



Diet Link

OFFICIAL NEWSLETTER OF THE MALAYSIAN DIETITIANS' ASSOCIATION

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FROM THE
EDITORIAL
DESK



Lee Zheng Yii

Department of Anesthesiology,
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Again, we are at the end of another year. This year, we are still living under the threat of COVID-19 but the situation is much better thanks to the effect of the vaccine. All MDA activities are still online, and I look forward to some physical meetings next year, if possible.

This issue starts with two articles. The first one is a Cochrane systematic review and meta-analysis of randomized controlled trials investigating the effect of low versus high sodium diet on blood pressure. This systematic review is conducted with the highest methodological standard and provides us with a trustable highest level of evidence. I encourage the reader to read this systematic review together with the article that I wrote in the research methodology corner: a brief introduction to performing a systematic review. The second study is a prospective observational study using indirect calorimetry (IC) in critically ill patients. This study successfully developed the first predictive equation for Malaysian critically ill patients. This may be useful for intensive care units that do not have an IC.

We are also privileged to be able to feature the Ketua Profesion Pengawai Dietetik, Puan Basmawati Baharom in this issue. Her inspiring stories and advice will encourage most of us to be more passionate in our profession.

We also have a special article on tips to organize an online cooking demo by the co-founder of Homey Nutrition, Yi Chien. I believe this will help more dietitians to disseminate the right knowledge of cooking nutritious and delicious food to the general public.

Lastly, we also have a nice short review article about ultra-processed food and health risk contributed by a student from UKM.

This will be the last time that I edit the Diet Link. I have to resign to focus more on other work. I am sure that the next chief editor will make this newsletter more interesting! Thanks, MDA and my editorial team for the great opportunity and the wonderful journey in the past 3 years!



Effects of low sodium diet versus high sodium diet on blood pressure, renin, aldosterone, catecholamines, cholesterol, and triglyceride.

Objective: To estimate the influence of low- versus high-dietary sodium intake on systolic blood pressure (SBP) and diastolic blood pressure (DBP) and on potential side-effects (hormones and lipids).



METHODS

- **Population (P):** Participants with normal or elevated BP, but otherwise healthy. Exclude studies that included participants with comorbidities.
- **Intervention (I):** low-sodium diet, sodium intake was estimated by the 24-hour urinary sodium excretion
- **Control (C):** high-sodium diet, sodium intake was estimated by the 24-hour urinary sodium excretion
- **Outcomes (O):** at least one of the outcome - blood pressure, renin, aldosterone, noradrenalin, adrenalin, cholesterol, high-density lipoprotein, low-density lipoprotein and triglyceride
- **Study Design (S):** randomized controlled trial
- **Database and search date:** CENTRAL, MEDLINE (from 1946), Embase (from 1974), WHO International Clinical Trials Registry Platform, and ClinicalTrials.gov, up to 11 April 2018/ March 2020; bibliographies of included studies and any relevant systematic reviews
- **Language:** no restriction
- **Data abstraction:** Two independent reviewers in a standardized form. Contacted study author to request additional information
- **Risk of bias:** Cochrane Risk of bias tool
- **Certainty of Evidence:** GRADE
- **Meta-analysis** (all continuous outcome): inverse variance analysis, random effect model. BP results are analyzed separately by race (White, Black and Asian) and hypertension status. Hypertension was defined as SBP \geq 140 mmHg and/or DBP \geq 90 mmHg. Study populations in which participants were treated with antihypertensive treatment were defined as hypertensive irrespective of baseline BP

RESULTS (only blood pressure results are summarized)

- Number of included studies: 195 (174 in white participants)
- Effect of mean sodium reduction from 11860 mg/day to 3800 mg/day (**in white participants**):
 - a) Normal blood pressure: SBP: mean difference (MD) -1.14 mmHg (95% confidence interval (CI): -1.65 to -0.63), 5982 participants, 95 trials;
 - b) Normal blood pressure: DBP: MD + 0.01 mmHg (95% CI: -0.37 to 0.39), 6276 participants, 96 trials.
 - c) Hypertension: SBP: MD -5.71 mmHg (95% CI: -6.67 to -4.74), 3998 participants, 88 trials;
 - d) Hypertension: DBP: MD -2.87 mmHg (95% CI: -3.41 to -2.32), 4032 participants, 89 trials(GRADE: all high-quality evidence)
Study duration: Shortest duration 3 days in main analysis and 7 days in subgroup-analysis.

