

PHILIPPINE GUIDELINES on PERIODIC HEALTH EXAMINATION

Lifestyle Advice

PERIODIC HEALTH EXAMINATION TASK FORCE 2021



DISCLAIMER

This guideline is intended to be used by specialists, general practitioners, allied health professionals who are primary care providers. Although adherence to this guideline is encouraged, it should not restrict the healthcare providers in using their sound clinical judgment in handling individual cases.

Payors and policymakers, including hospital administrators and employers, can also utilize this CPG, but this document should not be the sole basis for evaluating insurance claims. Recommendations from this guideline should not also be treated as strict rules on which to base legal action.

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ABBREVIATIONS AND ACRONYMS

Acronym	Full meaning
BMI	Body mass index
CBT	Cognitive behavioral therapy
CI	Confidence interval
COI	Conflict of interest
COPD	Chronic obstructive pulmonary disease
CPG	Clinical practice guideline
DOH	Department of Health
DBP	Diastolic blood pressure
ENDS	Electronic nicotine delivery systems
EtD	Evidence-to-decision
HIV	Human immunodeficiency virus
HD	Healthy diet
HR	Hazard ratio
IA	Internet addiction
IGD	Internet gaming disorder
MD	Mean difference
NCD	Noncommunicable disease
NPI	Nonpharmacologic intervention
OR	Odds ratio
PA	Physical activity
QALY	Quality-adjusted life year
QOL	Quality of life
RCT	Randomized controlled trial
RA	Republic act
RR	Risk ratio
SBP	Systolic blood pressure
SD	Standard deviation
SR	Systematic review
STI	Sexually transmitted infection
WHO	World Health Organization
YLD	Years lived with disability

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The NIH-ICE undertook extensive technical work in (1) searching and synthesizing the evidence while ensuring objectivity in each stage of the process, (2) presenting the evidence in the panel discussion and documenting and writing the final report. They were also indispensable in carrying out the legwork, coordinating among various individuals, groups, and committees, and facilitating the *en banc* meeting. The CPG Central Steering Committee and the Task Forces Steering Committee were responsible for overall organization and management and is accountable for the quality of the CPG.

Lastly, this guideline is invaluable because of the contribution and participation of panelists from different sectors of healthcare who committed their time and effort to share their knowledge, experience, and expertise in analyzing the scientific evidence and their values and preferences in formulating the recommendations with consideration of patients and the current healthcare system in the country.

The content of this CPG is an intellectual property of the Department of Health (DOH). Kindly provide the proper citations when using any part of this document in lectures, research papers, and any other format presented to the public. The electronic version of this material can be accessed online on the DOH website.

Queries, suggestions, and other concerns regarding this CPG may be directed to the DOH National Practice Guidelines Program office by email (egmd@doh.gov.ph) or to DOH-HPDPB and UP-NIH.

EXECUTIVE SUMMARY

This Clinical Practice Guideline for the Periodic Health Examination: Lifestyle Advice is an output from the joint undertaking of the Department of Health and National Institutes of Health – Institute of Clinical Epidemiology.

This clinical practice guideline (CPG) is a systematic synthesis of evidence to address lifestyle advice among Filipino adults and adolescents. The CPG provides forty-seven (47) recommendations on prioritized questions.

Recommendations are based on the best available evidence for each of the nine identified clinical questions. The guideline development process followed the widely accepted Grading of Recommendations, Assessment, Development, and Evaluation or the GRADE approach including GRADE Adolopment¹, a systematic process of adapting evidence summaries and the GRADE Evidence to Decision or EtD² framework. It included 1) identification of critical questions and critical outcomes, 2) retrieval of current evidence, 3) assessment and synthesis of the evidence base for these critical questions, 4) formulation of draft recommendations, 5) convening of a multi-sectoral stakeholder panel to discuss values and preferences and assess the strength of the recommendations, and 6) planning for dissemination, implementation, impact evaluation and updating. The CPG is intended to be used by general practitioners and specialists in the primary care setting, policy makers, employers and administrators, allied health practitioners and even patients. The Lifestyle Advise Taskforce took an individual patient perspective primarily, and a public health perspective secondarily.

The recommendations in this CPG shall hold and will be updated after three years or when new evidence arise.

¹ Schunemann H, Wiercioch W, Brozek J, Etzeandía-Ikobaltzeta I, Mustafa R, Manja V. GRADE Evidence to Decision (EtD) frameworks for adoption, adaptation, and de novo development of trustworthy recommendations: GRADE-ADOLOPMENT. *J Clin Epidemiol*. 2017;81:101-10.

² Schunemann HJ, Mustafa R, Brozek J, Santesso N, Alonso-Coello P, Guyatt G, et al. GRADE Guidelines: 16. GRADE evidence to decision frameworks for tests in clinical practice and public health. *J Clin Epidemiol*. 2016;76:89-98.

SUMMARY OF RECOMMENDATIONS

Recommendation	Certainty of Evidence	Strength of Panel Recommendation
Question 1: Should nonpharmacologic interventions such as brief intervention, telephone counseling, cognitive-behavioral approaches, patient education, self-help and exercise programs be recommended to prevent smoking among Filipino adults and adolescents?		
We recommend the use of nonpharmacologic interventions such as counseling for smoking cessation for healthy non-pregnant Filipino adults.	High	Strong
We recommend the use of nonpharmacologic interventions such as counseling for smoking cessation and for prevention of smoking initiation for healthy non-pregnant adolescents.	Very Low	Strong
Question 2: Should electronic nicotine delivery systems (ENDS) be recommended for nonpregnant Filipino adults and adolescents?		
We recommend against the use of electronic nicotine delivery systems (ENDS) for smoking cessation, prevention of smoking initiation, and prevention of relapse among non-pregnant Filipino adults.	Very Low	Strong
We recommend against the use of ENDS for smoking cessation, prevention of smoking, and prevention of relapse among Filipino adolescents.	Very Low	Strong
Question 3: Should non-pharmacologic interventions on safe sex be recommended to prevent Sexually Transmitted Infections (STIs), unintended pregnancy or parenthood, and mental health issues among adolescents and adults who screened positive for high-risk sexual behavior?		
We recommend the use of non-pharmacologic interventions on safe sex to prevent sexually transmitted infections, unintended pregnancy, unprotected intercourse, and to promote consistent condom use among Filipino adults who screened positive for high-risk sexual behaviors.	Low	Strong

We recommend the use of non-pharmacologic interventions on safe sex to prevent sexually transmitted infections, unintended pregnancy, unprotected intercourse, and promote consistent condom use among Filipino adolescents who screened positive for high-risk sexual behaviors.	Very Low	Strong
Question 4: Should psychological/motivational coaching or behavioral counselling for physical activity be recommended for Filipino adults without cardiovascular risk factors and adolescents?		
We recommend the use of brief interventions, psychological/motivational coaching, or behavioral counselling for physical activity to prevent hypertension, diabetes, and obesity, to promote weight loss, and to increase physical activity among Filipino adults without cardiovascular risk factors.	Low	Strong
We suggest against the use of psychological/motivational coaching or behavioral counseling to promote healthy nutrition in the general Filipino adolescent population.	Very Low	Weak
We recommend the use of psychological/motivational coaching or behavioral counselling for physical activity for the prevention of hypertension, diabetes, and obesity, and to promote weight loss among obese Filipino adolescents.	Very Low	Strong
Question 5: Should psychological/motivational coaching or behavioral counseling for healthy nutrition be recommended among adults and adolescents?		
We recommend the use of behavioral counselling or psychological/motivational coaching for healthy nutrition to promote weight loss, prevent hypertension, and prevent diabetes among Filipino adults without cardiovascular risk factors.	Low	Strong
We suggest against the use of psychological/motivational coaching or behavioral counseling to promote healthy nutrition in the general Filipino adolescent population.	Very Low	Weak

We recommend the use of psychological/motivational coaching or behavioral counseling to promote healthy nutrition among obese Filipino adolescents.	Very Low	Strong
Question 6: Should nonpharmacologic interventions on stress (behavior therapy, mind-body therapy) be recommended among adolescents and adults?		
We suggest the use of nonpharmacologic interventions for stress to prevent mental health issues and to reduce stress among Filipino adults.	Very Low	Weak
We suggest nonpharmacologic interventions for stress reduction to prevent mental health issues among Filipino adolescents.	Very Low	Weak
Question 7: Should nonpharmacologic interventions (brief intervention, counseling, education and advice) for internet addiction be recommended among healthy adolescents and adults?		
We suggest the use of nonpharmacologic interventions for internet addiction among adults with internet addiction/internet gaming disorder.	Very Low	Weak
We suggest the use of nonpharmacologic interventions for internet addiction in the general adolescent population.	Very Low	Weak
We recommend the use of nonpharmacologic interventions for internet addiction among adolescents with internet addiction/internet gaming disorder.	Very Low	Strong
Question 8: What advice on physical activity should be given to generally healthy Filipino adults and adolescents?		
Adapted from the 2020 WHO guidelines on physical activity and sedentary behavior		

Children and adolescents should do at least an average of 60 minutes per day of moderate- to vigorous-intensity, mostly aerobic, physical activity, across the week.	Moderate	Strong
Vigorous-intensity aerobic activities, as well as those that strengthen muscle and bone, should be incorporated at least 3 days a week.	Moderate	Strong
Children and adolescents should limit the amount of time spent being sedentary, particularly the amount of recreational screen time.	Low	Strong
All adults should undertake regular physical activity.	Moderate	Strong
Adults should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week, for substantial health benefits.	Moderate	Strong
Adults may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for additional health benefits.	Moderate	Conditional
Adults should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.	Moderate	Strong
To help reduce the detrimental effects of high levels of sedentary behavior on health, adults should aim to do more than the recommended levels of moderate- to vigorous intensity physical activity.	Moderate	Strong

All older adults should undertake regular physical activity.	Moderate	Strong
Older adults should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous intensity activity throughout the week, for substantial health benefits.	Moderate	Strong
Older adults should also do muscle strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits.	Moderate	Strong
As part of their weekly physical activity, older adults should do varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity, on 3 or more days a week, to enhance functional capacity and to prevent falls.	Moderate	Strong
Older adults may increase moderate intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous intensity activity throughout the week, for additional health benefits.	Moderate	Conditional
Older adults should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.	Moderate	Strong
To help reduce the detrimental effects of high levels of sedentary behavior on health, older adults should aim to do more than the recommended levels of moderate to vigorous-intensity physical activity.	Moderate	Strong
Question 9: What advice on healthy diet should be given to generally healthy Filipino adults and adolescents?		

Adapted from the 2018 WHO guidelines on saturated fatty acid and trans-fatty acid intake for adults and children

In adults and children whose saturated fatty acid intake is greater than 10% of total energy intake, WHO recommends reducing saturated fatty acid intake.	Moderate	Strong
In adults and children, WHO suggests reducing the intake of saturated fatty acids to less than 10% of total energy intake.	Low	Conditional
WHO suggests using polyunsaturated fatty acids as a source of replacement energy, if needed, when reducing saturated fatty acid intake.	Low	Conditional
In adults and children whose saturated fatty acid intake is less than 10% of total energy intake, WHO suggests no increase in saturated fatty acid intake.	Low	Conditional

Adapted from the 2015 WHO guideline on sugars intake for adults and children

WHO recommends a reduced intake of free sugars throughout the life course.	Moderate	Strong
In both adults and children, WHO recommends reducing the intake of free sugars to less than 10% of total energy intake.	Moderate	Strong
WHO suggests a further reduction of the intake of free sugars to below 5% of total energy intake.	Very Low	Conditional

Adapted from the 2012 WHO guideline on sodium intake for adults and children

WHO recommends a reduction in sodium intake to reduce blood pressure and risk of cardiovascular disease, stroke and coronary heart disease in adults.	Very Low	Strong
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WHO recommends a reduction in sodium intake to control blood pressure in children.	Very Low	Strong
WHO recommends a reduction to <2 g/day sodium (5 g/day salt) in adults.	Very Low	Strong
The recommended maximum level of intake of 2 g/day sodium in adults should be adjusted downward based on the energy requirements of children relative to those of adults.		
Adapted from the 2012 WHO guideline on potassium intake for adults and children		
WHO suggests an increase in potassium intake from food to control blood pressure in children.	Very Low	Conditional
The recommended potassium intake of at least 90 mmol/day should be adjusted downward for children, based on the energy requirements of children relative to those of adults.	-	-
WHO recommends an increase in potassium intake from food to reduce blood pressure and risk of cardiovascular disease, stroke and coronary heart disease in adults	Very Low	Strong
WHO suggests a potassium intake of at least 90 mmol/day (3510 mg/day) for adults	Very Low	Conditional

1. INTRODUCTION

The Philippine Guidelines on Periodic Health Examination (PHEX) was first published in 2004. [1] It was a comprehensive appraisal and synthesis of evidence on screening interventions committed to providing early prevention services among apparently healthy Filipinos. It was a long-awaited publication and the first to offer evidence-based recommendations for screening tests made possible through the concerted effort of various medical and paramedical organizations composed of more than a hundred experts, researchers, and stakeholders. [1] PHEX was inspired by the Canadian and the US Preventive Services Task Forces but tailored to the Philippine setting.

Due to the evolving technology, scientific evidence, and health policies, there is a pressing need to update this guideline. The 2021 Philippine Guidelines will support the objectives stated in the Universal Health Care Act that all Filipinos are given access to quality and affordable medical services, including primary care benefits. [2]

In developing the guideline, evidence-based recommendations for the prioritized health screening were formulated using the GRADE Evidence-to-Decision (EtD) framework. [3, 4] The EtD framework aims to facilitate the adaptation of recommendations and decisions of experts and stakeholders based on specific contexts, essential health outcomes, benefits, and harms while looking through the equity, applicability, and feasibility lenses. The task force took an individual patient perspective primarily, and a public health perspective secondarily. Both adult and adolescent Filipino populations were considered for each clinical question.

The target users of this guideline are individual practitioners (primary audience) including primary care providers and specialists, as well as regulatory agencies and policymakers in the national government, training institutions, payors, patients, the general public as well as partners in industry (secondary audience).

References

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adaptation, and de novo development of trustworthy recommendations: GRADE-ADOLOPMENT. J Clin Epidemiol. 2017;81:101-10.

2. SCOPE & PURPOSE

This clinical practice guideline is a systematic synthesis of evidence to address lifestyle or non-pharmacologic interventions in preventing diseases and promoting better health.

Non-pharmacological intervention (NPI) for this guideline is defined as any type of health intervention which is not primarily based on medication. More specifically, the SC limited the NPIs of interest to ***clinical interventions*** – which pertain to strategies done or recommended by individual providers to patients, likely in a clinic setting as opposed to *public health or population-based interventions* such as tobacco taxation or systematic reduction of salt content of food which are also regarded as interventions on lifestyle. Recommendations were made on smoking cessation, electronic nicotine delivery system (ENDS), safe sex, physical activity, nutrition, stress reduction, internet addiction, advice on physical activity and healthy diet.

3. GUIDELINE DEVELOPMENT METHODOLOGY

3.1 Organization of the Process

Following international standards, the DOH Manual for CPG Development outlined the guideline development process into four phases: preparation and prioritization; CPG generation; CPG appraisal; and implementation. [1]

In the preparation and prioritization phase, the Steering Committee (SC) set the CPG objectives, scope, target audience, and clinical questions. In developing the guideline questions for the task force, the SC performed scoping search of existing lifestyle guidelines as well as ranking of topics based on burden of disease, current controversy, cost-effectiveness, new evidence available, potential impact, public and provider interest, variation in care, sufficiency of evidence, and timeliness. Interventions that are linked to screening recommendations from the PHEX1 Guidelines such as tobacco cessation (linked to screening for tobacco use), safe sex (linked to screening for high-risk sexual behavior), and healthy diet/physical activity (linked to BMI screening for obesity) were prioritized. The SC identified six priority areas: diet, physical activity, substance use including smoking, stress, sleep, and excessive internet use. Adults and adolescents were identified as population groups. Clinical questions with outcomes were finalized after soliciting feedback from stakeholder organizations.

The Technical Working Group comprised of evidence review experts were tasked to review existing CPGs, appraise and summarize evidence relevant to each clinical question, and draft initial recommendations. The SC emphasized the need to search and prioritize local studies to improve applicability of the evidence and feasibility in implementing the recommendations. The evidence summaries were then presented to the Consensus Panel (CP).

The CP was composed of multisectoral representatives nominated by their respective organizations – Association of Municipal Health Officers of the Philippines (AMHOP), Department of Health (DOH), Philippine Alliance of Patient Organizations (PAPO), Philippine College of Physicians (PCP), Philippine Pediatric Society (PPS), Philippine Society of Adolescent Medicine (PSAMS), Philippine Society of General Internal Medicine (PSGIM), Philippine Society of Public Health Physicians (PSPHP), Philippine College of Occupational Medicine (PCOM), Philippine Academy of Family Physicians (PAFP) and Philippine Nurses' Association (PNA). The CP was composed of 13 members, including 3 non-voting members, and 2 non-voting observers. A minimum of 8 panelists were needed for a quorum (simple majority) and 6 votes for a recommendation to be passed.

CP members rated the importance of outcomes before and after seeing the evidence summaries using an online survey (Google form). The top seven outcomes for each question were presented during the *en banc* meetings. The panel discussed considerations on each clinical question and voted on each recommendation and voted

on the wording and strength of each recommendation. They participated in a modified Delphi process to decide on recommendations not resolved during the *en banc* meetings.

