x	x
52 53 54	Dissemination of results																	x	x
55 56 57 58 59 60	Journal publications																	x	x

**2.9 Data Management**

1 The study will be run in accordance with Good Clinical Practice (GCP). Data will be kept in  
2 accordance with the Data Protection Act, 1998 (DPA). Physical materials such as consent forms  
3 and interview notes will be stored in locked cabinets at the research centre within UKM. Electronic  
4 data, including interview and discussion recordings and transcriptions will be stored in shared  
5 drives with a specific password access within UKM. Only appropriately trained research team  
6 members will have access to the data.  
7  
8  
9

10  
11 All participants will be assigned a coded number and pseudonym. No participant names or other  
12 identifying features will appear in any form of data reporting, with pseudonyms used to identify  
13 quotes or comments made by interviewees. The coding system will be stored digitally and  
14 manually at UKM and will only be able to be accessed by a member of the research team. Data  
15 will be held securely for 10 years, according to Universiti Kebangsaan Malaysia Medical Research  
16 Ethics Committee policy.  
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20

21  
22 All participant-identifiable data linked to the participant via their unique ID will be kept separately  
23 from anonymised research data in a password-protected file. Electronic data will only be stored  
24 with participant ID in a password-protected file on secure UKM servers.  
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## 28 **2.10 Patient and Public Involvement**

29  
30 While developing the funding application for this project, we approached the Ministry of Health  
31 Malaysia to present our plans and gain their feedback to strengthen our application. Their  
32 experience of overseeing salt reduction in Malaysia was beneficial to help us define the food  
33 industry representatives and other stakeholders crucial to involve in this project. We also gained  
34 their approval to be involved in interviews and dissemination of the results, as they will facilitate  
35 dissemination to other Government departments and their network of food industry  
36 representatives.  
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## 43 **2.11 Ethics and Dissemination**

44  
45 Ethical approval has been obtained from the Universiti Kebangsaan Malaysia Medical Research  
46 Ethics Committee (reference UKM PPI/111/8/JEP-2020-524), the Malaysian National Medical  
47 Research Ethics Committee (reference NMRR-20-1387-55481 (IIR)) and Queen Mary (University  
48 of London) Research Ethics Committee (reference QMERC2020/37). There are no substantive  
49 ethical issues associated with the conduct of our research project.  
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55 Written informed consent will be obtained from all participants. Every participant has the right to  
56 withdraw from the study at any time and participation is solely on a voluntary basis.  
57  
58

59 Pseudonyms will be allocated in all interviews and transcriptions of data will be anonymized, to  
60 ensure confidentiality. Participants' identifiable information will only be used for the purposes of  
arranging interviews and obtaining signed consent. Demographic data will be aggregated among

1 participants and compiled in tables. Records will be stored securely on a password protected  
2 computer and paper copies of the consent form will be stored separately in a locked cabinet, only  
3 accessible by the researchers.  
4

5  
6 Results will be presented orally and in report form and made available to Ministry of Health,  
7 Ministry of Education and Ministry of Trade staff to encourage adoption of strategy as policy.  
8  
9

10 The findings of this study will be disseminated through conference presentations and peer-  
11 reviewed publications, as well as via webinars, newsletters and press releases through the World  
12 Action on Salt, Sugar and Health (WASSH) network of more than 600 international experts (29).  
13  
14

15 Findings from this study will contribute to the wider salt reduction strategy in Malaysia, and will  
16 inform global salt reduction efforts. It is anticipated that our findings will also inform and improve  
17 the School Health Program. We also anticipate that as a result of our study, the Ministry of Trade  
18 will support those manufacturers producing more healthy product portfolios. In addition, as school  
19 children buy food products from school canteen operators, our findings will benefit and strengthen  
20 healthy eating and salt reduction work by both the Ministry of Education and the Ministry of Health.  
21 Strengthening collaborative work is essential to ensure the food environment is healthy for  
22 children.  
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## 30 2.12 COVID-19

31 Malaysia has experienced several waves of the COVID-19 pandemic and restrictions are currently  
32 in place to help prevent further infections. A Movement Control Order (MCO) is applied as  
33 necessary to the whole country or to specific states, depending the number of active COVID-19  
34 cases.  
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40 The MCO has impacted our project, specifically interstate or inter-district travelling, and in-person  
41 group meetings. Data collection and meetings involving policy makers, NGOs, and researchers  
42 could be conducted effectively through online, virtual interviews, but interviews and focus group  
43 discussion (FGD) with food industry representatives and street food vendors would be best  
44 conducted in person and accompanied by a visit to the respective factories that manufacture  
45 products sold by companies and used by street food vendors. Project timelines will be monitored  
46 and adapted to ensure that in-person interviews and FGDs can be conducted later in the year  
47 when the MCO is likely to be lifted.  
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## Authors' Contributions

FJH, SS, HAM, MKB and GAM conceived the project and designed the study. MB wrote the first draft of the manuscript. SS, YXY, VM, HAM, ZAM, NSS, YCC and HH designed the questionnaires. All authors contributed to the refinement of the study protocol and approved the final manuscript.