- Effect of mean sodium reduction from 11400 mg/day to 3860 mg/day (**in black participants**)
 - a) Normal blood pressure: SBP: MD -4.02 mmHg (95% CI:-7.37 to -0.68), 253 participants, 7 trials.
 - b) Normal blood pressure: DBP: MD -2.01 mmHg (95% CI:-4.37, 0.35), 253 participants, 7 trials.
 - c) Hypertension: SBP: MD -6.64 mmHg (95% CI:-9.00, -4.27); 398 participants, 8 trials
 - d) Hypertension: DBP: MD -2.91 mmHg (95% CI:-4.52, -1.30), 398 participants, 8 trials(GRADE: all low-quality evidence)
Study Duration: Shortest duration of 5 days

- Effect of mean sodium reduction from 12680 mg/day to 6020 mg/day (**in Asian participants**)
 - a) Normal blood pressure: SBP: mean difference (MD) -1.50 mmHg (95% CI: -3.09, 0.10), 950 participants, 5 trials.
 - b) Normal blood pressure: DBP: MD -1.06 mmHg (95% CI:-2.53 to 0.41), 950 participants, 5 trials.
 - c) Hypertension: SBP: MD -7.75 mmHg (95% CI:-11.44, -4.07); 254 participants, 8 trials
 - d) Hypertension: DBP: MD -2.68 mmHg (95% CI: -4.21 to -1.15), 254 participants, 8 trials(GRADE: moderate-to-low quality evidence).
Study Duration: Shortest duration of 6 days



Authors' conclusions: In white participants, sodium reduction in accordance with the public recommendations resulted in mean arterial pressure (MAP) decrease of about 0.4 mmHg in participants with normal blood pressure and a MAP decrease of about 4 mmHg in participants with hypertension. Weak evidence indicated that these effects may be a little greater in black and Asian participants.

Full reference: Graudal NA, Hubeck-Graudal T, Jurgens G. Effects of low sodium diet versus high sodium diet on blood pressure, renin, aldosterone, catecholamines, cholesterol, and triglyceride. *Cochrane Database Syst Rev.* 2020;12(12):CD004022. Published 2020 Dec 12. doi:10.1002/14651858.CD004022.pub5

Do we need different predictive equations for the acute and late phases of critical illness?

A prospective observational study with repeated indirect calorimetry measurements

Objective:

- a) to assess whether separate predictive equations (PEs) for acute and late phases are needed,
- b) to recommend the best PE(s) for our population based on the result of the first objective (*if the predicted resting energy expenditure [REE] calculated by the acute PE and measured REE in the late phase has an absolute mean difference of $\geq 20\%$ or vice versa, then two PEs at different phases may be needed. Otherwise, a single PE will be sufficient*)

Study Design: Prospective observational study

Population: Adult critically ill patients who are mechanically ventilated

Intervention/Exposure: indirect calorimetry measurement COSMED Quark RMR 2.0 in the acute (≤ 5 days) vs late (≥ 6 days) phase of critical illness, up to 14 days.

Control/comparator: None

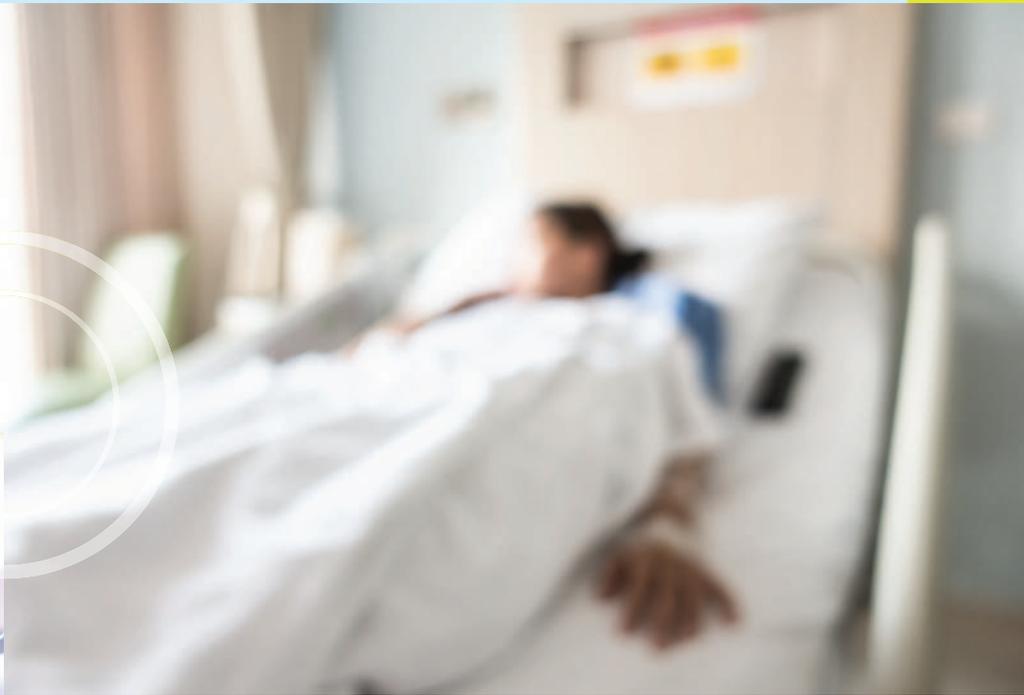
Outcome: Accuracy of developed predictive equations versus the measured