3.2 Creation of the Evidence Summaries

The clinical questions were phrased in the PICO (population, intervention, comparator and outcome) format. The EREs searched for existing CPGs including those of the United States Preventive Services Task Force (USPSTF), National Institute for Health and Care Excellence (NICE), Canadian Task Force on Preventive Healthcare, and Australian Clinical Practice Guidelines. Guidelines were sought through electronic databases (PubMed and the Western Pacific Region Index Medicus [WPRIM]). A sensitive PubMed filter for CPGs was utilized. [2] Websites of the DOH as well as local and international specialty organizations were also browsed. Two independent EREs assessed the quality of each relevant guideline using the AGREE II instrument [3], and disagreements were resolved via consensus. A CPG was eligible for adapting if they were (a) recent (International: published not earlier than 2019; Local: latest update was considered), (b) high-quality (Overall AGREE II score $\geq 75\%$, AND scaled domain score $\geq 80\%$ for “Rigour of Development”), and (c) had evidence profiles available. If the CPG were of good quality and done within 5 years (2016-2021), the evidence summaries of the CPG were adopted.

Existing evidence profiles were updated, and de novo systematic reviews were conducted for those without existing CPGs meeting the aforementioned criteria. All searches were done from May to Nov. of 2021. Details on the time periods were discussed under the specific questions. Please see evidence summaries in [Appendices](#). Searches on electronic databases including PubMed (MEDLINE), the Cochrane Library, and HERDIN Plus were performed by two independent reviewers. Disagreements regarding study inclusion were resolved by consensus or arbitrated by a third reviewer when necessary. Search terms (MeSH and free text) were based on the PICO for each clinical question. If necessary, EREs contacted study authors to verify details.

Relevant systematic reviews (SRs) published within two years and with high or moderate confidence were used as the basis for recommendations when no new relevant studies were found. Each SR was assessed by two independent EREs using the AMSTAR 2 tool, and was considered of high quality when it had one or no non-critical weakness [4]. SRs were excluded outright if both raters agree that there were no prespecified criteria for inclusion, and there were concerns about conflicts of interest declaration. [5]

Table 1. Domains of the evidence-to-decision framework utilized by the task force

1. **Desirable effects:** How substantial are the desirable anticipated effects?
2. **Undesirable effects:** How substantial are the undesirable anticipated effects?
3. **Certainty of evidence:** What is the overall certainty of the evidence of effects?
4. **Values:** Is there important uncertainty about or variability in how much people value the main outcomes?
5. **Balance of effects:** Does the balance between desirable and undesirable effects favor the intervention or the comparison?
6. **Acceptability:** Is the intervention acceptable to key stakeholders?
7. **Feasibility:** Is the intervention feasible to implement?
8. **Resources required:** How large are the resource requirements (costs)?

De novo systematic reviews were performed for questions where no relevant SR was found. Preference to randomized controlled trials (RCTs) was given for questions on interventions. Only cohort and case-control designs were considered for observational studies. At least two reviewers independently appraised directness, methodological validity and the results of each included study. The search strategy and inclusion criteria were based on the PICO question and are included in their respective evidence summaries. The Cochrane Collaboration Risk of Bias (RoB) tool, ROBINS-I and Newcastle Ottawa Scale were used to assess study quality. Review Manager 5 was used for quantitative synthesis, while GRADEpro was used to generate evidence profiles and EtD tables. For each clinical question, the EREs prepared evidence summaries which included a statement on the burden of illness and domains in the EtD framework modified from the clinical recommendation – individual patient perspective template (Table 1). Levels of certainty of evidence was reported following the GRADE approach (Table 2).

To answer the clinical questions on what to advice on healthy diet and on physical activity, recommendation development was guided by ADAPTE methodology. International guidelines with an AGREE II Rigor of Development score of 80% or higher, and an overall AGREE II score of 75% or higher were considered for adaptation. Local guidelines were included for consideration regardless of AGREE score due to their applicability to the local setting. The results of the review of existing guidelines were presented to the consensus panel in an online form. A modified Delphi technique was utilized to reach consensus on which guidelines on diet and physical activity would be adapted for the PHEX Lifestyle Guidelines.

Table 2. Basis for Assessing the Quality of the Evidence using GRADE Approach [2]

Certainty of Evidence	Interpretation
High	We are very confident that the true effect lies close to that of the estimate of the effect
Moderate	We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low	Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very Low	We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect
<p>Factors that lower quality of the evidence:</p> <ul style="list-style-type: none"> • Risk of bias • Important inconsistency of results • Some uncertainty about directness • High probability of reporting bias • Sparse data/Imprecision • Publication bias <p>Additional factors that may increase quality:</p> <ul style="list-style-type: none"> • All plausible residual confounding, if present, would reduce the observed effect • Evidence of a dose-response gradient 	

- Large effect

3.3 Composition of the CPG Panel

The Steering Committee convened the Consensus Panel (CP), keeping in mind that “the multidisciplinary membership is critical to avoid bias and to give different perspectives in the CPG development” [1] The SC determined that the CP should be composed of about 10-15 members to allow for productive and efficient discussions. The SC also decided to have medical experts that included generalists and specialists, practitioners from public and private facilities, government agency whose role is on health promotion/prevention of diseases, experts on CPG/evidence appraisal and/or health policy, and patient advocates in the CP. The explicit inclusion of a patient representative in the panel would ensure that the accurate information and perspectives of patients will be brought in the recommendations and to build capacity in lay individuals who can participate in future guideline development endeavors. The SC considered the potential relevance and amount of inputs to the topic and possible conflicts of interests of each panel member. Apart from general questions on financial and intellectual conflicts of interests provided by the Central SC which are mostly aligned with the pharmaceutical industry, the Lifestyle SC provided additional questions on COI specific to the topic of interest and included inquiries on involvement with weight loss clinics or programs, wellness centers, entities directly involved in the production, manufacture, distribution or sale of vaporizers, e-cigarettes, and other electronic nicotine delivery systems (ENDS), or products for products for weight management and tobacco cessation. In the choice of CP, the task force made sure that all stakeholders were part of the target population for the CPGs (See PERIODIC HEALTH EXAMINATION TASK FORCE ON LIFESTYLE 2021).

3.4 Formulation of the Recommendations

Draft recommendations were formulated based on the quality of evidence, trade-offs between benefit and harm, cost-effectiveness, applicability, feasibility, equity, resources and uncertainty due to research gaps. Prior to the series of online consensus panel meetings, the consensus panel received the draft recommendations together with evidence summaries based on the EtD framework shown in Table 2. These recommendations, together with the evidence summaries, were presented during the *en banc* meeting.

The strength of each recommendation (i.e. strong or weak) was determined by the panel considering all the factors mentioned above. Strong recommendation means that the panel is “confident that the desirable effects of adherence to a recommendation outweigh the undesirable effects” while weak recommendation means that the “desirable effects of adherence to a recommendation probably outweigh the undesirable effect but is not confident.” [7]

The recommendation for each question and its strength was determined through voting. If consensus was not reached in the first voting, questions, and discussions were encouraged. Two further rounds of voting on an issue ensued. Evidence-based draft

recommendations were also revised based on input arrived at by consensus in the *en banc* discussions.

3.5 Managing Conflicts of Interest

The Central Executive Committee convened an Oversight Committee (OC) whose task was to thoroughly review the declaration of conflict of interest (DCOI) of each of the Task Force members particularly the Consensus Panelists (CP) and make recommendations on how to manage the COI. For TF members with potential significant COIs, the member of OC conducted additional investigations with due diligence to ensure the integrity of the CPG process and the final recommendations.

All task force members submitted a DCOI and their curriculum vitae (CV) prior to the initiation of guideline development process. The disclosure included a 4-year period of personal potential intellectual and/or financial conflicts of interest (COI).

Management of the COI of the Consensus Panel, Technical Coordinators, and Task Force Steering Committees were deliberated and decided by the OC, using the pre-agreed criteria. A full description of the methods can be found in the Final Technical report.

Those with significant potential COI were not allowed to join the roster of consensus panel members while those with manageable COIs remained as non-voting panel members. See [Conflict of Interest Declaration](#) at the end of the document

3.6 External Review Process

The CPGs were reviewed by independent stakeholders, who were not members of the Task Force. They were also presented in conferences and to relevant societies for their comments and suggestions.

3.7 Planning for Dissemination and Implementation

The SC discussed with relevant stakeholders such as DOH and PhilHealth to prepare a dissemination plan that will actively promote the adoption of this guideline with strategies for copyrights. Suggestions ranged from making guidelines available on websites, press conferences, social media sites, professional society conventions, and journal publications.

References

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4.RECOMMENDATIONS AND PANEL DISCUSSION

4.1 Smoking Cessation

RECOMMENDATIONS

1. **We recommend the use of nonpharmacologic interventions such as counseling for smoking cessation for healthy non-pregnant Filipino adults.** (Strong recommendation, high certainty of evidence)
2. **We recommend the use of nonpharmacologic interventions such as counseling for smoking cessation and for prevention of smoking initiation for healthy non-pregnant adolescents.** (Strong recommendation, very low certainty of evidence)

Evidence-to-Decision Considerations

Smoking cessation interventions are generally viewed to be favorable. No undesirable effects were noted in studies, but the certainty of evidence is low. There is some concern about cultural acceptance. There are several concerns about the resources on the program (need to train personnel), provider (upskilling and added time for counselling) and patient fronts (time and travel costs). However, panelists consider smoking cessation interventions cost-effective because quitting can save lives and reduce healthcare costs. Variability in access to the intervention raise equity issues. Since many patients start smoking in adolescence, prevention of long-term smoking should be introduced early. Strong recommendations for adults and adolescents were issued following evidence of effectiveness, potential downstream effects such as on cardiovascular disease, and cost savings.

4.1.1 Burden of Disease

Tobacco use remains a significant driver of death and disability. In 2019, smoking accounted for 8.71 million deaths globally and was the second leading risk factor for mortality and the third leading risk factor for disability-adjusted life-years (DALYs). [1] In the Philippines, the Global Burden of Disease study estimates tobacco use as the leading risk factor propelling both death and disability for all ages combined. [2]

Within national-level estimates, demographic differences exist. As of 2018, 4% of adolescents aged 10-19 years and 21.5% of adults aged 20-59 years were current smokers, the majority of whom were males (89% and 85%, respectively). [3] Moreover, a significant proportion of both adolescents and adults were smoking tobacco daily (2.4% and 18.1%, respectively), also predominantly male (91% and 87.6%, respectively).

A landmark prospective cohort study on tobacco initiation among students aged 15-17 conceptualizes the natural history of smoking into 12 milestones, categorized into cigarette use and nicotine dependence. The 25% cumulative probability after the first puff and inhalation was reached by 2.5 months for mental addiction; 2.5 months for smoking a whole cigarette; 4.5 months for commencement of cravings; 5.4 months for physical addiction; 11 months for withdrawal symptoms; 13 months for tolerance; 19.5 months for lifetime total of 100 cigarettes; and 40.6 months for conversion to tobacco dependence. [4]

Distal effects of smoking beyond addiction and dependence are well established. Smoking is strongly associated with elevated risks for cancers [5, 6], coronary heart disease [7, 8], COPD [9], and all-cause mortality especially in the elderly. [10]

The National Smoking Cessation Framework divides services into tiers. Risk assessment, brief intervention, and referrals are made at the Barangay Health Stations, and further management including behavioral, psychologic, and pharmacologic interventions are given in designated healthcare facilities. Furthermore, the Department of Health offers telephone and mobile phone quitlines to improve access to services. [11] Moreover, the Philippine College of Chest Physicians provides recommendations for the diagnosis and treatment of tobacco use and dependence at both outpatient and in-hospital settings. [12]

Globally the total economic burden of smoking-attributable diseases, including direct healthcare costs and indirect labor loss, is estimated to reach 1.85 trillion purchasing power parity (PPP) USD in 2012. In lower middle-income countries including the Philippines, the economic burden amounts to 359 billion PPP USD during the same period. [13] The Department of Health estimates the economic impact of tobacco use to be 188 billion PHP annually. [3]

4.1.2 Benefits and Harms: Adults

Smoking Cessation

The USPSTF 2021 recommendations for smoking cessation in adults [14] cite a review where the pooled effect of 26 trials ($n = 22,239$) found that smokers who were offered cessation advice by a physician compared to those who were given usual care or did not receive advice were 76% more likely to quit after 6 months or longer (RR 1.76 [95% CI 1.58 to 1.96], $I^2 = 40\%$) [15]. Other interventions evaluated had issues with directness: nursing advice studies had up to half of the included population with various comorbidities, individual and groups counseling included studies where behavioral therapy was only an adjunct to pharmacotherapy, and telephone or mobile phone interventions were population-based interventions, often not in the outpatient setting and was therefore not considered for inclusion. [14]

The component network meta-analysis performed by Hartmann-Boyce et al. showed that based on the pooled effects of the 194 trials ($n = 72,273$) that employed counselling for smoking cessation directed at average risk, non-pregnant adults, those who received

intervention had 44% higher odds of quitting compared to those who received standard care (OR 1.44 [95% credible interval 1.22 to 1.70]). [16]

Safety and Adverse Events

In informing the USPSTF 2021 guidelines, Patnode et al. [14] found three SRs [17-19] and found no evidence that behavioral tobacco cessation interventions were associated with serious adverse events. It should be noted that these interventions involved internet-based interventions, incentives, and hypnotherapy. Given the limited number of reviews of reported harms related to interventions, there is moderate certainty that no serious harms are related to combined pharmacotherapy and behavioral counseling interventions or behavioral counseling alone for tobacco cessation. A similar conclusion was made from the component network meta-analysis by Hartmann-Boyce et al. with none of the 11 reviews indicating an excess of AE in people receiving behavioral support or reported adverse events or harms. [16] Adverse events noted in these 11 reviews were attributed to study medications, as prequit withdrawal symptoms, or were not further explained or attributed to behavioral support.

Mortality, Cardiovascular Disease, and Cancer

Only one trial [20] included in the evidence profile of USPSTF 2021 recommendations and in the systematic review by Stead et al. [15] investigated the effects of intensive behavioral intervention for smoking in addressing mortality, cardiovascular disease, and lung cancer. At 20 years of follow up, there was no statistically significant difference between intervention and control groups in all-cause mortality (RR 0.95 [95% CI 0.84 to 1.09]), cardiovascular disease (RR 0.89 [95% CI 0.70 to 1.13]), and lung cancer (RR 0.91 [95% CI 0.66 to 1.241]). [20] However, the study suffered from significant biases throughout the design and implementation and was conducted in adult males who were already deemed to be at high risk for developing cardiopulmonary diseases in the 1970s. We downgraded the certainty of evidence due to risk of bias, imprecision, and indirectness.

Smoking prevention, COPD, and Quality of Life

We found no sufficient evidence to evaluate the effect of behavioral interventions directed to healthy adults in preventing smoking initiation nor COPD as well as improving the QOL. Studies on reducing or preventing smoking initiation often focus on younger age groups, and interventions are directed to children or adolescents. This coincides with local data for the mean age of smoking initiation at 17 years old (GATS 2015) [2015 Philippine Global School-based Student Health Survey Country Report – DOH, 2015].

4.1.3 Benefits and Harms: Adolescents

Smoking Cessation

Selph et al. [21], which was used to inform USPSTF 2020, reviewed 9 trials ($n = 2,516$) that assessed behavioral interventions for the cessation of tobacco use that were primarily done in the United States and one in Switzerland. The interventions used had a duration of 1 week to 12 months and were targeted to the youth, their parents or both, involving face-to-face counseling, telephone counseling, text messages or print materials, with a majority conducted in clinics. There was no statistically significant difference between behavioral nonpharmacologic interventions and controls in smoking cessation at 6 to 12 months of follow up (RR 0.97 [95% CI 0.93 to 1.01], $I^2 = 28.7\%$, favors intervention). However, three of the RCTs included in this SR [25-27] included pharmacotherapy in the intervention, and one RCT [22] involved solely untailored text messaging.

Choi et al. [23] performed a more recent systematic review and meta-analysis that included 32 RCTs conducted predominantly in the US and Europe, with one study performed in Taiwan. The intervention duration was 1 to 12 months, in the form of personal counseling, group counseling, customized texting, smartphone applications, and telephone counseling. At 6 months the groups with behavioral nonpharmacologic interventions had a higher rate (30%) of smoking cessation than the control group (RR 1.30 [95% CI 1.20 to 1.41], $I^2 = 26.5\%$). [23] However, 17 of the included studies applied interventions that we adjudicated to belong to population-level interventions.

We adapted both SRs and performed a random-effects meta-analysis of 17 studies ($n = 4,716$ participants), using behavioral intervention compared to standard care, for the outcome of smoking cessation. At 6 months, individuals who received behavioral interventions were 32% more likely to quit smoking compared to those who received standard care (RR 1.32 [95% CI 1.06 to 1.63]). The presence of heterogeneity ($I^2 = 53\%$) is likely attributable to differences in duration, manner of delivery, frequency, and content of intervention.

Smoking Prevention

Selph et al. [21] also included a pooled analysis of 14 trials ($n = 21,700$) with an intervention duration of 7 weeks to 25 months, for a mean total of 6 points of contact, and with a range of follow up from 6 to 36 months. The use of behavioral interventions had a statistically significant reduction in smoking initiation compared to controls within 7 to 36 months follow up (RR 0.82 [95% CI 0.73 to 0.92], $I^2 = 14.9\%$). However, two of the studies included [24, 25] involved interventions directed at parents only, and five of the studies included [26-30] relied solely on reading materials without any intervention from healthcare professionals.

We adapted this SR to perform a random effects meta-analysis of 4 studies (2,977 participants), using behavioral intervention compared to standard care, for the outcome of smoking prevention. At 6 months after initiation of intervention, adolescents who received behavioral intervention were 26% less likely to begin smoking compared to those who received standard care (RR 0.74 [95% CI 0.59 to 0.93]). Moreover, there was no heterogeneity in this analysis ($I^2 = 0\%$).

Mortality, Cardiovascular Disease, COPD, Cancer and Quality of Life

We found no evidence in our systematic search to evaluate the use of non-pharmacologic behavioral interventions for smoking among adolescents to reduce overall mortality and rates of cardiovascular diseases, COPD and cancer, to improve QOL, nor to assess safety and adverse events.