## Funding

This work is supported as part of the Newton Fund Impact Scheme by the Medical Research Council on behalf of UK Research and Innovation in the UK and by the Malaysia Industry-Government Group for High Technology (MiGHT) (grant number: MR/V005847/1).

## Competing Interests

The authors declare they have no competing interests

## Ethics Approval

Ethical approval has been obtained from the Universiti Kebangsaan Malaysia Medical Research Ethics Committee (reference UKM PPI/111/8/JEP-2020-524), the Malaysian National Medical Research Ethics Committee (reference NMRR-20-1387-55481 (IIR)) and Queen Mary (University of London) Research Ethics Committee (reference QMERC2020/37).

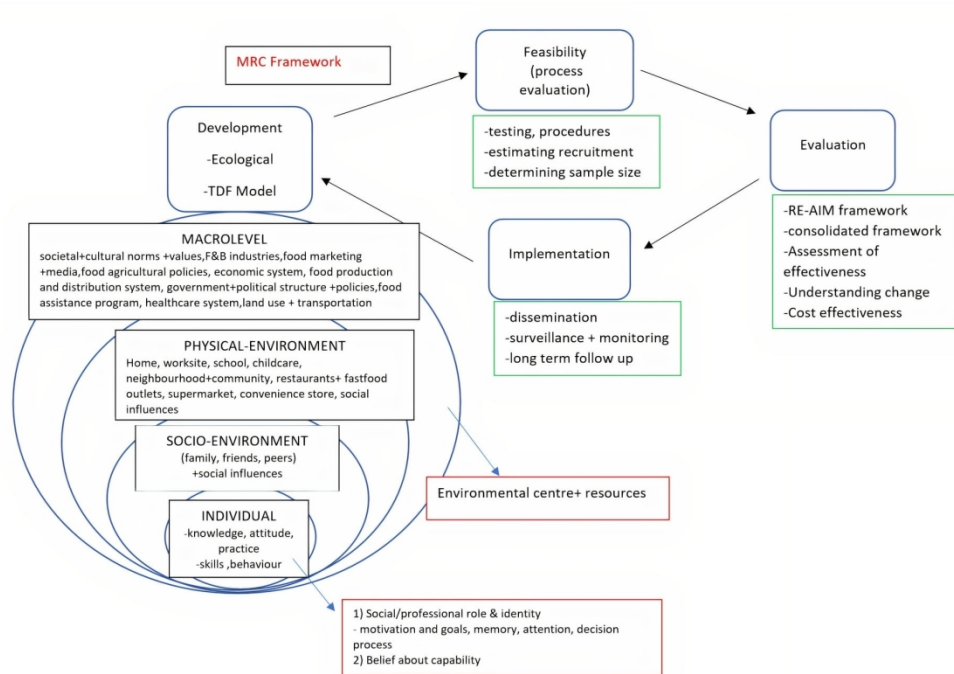


Figure 1: Study model developed by combining a social ecological model with adaptations from the UK Medical Research Council (MRC) framework and the Theoretical Domains Framework (TDF)

668x468mm (72 x 72 DPI)

## Appendix 1

### INDEPTH INTERVIEW INFORMATION

<b>State</b>	
<b>Interview Number</b>	
<b>Stakeholder Organization/Sector</b>	
<b>Date</b>	
<b>Sociodemographic Information</b>	Age Gender Education qualification Position Years of service in the organization Nationality

Participants will be asked to suggest which actions need to be taken in terms of salt reduction to reduce the high burden of cardiovascular disease in Malaysia. In addition , they will be asked to comment on the pre-defined interventions.

Participants will be given background information about existing policy commitments nationally and regionally and relevant evidence of interventions. This will help inform the focus group.

### INTRODUCTION

Thank you for taking the time to join our focus group discussion/to be interviewed. The aim of this focus group/interview is to discuss salt intake and salt related actions/policy interventions in Malaysia. We want to get your opinions about different interventions to reduce salt consumption and how useful they might be.