Analysis method:

- In patients who have a measured REE in both the acute and late phases (N=168): Fivefold cross-validation approach was used to develop and validate PE for both phases, whereby subjects were randomly divided into five groups. PEs were then generated five times for each phase, each time with four groups as the validation group (training folds) and the one remaining group as the cross-validation group (test fold).
- The stepwise selection of variables was applied in multiple linear regression analysis to generate the PE by entering demographic, nutritional, respiratory, and clinical characteristics variables into the model. The PEs with the highest R^2 , the lowest root mean square error (RMSE) and the lowest standard error of estimate (SEE), for acute and late phases, were identified as the best PEs.
- However, it was found that the mean absolute percentage difference was $< 20\%$ between the calculated REE for the acute phase with REE measured during the acute and late phases. Similarly, the calculated REE for the late phases and REE measured during the acute and late phases also had mean absolute percentage difference of $< 20\%$. Hence, only one PE was developed with a larger sample of patients from the acute phase (n = 294). Tenfold cross-validation was used because a higher number of folds leads to a less biased predictive model for larger sample sizes.

Results

- The best PE for estimating REE (kcal/day) was **891.6 (Height in m) + 9.0 (Weight in kg) + 39.7 (Minute Ventilation) – 5.6 (Age) – 354**, with $R^2 = 0.442$, RMSE = 348.3, SEE = 325.6.
- The mean absolute percentage difference between the measured and predicted REE in the acute and late phases are $15.1 \pm 14.2\%$ and $15.0 \pm 13.1\%$, respectively.
- In the acute phase, this PE underestimated 23.5% and overestimated 32.0% of subjects' measured REE, with a mean percentage difference against the measured REE of $-12.1 \pm 8.4\%$ and $17.6 \pm 17.1\%$, respectively.
- In the late phase, a total of 33.3% and 22.2% of the subject's measured REE was underestimated and overestimated by this PE, respectively, with a mean percentage difference against the measured REE of $-13.5 \pm 8.6\%$ and $17.0 \pm 17.2\%$, respectively.
- A Microsoft Excel Tah et al. equation calculator (in the Supplementary File, available on the online version of this article) was developed as an aid for ease of application



Full reference: Tah PC, Poh BK, Kee CC, et al. Do we need different predictive equations for the acute and late phases of critical illness? A prospective observational study with repeated indirect calorimetry measurements [published online ahead of print, 2021 Aug 30] [published correction appears in *Eur J Clin Nutr.* 2021 Oct 25;:]. *Eur J Clin Nutr.* 2021;1-8. doi:10.1038/s41430-021-00999-y

Puan Basmawati Baharom
Ketua Profesion Pengawai Dietetik
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1. Can you tell us a little bit about yourself and your childhood?

I was an athlete; I love to run and I was good runner. I was always the champion when I ran and had won lots of awards. During my primary school years, I won the best athlete award for two consecutive years when I was at the age of 11 and 12. As I entered secondary school, I slowed down my sports activities and focused more on my academics till I managed to get myself into preparatory college to further my study abroad.

I got 2 scholarships at that time, whether to continue my dream to be a doctor at a local university or to explore more abroad. I went through the Oxford dictionary (google was not born yet at that time) to understand between nutrition and clinical nutrition. I encountered the meaning of dietitian, and to be a dietitian you get to work in the hospital too. So, I decided to pursue my studies abroad, to major in dietetic and clinical nutrition since my parents encouraged me to do so.