4.1.4 Additional Considerations

Resources Required

It is important to preface that any intervention aimed at tobacco or smoking cessation is inherently cost-effective compared to no intervention due to the large costs of the associated complications from use of tobacco products. This conclusion is shared by many, if not all of the studies evaluating cost effectiveness, and the remaining comparison is of service delivery, access, patient readiness, and resource allocation. [16, 31-35]

There is no consistent evidence to suggest one type of behavioral intervention for smoking cessation being more cost-effective than another. Hartmann-Boyce et al. limited recommendations in their component meta-analysis due to the 23 included economic evaluations identified focused on mode of delivery of non-pharmacologic interventions and were not subjected to critical appraisal. [16]

Salloum et al. did a systematic review of cost evaluations of tobacco control interventions in clinical settings. [32] The cost per participant given an intervention was estimated at 36.81 to 1,471 USD (approximately Php 1869 to 74,716) and a cost per quit of 309 to 3,337 USD (approximately Php 15,695 to 169,496). The SR included studies with counseling delivered by telephone, as an in-home session, online, or nurse-led inpatient programs, a 15-minute consult, web-based system training, and physician training with or without nicotine replacement therapy or pharmacotherapy. The group was unable to identify any cost-effectiveness studies conducted in pediatric settings as tobacco control interventions for children in clinical settings are uncommon.[32]

Patient Values and Preferences

There are limited studies that determine patient preference for smoking cessation programs or interventions. A study done by Cheng [35] which included 2,000 smokers from Itogon and Mankayan, Benguet province, determined that the favored methods for smoking cessation was by chewing gum or employing a substitute, or people receiving instructions on how to quit on their own. Regarding behavioral interventions, lectures and individual or group counseling had the least support, which was attributed to a reluctance to commit to programs due to availability or work schedule, and that the respondents belonged to the Ibaloi or Kankana-ey ethnic groups which have been described to keep to themselves. [35]

Social Impact, Equity Issues and Health Systems Impact

There is no general consensus on the minimum effect size for smoking interventions to be clinically significant to justify use in health care systems. A number needed to treat (NNT) of 25 to 50 – or an effect of 4% or 2% respectively – has been set as an acceptable minimum for programs aimed at smoking cessation. [31] Recent reviews have noted that behavioral interventions such as counseling (NNT = 41) or population interventions such as guaranteed financial incentives (NNT = 40) are within this accepted range. [16]

Love-Koh et al. examined the effect of health inequalities in treatment value of smoking cessation interventions using the Index of Multiple Deprivation (IMD) an area-based measure incorporating employment, income, education, crime, living environment and housing/services. [33] At the population level, all interventions (minimal intervention, cognitive behavioral therapy, counselling, used alone or in combination with nicotine replacement therapy or pharmacotherapy) provide greater direct health benefits to recipients in less deprived groups. Notably the absolute risk reduction is greatest in the most deprived groups even with various baseline levels of mortality and smoking related disease. This indicates that smoking cessation treatment reduces the absolute gap as determined by quality adjusted life years between the most and least deprived. All interventions with counseling produced health gains and were cost saving, increasing population health and decreasing health inequity, compared to no cessation service. [33, 34]

Given the evidence of benefits in both clinical outcomes and addressing inequality, the decision to commit to cost-effective life-saving smoking cessation treatment is dependent on the acceptance of the moral and social obligations of health-care systems in paying for treatment through taxes and health insurance. [31, 33, 34]

4.1.5 Recommendations from Other Groups

Guideline	Recommendation	Strength of Recommendation	Level of Evidence
ADULTS			
U.S. Preventive Services Task Force (USPSTF, 2020; 2021)	Grade: A* <ul style="list-style-type: none"> clinicians ask all adults about tobacco use, advise them to stop using tobacco, and provide behavioral interventions and US Food and Drug Administration (FDA)–approved pharmacotherapy for cessation to nonpregnant adults who use tobacco. Effective behavioral counseling interventions include: <ul style="list-style-type: none"> Physician or nurse advice Individual counseling Group behavioral interventions telephone counseling Mobile phone-based interventions Combined behavioral counseling and pharmacotherapy includes at least ≥4 behavioral counseling sessions with 90-300 minutes of total contact time. 	Strong	Moderate to High
National Institute for Health and Care Excellence (NICE, 2018)*	Ensure the following evidence-based interventions are available for adults who smoke: <ul style="list-style-type: none"> Behavioral support (individual and group) Very brief advice. [2018] 	Strong	Moderate to High

Philippine College of Chest Physicians Diagnosis and Treatment of Tobacco use and dependence (PCCP 2017)	Behavioral interventions alone (face-to-face, behavioral support counseling, self-help materials) or combined with pharmacotherapy substantially improve achievement of tobacco cessation	Strong	High (Grade A)
2014 PHA Clinical Practice Guidelines for the Diagnosis and Management of Patients with Coronary Heart Disease (PHA CAD 2014)	Lifestyle modification and treatment of risk factors be integrated into GDMT to reduce major CV events. <ul style="list-style-type: none"> “Smoking status should be assessed systematically, including passive smoking; and all smokers should be advised to quit and offered smoking cessation programs.” References: US Public Health Service CPG 2000 and USPSTF 2003 	Strong	-
Clinical Practice Guidelines for the Management of Dyslipidemia in the Philippines Dyslipidemia Guidelines 2005 (INCLEN KM+ methods)	Statement 1: To reduce overall CV risk, all patients, regardless of their present morbid condition or risk profile, should be advised on the need for the following: Smoking cessation “physician advice” - based on literature from 1980s-1990s Weight management Regular physical activity Adequate blood pressure monitoring and control	-	-
ADOLESCENTS			
U.S. Preventive Services Task Force (USPSTF, 2020; 2021)	Grade: B** Provide interventions, including education or brief counseling, to prevent initiation of tobacco use in school-aged children and adolescents. Provide behavioral counselling interventions to all youth to prevent tobacco use. Effective interventions include: <ul style="list-style-type: none"> face-to-face counseling, telephone counseling Computer-based interventions print-based interventions. 	Strong	Moderate to High
	Grade: I† statement The evidence is insufficient to assess the balance of benefits and harms of primary-care feasible interventions for cessation of tobacco use in school-aged children and adolescents.	None	Insufficient
Canadian Task Force on Preventive Health Care (CTFPHC 2017)	For children and youth (5-18 years) who do not currently smoke tobacco, whether they have never smoked or are former smokers, we recommend an intervention asking children and youth or their parents about tobacco use and offering brief* information and advice at appropriate primary care visits ** to prevent tobacco smoking. For children and youth (5-18 years) who have smoked tobacco within the past 30 days we recommend asking children and youth and/or their parents about tobacco use by the child or youth and offering brief* information and advice at appropriate primary care visits ** to treat tobacco smoking.	Weak	Low
Philippine College of Chest Physicians Diagnosis and Treatment of Tobacco use and dependence (PCCP 2017)	Education, prevention, screening, and treatment of tobacco use and dependence should be offered to adolescent smokers	Strong	High
	Smoking cessation among adolescents requires individualized approach.	Strong	-
	Counseling and behavioral interventions are recommended for adolescent smokers	Conditional	Low

* Grade A: USPSTF recommends the service; there is high certainty that the net benefit is substantial. Offer or provide this service.

** Grade B: USPSTF recommends the service; high certainty that the net benefit is moderate or there is more moderate certainty that the net benefit is moderate to substantial. Offer to provide this service.

† Grade I: USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

* Evidence last reviewed 2018; guideline recommendation is taken from. Currently ongoing update and revision.

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3.2 Electronic Nicotine Delivery Systems

RECOMMENDATIONS

1. **We recommend against the use of electronic nicotine delivery systems (ENDS) for smoking cessation, prevention of smoking initiation, and prevention of relapse among non-pregnant Filipino adults.** (Strong recommendation, very low certainty of evidence)
2. **We recommend against the use of electronic nicotine delivery systems (ENDS) for smoking cessation, prevention of smoking, and prevention of relapse among Filipino adolescents.** (Strong recommendation, very low certainty of evidence)

Evidence-to-Decision Considerations

While the desirable effects seem to support the use of ENDS, the undesirable effects, feasibility, and resources domains do not. The benefits of ENDS appear to last until 12 months, but there were high rates of relapse. Several panelists share reservations about construing ENDS as an alternative to smoking given the former's adverse effects. As such, it would not do the population good. There is uncertainty, particularly among adolescents, regarding values surrounding the use of ENDS. Because of perceived harms including from known chemical components of e-cigarettes and reports of lung injury, the guideline panel recommends against the use of ENDS.

4.2.1 Burden of Disease

The tobacco epidemic accounts for around 8 million deaths worldwide per year. [1] Cigarette smoking is the leading cause of preventable death, with smokers having increased risks for cardiovascular diseases, respiratory diseases and different forms of cancer. [2, 3] In the Philippines, around 87,600 Filipinos die annually from tobacco-related diseases. [4] At least 20.7% of Filipino adults, mostly males, reported on current tobacco use. [5] An estimated 3.6 million adults and 24 million adults were exposed to secondhand smoke in the past month at the workplace and at home respectively. [6] According to the 2015 Global Youth Tobacco Survey, 16% of Filipino students (22.2% of boys, 10.4% of girls) aged 13-15 years old are current tobacco users, and an estimated 38.3% of Filipino students were exposed to tobacco smoke at home. [7] Yearly, tobacco-related expenditures from health care expenses and lost income due to sickness or early death cost the Philippines an estimated Php 188 billion. [4]

Electronic Nicotine / Non-nicotine Delivery Systems (ENDS), also known as electronic cigarettes, vapes or vapor products, are battery-operated devices containing a solution, with or without nicotine, that produces aerosols or mist when heated which users inhale to mimic the act of smoking. [8] In the Philippines, the 2015 Global Adult Tobacco Survey

reported that the prevalence of ever users and current users of electronic cigarettes was at 2.8% and 0.8% respectively [6], while for the adolescent population (13- to 15-year-old students), 11.7% have ever tried or experimented with electronic cigarettes, even one or two puffs. [7] The manufacture, distribution, importation, exportation and sale of electronic cigarettes in the country is subject to licensing by the Food and Drug administration and sale of such products is restricted only to individuals over 21 years old. [9] This age limit however might be lowered to 18 years old if House Bill No. 9007, or the “Non-Combustible Nicotine Delivery Systems Regulation Act”, is enacted into a law. [10]

The efficacy and safety of electronic cigarettes have been debated. [11-13] The Philippine College of Chest Physicians, in their 2017 Clinical Practice Guidelines for the Diagnosis and Treatment of Tobacco Use and Dependence, do not recommend the use of electronic cigarettes to aid in smoking cessation due to insufficient evidence. [14] Since then, new studies have been published, hence the need to evaluate the evidence.

4.2.2 Benefits and Harms: Adults

Smoking cessation

Nine RCTs at low risk of bias were included in the analysis for this outcome (n = 8,645). One conference abstract was not included because of study quality could not be reliably assessed. [15] Most studies were done in Europe (6 studies) and the USA (2 studies). Smoking cessation was assessed via self-report and biochemically validated via exhaled carbon monoxide levels across all studies.

Pooled results showed higher smoking cessation rates among those who used nicotine electronic cigarettes versus any comparison (RR 1.84 [95% CI 1.43 to 2.26], $I^2 = 0\%$).

Hartmann-Boyce et al. also compared the results per comparator group and found higher quit rates among those given nicotine electronic cigarettes compared to nicotine replacement therapy (RR 1.69 95% CI 1.25 to 2.27, $I^2 = 0\%$), non-nicotine electronic cigarettes (RR 1.70 [95% CI 1.03 to 2.81], $I^2=0\%$) or behavioral support/no support (RR 2.70 [95% CI 1.39 to 5.26]). [16] Only varenicline was shown to be superior to nicotine electronic cigarettes for smoking cessation (RR 0.31 [95% CI 0.11 to 0.82]), but confidence in this result is limited by high risk of bias of the study reporting this comparison. [16]

Adverse events

Any adverse events

Seven RCTs (n = 1,464), deemed of low (3 studies) to moderate risk (4 studies) of bias, were included in the analysis for the outcome of any adverse events measured from 1 week to up to 6 months of ENDS use. Three of the studies were conducted in the USA while two were conducted in the UK. Nicotine electronic cigarettes were compared with nicotine replacement therapy in 2 studies [17, 18], non-nicotine electronic cigarettes in 3 studies [17, 19, 20] and behavioral / no support in 4 studies [19, 21-23]. In the pooled analysis, there was a higher incidence of adverse events among ENDS users compared

to any comparator (RR 1.10 95% CI 1.02 to 1.18, $I^2 = 0\%$). Commonly reported adverse events of ENDS include cough, mouth / throat irritation, headache, and nausea. [18, 19, 22, 23] No adverse events were reported in the study on electronic cigarettes and varenicline. [15]

Cancer

No studies were found comparing ENDS use and cancer development. The current lack of unequivocal epidemiologic evidence may be due to the following: (a) the lag period from exposure to oncogenic substances to malignant transformation given that it has been only two decades since ENDS were first commercially produced, (b) the compounds in e-cigarettes and vaping fluids marketed worldwide vary, and (c) the increasing number of smokers who use both ENDS and conventional cigarettes. [24]

There are differences in the components used in ENDS but those that have been implicated as oncogenic agents include nicotine derivatives, polycyclic aromatic hydrocarbons, heavy metals including organometal compounds, and aldehydes and other complex organic compounds. [24] These components carry potential dangers for development of lung cancer, head and neck cancers and even bladder cancer. [24-26]

Cardiovascular Diseases

No direct evidence was found on the effect of ENDS on cardiovascular diseases.

EVALI

As of June 2020, the U.S. Centers for Disease Control and Prevention has reported 2,807 cases of E-cigarette or vaping product use associated acute lung injury (EVALI), and 68 EVALI-associated patient deaths. The first cases of EVALI have been known since 2012 but only gained much attention after an outbreak in the US in 2019.

A systematic review of 41 reports on lung injury associated with vaping that included 216 patient cases described the clinical characteristics and outcomes of EVALI. [27] Most patients presenting with EVALI were young (median age 19-35 years old) and male (77%). The length of vaping varied from days to several years and most presented with at least 1 week of symptoms, the most common of which were dyspnea (81%) and cough (74%). Hemoptysis (10%) was a less common symptom. Patients often reported use of multiple vaping products simultaneously, of which tetrahydrocannabinol (91%) was the most common. All cases reported a pattern of nonspecific acute lung injury, the most common histopathologic features include organizing pneumonia (59%). Ninety-five percent of these patients were hospitalized with 27% needing intubation. While 68 patients died, most of those hospitalized (95%) were eventually discharged.

Initiation or Relapse to Conventional smoking

Four studies among the adult population (n = 18,438) reported on smoking initiation relapse/initiation among ENDS users. [28-32] We did not pool the results because of significant heterogeneity ($I^2 = 91\%$). However, all four studies consistently showed that ENDS increases the risk for initiation or relapse to conventional smoking compared to non-ENDS users (adjusted odds ratios range from 2.72 to 6.06).

Quality of Life

One observational study (n = 80) compared the self-reported quality of life (QOL) of smokers attending homeless centers in Great Britain who were given electronic cigarettes on top of usual care versus usual care alone. [33] QOL was measured using the EQ-5D-3L, one of the most widely used tools for assessing health-related quality of life. It is composed of the EQ-5D descriptive system and the EQ-5D visual analogue scale (EQ-5D VAS) rated from 0 (“the worst health you can imagine”) to 100 (“the best health you can imagine”) [EQ-5D 2021]. EQ-5D-3L scores did not differ between the two groups at 24 weeks (mean difference 0.80 [95% CI -13.86 to 15.46]). [33] Certainty in the result is limited by the presence of performance bias and attrition bias (lost to follow-up in the intervention arm and control arm is 27.1% and 62.5% respectively).

Adherence to Intervention

Data from 2 RCTs (n = 628) showed that at 12 weeks, participants were more likely to adhere to ENDS compared to Nicotine patch, Nicotine replacement therapy or Placebo e-cigarettes (RR 1.81 95% CI 1.28 to 2.56). [17, 34] This adherence however decreases over time across all groups.

4.2.3 Benefits and Harms: Adolescents

Smoking Cessation

One observational study (n = 1,497) reported the effect of ENDS on smoking cessation among adolescents aged 16 to 18 years. There was no significant difference in the change in the number of days smoked in the past 30 days between adolescents exposed and unexposed to e-cigarettes (mean difference 0.64 days [95% CI -0.21 to 1.49]). [35]

Smoking Prevention

For the outcome of smoking prevention, the included studies were divided into subgroups based on reported baseline susceptibility to cigarette smoking: unknown susceptibility, non-susceptible and susceptible. Results favored no ENDS exposure regardless of susceptibility to cigarette smoking: unknown susceptibility (adjusted RR 2.77 [95% CI 2.12 to 3.64]; non-susceptible (adjusted RR 3.46 [95% CI 2.14 to 5.61]); susceptible adolescents (adjusted RR 1.60 [95% CI 1.32 to 1.94]). Although there was significant heterogeneity, results were consistent across studies and subgroups. [36]

Other Outcomes

No studies were found on the effect of ENDS on mortality, quality of life, patient adherence, COPD and cancer among adolescents.