We would also like to remind you that this discussion/interview is being audio- recorded.

## INDEPTH INTERVIEW TOPICS – GOVERNMENT/ NGO

### 1. Society and Culture

- What do you think about salt consumption in Malaysia? Is it an issue?
- Why is salt intake high in Malaysia?
- What other dietary risk factors are you concerned about? Are you involved in policies to address these?
- Who is responsible for reducing how much salt the population eat?
- How best can we target industry/society to make salt reduction?

### 2. Government/organization practice and structure

- Has the ministry/ organization conducted/ implemented any strategy/ programme to reduce salt intake of the population?
- Was the strategy/ programme effective? Why?
- What are other actions need to be taken?—Is there any target/ goal? Any implementation plan? (e.g. food labelling, law enforcement)
- Should salt targets be mandatory?
- Would reducing salt intake of the population feasible?
- What are the opportunities related to reducing salt intakes and salt levels in foods?
- Who should take the lead ?
- Who should be involve in making decision / who will support change?
- How can sectors outside of health help facilitate salt reduction? **Which departments should be involved in salt reduction outside of the Ministry of Health?**
- What is the expected impact of the proposed action?
- How can progress be monitored and who should do this? Would an independent body be useful in this case?

### 3. Motivation and Goals

- Would salt reduction benefit the population and communities? How? (i.e. do they realize there are economic benefits, as well as immediate health benefits)
- What does the ministry/ organization gain from participating/taking action?
- Does the ministry/ organization intend to measure and sustain the commitment for long term?

### 4. Barriers

- What is required to help the population change their practices, and how can you support this?
- How will you counter food industry opposition to reformulation policies?
- Does the ministry/ organization have the knowledge/capacity/ skills to take action?
- What additional resources would be needed to put a comprehensive salt reduction policy in place?
- How do you address/manage negative feedback?
- Does the current pandemic (COVID-19) affect any implementation that you plan to do? If yes, what is your mitigation plan/strategy?
- How can salt reduction be prioritized alongside ongoing sugar reduction and obesity policies?
- **Does the ministry/department recognize the significance of salt reduction and the need to participate in the process?**
- **How should salt reduction be monitored and evaluated? Who should conduct this evaluation?**

### 5. Additional Information

- Are there any other issue that you would like to highlight in relation to salt reduction that have not already been covered?

## INDEPTH INTERVIEW TOPICS – FOOD INDUSTRY

### 1. Society and Culture

- What do you think about salt consumption in Malaysia?
- Do you think any relationship excessive salt consumption and health of the population?
- What part do products such as yours play in how much salt people eat?
- What do you think about the consumer's acceptance towards reduced salt products?
- What do you think about salt reduction policy? Should it be voluntary or mandatory? Why?

### 2. Practices and Actions

- How many of your products are high in salt?
- Has the company make any effort related to reduce salt content of the products?
- What are other efforts to be taken?—Is there any target? Implementation plan?
- Should salt targets be mandatory?
- Would reducing salt level in the product is feasible?
- Do you already practiced salt labelling in your product?
- Would reducing salt levels in foods be low cost to do?
- What supports do you need to reduce salt level in your product or to include salt in the product label?
- Do you currently use salt substitutes in your products? Would you be willing to do so?
- Do you use Himalayan salt, rock salt or similar salts in the production of your products? If so, why?

### 3. Motivation and Goals

- What do the industry gain from participating/taking action?
- Does the industry intend to measure and sustain that commitment for long term?
- Do you anticipate this salt reduction strategy as part of corporate social responsibility?
- What are the opportunities related to reducing salt intakes and salt levels in foods?
- (For global companies) Are you aware of the salt reduction efforts made by your company in the UK and South Africa?

### 4. Barriers

- Is salt reduction a company priority? What would be required to make it a priority?
- Does the industry has the knowledge/capacity/ skills to take action?
- How do you address/manage negative feedback ?
- **Are there any negative aspects to reducing salt levels?**
- **Are there any negative aspects to mandated salt reduction programs?**
- Any comments on the cost associated implementing the salt reduction policy?
- **How should salt reduction be monitored and evaluated? Who should conduct this evaluation?**

### 5. Additional Information

- Are they any other issue that you would like to highlight in relation to salt reduction that have not already been covered?
- What is the impact of COVID-19 on your operation and sales? (Any products more or less popular during this pandemic?)