2. Can you share with us your career journey?

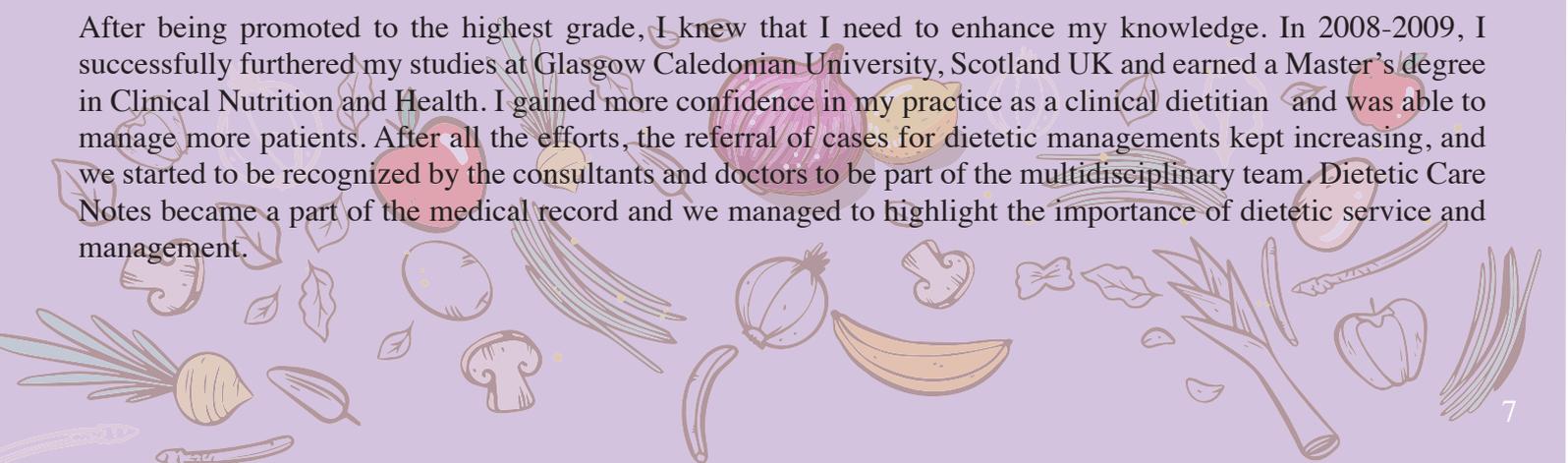
Before being appointed as a dietitian in the Ministry of Health (MOH), I worked as a Product Executive at a supplement company where I need to travel a lot. Indeed, I had already travelled to every state in Malaysia including Sabah and Sarawak after a year of working. It was quite tiring for a mother of two, yet I was happy to gain a lot of experience, meeting people who wanted to know more about nutrition. I was appointed as a dietitian under the MOH in 1993 and was supposed to report duty at Kuching, Sarawak, right after I gave birth to my 3rd child. . However, I was lucky because Madam Wong had just retired from Hospital Seremban and the officer offered me a place there after he found out that I was married with 3 children.

In Malaysia, the profession of dietetics was still very new, and that was a global issue too. Less than 1% of the population and even the MOH knew about this profession. At that time, our official title was Penyelia Jenis Makanan, but unofficially I always introduce my position as Pegawai Dietetik or Dietitian until we managed to change it officially.

For more than 10 years, I was the only dietitian in the hospital and in the state of Negeri Sembilan. Almost every month, I was invited to deliver nutrition talks in different parts of Negeri Sembilan. At the same time, I tried very hard to promote our profession.

I managed to share my expertise when I was involved in the menu development program for SUKMA X athletes in 2004, which was organized in Negeri Sembilan. In 2007, I was given the opportunity to gain more experiences with the Medical Team for Hajj. There were a lot for cases in Mecca and Medina that involved respiratory problems.

After being promoted to the highest grade, I knew that I need to enhance my knowledge. In 2008-2009, I successfully furthered my studies at Glasgow Caledonian University, Scotland UK and earned a Master's degree in Clinical Nutrition and Health. I gained more confidence in my practice as a clinical dietitian and was able to manage more patients. After all the efforts, the referral of cases for dietetic managements kept increasing, and we started to be recognized by the consultants and doctors to be part of the multidisciplinary team. Dietetic Care Notes became a part of the medical record and we managed to highlight the importance of dietetic service and management.



3. What is your most significant accomplishment as a professional?

When I was selected to participate in the executive management program by Public Service Department at Germany in 2019, I represented dietitians as one of public service profession. From that moment, I had the opportunity to show them that dietitians play a significant role in managing patient care, diet and food, which are matters of utmost importance in our life.