4.2.4 Additional Considerations

Resources Required

Prices of vape kits containing both vaping device and pods range from Php 400 to 2,000. [37] No cost-effectiveness, cost-utility nor cost-benefit study on ENDS done in the Philippines was found. Pricing of electronic cigarettes in the country is affected by excise and value-added tax mandated under Republic Act No. 11346 and subsequently amended in RA No. 11467. Under RA No. 11467, Nicotine Salt vapor products and conventional “freebase” or “classic” Nicotine vapor products were taxed Php 42 (per milliliter or fraction) and Php 50 (per ten milliliters or a fraction) respectively effective January 1, 2021. An additional Php 5 tax will be added yearly until January 1, 2024, after which a 5% per year increase will be implemented. Similarly, heated tobacco products are taxed Php 27.50 per pack of twenty units effective January 1, 2021, with an additional Php2.50 yearly until 2024. After 2024, a 5% per year increase will also be implemented. These scheduled tax increases are expected to increase the price of ENDS per year.

Patient Values and Preferences

According to the data from GATS 2015, 76.7% of current daily or occasional smokers planned or were contemplating to quit smoking. About half made an attempt to quit but only around 4% were able to successfully quit in the past year. [6] Another survey done in 2019 among middle and high school students in the US showed that 57.8% of current tobacco users reported thinking about quitting smoking and only 57.5% reported cessation of use of tobacco products for at least a day because they were trying to quit. [38] A survey done in Malaysia, a similarly populated country experiencing a rise in electronic cigarette use, showed that current smokers (dual users, e-cigarette users and conventional cigarette smokers) were more likely to perceive ENDS as beneficial compared to never users, citing belief that ENDS were “healthier/less harmful” than conventional smoking which might aid in smoking cessation and reduce urge to smoke. [39] In the Philippines, the DOH and FDA has warned the general public on the safety of electronic cigarettes especially on its lasting effect for which more long-term epidemiological studies are needed. [9]

Social Impact, Equity Issues and Health Systems Impact

ENDS are not included as part of smoking cessation aids in the DOH Smoking Cessation Program (DOH Administrative Order No. 122 s. 2003 The Smoking Cessation Program to support the National Tobacco Control and Healthy Lifestyle Program). [40] Currently, Philippine law prohibits the selling of ENDS to individuals under 21 years old. However, this age limit may decrease to 18 years old once House Bill No. 9007 (“Non-Combustible Nicotine Delivery Systems Regulations Act”) is implemented.

4.2.5 Recommendations from Other Groups

Guideline	Recommendation	Strength of Recommendation	Level of Evidence
ADULTS			
United States Preventive Services Task Force 2021	The current evidence is insufficient to assess the balance of benefits and harms of electronic cigarettes (e-cigarettes) for tobacco cessation in adults including pregnant persons.	None	None
Update on guidelines for the treatment of COPD in Taiwan 2021	The effectiveness and safety of using electronic cigarettes as a smoking cessation aid is uncertain at present.	None	None
National Institute for Health and Care Excellence 2018 on Smoking cessation interventions and services	<p>For people who smoke and who are using, or are interested in using, a nicotine-containing e-cigarette on general sale to quit smoking, explain that:</p> <ul style="list-style-type: none"> Although these products are not licensed medicines, they are regulated by the Tobacco and Related Products Regulations 2016 Many people have found them helpful to quit smoking cigarettes · people using e-cigarettes should stop smoking tobacco completely, because any smoking is harmful The evidence* suggests that e-cigarettes are substantially less harmful to health than smoking but are not risk free <p>* The evidence in this area is still developing, including evidence on the long-term health impact.</p>	None	None
American Thoracic Society 2020	Recommends the use of varenicline over electronic cigarettes among tobacco-dependent adults for smoking cessation	Conditional	Very low
Smoking Cessation, Version 1.2016, NCCN Clinical Practice Guidelines in Oncology	Currently, the panel does not recommend use of e-cigarettes, and instead recommend that known effective methods for smoking cessation be offered.	None	None
Philippine College of Chest Physicians' Clinical Practice Guidelines for the Diagnosis and Treatment of Tobacco Use and Dependence 2017	<p>There is no sufficient evidence to support the efficacy of electronic cigarettes as an acceptable form of NRT for smoking cessation</p> <p>E-cigarettes may promote nicotine addiction and unlikely to aid in smoking cessation particularly among the youth.</p> <p>The use of e-cigarettes is not recommended as an alternative NRT</p>	Strong	High

ADOLESCENTS			
American Academy of Pediatrics 2015	Do not recommend electronic nicotine delivery systems for tobacco dependence treatment Prohibitions on smoking and use of tobacco products should include prohibitions on use of electronic nicotine delivery systems	Strong	None
Canadian Paediatric Society	Do not recommend e-cigarettes as a smoking cessation intervention in youth	None	None
Forum of International Respiratory Societies	Health risks and potential benefits of ENDS have not been adequately studied ENDS should be restricted or banned, until more information is available	None	None
International Union Against Tuberculosis and Lung Disease	Safety and benefits of ENDS have not been scientifically proven The Union strongly supports regulation of the manufacture, marketing and sale of ENDS and to regulate ENDS as medicines	None	None
Philippine Pediatric Society Tobacco Control Advocacy Group	ENDS should not be recommended as a treatment product for tobacco dependence	None	None

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4.3 Safe Sex

RECOMMENDATIONS

1. **We recommend the use of non-pharmacologic interventions on safe sex to prevent sexually transmitted infections, unintended pregnancy, unprotected intercourse, and to promote consistent condom use among Filipino adults who screened positive for high-risk sexual behaviors.**
(Strong recommendation, low certainty of evidence)
2. **We recommend the use of non-pharmacologic interventions on safe sex to prevent sexually transmitted infections, unintended pregnancy, unprotected intercourse, and promote consistent condom use among Filipino adolescents who screened positive for high-risk sexual behaviors.**
(Strong recommendation, very low certainty of evidence)

Evidence-to-Decision Considerations

The evidence did not show significant adverse effects with counselling on safe sex. While rural health units already stock condoms, there remains a high resource requirement in terms of training and distributing personnel. Patient burden is likely low and several panelists view the nonpharmacologic interventions as cost-effective and beneficial. Preferences and acceptability may differ from other geographical regions, and Filipino sexual attitudes are shaped by the predominant religion. Health promotion and disease prevention (i.e., sexually transmitted infections) are aligned with universal healthcare goals. The burden of STIs and teenage pregnancy is also of concern and so early intervention for high-risk individuals is desirable. Adolescents still require the consent of their parents and are economically dependent on the latter. The existence of adolescent-friendly health facilities may aid with implementation.

4.3.1 Burden of Disease

The last Young Adult Fertility and Sexuality Study in the Philippines (YAFS4) conducted in 2013 observed an increasing proportion of youth who have begun sexual activity before 18 years old, with an almost two-fold increase to 23% in 2013 from 13% in 1994. [1]

In 2008, the Philippine Statistics Authority (PSA) reported that one in three births was unplanned, either unwanted or mistimed. [PSA] In the Philippines, it is estimated that there are almost 2 million unintended pregnancies per year and over 600,000 unsafe abortions. It was also stated that only 3% of women who desired to avoid pregnancy received contraceptive counseling. [High Rates of unintended pregnancies 2019] The YAFS4 survey also revealed the proportion of 15- to 19-year-old individuals who have already gotten pregnant increased two-fold from 6.3% in 2002 to 13.6% in 2013. [1]

Risky sexual behaviors lead to complications such as unintended pregnancies, sexually transmitted infections and mental health issues. According to the WHO, unwanted pregnancies may lead to serious health risks to the mother which may include malnutrition, abuse, unsafe abortion and even death. High Rates of unintended pregnancies 2019]] Untreated sexually transmitted infections may lead to other conditions that ultimately cause a considerable burden to patients. Chesson 2017] In 2016, the Philippines became the fastest growing epidemic in HIV in the Asia-Pacific region, with majority of new cases occurring among 15- to 24-year-old males who have sex with males and transgender women who have sex with males. [Philippines Addresses Rising Trend in New HIV Infections 2021]

Filipinos are prevented from getting adequate access to sexual and reproductive health care due to socio-cultural and political factors. [2] These structural inequalities lead to varying health interventions received by patients. Management would depend on whether complications from risky sexual behaviors took place.

Economic impact of the disease

In 2016, United Nations Population Fund Philippines (UNFPA) reported a Php 33 billion loss in potential life income due to early pregnancy which affects completion of education, resulting in a significant decrease in predicted daily wage. [UNFPA Philippines 2021] The UP School of Economics released an article in 2011 stating that 22% of married women among the poorest families fail to use any birth control methods despite having the desire to avoid having any pregnancies. In the same paper, it was stated that the family size is closely associated with poverty incidence, creating a difficult financial situation for families with mistimed and unplanned pregnancies. [Pernia 2011]

Sexually transmitted infections also create both health and economic problems. In the USA, major STIs have been estimated to have a medical cost of \$16.7 Billion. [Chesson 2017]

Social impact of the disease

The United Nations recognizes sexual and reproductive health as related to multiple human rights with everyone is entitled to acceptable and available services of good quality. Primary care physicians play a large role in sexual and reproductive health, especially in providing interventions such as counseling, sex education, and other behavioral approaches to address risky sexual behaviors. According to the US Center for Disease Control (CDC), an effective program is done in a nonjudgmental and emphatic manner that is relevant to the patients' culture, gender, and age. [3]

4.3.2 Benefits and Harms: Adults

Unintended Pregnancy

Four RCTS (n = 1,691) were included in the analysis for the outcome of unintended pregnancy. [4-7] The interventions were a mix of tailored feedback sessions via the computer [6, 7] and individual counseling [4, 5]. Pooled analysis showed no significant difference between the intervention and control arms with regards to preventing unintended pregnancy (RR 0.88 [95% CI 0.73 to 1.05]). Likewise, subgroup analysis based on contact time and intervention type did not show a significant difference between intervention and control.

One study was not included in the pooled analysis as the study authors did not report the number of recorded pregnancies per arm. However, they did not report a significant difference between the intervention and control arm in terms of preventing unintended pregnancies. [5]

Sexually Transmitted Infections

Fifteen RCTs (n = 50,521) were included in this analysis and the interventions varied from individual and group counseling to media-based strategies (web-based, video, and text messaging). Pooled results showed a lower risk of STIs with the intervention compared to control (RR 0.86 [95% CI 0.76 to 0.97]). However, there was moderate heterogeneity ($I^2 = 44\%$). Subgroup analysis according to contact time showed that low contact counseling significantly reduced the risk of STIs compared to control (RR 0.85 [95% CI 0.78 to 0.92]), whereas interventions with moderate or high contact time did not. In terms of intervention type, group counseling interventions prevented STIs (RR 0.75 [95% CI 0.64 to 0.88]) while individual counseling and media-based interventions did not.

Unprotected Intercourse

Pooled results from six RCTs (n = 2,069) that enrolled individuals (mean age 20.4 to 35.5 years old) did not show a significant difference in unprotected intercourse between the intervention and control arms (mean difference -0.56 [95% CI -1.58 to 0.46]). There was moderate heterogeneity across studies ($I^2 = 52\%$). Subgroup analysis by contact time and intervention type also did not show a significant benefit from the intervention in terms of unprotected intercourse.

Condom Use

Based on the pooled results from nine RCTs (n = 3,375), there was no significant difference in condom use between the intervention and control arms (RR 1.11 [95% CI 0.99 to 1.23]). Subgroup analysis by contact time and intervention type showed similar results. We excluded one study (n = 402) that was included in the USPSTF analysis from our meta-analysis because it did not report the event rates. [8]

Mental Health

Only one study in the USPSTF guideline reported on mental health issues. [9] This study recruited 55 women in the US with a history of intimate partner violence (mean age 34.5 years). The intervention was a series of three individual counseling sessions followed by five group counseling sessions lasting for 135 minutes each. At three months of follow-up, there was no significant difference in depression, anxiety, and PTSD scores between the intervention and control arms (range of mean differences: -3.04 [95% CI -6.65 to 0.57] to 0.95 [95% CI -0.73 to 2.63]).

Safety/Adverse Events

One study investigated a text message-based intervention reported traffic accidents in both intervention and control arms (2.6% and 1.3% respectively). [10] However, there was no significant difference in the risk for traffic accidents between the groups (RR 2.08 [95% CI: 0.19 to 22.45]).

Other outcomes

There were no studies that reported on mortality, either from acquired STIs or the intervention itself, or unintended parenthood.

4.3.3 Benefits and Harms: Adolescents

Smoking Unintended Pregnancy

Two RCTs (n = 1,615) were included in the analysis of unintended adolescent pregnancy. [11, 12] We derived the absolute number of events from percentages reported by Di Clemente et al. [12] There was no statistically significant difference in the effects of contact time (moderate vs. high contact time) or type of counseling (group vs. individual counseling) on unintended pregnancy. The pooled estimate for the comparison of group vs individual counseling is RR 1.02 (95% CI 0.62 to 1.65, $I^2 = 48\%$). As with succeeding sections, pooled total data on contact time was not determined since the control group tends to be doubled during analysis.

Sexually Transmitted Infections

Four RCTs (n = 2,667) were included in the analysis of sexually transmitted infections among adolescents [11, 13-15]. We derived the absolute number of events from the percentages reported by two trials [13, 15]. We conducted subgroup analyses by contact time and by type of intervention. For studies with 3 treatment arms, we combined all intervention groups and compared that to the control group [14, 15].

Based on one RCT (n = 771), there was no significant difference in STI incidence between interventions with moderate contact time and control (RR 0.68 [95% CI 0.33 to 1.38]). On the other hand, pooled results from 4 RCTs (n = 2,284) showed that interventions with high contact time decreased the incidence of STIs compared to control (RR 0.79 [95% CI

0.65 to 0.97]). Four RCTs were included in the analysis by type of intervention. Pooled results showed that individual or group counseling decreased STI incidence compared to control (RR 0.79 [95%CI 0.65 to 0.96], $I^2=0\%$). On subgroup analysis, individual counseling did not significantly decrease STI incidence (RR 0.75 [95% CI 0.49 to 1.15]), whereas group interventions reduced the incidence of STIs compared to control (RR 0.80 [95% CI 0.64 to 0.99]).

Unprotected Intercourse

Four RCTs ($n = 1,831$) reported unprotected vaginal sex events. [12, 15-17] All studies included only female participants except for one [17] which enrolled cisgender males identifying as gay, bisexual or queer. The studies defined unprotected intercourse events as the number of days or episodes of condomless sex. The mean difference in the number of unprotected intercourse encounters between intervention and control ranged from -2.78 (95% CI -5.02 to -0.54) to 0.12 (95% CI -3.18 to 3.42) unprotected sexual acts across the studies. Subgroup analysis on contact time was not done since all studies were categorized as high contact. On subgroup analysis according to type of intervention, the mean difference of unprotected sexual acts ranges from -2.78 (95% CI -5.02 to -0.54) to -0.89 (95% CI -1.58 to -0.20) among group interventions (4 RCTs, $n = 1,548$). One study using a text messaging intervention and categorized as media-based did not reduce the number of unprotected sex events (MD 0.12 [95% CI -3.18 to 3.42]).

Only two studies favored the intervention for this outcome. This includes the study done by DiClemente et al. which employed an HIV prevention program (MD -0.89 [95% CI -1.58 to -0.20]) [12], and the skills-based intervention group on HIV reduction by Jemmott et. al. (MD -2.78 [95% -5.02 to -0.54]) [15]. The rest of the interventions did not show a significant difference in unprotected sex events when compared to the control.

Condom Use

Five RCTs ($n = 2,833$) reported on condom use. [11-13, 16, 18] Condom use measured by Morrison-Beedy et al. was taken from the USPSTF's pooled analysis [16].

Based on one RCT ($n = 771$), an intervention with moderate contact time did not increase condom use compared to control (RR 0.76 [95% CI 0.42 to 1.38]). In contrast, evidence from 5 RCTs ($n = 2,450$) showed that high contact interventions significantly increased condom use (RR 1.21 [95% CI 1.07 to 1.38]). The pooled estimate of the results from five RCTs ($n = 2,833$) suggest that individual, group, or media-based interventions promote condom use compared to control (RR 1.19 [95% CI 1.04 to 1.37], $I^2 = 39\%$). Subgroup analysis by intervention type showed that individual counseling interventions did not significantly increase condom use (RR 0.86, 95% CI 0.62 to 1.19) while condom use increased with both group and media interventions (RR 1.27 [95%CI 1.13 to 1.42] and RR 1.31 [95%CI 1.07 to 1.60] respectively).

Other outcomes

No RCTs were found with parenthood, mental health, mortality, and safety as outcomes.

4.3.4 Additional Considerations

Resources Required

In 2001, a study by Sweat et al. looked into the cost-effectiveness of a single-session, video-based HIV intervention (VOICES/VOCES) among African American and Latino in STI clinics. It estimated the annual cost to provide the intervention to 10,000 clients at around \$447,005 (\$44.70/client), resulting to an average of 27.69 HIV infections averted and 387.61 quality-adjusted life years saved. Cost-utility ratio was estimated to be - \$14,628, with the negative value indicating a highly cost-effective level of cost savings (\$544,408). [19]

A study by Hutton et al in 2003 did a cost-effectiveness analysis on the prioritization of preventive strategies to combat HIV/AIDS in resource-constrained areas in sub-Saharan African countries. Peer group education for young people was estimated to be \$121 per secondary level teacher trained. There was no noted cost estimate for counselors in primary health care settings. [20]

We found no local cost-effectiveness studies on non-pharmacologic interventions for adults and adolescents with high-risk sexual behaviors that can be done in a primary care setting. However, general counseling on average may cost Php 2,000 to Php 2,500 per session.