**FOCUS GROUP DISCUSSION TOPICS- VENDORS (MEDIUM TO LARGE SCALES)****1. Society and Culture**

- What do you think about salt consumption in Malaysia?
- Do you think any relationship between excessive salt consumption and health?
- What part do meals eaten outside the home, such as yours, play in how much salt people eat?
- What do you think about the consumer's acceptance towards reduced salt products/ foods/ dishes?
- What do you think about salt reduction policy? Should it be voluntary or mandatory? Why?

**2. Behaviours, Practices and Actions**

- How many of your dishes are high in salt?
- What is your signature dish/ product? Popular food among your customer?
- Do you use any flavour enhancers (chicken cubes, oyster sauce, tauco) in your cooking?
- Do you make any changes to make your food healthier?
- If yes, what is the customer's acceptance toward healthier food option that you prepared? If no or not yet, why?
- With respect to salt reduction, what action need to be taken?—Is there any target/ goal? Implementation plan?
- Do you think you have a role in reducing salt intake of the population?
- Are you aware of alternatives to increase the flavor of food without adding more salt and other flavour enhancers?
- Do you currently use salt substitutes in your outlets? Would you be willing to?
- Do you use Himalayan salt, rock salt or similar salts in the production of your products? If so, why?
- Would reducing salt level feasible?
- What is the expected impact of the proposed action?
- (for global companies) Are you aware of the salt reduction efforts made by your company in the UK and South Africa?

**3. Motivation and Goals**

- What supports do you need to reduce salt level in your product or to include salt in the product label?
- What do your company gain from participating/taking action?
- Do your company intend to measure and sustain that commitment for long term?
- Do you anticipate this salt reduction strategy as part of social responsibility?

**4. Barriers**

- Is salt reduction a company priority? If not, what is needed to make it a priority?
- Do the company has the knowledge/capacity/ skills to take action?
- How do you address/manage negative feedback ?
- **Are there any negative aspects to reducing salt levels?**
- Is there any extra cost associated with implementing the salt reduction policy
- what is the impact of COVID-19 on your cost and sale?
- **How should salt reduction be monitored and evaluated? Who should conduct this evaluation?**

**5. Additional Information**

- Are there any other issue that you would like to highlight in relation to salt reduction that have not already been covered?
- What is the impact of COVID-19 on your operation and sales?

**SOCIODEMOGRAPHIC QUESTIONNAIRE FOR CONSUMERS (ADAPTED FROM MANS/NHMS 2014)**

Please write or circle your answer

1.	Name Of Respondent	
2.	When is your date of birth ?	
3.	What is your identification card number ?	
4.	What is your passport number?	
5.	What other identification card number you have ? Army, police, birth certificate, others ?	
6.	How old are you ?	Completed years
7.	Landline telephone or mobile which can be contacted..	
8.	What is your Ethnicity?	Melayu Cina India Iban Kadazan Dusun Bidayuh Melanau Bajau Murut Bumiputra Sabah( lain) Bumiputra Sarawak(lain) Orang Asli (Semenanjung ) Lain- Lain
9.	What is your marital status?	Never married Married Separated Divorcee Widow/er Cohabiting

1		Others
2		
3		
4		
5		
6		
7		
8	10	What is your highest education level?
9		No schooling
10		Did not complete primary school
11		Completed standard 6
12		Completed Form 3
13		Completed form 5
14		Completed form 6, certificate/diploma
15		Completed a bachelors degree
16		Completed a master degree
17		Completed a doctoral qualification
18		Other
19	11	Are you?
20		Government employee
21		Semi government employee
22		Private employee
23		Self employed
24		Unpaid worker
25		Not working
26		Retiree
27		Student
28	12	What is your average personal gross monthly income?
29		From salary
30		Other household income
31		Others?
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## QUESTIONNAIRE ON EATING OUT

1	<b>In a typical week, how many days do you take breakfast?</b>	<b>Where do you normally get the food from?</b>	<b>Where do you usually eat?</b>	<b>With whom do you normally take breakfast?</b>
	<ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> </ul>	<ul style="list-style-type: none"> <li>• At home</li> <li>• Buy from cafeteria</li> <li>• Buy from</li> </ul>	<ul style="list-style-type: none"> <li>• At home</li> <li>• At office</li> <li>• At cafeteria</li> </ul>	<ul style="list-style-type: none"> <li>• Alone</li> <li>• With family</li> </ul>