4. What are some of the major milestones in your life?

Since I'm still actively involved in the Technical Committee of the Dietetic Profession, we continuously work to be in par with other professions and at least with the pharmacists. The system that is already in concrete is that we have 4 bureaus to facilitate dietetic services, to expand, to train and to assure the competency of the personnel and to highlight what matters regarding diet in social media. I am so proud with all the members and the spirit among us, to keep blooming.

5. How do you balance between your personal/family and professional time?

I am fully blessed with my dietitians at Hospital Tuanku Jaafar Seremban. They are so creative, proactive and aggressively in doing their part as a dietitian and future leader. They teach me to manage my time well, so that I can equally balance between family and work. I hardly disturb my time after office hours with work matters because that is the time for me and my family. Every day, I will try to assure all urgent things are done and prioritize the matters well.

6. What is the quality that you look for in hiring/promoting a Dietitian?

Attitude- willing to learn, to adjust and tolerate and not to be so calculative.

7. As a Ketua Profesion Pengawai Dietetik, what is your hope for the profession in the next 5 years?

Recognition as an expert in certain area like to be a pediatric dietitian, renal dietitian, or an endocrine dietitian. Now, we only have Oncology Dietitians. I want to see at every wards or departments, dietitians are around to help and manage patients' dietary intake.

8. Any final words of encouragement for the profession?

You are a dietitian once you are graduated. Have souls, which means you know how to practice and use your knowledge as a dietitian, for yourself, your family, your neighbors, your extended relatives and society. We eat 3 meals per day, so eat properly and healthy. Be a good dietitian by being a good example! People are watching what and how you eat.



How to perform a systematic review and meta-analysis: a brief introduction

Systematic review (with or without meta-analysis) is a study design located at the top of the evidence-based pyramid, this is especially true for systematic review of randomized controlled trials (RCTs). Unlike narrative reviews, systematic reviews need to have a "clearly stated objectives, predefined inclusion and exclusion criteria, an explicit reproducible methodology, systematic exhaustive searches to identify all sources of evidence, an assessment of the validity for each included study, and a systematic presentation of the study characteristics/results."¹ Systematic review is considered an original research.

Below is a brief description on the key steps of conducting a systematic review (particularly for RCTs). Before we even embark on the steps below, we have to at least understand the literature of the specific topic of interest and identify the research gap. It is also recommended to search systematic review registry such as PROSPERO to identify if there is a similar systematic review being conducted by another group of researcher to avoid duplication of work.

Step 1: Defining a question

- A question is very important to bring focus to the review. The question must be relevant and address practical concerns and options faced by frontline decision makers.
- Once the question is defined, a PICOS method can be used to establish the eligibility criteria of the studies that are going to be included in the systematic review, where P=population, I=intervention, C=comparison, O=outcome, S=study design.

Step 2: Designing the search strategy

- It is important to design a search strategy that will include all (or most) of the potential (published) papers in the literature. The duration of search and language (whether to include non-English papers) should be pre-defined. The search should be conducted in at least 2 major databases. The most commonly searched database for medical and health sciences topics are MEDLINE, EMBASE and CENTRAL (these databases can be accessed through OVID, a powerful searching platform). MEDLINE can also be accessed via PubMed. A step-by-step guide of conducting a PubMed search can be found in McKeever 2015.² While CINAHL (accessed through EBSCOhost) is also recommended especially for research involving allied health professionals. It is optional to include grey literature/ conference abstract.
- The search strategy should consist of MeSH terms (for MEDLINE)/Emtree (EMBASE) and free-text (known as keywords) that are relevant to the topic. These terms can be combined together with Boolean Operators 'OR', 'AND' or 'NOT', as appropriate.

- The reference list of previous systematic review should also be searched.
- Ongoing study should also be searched in established registry such as the clinicaltrial.gov.

Step 3: Literature screening

- Once we get the search results, the bibliographic can be exported to a reference management software (such as EndNote or Mendeley) for the removal of duplications.
- Two independent reviewers should screen the title and abstract to identify potential eligible studies. The full-text of the potential studies can then be retrieved to confirm their eligibility. The number of papers that are included and excluded in each process should be recorded for the generation of the PRISMA flow chart. This process can be done in a reference management software, or a platform that is designed for this process such as Covidence.