Patient Values and Preferences

Of the young Filipinos interviewed in the YAFS4 study, only 27.4% said that they had adequate knowledge about sex. Twenty-two percent noted that they would consult no one if they had questions about sex, while 37.6% would consult their friends. When given choices on possible sources of information, only 43% would consult medical professionals, while 60% would still consult with friends of the same sex. When asked if they had material sources of information on sex and reproductive health, 41.6% admitted that they had none, while the rest cited television, books, and the internet as alternative sources (20.3%, 17.7%, and 16.3%, respectively). [1]

Although condoms are available for purchase in various stores and should even be available for free in primary care settings, social stigma against sex outside of marriage serve as an important barrier to most Filipinos, especially the youth. Many Filipinos living with HIV (aged 18-35) reported feeling uneasy when procuring condoms. [21]

Social Impact, Equity Issues and Health Systems Impact

The YAFS4 study documented a rise in pre-marital sexual encounters (17.8% in 1994 to 32.2% in 2013), with only 12.9% using condoms as a method of contraception and prevention from STIs, and 9.2% using other methods of contraception, including withdrawal. A large portion of the youth interviewed engaged in unprotected intercourse (78%). Similarly, most young persons who engage in risky sexual behaviors (e.g., commercial sex, casual sex, extramarital sex) do not use any method of contraception or engage in these acts without condoms--only 27.3% of those who paid for sex used a condom consistently in the last year, and only 18% of those who engaged in casual sex used a condom during their last encounter. [1] These alarming statistics stem from multi-systemic issues, ranging from the gaps in education and information, inaccessibility of contraception methods (due to financial, political, and logistical problems), and religious concerns. [1, 22]

The Responsible Parenthood and Reproductive Health Act of 2012 (RA 10354) holds the Department of Health responsible for conducting baseline competency assessment, training, monitoring and evaluation of all healthcare providers to provide quality reproductive health care. [2] Whether this is strictly implemented across the country, however, is another matter entirely. In a cross-sectional survey of 101 health facilities in the Philippines (ranging from barangay health centers to regional and national hospitals), 82.7% of the participants (sexually active women 18-49 years old) reported a missed reproductive health counseling opportunity (wherein a staff member of the health facility failed to provide any counseling). Likewise, of 1664 cumulative clinic visits, 72.6% also had missed opportunities for family planning counseling, and of those with specific reproductive health concerns, only 16% received family planning counseling and 2.9% received advice specific to her concern. Hence, one of the conclusions of this study was that although family planning counseling is included in national policies, this is not always put into practice. Additionally, although a patient-centered approach has been found to be most effective for contraceptive method continuation, oftentimes patient-provider encounters are driven by the healthcare staff, rather than centered on patient needs and preferences. Other issues identified by this study is the inadequate and out-of-date knowledge and training of some health care workers on modern contraceptive methods, the lack of skills and comfort on counseling patients on reproductive health, personal religious beliefs of the health care providers, reliance on patients to initiate discussions on sexual health, and even external pressures imposed upon providers by religious and anti-reproductive health groups. [22] Furthermore, parental consent is required prior to providing family planning services (including HIV testing) to minors, creating yet another barrier to a vulnerable population. [2, 22]

Decentralization of healthcare in the Philippines is also an important obstacle to implementation of national guidelines on reproductive health, as evidenced by the ban on artificial contraception by local health officials (i.e., Mayor of Manila in 2000, Mayor of Balanga City, Bataan in 2007, and Mayor of Sorsogon City, Bicol in 2016) despite being written into law. [21, 22] Access to basic health care (including reproductive health care)

is a recurring issue given the archipelagic nature of the Philippines. Among the provisions in the RH law is to provide mobile services to cater to remote areas. [2]

4.3.5 Recommendations from Other Groups

Guideline	Recommendation	Strength of Recommendation	Level of Evidence
ADULTS			
United States Preventive Services Task Force 2020 [Krist 2020]	Recommends behavioral counseling for all sexually active adolescents at increased risk for sexually transmitted infections.	Grade B	None
National Institute for Health and Care Excellence 2007 [National Institute for Health and Care Excellence. Sexually transmitted infections 2007]	<ul style="list-style-type: none"> For high-risk individuals (e.g., MSM, people from disadvantaged backgrounds or low educational levels), primary care physicians should ask about sexual history as part of the initial encounter. One-on-one structured discussions, lasting at least 15-20 minutes each, addressing patient-specific risk factors and strengthening self-efficiency and motivation. Additional sessions are dependent on the need of each patient. Advice on contraception and STI testing should be included in this discussion. If the primary-care-provider is not trained to do counseling, the patient should be referred to a trained counselor. 	None	None
Centers for Disease Control and Prevention [Walensky 2021]	<ul style="list-style-type: none"> As part of the clinical encounter, health care providers should routinely obtain sexual histories. Counseling should be appropriate to the patient's culture, language age, sex and gender identity, and sexual orientation. Intervention types may be intensive one-on-one counseling, group counseling, or media-based interventions (e.g., educational videos). 	None	None
ADOLESCENTS			
United States Preventive Services Task Force 2020 [Krist 2020]	Recommends behavioral counseling for all sexually active adults at increased risk for sexually transmitted infections.	Grade B	
National Institute for Health and Care Excellence 2016 [National Institute for health and Care Excellence. Harmful sexual behavior 2016]	<ul style="list-style-type: none"> For children and young persons with harmful sexual behavior (e.g., sexuality beyond what is expected for age group), a multi-agency and multidisciplinary team approach, grounded on structured care and treatment plans, yet flexible enough to adjust to ever changing developmental stages of the patients. Adults (ie. parents, caregivers) be included in the treatment plan, and if safe, that 	None	None

	<p>interventions be delivered at the community or family-setting.</p> <ul style="list-style-type: none"> • Cognitive behavioral therapy and other psychotherapeutic counseling interventions are viable options. Modes of delivery recommended include individual, group, and family counseling. 		
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4.4 Physical Activity

RECOMMENDATIONS

1. **We recommend the use of brief interventions, psychological/motivational coaching, or behavioral counselling for physical activity to prevent hypertension, diabetes, and obesity, to promote weight loss, and to increase physical activity among Filipino adults without cardiovascular risk factors.** (Strong recommendation, low certainty of evidence)
2. **We suggest against the use of psychological/motivational coaching or behavioral counseling to promote healthy nutrition in the general Filipino adolescent population.** (Weak recommendation, very low certainty of evidence)
3. **We recommend the use of psychological/motivational coaching or behavioral counselling for physical activity for the prevention of hypertension, diabetes, and obesity, and to promote weight loss among obese Filipino adolescents.** (Strong recommendation, very low certainty of evidence)

Evidence-to-Decision Considerations

Most domains favor the intervention. While physical activity is generally valued, the life priorities of patients vary. Some communities still do not view weight loss, or weight management, as desirable and instead think of obesity as being "healthy". Some panelists raised concerns about interventions being time-intensive for both patients and providers. Training may incur expenses for healthcare workers such as for travel to sessions. Patients will also need to consider access to and costs of decent internet connection and text messaging for communication with their healthcare professionals. For adolescents, conclusive benefits are limited to reduction in blood pressure but the evidence may change eventually. Patients at the extremes of growth charts will require more intensive interventions and these can be costly and time-consuming. The potential advantages of weight management including reduction in noncommunicable diseases and economic impacts outweigh its challenges.

4.4.1 Burden of Disease

In the Philippines, noncommunicable diseases (NCDs) such as hypertensive heart disease, ischemic heart disease, and diabetes were among the leading causes of death in 2019. [1] In 2020, approximately 67% of deaths were attributable to NCDs. [2] Ischemic heart disease and diabetes were also among the top causes of disability-adjusted life years, ranking 1st and 6th, respectively. [1]

The rise in NCDs is driven by modifiable risk factors. Of these, tobacco, high blood pressure, high fasting plasma glucose, and high body mass index are among the top causes of deaths and disability. [1] The prevalence of overweight and obesity among adults has increased from 16.6% in 1993 to 37.2% in 2018 while that of high fasting blood glucose doubled from 3.4% in 2003 to 6.7% in 2018. In those 20 years old and above, the prevalence of elevated blood pressure remains high at 19% in 2018. Furthermore, around 4 in 10 adults (40.6%) report to be insufficiently physically active. [3]

NCDs also significantly affect the adolescent population, although this remains largely overlooked. Studies have shown that NCDs are primarily attributed to risk factors which emerge during the adolescent years; approximately 70% of premature deaths occurring in adulthood are the result of health-related behaviors in childhood and adolescence. [4]

The prevalence of type 2 diabetes mellitus and obesity in children and adolescents has increased in the last two decades. [5, 6] Around 14.4 million children and adolescents in the US were obese, with an overall prevalence of 19.3%, in 2017-2018 according to the CDC. [6] Due to this increasing global burden on the younger population, there has been a corresponding rise in the interest and efforts in adolescent health and wellbeing.

Recent recommendations have emphasized the inclusion of behavioral interventions promoting a healthy lifestyle, in addition to traditional pharmacologic treatment. Local and global societies have highlighted the importance of a multifaceted, multi-disciplinary, and patient-centered approach for both prevention and management of NCDs. [7]

Socioeconomic impact of the disease

NCDs are the leading cause of mortality worldwide. [8] Although initially considered “diseases of affluence”, recent evidence now shows that these diseases disproportionately affect low- and middle-income countries. [9] Around 85% of premature deaths due to NCDs occur in these areas, comprising three-quarters of the global NCD death rate. Poverty has been shown to be closely linked with NCDs; people of lower socioeconomic status tend to be at greater risk because of their exposure to harmful products, unhealthy practices, or limited access to health care. [9]

NCDs also have a huge financial impact on household costs. A study done in India showed that the odds of incurring catastrophic hospitalization expenditures are 30% higher for cardiovascular diseases compared to a communicable condition. [10] A 2011 economic evaluation done in Harvard estimated that global costs for cardiovascular diseases (CVD) could reach as high as US\$20 trillion over a 20-year period, with diabetes costs also expected to increase substantially, estimated to rise to at least US\$745 billion in 2030. [11] Forty-five percent of CVD costs were due to loss of workforce because of disability or premature death, proving that not only do NCDs cause significant economic burden due to healthcare costs but also due to productivity loss. [11]

4.4.2 Benefits and Harms: Adults

Change in weight

Five RCTs (n = 1,595) reported the effects of behavioral interventions on body weight. All the studies involved counseling sessions of at least medium intensity with or without tailored prescriptions or self-monitoring. The follow-up duration ranged from 26 weeks to 52 weeks. At the end of the follow-up period, the pooled mean difference in weight in kilograms between the intervention and control group was not statistically significant (MD -0.47 kg [95% CI -1.14 to 0.2], $I^2 = 50\%$). On sensitivity analysis excluding the study of Kinmonth et al. [12], both the overall and medium intensity group statistical heterogeneity decreased to 0%, the effect size estimate increased, and the confidence interval became narrower with both upper and lower limits favoring intervention (MD -0.68 kg [95% CI -1.12 to -0.23]). The said study may have contributed to heterogeneity due as it was the only trial with phone counseling as the intervention.

Change in body mass index

Six RCTs (n = 4,894) that involved counseling sessions of low to medium intensity with or without tailored prescriptions reported BMI. The follow-up duration ranged from 26 weeks to 52 weeks. At the end of the follow-up period, the pooled mean difference in BMI between the intervention and control group was not statistically significant (MD 0.08 [95% CI -0.07 to 0.23], $I^2 = 64\%$). On sensitivity analysis excluding the study of Kallings and colleagues [13], the overall and medium intensity statistical heterogeneity decreased to 39% to 37%, respectively. The effect direction did not change, but the confidence interval became narrower with both upper and lower limits favoring control (MD 0.11 [95% CI 0.01 to 0.22]). The said study could have possibly contributed to the heterogeneity due to its short follow-up of 26 weeks; the other studies had a follow-up of 52 weeks.

Change in systolic blood pressure

Six RCTs (n = 5,169) that reported on changes in systolic blood pressure (SBP) involved counseling sessions of varying intensity with or without tailored prescriptions or self-monitoring. The follow-up duration ranged from 26 weeks to 52 weeks. At the end of the follow-up period, the pooled mean difference in SBP in mm Hg between the intervention and control group was not statistically significant (MD -0.62 mmHg [95% CI -1.74 to 0.50], $I^2 = 1\%$). One of the studies that reported blood pressure outcomes did not report data on SBP. It only stated that there was no significant difference between treatment and control. [14]

Change in diastolic blood pressure

Seven RCTs (n= 5,243) reported on changes in diastolic blood pressure (DBP). Six trials involved counseling sessions of varying intensity with or without tailored prescriptions or self-monitoring, while one study designed a tailored walking program. The follow-up duration ranged from 26 weeks to 52 weeks. At the end of the follow-up period, the pooled

mean difference in DBP in mmHg between the intervention and control group was not statistically significant (MD -0.34 mmHg [95% CI -1.38 to 0.71], $I^2 = 39\%$).

Patient adherence to advice

There were no studies that reported on patient adherence as outcome.

Change in fasting plasma glucose

Six RCTs ($n = 4,440$) that involved counseling sessions of varying intensity with or without tailored prescriptions or self-monitoring reported on changes in fasting blood sugar. The follow-up duration ranged from 26 weeks to 52 weeks. At the end of the follow-up period, the pooled mean difference in fasting plasma glucose in mg/dL between the intervention and control group was not statistically significant (MD 0.11, 95% CI -1.11 to 1.33, $I^2 = 52\%$). On sensitivity analysis excluding the study of Kinmonth et al. [12], both the overall and medium intensity statistical heterogeneity decreased to 0% and the effect estimate improved to MD -0.44 although still imprecise (95% CI -1.25 to 0.36). The said study could have possibly caused the heterogeneity due to its population being adults with a parental history of type 2 diabetes mellitus.

Cardiovascular disease

There were no studies that reported on cardiovascular disease as outcome.

Change in duration of physical activity

Twenty-one RCTs ($n = 9,540$) measured the effects of behavioral interventions on the duration of physical activity. The trials used various interventions such as individual and group counseling and tailored print mailings. The included studies only used low to medium intensity interventions. They were also grouped by follow-up duration ranging from 26 to 52 weeks. At the end of the follow-up period, pooled results showed that the intervention group engaged in physical activity longer than the control group (MD 38.33 minutes longer [95% CI 25.67 to 51], $I^2 = 48\%$).

4.4.3 Benefits and Harms: Adolescents

Weight Loss

Physical Activity Alone

The single RCT ($n = 62$) on motivational interviewing to promote physical activity among adolescents showed no significant difference in the BMI at six months follow-up (MD -1.76 [95% CI -4.57 to 1.05]).

Combined Diet and Physical Activity

Evidence from behavioral interventions for diet and physical activity showed no significant difference in the change in BMI from baseline (MD ranging from -1.81 to 0.80) nor z-BMI (MD ranging from -0.37 to 0.03).

Change in PA duration

Physical Activity Alone

Gourlan and colleagues [15] also presented objective measures of PA length by accelerometer. A sample of 20 patients (10 from each group) were asked to wear an accelerometer, with 15 patients effectively using it until the end of study (six patients from the MI+SWLP group and nine patients from the SWLP group). PA duration was measured at six months follow-up. Mean difference in PA length did not significantly differ between intervention and control groups, with MD of 0.39 hours/day (23.4 minutes) higher for the MI group (95% CI -0.37 to 1.15) (22.2 minutes lower to 69 minutes higher).

Change in SBP and DBP

Combined Diet and Physical Activity

Behavioral interventions for healthy nutrition and physical activity showed a significant lowering of both systolic and diastolic blood pressures (mean change of -3.65 mmHg [95% CI -6.69 to -0.61] and -3.44 mmHg [95% CI -5.02 to -1.86] respectively).

Change in Fasting Plasma Glucose

Combined Diet and Physical Activity

Evidence showed no significant difference in fasting plasma glucose (MD 0.17 [95% CI -0.03 to 0.37]) between behavioral counseling and control.

Patient adherence, Mortality, Cardiovascular Disease, Health-related Quality of Life

There were no studies that investigated the effect of behavioral counseling to promote physical activity alone on the other outcomes of interest.

4.4.4 Additional Considerations

Resources Required

An economic analysis done as part of the National Institute for Health and Care Excellence (NICE) 2013 guidelines on brief advice for adults in primary care suggests that brief advice on physical activity in primary care is more cost effective than usual care based on moderate but limited evidence from three studies. One of the studies reported that an incremental cost of £886.50 was needed to increase self-reported moderate intensity physical activity duration to 150 minutes per week via disease register screening compared to opportunistic patient recruitment. [16]

An economic modeling study also done as part of the NICE 2013 guidelines showed that brief advice is more expensive than usual care incurring additional costs of £806,809 but more effective as it leads to 466 quality-adjusted life years (QALYs) gained in the total cohort, approximating a QALY gain of 0.0047 per person. Overall, the incremental cost of £1,730 per QALY of brief advice compared to usual care is cost-effective based on a set NICE threshold of £20,000. [17]

We found no economic or cost-effectiveness studies on the use of behavioral counseling to promote physical activity in adolescents.

Social Impact, Equity Issues and Health Systems Impact

No studies were found on patient values and preferences, social impact, equity issues, and health systems impact related to psychological / motivational coaching and behavioral counselling on physical activity for both adults and adolescents.