	<ul style="list-style-type: none"> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> </ul>	<p>restaurant</p> <ul style="list-style-type: none"> <li>• Buy from stall</li> <li>• Buy from fast food outlet</li> <li>• Other</li> </ul>	<ul style="list-style-type: none"> <li>• At restaurant</li> <li>• At hotel</li> <li>• At stall</li> <li>• At fast food outlets</li> <li>• Others</li> </ul>	<ul style="list-style-type: none"> <li>• With friend</li> <li>• Other</li> </ul>
<b>2</b>	<p><b>In a typical week, how many days do you eat lunch?</b></p> <ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> </ul>	<p><b>Where do you normally get the food from?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• Buy from cafeteria</li> <li>• Buy from restaurant</li> <li>• Buy from stall</li> <li>• Buy from fast food outlet</li> <li>• Other</li> </ul>	<p><b>Where do you usually eat?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• At office</li> <li>• At cafeteria</li> <li>• At restaurant</li> <li>• At hotel</li> <li>• At stall</li> <li>• At fast food outlets</li> <li>• Others</li> </ul>	<p><b>With whom do you normally take lunch?</b></p> <ul style="list-style-type: none"> <li>• Alone</li> <li>• With family</li> <li>• With friend</li> <li>• Other</li> </ul>
<b>3.</b>	<p><b>In a typical week, how many days do you take dinner?</b></p> <ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> <li>• 3</li> <li>• 4</li> <li>• 5</li> <li>• 6</li> <li>• 7</li> </ul>	<p><b>Where do you normally get the food from?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• Buy from cafeteria</li> <li>• Buy from restaurant</li> <li>• Buy from stall</li> <li>• Buy from fast food outlet</li> <li>• Other</li> </ul>	<p><b>Where do you usually eat?</b></p> <ul style="list-style-type: none"> <li>• At home</li> <li>• At office</li> <li>• At cafeteria</li> <li>• At restaurant</li> <li>• At hotel</li> <li>• At stall</li> <li>• At fast food outlets</li> <li>• Others</li> </ul>	<p><b>With whom do you normally take dinner?</b></p> <ul style="list-style-type: none"> <li>• Alone</li> <li>• With family</li> <li>• With friend</li> <li>• Other</li> </ul>

## FOCUS GROUP INTERVIEW TOPICS – CONSUMERS

### 1. Society and Culture

- What do you think about salt consumption in Malaysia?
- In your opinion, generally, how much salt is used in your cooking?
- In your understanding, what are the major food sources that are high in salt?
- Do you use any flavour enhancers (chicken cubes, oyster sauce, tauco) in your cooking?
- Are you aware of alternatives to increase the flavour of food without adding more salt and other flavour enhancers?
- Do you think any relationship between excessive salt consumption and health?
- How important do you think reducing salt intake in your diet is?
- What do you think about reduced salt products/ foods/ dishes?
- Why are you eating out?

### 2. Behaviours And Actions

- Have you make an attempt to reduce your salt intake, ie. the amount of salt you add in cooking? Or salty foods or snacks that you purchased? Or during eating out? If yes, please state the action. If no, why?
- When buying packaged food items, how often do you look for the nutrition information? Do you specifically look for the salt content? Do you think it would be helpful to have information about the salt content on food packages?
- Do you currently use salt substitutes in your cooking/ dishes ? Would you be willing to do so?
- Do you use Himalayan salt, rock salt or similar salts in the production of your products? If so, why?
- What type of programs/ policies should be made by the government for salt reduction among the population? Media role? Food industry role? Restaurants/ hotels/ street vendors role? (eg. Labelling sodium or salt content in food products, consumer awareness, development of symbols to identify low salt products, agreements with food industry to lower the salt content of food products, and regulations)

### 3. Motivation and Goals

- What action would encourage you to reduce the amount of salt you add in cooking? Or buying or eating out? (e.g. Media's role, doctors advice, traffic light labelling system?)
- What action would encourage you to cutting habit of using salt at the table?
- need to reduce your salt intake (through home prepared foods, processed foods and meals outside home) ?
- What are other help or support do you need to reduce your salt intake (through home prepared foods, processed foods and meals outside home)?

### 4. Barriers

- What would make it difficult for you to use less salt in cooking? (Family members, children's preferences)
- What would make it difficult for you to cutting habit of using salt/ sauces at the table?
- What would make it difficult for you to buy less salty foods? (non availability of low salt items, high price, preferences)
- What would make it difficult for you to choose less salt when eating out? (Family members' preferences)

## 5. Additional Information

- Are there any other issues that you would like to highlight in relation to salt reduction that have not already been covered?
- Is there any effect of COVID-19 pandemic on your eating habit?
- Does COVID-19 pandemic inhibit to enjoy eating out? Do you order food delivery? How often? What type?
- What types of food do you stock up during COVID-19 pandemic?

For peer review only