Step 4: Data Abstraction and Critical Appraisal

- At least before data abstraction, the protocol of a systematic review should be matured and be registered in PROSPERO.
- A standardized case report form (CRF) should be designed and piloted before data abstraction. Two independent abstractors should abstract the data independently into the CRF and the data are compared and harmonized. The corresponding authors of the original study can be contacted to obtain additional data that are required or for clarification of the methodology.
- Two independent reviewers should assess the risk of bias of the included studies using appropriate tools. For example, the Cochrane Risk-of-Bias tool 2 (RoB 2) can be used for evaluating RCTs. For nutrition studies, NUQUEST may be considered.³
- The certainty of evidence can be evaluated using tools such as GRADE (Grading of Recommendations Assessment, Development and Evaluation).

Step 5: Meta-analysis

- If the results of the included papers are not too heterogeneous to be pooled together, a meta-analysis can be performed using an established software. The most popular (free) meta-analysis software is RevMan5.
- Using a meta-analysis software, a forest plots can be generated to visualize the pooled effect estimates.
- For continuous outcome such as body mass index, knowledge score, hospital length of stay etc, the pooled estimate can be mean difference (if the outcome is measured in the same unit) or standardized mean difference.
- For dichotomous outcomes such as mortality, incidence of infection and etc, the pooled estimate can be odds ratio, risk ratio or risk difference.
- Depending on the heterogeneity of the study design or the result (based on the I^2 measure of the forest plot), a fixed or random effect meta-analysis can be performed. By convention, if the I^2 measure is $\geq 50\%$, a random effect meta-analysis should be used.
- An *a priori* (planned before the data abstraction and registered in PROSPERO) or post-hoc (after data abstraction) subgroup or sensitivity analysis may be conducted to explore potential subgroup differences or confirming the results of the main analysis, especially when heterogeneity is high.
- Funnel plot should also be generated to examine bias in the results of meta-analyses, most frequently to look for publication bias. If ≥ 10 studies are included in a meta-analysis, Egger's test for funnel plot asymmetry should be performed.⁴

- More sophisticated meta-analysis method such as trial sequential analysis and network meta-analysis are getting popular and should be conducted with guidance from experts.

Step 6: Reporting of systematic review

- The PRISMA checklist should be referred when writing manuscript for a systematic review. The latest PRISMA statement was published in year 2020.⁵

Lastly, bear in mind that not all systematic review and meta-analysis of RCTs has a trustable result. Recently, many low quality journals are publishing low quality systematic review that is conducted with poor methodology. Hence, it is important for us to understand the proper methodology in order to evaluate the robustness and the trustworthiness of a systematic review.



Reference:

1. Crowther DM. A clinician's guide to systematic reviews. *Nutr Clin Pract*. 2013;28(4):459-462. doi:10.1177/0884533613490742
2. McKeever L, Nguyen V, Peterson SJ, Gomez-Perez S, Braunschweig C. Demystifying the Search Button: A Comprehensive PubMed Search Strategy for Performing an Exhaustive Literature Review. *JPEN J Parenter Enteral Nutr*. 2015;39(6):622-635. doi:10.1177/0148607115593791
3. Kelly SE, Greene-Finestone LS, Yetley EA, et al. NUQUEST-NUTRITION QUALITY Evaluation Strengthening Tools: Development of tools for the evaluation of risk of bias in nutrition studies [published online ahead of print, 2021 Oct 4]. *Am J Clin Nutr*. 2021:nqab335. doi:10.1093/ajcn/nqab335
4. Sterne JA, Sutton AJ, Ioannidis JP, et al. Recommendations for examining and interpreting funnel plot asymmetry in meta-analyses of randomised controlled trials. *BMJ*. 2011;343:d4002. Published 2011 Jul 22. doi:10.1136/bmj.d4002
5. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71. Published 2021 Mar 29. doi:10.1136/bmj.n71

Resources:

• OVID: <https://ovidsp.ovid.com/>
• CENTRAL: <https://www.cochranelibrary.com/central/about-central>
• CINAHL: <https://www.ebsco.com/products/research-databases/cinahl-complete>
• PRISMA: <http://prisma-statement.org/>
• Covidence: <https://www.covidence.org/>
• Risk of bias 2: <https://methods.cochrane.org/bias/resources/rob-2-revised-cochrane-risk-bias-tool-randomized-trials>
• GRADE: <https://www.gradeworkinggroup.org/>
• PROSPERO: <https://www.crd.york.ac.uk/prospéro/>
• RevMan 5: <https://training.cochrane.org/online-learning/core-software-cochrane-reviews/revman/revman-5-download>
• Cochrane handbook: <https://training.cochrane.org/handbook/current>

10 To Successful Online Cooking Demonstration By Dietitians

Steps



MCO Movement Control Order had changed the way dietitians run community programmes. Despite being locked down (as physical and social distance remains a priority in order to reduce the spread of the virus), we can connect to a community on an online platform. Hosting a virtual cooking class is not only a fun way to engage your community online during these challenging times, but it also provides an opportunity for you to have a hands-on session together with them!