4.4.5 Recommendations from Other Groups

Guideline	Recommendation	Strength of Recommendation	Level of Evidence
ADULTS			
Canadian Task Force on Preventive Health Care 2015	We recommend that practitioners not offer formal, structured interventions aimed at preventing weight gain in normal-weight adults. Adults who are overweight or obese may be candidates for weight-loss treatment.	Weak	Very low quality
	For adults who are obese (BMI 30–39.9) and are at high risk of diabetes, we recommend that practitioners offer or refer to structured behavioural interventions aimed at weight loss.	Strong	Moderate
	For adults who are overweight or obese, we recommend that practitioners offer or refer to structured behavioural interventions aimed at weight loss.	Weak	Moderate
American College of Cardiology/American Heart Association Guideline on the Primary Prevention of Cardiovascular Disease 2019	Adults should be routinely counseled in healthcare visits to optimize a physically active lifestyle.	Strong	Meta-analyses of moderate quality RCTs
National Institute for Health and Care Excellence 2013	<p>RECOMMENDATION 1</p> <p>Identify adults who are not currently meeting the UK physical activity guidelines</p> <p>Use professional judgement to determine when this assessment would be most appropriate, for example, when someone is presenting with a condition that could be alleviated by physical activity. When assessing activity levels, remain sensitive to people's overall circumstances. If it is not appropriate during the current consultation, carry out an assessment at the next available opportunity.</p> <p>Do not rely on visual cues (for example, body weight). Use validated tools such as the general practice physical activity questionnaire (GPPAQ) to assess physical activity levels.</p>	None reported	None reported

	<p>For people who are not meeting the UK guidelines, identify the most appropriate time to discuss physical activity with them.</p> <p>Record the outcomes of the physical activity assessment.</p> <p>Encourage people who are assessed as meeting the UK physical activity guidelines to maintain this level of activity.</p>		
	<p>RECOMMENDATION 2</p> <p>Advise adults who have been assessed as being inactive to do more physical activity, with the aim of achieving the UK physical activity guidelines.</p> <p>When delivering brief advice, tailor it to the person's motivations and goals, current level of activity and ability, circumstances, preferences and barriers to being physically active, health status (for example whether they have a medical condition or a disability).</p> <p>Provide information about local opportunities to be physically active for people with a range of abilities, preferences and needs.</p> <p>Consider giving a written outline of the advice and goals that have been discussed.</p> <p>Record the outcomes of the discussion.</p> <p>Follow up when there is another appointment or opportunity. The follow-up could consist of a conversation about what physical activity someone has been doing, progress towards their goals or towards achieving the UK physical activity guidelines</p>	None reported	None reported
	<p>RECOMMENDATION 3</p> <p>When commissioning services to prevent or treat conditions such as cardiovascular disease, type 2 diabetes and stroke or to improve mental health, ensure brief advice on physical activity is incorporated into the care pathway.</p> <p>Ensure brief advice on physical activity is incorporated into services for groups that are particularly likely to be inactive. This includes people aged 65 years and over, people with a disability and people from certain minority ethnic groups.</p> <p>Include physical activity assessment and brief advice as part of a strategy for addressing domain 2 of the public health outcomes framework indicator on the proportion of physically active and inactive adults.</p> <p>Ensure assessment of physical activity and the delivery of, and follow up on, brief advice are built into local long-term disease management strategies.</p>	None reported	None reported

	<p>RECOMMENDATION 4</p> <p>Ensure systems such as Read Codes are being used to identify opportunities to assess people's physical activity levels and deliver brief advice.</p> <p>Ensure resources (for example, standard documents and forms) and systems are available to assess, record and follow up on the provision of brief advice.</p> <p>Ensure information about local opportunities to be active (including non-sporting activities) is available and up to date. This could include online maps and route finding for walking or adapted cycling.</p>	None reported	None reported
	<p>RECOMMENDATION 5</p> <p>Provide information and training for primary care practitioners.</p>	None reported	None reported
Primary Prevention of ASCVD and T2DM in Patients at Metabolic Risk: An Endocrine Society Clinical Practice Guideline 2019	For individuals at metabolic risk with excess weight (defined by body mass index and/or waist circumference), we recommend that comprehensive programs to support the adoption of a healthy lifestyle should aim to achieve a weight loss of 5% of initial body weight during the first year.	Strong	High
	In individuals at metabolic risk, we recommend prescribing daily physical activity, such as brisk walking, and reduction in sedentary time.	Strong	Moderate
ADOLESCENTS			
<p>Clinical Practice Guideline for Multicomponent Behavioral Treatment of Obesity and Overweight in Children and Adolescents: Current State of the Evidence and Research Needs for the Guideline Development Panel for Obesity Treatment of the American Psychological Association</p> <p>American Psychological Association, 2018</p>	For child and adolescent patients aged 2-18 with overweight or obesity, the panel strongly recommends the provision of family-based multicomponent behavioral interventions, with a minimum of 26 contact hours, initiated at the earliest age possible.	None reported	None reported
Pediatric Obesity – Assessment, Treatment	<p>3.0 Prevention of Obesity</p> <p>3.1 We suggest that clinicians promote and participate in the ongoing healthy</p>	Weak	Very low

and Prevention: An Endocrine Society Clinical Practice Guideline	dietary and activity education of children and adolescents, parents, and communities, and encourage schools to provide adequate education about healthy eating (2 ⊕○○)		
European Society of Endocrinology / Pediatric Endocrine Society 2017	3.3 We recommend that children and adolescents engage in at least 20 minutes, optimally 60 minutes, of vigorous physical activity at least 5 days per week to improve metabolic health and reduce the likelihood of developing obesity. (1 ⊕⊕○○)	Strong	Low
	<u>4.0 Treating obesity</u> 4.3 We recommend that clinicians prescribe and support the reduction of inactivity and also a minimum of 20 minutes of moderate to vigorous physical activity daily, with a goal of 60 minutes, all in the context of a calorie-controlled diet. (1 ⊕⊕○○)	Strong	Low
Recommendations for growth monitoring, and prevention and management of overweight and obesity in children and youth in primary care Canadian Task Force on Preventive Health Care, 2015	For children and youth aged 2 to 17 years who are overweight or obese, we recommend that primary care practitioners offer or refer to structured behavioural interventions aimed at healthy weight management.	Weak	Moderate
Combined Diet and Physical Activity Promotion Programs for Prevention of Diabetes: Community Preventive Services Task Force Recommendation Statement Community Preventive Services Task Force, 2015	The Task Force recommends the use of combined diet and physical activity promotion programs by health care systems, communities, and other implementers to provide counseling and support to clients identified as being at increased risk for type 2 diabetes.	None reported	None reported
Obesity: identification, Assessment and Management of Overweight and Obesity in Children, Young People and Adults	<u>1.5 Behavioural interventions</u> Adults and children 1.5.1 Deliver any behavioural intervention with the support of an appropriately trained professional.	None reported	None reported

National Institute for Health and Care Excellence, 2014	<p><u>1.6 Physical Activity</u></p> <p>Children</p> <p>1.6.4 Encourage children and young people to increase their level of physical activity, even if they do not lose weight as a result, because of the other health benefits exercise can bring (for example, reduced risk of type 2 diabetes and cardiovascular disease). Encourage children to meet the recommendations in the UK Chief Medical Officers' physical activity guidelines for daily activity.</p> <p>1.6.5 Be aware that children who are already overweight may need to do more than 60 minutes' activity.</p> <p>1.6.6 Encourage children to reduce inactive behaviours, such as sitting and watching television, using a computer or playing video games.</p> <p>1.6.7 Give children the opportunity and support to do more exercise in their daily lives (for example, walking, cycling, using the stairs and active play; see also NICE's guideline on walking and cycling). Make the choice of activity with the child, and ensure it is appropriate to the child's ability and confidence.</p> <p>1.6.8 Give children the opportunity and support to do more regular, structured physical activity (for example football, swimming or dancing). Make the choice of activity with the child, and ensure it is appropriate to the child's ability and confidence.</p>	None reported	None reported
Clinical practice guideline for the diagnosis and treatment of pediatric obesity: recommendations from the Committee on Pediatric Obesity of the Korean Society of Pediatric Gastroenterology Hepatology and Nutrition	2-2. We recommend a family-based, comprehensive, multidisciplinary team approach to succeed in behavioral interventions (active vigorous physical activity and reduction of inactivity, accompanied with calorie-controlled diet) for the treatment of obesity in children	Strong	High
	4-1. We recommend physical activity, which is beneficial to all children and adolescents	Strong	High
Korean Society of Pediatric Gastroenterology Hepatology and	4-2. We recommend moderate to vigorous levels of physical activity, including regular and steady exercise, which is helpful in promoting a decrease in weight. The recommended duration of moderate to vigorous exercise is at least	Strong	High

Nutrition, 2019	20 minutes, with a goal of 60 minutes, 5 days per week		
	4-3. We recommend programmed exercises, which are helpful in reducing body fat in children and adolescents	Strong	High

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4.5 Nutrition

RECOMMENDATIONS

1. **We recommend the use of behavioral counselling or psychological/motivational coaching for healthy nutrition to promote weight loss, prevent hypertension, and prevent diabetes among Filipino adults without cardiovascular risk factors.** (Strong recommendation, low certainty of evidence)
2. **We suggest against the use of psychological/motivational coaching or behavioral counseling to promote healthy nutrition in the general Filipino adolescent population.** (Weak recommendation, very low certainty of evidence)
3. **We recommend the use of psychological/motivational coaching or behavioral counseling to promote healthy nutrition among obese Filipino adolescents.** (Strong recommendation, very low certainty of evidence)

Evidence-to-Decision Considerations

Nutrition counselling can be beneficial for apparently healthy individuals and especially for those already with overnutrition. Implementation will require intensive human resources and there are no local cost-effectiveness studies currently available. The panel gave a strong recommendation citing evidence of benefit outweighing the burden of disease without any intervention. Nutrition interventions are expected to have a major impact on noncommunicable diseases in adulthood.

4.5.1 Burden of Disease

Noncommunicable diseases (NCDs) cause 71% of worldwide deaths, and 85% of premature deaths caused by these diseases occur in low- and middle-income countries. [1] This comprises about three-quarters of the global NCD death rate. [2] Rapid urbanization, globalization of unhealthy lifestyles and an aging population are just some of the factors which contribute to the rise of cardiovascular diseases. In the Philippines, NCDs comprise the majority of total deaths, following global trends; in 2007, seven of the ten leading causes of death in the country were non-communicable in etiology.

Risk factors for NCDs such as obesity, diabetes mellitus and hypertension, are consequences of unhealthy lifestyle and practices. Hypertension has been consistently identified as one of the most important risk factors for disability adjusted life-years lost throughout the world [3-5]. Only 67% of hypertensive individuals were on medications,

and only 36% of those on treatment had the condition under control. [6, 7] In the Philippines, the *Presyon 4* Nationwide 2021 Hypertension Survey showed an alarming increase in overall prevalence among adults, from 28% in 2013 to 37% in 2021 [8]. Based on the data from the Expanded National Nutrition Survey (ENNS), among adolescents 10 to 19 years old, both mean SBP and DBP showed significant decline: 99.5 mmHg mean SBP in 2015 to 98.5 mmHg in 2018, and 64.5 mmHg mean DBP in 2015 to 62.6 mmHg in 2018. [7] On the other hand, cases of diabetes mellitus in the country are on the rise, with a prevalence of 6.3% among Filipino adults, or almost four million total cases as of 2020. [9] It remains to be the fourth leading cause of death in the Philippines in 2020. [10] Prevalence of diabetes among Filipino children has not yet been established nationally. But according to a prevalence survey by Costelo et al. in 2020, a total of 281,398 type 2 diabetes patients are being seen by the 106 physician respondents of the study, with only a total of 0.091% pediatric diabetic patients reported. [11] Obesity rates among Filipino adults were also reported to be increasing from 7.2% in 2015 to 7.5% in 2016 for females, and from 5.0% in 2015 to 5.2% in 2018 for males. [12] Moreover, the prevalence of overweight and obesity has risen from 9.2% in 2015 to 11.6% in 2018 among Filipino adolescents. [13]

Local guidelines have stressed a multistep, multidisciplinary, and multifactorial approach to the battle against NCDs. This includes lifestyle modifications, weight management, dietary modifications, proper glucose and blood pressure determination and monitoring, pharmacologic treatment, and individualization of targets and management according to each patient's comorbidities and capabilities. [14, 15]

NCDs increase household costs associated with health care and quickly drain household resources, particularly in low-resource settings. [1] A 2020 review including data from 15 countries calculated that per person, the average total costs of hypertension was 630.14 international dollars (Int\$) – 1497.36 Int\$ in direct costs and 282.34 Int\$ in indirect costs. Overall cost per country reached the region of several dozen billion Int\$, which indicates a growth in costs from year to year and increasing burden on society. [16] A 2011 economic evaluation reported that 5 major NCDs (cardiovascular disease, chronic respiratory disease, cancer, diabetes, and mental illness) could contribute to a cumulative loss of \$47 trillion in the two decades from 2011 with cardiovascular disease and mental health conditions contributing the greatest economic burden. [17] A cost-of-illness approach by the same report estimated that the cost of cardiovascular disease could reach as high as US \$ 20 trillion dollars over 20 years. The global economic cost of diabetes was also projected to rise to US \$745 billion dollars by 2030, from US \$500 billion in 2010. [17]

4.5.2 Benefits and Harms: Adults

Hypertension

Change in Systolic Blood Pressure

Sixteen RCTs (n = 52,785; follow-up ranging from 26-204 weeks) were included in the analysis, with 7 focusing on HD + PA interventions and 9 on HD alone. Pooled data showed that HD + PA or HD interventions resulted in statistically significant lowering of

systolic blood pressure (MD -1.48 mmHg [95% CI -2.05 to -0.90], $p < 0.0001$). Results approached statistically significant heterogeneity ($I^2 = 45\%$). Identified contributors to this are varying highlighted aspects of healthy nutrition in the intervention arm (e.g., low fat, saturated fat, sodium, fruits, vegetables), durations of intervention, intervention session length and intensity, and method of intervention delivery. Subgroup analysis showed similar results for HD alone (9 RCTs, $n = 50,868$) (MD -1.5 mmHg [95% CI -2.24 to 0.78], $p < 0.0001$) and combined HD + PA coaching intervention (7 RCTs, $n = 1917$) (MD -1.52 mmHg [95% CI -2.65 to -0.39], $p = 0.008$).

Change in Diastolic Blood Pressure

We found 16 RCTs ($n = 52,779$, follow-up ranging from 26-204 weeks) showing a statistically significant reduction in diastolic blood pressure for either HD + PA or HD interventions (MD -0.71 mmHg [95% CI -0.84 to -0.58]; $p < 0.00001$, $I^2 = 0\%$). Subgroup analysis showed that this effect was primarily driven by HD alone intervention (9 RCTs, $n = 50,863$) (MD -0.72 mmHg [95% CI -0.91 to -0.52]; $p < 0.00001$, $I^2 = 5\%$). Lowering of diastolic blood pressure by combined HD + PA counselling (7 RCTs, $n = 1916$) was not statistically significant (MD -0.62 mmHg [95% CI -1.37 to 0.13], $p = 0.10$, $I^2 = 0\%$).

Diabetes

Change in Fasting Glucose

Among the 17 studies ($n = 2,834$, follow-up ranging from 26-234 weeks) included in the overall analysis, 6 looked into HD + PA while only 1 at HD alone. Pooled data shows that counselling reduced fasting glucose as measured in mg/dL without significant heterogeneity (MD -1.14 mg/dL [95% CI -2.00 to -0.27], $p = 0.010$, $I^2 = 6\%$). The reduction was not statistically significant in HD + PA counselling (6 RCTs, $n = 1,767$) (MD -0.83 mg/dL [95% CI -1.89 to 0.23], $p = 0.12$, $I^2 = 6\%$), but statistically significant in the lone trial looking at HD alone (1 RCT, $n = 1,067$) (MD -1.80 mg/dL [95% CI -3.24 to -0.36], $p = 0.01$).

Obesity

Change in Body Mass Index

A total of 15 studies ($n = 50,809$, follow-up ranging from 26-234 weeks) were included in analysis, with 9 investigating HD + PA and 6 looking at HD alone. There was an overall statistically significant decrease in BMI (MD -0.56 [95% CI -0.72 to -0.39], $p < 0.00001$), but with significant heterogeneity ($I^2 = 83\%$). This was consistent across both subgroup analyses of HD + PA (9 RCTs, $n = 2,933$) (MD -0.65 [95% CI -0.99 to -0.32], $p < 0.00001$, $I^2 = 80\%$) and HD alone (6 RCTs, $n = 47,876$) (MD -0.46 [95% CI -0.67 to -0.25], $p < 0.0001$, $I^2 = 89\%$). Possible sources of heterogeneity are the different specific focuses of healthy nutrition (e.g., low fat, saturated fat, sodium, fruits, vegetables), duration of intervention, intervention session length and intensity, and method of intervention delivery.

Mortality

All-Cause Mortality

Four studies (n = 53,488, follow-up ranging from 156-520 weeks) investigated HD counselling (without PA) alone. There was no difference in all-cause mortality when compared to control groups (RR 0.98 [95% CI 0.90 to 1.05], $I^2 = 0\%$).

Cardiovascular Disease Mortality

Pooled results from two studies (n = 48,973, follow-up ranging from 421-520 weeks) which looked into HD counselling alone (without PA), showed no net benefit for the reduction of cardiovascular disease mortality (RR 0.98 [CI 0.79 to 1.22], $I^2 = 0\%$).

Cardiovascular Disease

Three studies (n = 49,515, follow-up ranging from 421-520 weeks) investigated HD alone counselling (without PA counselling involved). The outcomes evaluated include myocardial infarction (MI), coronary heart disease death, cardiovascular death, need for myocardial revascularization, and stroke. [18-20]. Pooled results showed a trend towards benefit with HD counseling compared to control (RR = 0.92 [95% CI 0.85-1.00], $p = 0.04$, $I^2 = 0\%$).

4.5.3 Benefits and Harms: Adolescents

Diet and Physical Activity

Change in BMI or BMI z-score

Sixteen studies (n = 1,702) that investigated the change in BMI or BMI z-score were included in this analysis. Subgroup analysis was done according to the reported outcome, either BMI or z-score BMI. The mean difference (MD) between behavioral counseling groups and control groups in terms of z-score BMI ranged from -0.37 to 0.03 across studies with most favoring the intervention. The MD for BMI ranged from -1.81 to 0.80 kg/m². We did not report a pooled estimate due to the very high heterogeneity ($I^2 = 90\%$). Subgroup analyses by intervention type and duration of intervention (contact hours) did not address the heterogeneity. Overall evidence on this outcome was deemed inconclusive.

Hypertension

Change in Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP)

Eight studies (n = 1,108) provided data on the change in blood pressure. Pooled data showed a significantly lower SBP among patients who underwent behavioral counseling compared to control (MD -3.65 mmHg [95% CI -6.69 to -0.61]). The overall moderate to high heterogeneity ($I^2 = 78\%$) may also be due to variation in contact hours and treatment duration. Behavioral counseling also significantly lowered DBP compared to control (MD -3.44 mmHg [95% CI -5.02 to -1.86]) with low heterogeneity ($I^2 = 27\%$). The low heterogeneity may be due to less variability and narrower range of DBP values.

Change in Fasting Plasma Glucose (FPG)

Eight studies (n = 1,091) provided data on change in FPG. The pooled result was inconclusive (MD 0.17 mg/dL [95% CI -0.03 to 0.37], $I^2 = 0\%$).

Patient Adherence

There were no studies that reported on patient adherence to behavioral counseling to promote healthy nutrition.

Quality of Life

There were no studies that reported on the effect of behavioral counseling to promote healthy nutrition on QOL.

Other Outcomes

There were no studies that reported on the effect of behavioral counseling to promote healthy nutrition on mortality. There were no studies that investigated the effect of behavioral counseling to promote healthy nutrition alone on weight management, prevention of hypertension, diabetes, and mortality.

4.5.4 Additional Considerations

Resources Required

There are no available local studies on cost-effectiveness or cost-benefit analysis on the use of motivational coaching or behavioral counseling to promote healthy nutrition among obese, overweight or at-risk adolescents.

Patient Values and Preferences

A study by Early 2019 on motivational interviewing and home visits to improve health behaviors and reduce childhood obesity revealed that families which participated in the study felt that the home visit by a registered nurse was helpful and was an opportunity for learning healthy behaviors. [21] Out of the 11 families enrolled in the study, 7 families mentioned that more families would be receptive to home visits if they are to be informed of the benefits of the visits, such as learning more about healthy foods and portioning. The study, however, focused on determining the acceptability of home visits, rather than the acceptability of motivational interviewing.

Another study by Schwartz et al. [22] on office-based motivational interviewing to prevent childhood obesity recruited 91 pediatric patients (mean age 4.7 years for intervention, 5.3 years for control). The study revealed that 94% (15 out of 16) of the parents who completed the evaluation form and rated the intervention were very satisfied with the pediatrician visit. All 16 of the recruited parents were very satisfied with the registered dietitian visit. [23]

Social Impact, Equity Issues and Health Systems Impact

No studies were found on patient values and preferences, social impact, equity issues, and health systems impact related to psychological/motivational coaching and behavioral counselling on physical activity for adults.

4.5.5 Recommendations from Other Groups

Guideline	Recommendation	Strength of Recommendation	Level of Evidence
ADULTS			
<p>AHA/ACC Guideline on the Primary Prevention of Cardiovascular Disease (2019)</p> <p><i>Population: Adults (≥18 years of age) without cardiovascular disease</i></p>	<p>Class I:</p> <ul style="list-style-type: none"> A diet emphasizing intake of vegetables, fruits, legumes, nuts, whole grains, and fish is recommended to decrease ASCVD risk factors. <p>Class IIa:</p> <ul style="list-style-type: none"> Replacement of saturated fat with dietary monounsaturated and polyunsaturated fats can be beneficial to reduce ASCVD risk. A diet containing reduced amounts of cholesterol and sodium can be beneficial to decrease ASCVD risk. As a part of a healthy diet, it is reasonable to minimize the intake of processed meats, refined carbohydrates, and sweetened beverages to reduce ASCVD risk. <p>Class III:</p> <ul style="list-style-type: none"> As a part of a healthy diet, the intake of trans fats should be avoided to reduce ASCVD risk. 		
<p>US Preventive Services Task Force Healthful Diet and Physical Activity for Cardiovascular Disease Prevention in Adults Without Known Risk Factors:: Behavioral Interventions (2017)</p> <p><i>Population: Adults without obesity who do not have known cardiovascular risk factors.</i></p>	<p>Grade C: Individualize the decision to offer or refer adult.</p> <p>The USPSTF recommends that primary care professionals individualize the decision to offer or refer adults without obesity who do not have hypertension, dyslipidemia, abnormal blood glucose levels, or diabetes to behavioral counseling to promote a healthful diet and physical activity. Existing evidence indicates a positive but small benefit of behavioral counseling for the prevention of cardiovascular disease (CVD) in this population. Persons who are interested and ready to make behavioral changes may be most likely to benefit from behavioral counseling.</p>		
<p>Canadian Task Force on Preventive Healthcare recommendations for prevention of weight gain and use of behavioural and pharmacologic</p>	<p>We recommend that practitioners not offer formal, structured interventions[‡] aimed at preventing weight gain in normal-weight adults. Adults who are overweight or obese may be candidates for weight-loss treatment.</p>	Weak	Very Low

<p>interventions to manage overweight</p> <p><i>Inclusion: Apparently healthy adults (≥18 years of age) who present to primary care</i></p> <p><i>Exclusion: People with eating disorders, or who are underweight, pregnant, overweight or obese (BMI ≥ 25).</i></p>			
<p>‡ - Formal structured interventions are behavioural modification programs that involve several sessions or interactions that take place over weeks to months. Interventions examined for prevention of weight gain included behaviourally based prevention interventions focused on diet, increasing exercise, making lifestyle changes or any combination of these. These could be offered in primary care settings or settings where primary care practitioners may refer patients, such as credible commercial or community programs. Recommended interventions for management of overweight and obesity include intensive behaviourally based interventions focused on diet, increasing exercise, making lifestyle changes or any combination of these. Lifestyle interventions generally included counselling, education or support, and/or environmental changes in addition to changes in exercise and/or diet.</p>			
ADOLESCENTS			
<p>Korean Society of Pediatric Gastroenterology Hepatology and Nutrition (KSPGHN 2019)</p>	<p>Strength of Evidence I, Grade of Recommendation A¹:</p> <ul style="list-style-type: none"> - We recommend a family-based, comprehensive, multidisciplinary team approach to succeed in behavioral interventions (active vigorous physical activity and reduction of inactivity, accompanied with calorie-controlled diet) for the treatment of obesity in children. - We recommend the decrease in intake of sugar-sweetened beverages. - We recommend the reduction in total energy intake. <p>Strength of Evidence III, Grade of Recommendation C²:</p> <ul style="list-style-type: none"> - We suggest the use of small-sized plates or bowls. - We suggest the decrease in consumption of fast food. 	<p>Level I</p> <p>Level III</p>	<p>Grade A</p> <p>Grade C</p>
<p>American Psychological Association (APA 2018)</p>	<p>For child and adolescent patients aged 2-18 with overweight or obesity, the panel strongly recommends the provision of family-based multicomponent behavioral interventions, with a minimum of 26 contact hours, initiated at the earliest age possible.</p>	<p>ungraded</p>	<p>ungraded</p>
<p>US Preventive Services Task Force (USPSTF 2017)</p>	<p>Lifestyle-based weight loss interventions with 26 or more hours of intervention contact are likely to help reduce excess weight in children and adolescents. The clinical significance of the small benefit of medication use is unclear.</p>	<p>ungraded</p>	<p>ungraded</p>
<p>European Society of Endocrinology / Pediatric Endocrine Society 2017 (Styne 2017)</p>	<p>Ungraded Good Practice Statement:</p> <ul style="list-style-type: none"> -We recommend that clinicians prescribe and support healthy eating habits in accordance with the following guidelines of the American Academy of Pediatrics and the US Department of Agriculture: --decreased consumption of fast foods --decreased consumption of added table sugar 	<p>ungraded</p>	<p>ungraded</p>

	<p>and elimination of sugar-sweetened beverages</p> <ul style="list-style-type: none"> --decreased consumption of high-fructose corn syrup and improved labeling of foods containing high-fructose corn syrup --decreased consumption of high-fat, high sodium, or processed foods --consumption of whole fruit rather than fruit juices --portion control education --reduced saturated dietary fat intake for children and adolescents >2 years of age --US Department of Agriculture recommended intake of dietary fiber, fruits, and vegetables --timely, regular meals, and avoiding constant "grazing" during the day, especially after school and after supper --recognizing eating cues in the child's or adolescent's environment, such as boredom, stress, loneliness, or screen time --encouraging single portion packaging and improved food labeling for easier use by consumers. 		
Canadian Task Force on Preventive Health Care 2015	<p>Weak Recommendation, Moderate Quality Evidence:</p> <ul style="list-style-type: none"> - We recommend that primary care practitioners offer or refer to structured behavioural interventions aimed at healthy weight management. <p>Weak Recommendation, Very low Quality Evidence:</p> <ul style="list-style-type: none"> - We recommend that primary care practitioners not routinely offer structured interventions‡ aimed at preventing overweight and obesity in healthy-weight children and youth aged 17 years and younger. 	Weak	Moderate
National Institute for Health and Care Excellence (NICE 2014)	<p>1.5 Behavioural Interventions</p> <p>Adults and children</p> <p>1.5.1 Deliver any behavioural intervention with the support of an appropriately trained professional. [2006]</p> <p>Children</p> <p>1.5.3 Include the following strategies in behavioural interventions for children, as appropriate:</p> <ul style="list-style-type: none"> -stimulus control -self-monitoring -goal setting -rewards for reaching goals <p>problem solving. Give praise to successes and encourage parents to role-model desired behaviours. [2006, amended 2014]</p> <p>1.7 Dietary</p> <p>Adults and children</p> <p>1.7.1 Tailor dietary changes to food preferences and allow for a flexible and individual approach to reducing calorie intake. [2006]</p>	ungraded	ungraded

	<p>1.7.2 Do not use unduly restrictive and nutritionally unbalanced diets, because they are ineffective in the long term and can be harmful. [2006, amended 2014]</p> <p>1.7.3 Encourage people to improve their diet even if they do not lose weight, because there can be other health benefits. [2006]</p> <p>Children</p> <p>1.7.12 A dietary approach alone is not recommended. It is essential that any dietary recommendations are part of a multicomponent intervention. [2006]</p> <p>1.7.13 Any dietary changes should be age appropriate and consistent with healthy eating advice. [2006]</p> <p>1.7.14 For overweight and obese children and young people, total energy intake should be below their energy expenditure. Changes should be sustainable. [2006, amended 2014]</p>		
<p>¹Strength of Evidence I, Grade of Recommendation A: strong evidence from one or more systematic reviews of well-designed RCTs; highly recommended</p> <p>²Strength of Evidence III, Grade of Recommendation C: Evidence from well-designed clinical trials without randomization, comparative study in a single group, cohort study, time series study or matched case-control studies; recommended</p>			

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4.6 Stress Reduction

RECOMMENDATIONS

1. **We suggest the use of nonpharmacologic interventions for stress to prevent mental health issues and to reduce stress among Filipino adults.** (Weak recommendation, very low certainty of evidence)
2. **We suggest nonpharmacologic interventions for stress reduction to prevent mental health issues among Filipino adolescents.** (Weak recommendation, very low certainty of evidence)

Evidence-to-Decision Considerations

Most evidence-to-decision domains favor the interventions on stress but some interventions, e.g., cognitive behavioral therapy, are more time- and resource-intensive. There were also concerns about adherence to therapy sessions with patients having other life priorities and issues on access. Web-based and telehealth services may be considered as alternative means of delivery. There may also be issues of equity as those who could benefit more from such interventions may not have access to them. For adolescents, stigma and parental attitudes may influence acceptability of the intervention.

4.6.1 Burden of Disease

Depression and anxiety are common mental disorders globally. It is estimated that 4.4% of the world's population is affected with depression and 3.6% have anxiety disorders. Prevalence of depression varies with age, sex, and region with higher rates among older adults and among females. [1] Depression rates increase starting early to mid-adolescence underlying the importance of preventive interventions for this age group. [2] The prevalence of depression in adolescents is estimated at 3-8% by 18 years old, with about 25% of adolescents reporting at least one depressive episode. [3] For anxiety, prevalence is higher among females at 7.7% versus 3.6% among males, but rates do not significantly differ between age groups. In terms of global estimates of health loss, depressive disorders led to over 50 million years lived with disability (YLD) in 2015, with the majority occurring in low- and middle-income countries. Meanwhile, anxiety disorders led to an estimated 24.6 million YLD in 2015. [1]

Locally, 3.3% of the population had depressive disorders while 3.1% had anxiety disorders, according to the Global Burden of Disease study in 2015. In terms of disease burden, depressive disorders accounted for an estimated 554,100 YLD while anxiety disorders accounted for 284,591 YLD. [1] In 2018, a local cross-sectional study among Filipino adults (n = 1,203) assessed the prevalence of depression and anxiety in low-

income communities. [4] They found that depression and anxiety were prevalent at 21% and 39% respectively. Depression was found to be associated with older age, higher anxiety, and lower QOL while anxiety was associated with younger females, higher depression and lower QOL.

The natural course of depression is varied among individuals, with some patients experiencing a single major depressive episode, others with recurrent symptoms with full recovery in between episodes, and some with persistent, waxing, and waning symptoms. Some episodes cause minimal disability and are unnoticed by others, while in some cases symptoms are so severe that the patient is not capable of self-care. Patients correctly diagnosed with major depressive disorder (MDD) may eventually be diagnosed with bipolar disorder in 23% of cases and schizophrenia-spectrum disorder in 5-15%. [5]

A multinational, observational study in 2017 that included the Philippines examined the recovery rates in 1,549 patients with MDD. They found that 70.6% and 56.1% achieved clinical and functional remission respectively and recovery was negatively associated with poorer adherence to treatment, lower levels of education, and medical or psychiatric comorbidities. [6] Unfortunately, there is a high recurrence rate of MDD. A prospective study done in the Netherlands showed that the cumulative recurrence of MDD was 13.2% at 5 years, 23.2% at 10 years and 42.0% at 20 years. Factors associated with a shorter time to recurrence include younger age, higher number of prior episodes, severe previous episodes and negative experiences in childhood. [7]

According to the WHO, mental health conditions account for 1 in 5 YLD globally, with more than US\$1 trillion per year in economic losses. In addition, mental health conditions like depression and anxiety disorders also tend to be more associated with other comorbidities such as HIV, tuberculosis and noncommunicable disease, hence increasing patients' economic burden. [8]

4.6.2 Benefits and Harms: Adults

Anxiety

Anxiety scores

Ten RCTs (n = 2,456) of moderate quality compared the mean anxiety scores using standardized scales between those who received nonpharmacological interventions and those in the control group measured post intervention ranging from a follow-up of 2 months to 5 years. Anxiety scores were measured using different scales: 3 studies used the Hospital Anxiety and Depression Scale – Anxiety subscale (HADS-A), 2 studies used the 7-Item Generalized Anxiety Disorder Scale and 1 study each used the Depression Anxiety Stress Scales (DASS-A), GHQ-28-anxiety, Self-rating Anxiety Scale (SAS), SPAI (Social Phobia and Anxiety Interview) and the Beck Anxiety Inventory.

Pooled results showed lower mean scores on anxiety scales among those who received the intervention versus the control (SMD -0.29 [95% CI -0.43 to -0.14]). There was significant heterogeneity ($I^2 = 75\%$). Subgroup analysis according to the different interventions minimized heterogeneity: 2 studies utilized Psychoeducational program

(SMD -0.72 [95% CI -1.06 to 0.37], $I^2 = 0\%$), 7 studies utilized cognitive behavioral therapy (CBT) (SMD -0.14 [95% CI -0.21 to -0.06], $I^2 = 0\%$) and one study utilized ACT (SMD -0.83 [95% CI -1.01 to -0.65], $I^2 = 0\%$). Results favored the intervention across all subgroups.

Anxiety incidence

Four RCTs ($n = 517$) reported on the incidence of anxiety disorders using standardized measuring tools, (follow-up: range 6 months to 24 months). Three studies utilized CBT, and one study utilized a guided self-help intervention. Pooled results showed no significant difference in the odds of developing anxiety disorders among participants who were given nonpharmacologic interventions compared to control (OR 0.64 [95% CI 0.19 to 2.13], $I^2 = 55\%$). Possible sources of heterogeneity include the different interventions used and different follow-up durations. [9]

Depression

One meta-analysis that included 13 RCTs ($n = 7,305$) [10] reported the effectiveness of nonpharmacologic interventions to prevent depression in the primary care setting. Outcomes were reported as SMD using various depression scales. The follow-up period of the included studies ranged from 7 weeks to 60 months (median 12 months). The pooled SMD across all studies was -0.163 (95% CI -0.256 to -0.070, $p = 0.001$) for the random effects model with low heterogeneity ($I^2 = 20.6\%$). Subgroup analyses were done according to age group. Pooled SMD among adults (10 RCTs) was -0.156 (95% CI -0.268 to -0.045) and -0.233 (95% CI -0.588 to 0.121) among the elderly (≥ 60 years old in 1 RCT and ≥ 75 years old in another RCT). There was no significant heterogeneity in the two subgroups ($I^2 = 28.7\%$ and $I^2 = 49.2\%$ respectively). [10]

In one RCT ($n = 406$), the intervention reduced the risk of MDD compared to control over a 12-month follow-up period (RR 0.66 [95% CI 0.50 to 0.87]); (HR 0.59 [95% CI 0.42 to 0.82]). The mean time to onset of MDD was 6 weeks longer (95% CI 2.46 to 9.54) in the intervention group compared to the control group. [11]

Stress Reduction

Six RCTs ($n = 772$) of fair to good quality reported on the effect of nonpharmacologic group interventions on stress among undergraduate and post-graduate health professional students. Pooled data showed that nonpharmacologic group interventions reduced stress compared to control (SMD -0.33 [95% CI -0.52 to -0.14], $I^2 = 33\%$). Stress reduction was measured using the DASS on 4 studies, BSI on 1 study and PSS on 1 study. Among the three interventions, mindfulness interventions were shown to be the most effective (SMD -0.54 [95% CI -0.85 to -0.24]). Mindfulness interventions primarily employed were in the form of mindfulness-based stress reduction (MBSR) which combines psychoeducation, mindfulness-based cognitive-behavioral intervention, breath awareness, body awareness and Hatha yoga postures. [12]

Other Outcomes

No direct evidence was found for the following outcomes in adults: mortality, patient adherence, quality of life, and safety.