Orchestrating this production may seem daunting but it is as simple as using the camera on your mobile device. Preparation is important as it encourages a smooth operation all the way through. Follow these 10 simple steps, and you will be running your own cooking school in no time.

Identify your audience.

You must identify who your audience is and what they would like to see from you. With these preparations, you will be able to determine the right menu and convey the right message to the audience.

01

Pick the menu

02

You shall choose recipes that can be easily followed by your target audience. Make sure the meal preparation & cooking time is fit to the scheduled length.

Sort the shopping list in advance and avoid ingredients that are difficult to find or deliver. You may provide alternatives for your participants who have an allergy to certain ingredients or have issues sourcing certain ingredients from the store.

Pick the day, and time

Once you have figured out the ideal length, you may check the available time of your participants and set the expectation with your participants as to how much they will need to set aside for the class. You may even want to poll your participants to ask what day and time works best for them.

03



Pick the channel

04

If you prefer something more along the lines of video conferencing, try Zoom, Google Meet, or Microsoft Teams.

If you have a strong social media following, take advantage of that and go live on one of those platforms, like Facebook Live or Instagram Live.

Create a practice run of the show

It's important to set aside time to do a practice run-through to create a detailed outline of the class to be shared with both your participants and your co-host. You will want to have your cooking area set up so you can test your camera angles, lighting, and sound. Invite your co-host to see how everything looks from a viewer's perspective.

This will set expectations and help everyone to be prepared. Include the ingredients and necessary kitchen tools you'll be using. This will help your participants follow along easily when it is time for them to join you online and go to work in their own kitchen.

If you have a strong social media following, take advantage of that and go live on one of those platforms, like Facebook Live or Instagram Live.

05



Promote the class- and your recipe(s)

06

Once you know what you are making, when you are making it, and where your participants can follow along, spread the word far and wide through social media.

Premeasure and prepare

Leading up to the event, continue to promote the recipe, and remind your participants to have all the ingredients on hand and to premeasure everything to keep the show running smoothly. You will probably have participants asking for alternatives and substitutions, so offer those ahead of time if you have some in mind.

07



Have your co-host be your personal assistant

08

Having someone co-host with you is invaluable. This allows you to stay focused on cooking and providing instructions, while your co-host helps facilitate the one-on-one connection and more personalized experience.

Go live and move slowly with your audience

Welcome everyone and build rapport. You will want to go through the run of the show and set expectations for how you will be monitoring your live chat and any answering questions that come up throughout.

If you're on a video conferencing platform, walk guests through the control panel or any features they may need to use during the class. Prior to beginning the actual cooking portion, walk through the ingredient list one last time, and point out that you have premeasured the ingredients.

It's important to pace yourself and instruct them in an easy-to-follow manner. Certain terminology that may be common to you could be something a viewer is hearing for the first time, so use basic cooking language.

Sometimes people miss an instruction, so repeating your message will help everyone stay on track.

Lastly, encourage everyone to take pictures as they go: chef selfies, kitchen set-ups, progress on the dishes, etc.

Wrap it up with your key messages

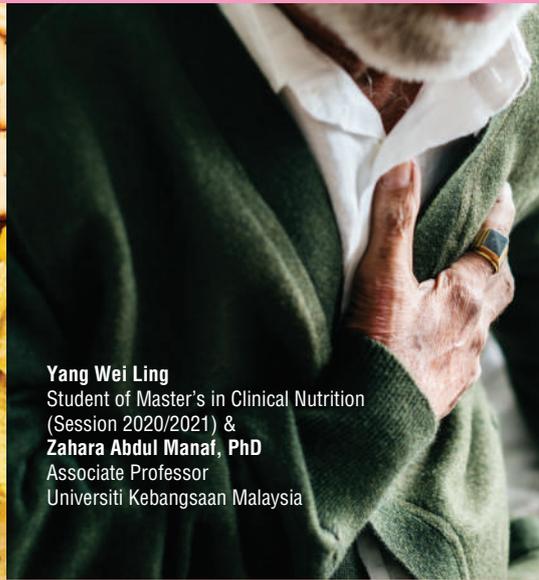
10

Once the dish is finished, encourage attendees to enjoy the meal together on video with a live Q&A. Wrap it up with your key messages to your target audience.



Written by:
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Ultra-Processed Foods and Health Risk



Yang Wei Ling
 Student of Master's in Clinical Nutrition
 (Session 2020/2021) &
Zahara Abdul Manaf, PhD
 Associate Professor
 Universiti Kebangsaan Malaysia

Malaysia is the fattest country in Asia based on World Health Organization in 2019¹. Sedentary lifestyle, stress and diet that consist of large amount of unhealthy ultra-processed foods (UPFs) can be some of the factors that led to the problem of overweight or obesity. Based on the NOVA classification, ultra-processed foods were defined as multi-ingredient, mixtures that are industrially formulated which contain small amount of intact food². Examples of UPFs include pre-prepared and ready to eat products such as 'instant' soups, noodles or ready-to-consume products such as carbonated soft drinks, industrialized breads and buns and so on³.

Some recent studies have shown that UPFs is associated with obesity and several non-communicable diseases (NCDs) such as type-2 diabetes. A recent systematic review and meta-analysis of observational studies found that individuals that has higher intake of UPFs has higher percentage of excess body weight⁴. Besides, a cross-sectional survey of dietary habits and nutrient intake had observed that high consumption of UPFs was associated with higher body mass index (BMI), greater waist circumference (WC) and also higher odds of being obese when compare to lower consumption of UPFs⁵. In fact, a dose-response relationship of consumption of UPFs and prevalence of obesity in men and women was demonstrated⁵. Further, another longitudinal study also identified that individuals with UPFs $\geq 50\text{g/d}$ have significantly higher mean BMI and mean WC than non-consumers⁶. The association of UPFs or processed foods consumption and obesity had long been emphasized by researchers or health care professionals before the randomized control trial (RCT). Recently, a RCT has further highlighted the casual relationship between UPFs consumption and obesity⁷. In this RCT, study participants consuming ultra-processed diet experienced weight gain and increase in body fat mass, whereas weight and fat mass reduction were observed when taking unprocessed diet⁷.



The explanation for the association of UPFs with obesity or NCDs may include overconsumption of these foods which have the characteristics such as denser in energy, containing higher levels of added sugar, sodium, saturated and trans fatty acids⁸. UPFs also tend to contain higher amount of refined carbohydrate which are likely to cause alteration in insulin and elevate storage in adipose tissues. Higher content of fat or refined carbohydrate may affect the reward neurocircuitry mechanism and increase the craving for food and excessive intake^{9,10}. In addition, mass media marketing of UPFs are likely to cause increase in food intake¹¹. Besides, these food products are often hyperpalatable and require less preparation steps which are likely to cause “mindless eating”¹². A study also found that the eating rate was higher during the UPFs diet⁷.

The increase in eating speed may bring disturbance to various satiety hormones and can affect the amount of food intake¹³. In addition, UPFs often undergoes complicated food processing method that can cause changes to the fiber and fat content of the foods and this modification in food matrix can influence the interaction between the gut microbiota composition and the host¹⁴. Researchers had proposed that UPFs can promote inflammatory gut microbiota that are associated with some cardiometabolic condition¹⁵. Also, UPFs tend to contain artificial sweeteners such as Polysorbate-80 that is associated with alteration in gut microbial composition which may increase the risk of obesity or glucose intolerance¹⁶. Further consumption of UPFs increased the risk of exposure to compounds such as phthalates or bisphenol which are commonly used in food packaging and production¹⁷. Phthalates are one of the examples of endocrine-disrupting chemicals (EDCs). Exposure to phthalates such as diisononyl phthalate (DINP) and (2-ethylhexyl) phthalate (DEHP) may give rise to overweight or obesity¹⁸. These EDCs can also be known as obesogen which could promote adipogenesis and lead to weight gain¹⁸. Other compounds such as Bisphenol A (BPA) may also have positive association with obesity¹⁹.

The sales of UPFs have increased in the region of South and Southeast Asia in recent years²⁰. The rise in food prices especially fresh fruits and vegetables may put more challenges in halting the increase consumption of UPFs due to its lower prices and shorter meal preparation time compare to fresh foods. Strategies to prevent obesity might need to target several aspects such as socioeconomic, personal and environmental²¹ as obesity is multifactorial and most importantly it is a largely preventable disease. Initiations such as imposing food taxes on UPFs, policies to modify food environment, joint effort from schools, hospitals and health centres to continuously educate healthy eating and promotion of physical activity can be some of the approaches to reduce the prevalence of obesity.



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