4.6.3 Benefits and Harms: Adolescents

Anxiety

One RCT (n = 251) with moderate quality looked into the preventive effect of a modified version of a rumination-focused CBT aimed to prevent anxiety and depression by targeting negative repetitive thinking (e.g., worry and rumination). In this study, the authors looked at the Generalized Anxiety Disorder Questionnaire (GADQ-IV) score of two intervention groups (group and internet intervention) compared to control. GADQ-IV is a 9-item test that corresponds to the DSM-IV criteria for generalized anxiety disorder. It was found out that after 12 months, both group and internet intervention showed a lower prevalence of anxiety (18% and 16% respectively) compared to a waitlist control group (42.2%). Comparing treatment to control, the hazard ratio was 2.52 (95%CI 1.38 to 4.59, $p = 0.003$). [13]

Four RCTs (n = 2,299) with high risk of bias investigated the preventive effect of cognitive-based interventions on anxiety. [14-17] Different scales were used to measure anxiety across the 4 trials: the Social Phobia and Anxiety Inventory for Children (SPAI-C) [14], Multidimensional Anxiety Scale for Children (MASC) [15], and the Spence Children's Anxiety Scale (SCAS). [16, 17] Pooled analysis of standard mean differences show that the intervention reduced anxiety scores compared to the control group (SMD -0.19 [95% CI -0.27 to -0.11], $I^2 = 0\%$).

Depression

A total of 32 RCTs were included in this analysis (n = 5,941). All studies were of moderate risk of bias, with lack of participant blinding. Adolescents included in these studies were considered at high risk for depression (i.e., with subthreshold depression, with post-traumatic stress disorder [PTSD], children of alcoholic parents or parents with clinical depression). The mean age of participants ranged from 11.4 to 14.7 years old. Interventions ranged from a computer-based CBT program (given over 6 weeks) [18], individual and group CBT [3, 19-21] as well as family-based therapy (12 sessions) [2]. Controls were written information only, wait-list (i.e., provided with the same intervention after a certain period following the intervention group), usual care, or no intervention. Depression scores were measured at baseline, immediately post-intervention, and after a pre-specified period after the intervention (i.e., 6, 12, and 24-months post-intervention). Scales used included the Center for Epidemiologic Studies-Depression scale (CES-D), the Birleson Depression Self-rating Scale (DSRS), and the Reynolds Adolescent Depression Scale (RADSD): all are validated self-administered questionnaires for children and adolescents. In general, the higher the final score, the more severe the depression symptoms of the adolescent or child.

For this analysis, the SMD of scores from baseline to post-intervention were calculated and pooled. The RCTs included in the subgroup analysis by Ssegonja et al. [19] could not be added as the study authors did not report the exact mean difference scores. Mean difference of depression scores from baseline to subsequent follow-up (i.e., 6-, 12-, or 24-months post-intervention) could not be calculated since mean scores for these time points were not provided by the study authors [20, 21].

Pooled analysis shows that behavioral interventions significantly reduce depression scores post-intervention (SMD -0.30 [95% CI -0.56 to -0.05]). Similarly, the meta-analysis by Ssegonja et al. concluded that group CBT significantly lowered symptom severity from baseline to post-intervention (Cohen's d -0.29 [95% CI -0.39 to -0.18]). [19]

Beyond 6 months however, there seems to be a decay in the effect of behavioral interventions with depression scores becoming comparable between the intervention and control groups. [3, 18, 19] In the study by Clarke et al. [3] the likelihood of being non-depressed diminished over time. This is consistent with the results of the meta-analysis by Ssegonja et al. where the number of participants diagnosed with depression increased over time noted a decay in the effect of group-based interventions in comparison to passive control. The number needed to avoid depression calculated at different time points ranged from 9 to 42. [19]

Safety

The study by Smith et al. (individual CBT in 24 participants with PTSD) reported that no adverse events were documented, and the intervention seems to be acceptable in that there were no documented dropouts in the study. [20]

Other Outcomes

No studies reported with the outcomes on the following outcomes: stress reduction, mortality, patient adherence, and quality-of-life were encountered in our search.

4.6.4 Additional Considerations

Resources Required

A cost-effectiveness study on the prevention of depression was done by Lynch et. al. in 2019. [22] In this study, adolescents with age 13-17 years and with subsyndromal depressive symptoms and/or prior depressive symptoms were exposed to either a cognitive-behavioral prevention program or usual care. A cognitive-behavior prevention program had a cost of \$591 per youth. In 9 months, the intervention group showed an improvement in depression-free days (DFD) and QALY compared to usual care, with Incremental cost-effectiveness ratio (ICER) of \$35 per DFD and \$24,558 per QALY. Post-intervention analysis after 33 months was also done showing ICER of 15 per DFD and \$12,787 per QALY. They concluded that not only is the program cost-effective, but it is also lower than the cost per QALY for treating youth depression. [22]

In a health-economic evaluation on depression prevention among adults, the cost-effectiveness of a web-based self-help intervention based on cognitive-behavioral therapy and problem-solving therapy was evaluated in terms of preventing major depressive disorder among adults with subthreshold depression in comparison to usual care. [23] After 12 months, improvement in depression free years (DFY) and QALY was noted in the intervention group. Overall, the authors concluded that cost-effectiveness of the program with an incremental per-participant cost of €136. [23]

In the Philippines, majority of mental health services are delivered in the hospital setting, and community services are still lacking. There are only two tertiary psychiatric hospitals in the Philippines, the National Center for Mental Health in Mandaluyong City and the Mariveles Mental Hospital in Bataan. Issues in other small institutions affiliated with NCMH include overcrowding of patients, manpower shortage, lack of funds and underdeveloped facilities. There is also a shortage in the number of psychiatrists and mental health workers in the country with only 500 psychiatrists in practice, and 2-3 mental health workers per 100,000 population. [24]

No local cost-effectiveness studies were found on the use of nonpharmacologic interventions on stress to prevent mental health issues among adolescents and adults.

Patient Values and Preferences

A systematic review found that Filipinos aged 17-70 years old showed reluctance to seek mental health care. [25] Filipinos were more inclined to seek help from family and friends and consider seeking professional help as a last resort. Barriers to mental health care utilization cited include stigma to mental health and illness, fear of being judged negatively for accessing care, financial constraints, and inaccessibility of services especially in rural communities. [25]

Social Impact, Equity Issues and Health Systems Impact

Enacted in June 2018, Republic Act No. 11036, or the Mental Health Act, is the Philippines' first national mental health legislation. This law aims to integrate mental health care and promotion in basic health services including incorporation in educational institutions, workplace, and communities. Because of the devolved health system of the country, non-specialized health care is primarily managed by Local Government Units who decide how to devote the resources in health care. However, even with around 20,000 primary health clinics in the country, most mental health services are still offered by private providers hence producing a gap. [8] To improve this, the Department of Health and Local Government Units conduct trainings in WHO-Mental Health Global Action Program (mhGAP) for municipal health workers, nurses and pharmacists in different regions of the country. [26] The WHO reports that as of 2019, 69% of Local Government Units have trained health providers in WHO-mhGAP. [8] Still, much work is needed to augment mental health services in the communities.

4.6.5 Recommendations from Other Groups

There were no relevant guidelines that answered the question.

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4.7 Internet Addiction

RECOMMENDATIONS

1. **We suggest the use of nonpharmacologic interventions for internet addiction among adults with internet addiction/internet gaming disorder.** (Weak recommendation, very low certainty of evidence)
2. **We suggest the use of nonpharmacologic interventions for internet addiction in the general adolescent population.** (Weak recommendation, very low certainty of evidence)
3. **We recommend the use of nonpharmacologic interventions for internet addiction among adolescents with internet addiction/internet gaming disorder.** (Strong recommendation, very low certainty of evidence)

Evidence-to-Decision Considerations

The guideline panel recognizes the lack of consensus on defining internet addiction. Given the lack of direct evidence of benefit and resources required, interventions may be more useful for adults already diagnosed with internet addiction disorder. Meanwhile, adolescents with developing emotional and cognitive faculties are more prone to risky behavior. The panel gave more weight to the preventive value of nonpharmacologic interventions for internet addiction in this higher risk population.

4.7.1 Burden of Disease

In 2017 there were 57.34 million internet users or about 60.05% of the total population in the Philippines. A more recent estimate in 2019 has 43% of the Philippine population using the internet from any location or device in the last three months. [1]

With the advent of the COVID-19 pandemic, regulations to remain indoors, changing means for academic instruction and work has affected how people use the internet. There was a considerable increase in digital activity especially in countries that have had the strictest COVID-19 lockdowns including the Philippines with the longest and most stringent lockdown policies globally. [2, 3]

Prior to the COVID-19 pandemic the Philippines has consistently been at the top in terms of time spent using the internet or social media. It continues to be in the lead with the average time spent online reaching up to 11 hours daily, almost 60% the global average and spending up to more than four hours on social media daily which is 75% more than the global average. [4, 5] Internet use increased by 4.2 million (6.1%) and social media use increased by 16 million with a 22% increase between 2020 and 2021. Similar trends

of increased time spent online daily is seen in the Southeast Asian region. [4-7] Many internet users expect that their new habits will continue after the COVID-19 pandemic passes with 15% expecting to continue spending more time using social media. In an online survey of psychological well-being and internet use among young people in low- and middle-income countries during COVID-19 lockdown, Philippine participants scored significantly higher than other LMICs in problematic internet use, social media use, and general app usage. [8, 9]

Early local studies on internet addiction done in 2008 and 2009 using the internet addiction test questionnaire report that 74% (n = 448) of young adults in college had internet addiction with 5% (n = 33) classified to have severe dependence; more males (48%, n = 290) than females were found to have internet addiction. [10] A similar study on a sample of 426 senior college students found that 68.5% were classified to have moderate internet addiction, and 0.94% were rated to be severe. [11]

In recent systematic reviews, mental health problems such as anxiety and depression have been found to be associated with diagnosed internet addiction or problematic interactive media use (PIMU), but the exact explanation for this association is difficult to establish as the available literature comes solely from cross-sectional studies. [12-14] Internet gaming disorder (IGD) was fully associated with depression in 13 observational studies, eight of which showed a large effect size (OR 4.25). [14] Anxiety was also associated with IGD based on 11 observational studies, with 5 studies showing a moderate effect size (OR 2.50). [15]

Mylona et al. noted paucity of objective measurements on the impact of internet and video game addiction on adolescent vision, with outcome measures mostly self-reported and were related to prolonged near-term adaptation (i.e. blurred vision, difficulty in focusing, headaches after screen use), and dry eye syndrome (i.e. ocular fatigue, burning or irritating sensation, discomfort, or photosensitivity), with pre-existing vision problems contributing to the appearance of the syndrome if not yet diagnosed or addressed. [16]

Four studies [17-21] done in South Korea among school children, college students and adults (n = 1,599) found higher dry eye symptoms with longer duration of smartphone use as measured by ocular surface disease index score (OSDI). The smartphone group had a higher total OSDI (mean 25.03, SD 10.61, $p < 0.05$) compared to the control (mean 6.61, SD 6.45) after 4 hours of smartphone use among young adults aged 25 to 36 years old [Al-Marri 2021] and had higher dichlorodihydro-fluorescein intensity values indicating tear film break up and is used in the diagnosis of dry eye, than the control group after 4 hours (141.56 ± 22.39 vs 123.03 ± 18.45 respectively). [18] The three remaining studies [19-21] were cross-sectional in design and included college students and school children reporting higher mean OSDI scores at 3-5 hours of use (30.76 ± 19.80) [24], and with an increase in daily smartphone use duration to 1 hour led to increased odds of dry eye syndrome (OR 1.86 [95%CI 1.07 to 3.24] and OR 13.07 [95%CI of 5.99 to 28.52]). [20, 21]

One moderate-quality meta-analysis of 22 cross-sectional studies and one longitudinal cohort study showed that internet addiction was associated with sleep problems (OR 2.20 [95% CI 1.77 to 2.74], $I^2 = 87.3\%$), and decreased sleep duration by about 14 minutes (range 6 to 22.8 minutes). [22] The included studies were mostly done in Asia but represented various countries and used various tools and scoring systems which may account for the significant heterogeneity. [22] A recent cross-sectional study done in Turkey evaluating adolescents ($n = 1,487$) also showed a weak but statistically significant positive correlation between Internet addiction and sleep problems using the Young's Internet addiction Test - Short form and Pittsburgh sleep quality index. [23]

There was a similar lack of studies for strength of association in some of the critical outcomes and internet addiction in the adult population. Systematic reviews on related outcomes for QOL such as obesity report a significant and positive association between internet use and being overweight and obese in children and adolescents (OR 1.27 [95%CI 1.06 to 1.52], $I^2 = 41.6\%$), and in adults (OR 1.70 [95%CI 1.27 to 2.29], $I^2 = 61\%$). [24]

Social impact of the disease

While the direction of causality remains unclear, a systematic review suggests that self-harm or suicidal behavior was particularly associated with internet addiction, high levels of internet use and exposure to websites with self-harm or suicide content in young people. [25] The included studies however were inconsistent, with two out of the seven included showing no association. A recent multicenter cross-sectional survey done in China ($n = 15,623$) found a higher likelihood of more frequent non-suicidal self-injury among adolescents (11 to 20 years old) with internet addiction (OR 2.66 [95% CI 2.10 to 3.38]). [26]

While there has been evidence of QOL being affected by internet addiction among Filipino adolescents [27], it has been hypothesized that internet addiction develops as either a function of accessibility to the internet or due to increased real world stressors (lower life satisfaction, increased pollution, increased traffic commute time, lower national income) and the increased internet use as a means to cope. [28]

4.7.2 Benefits and Harms: Adults

We did not find direct evidence for the use of NPIs for internet addiction to prevent mental health issues, sleep issues or disturbance, problematic internet use, safety/adverse events, patient adherence, developmental issues, visual impairment and hearing impairment in healthy adults.

Severity of Internet Addiction / Internet Gaming Disorder

Based on the pooled results from a meta-analysis of 23 studies (10 single arm pre-post design or before/after studies, and 13 RCT) evaluating 15 psychological treatments, NPIs were found to reduce the global severity of internet addiction or internet gaming disorder at the end of treatment (Hedges' $g = 1.84$ [95%CI 1.37 to 2.31], $p < 0.001$, $I^2 = 83.56$).

[29] This pooled estimate includes 6 studies with adolescents in addition to the 17 studies involving mostly young adults.

Stevens and colleagues [30] pooled effect estimates from three studies on CBT in adults, which was found to significantly improve internet gaming disorder symptoms (Hedge's $g = 1.52$ [95% CI 0.37 to 2.68], $p = 0.007$, $I^2 = 79.86$).

Both systematic reviews show a similar direction in that use of NPI, mostly CBT, results in the reduction of IA / IGD symptom severity after completion of intervention.

Mental Health Issues

We identified two low-quality observational studies included in Stevens et al. that evaluated severity scores for depression and anxiety in adults. Both studies were deemed to be high risk of bias and of very low level of certainty. The effect of NPIs was found to be indeterminate in adults for anxiety (Hedge's $g = 1.42$ [95% CI -16.25 to 19.95], $I^2 = 98.42$) and depression (Hedge's $g = 1.28$ [95% CI -3.86 to 6.42], $I^2 = 89.56$). There was significant heterogeneity in the results due to differences in methodology and tools used to assess outcomes.

Problematic Interactive Multimedia Use

We identified three low- to moderate-quality studies that evaluated NPIs, and time spent on the internet or on a smartphone device in adults. Due to the differences in methodology and tools used to evaluate internet addiction, we were unable to pool results.

Khazaei and collaborators performed an RCT involving 48 college students diagnosed with internet addiction in Iran and given positive psychological interventions compared to being on a waitlist. Lan et al. performed a non-randomized controlled trial group cognitive behavioral therapy in 68 adults. Finally, Su et al. performed an RCT involving 59 adults randomized into 4 groups (online CBT delivered in the laboratory, in a participant's natural environment, in a non-interactive environment, and control).

All three studies noted a statistically significant difference in the time spent on the internet or smartphone device (in hours per week) between the treatment and control groups.

4.7.3 Benefits and Harms: Adolescents

We did not find direct evidence for the use of nonpharmacologic interventions for internet addiction to prevent mental health issues, sleep issues or disturbance, PIMU, visual impairment, hearing impairment, or affecting patient adherence or safety (adverse events) in adolescents.

We also found no evidence for the use of NPIs for internet addiction to prevent developmental issues in adolescents. Some studies included persons already with developmental issues, such as attention deficit hyperactivity disorder (ADHD) and autism [13, 14]. These conditions may be risk factors for internet addiction by increasing the likelihood of problematic usage of social media rather than outcomes developing from increased exposure to media. [25, 31]

Severity of Internet Addiction / Internet Gaming Disorder

Based on the pooled results of 5 studies (single arm pre-post design) from the mentioned systematic review by Stevens et al., CBT significantly improved internet gaming disorder symptoms in adolescents (Hedge's $g = 0.55$ [95% CI 0.01 to 1.08], $p = 0.047$, $I^2 = 58.53$).

Mental Health Issues

We identified two RCTs of good quality included in both SRs that measured severity scores for mental health issues. Both studies showed that CBT reduced anxiety and depression symptoms among adolescents diagnosed with IA.

Du and collaborators performed an RCT involving 56 adolescents (age 12-17) with IA based on Beard and Wolf criteria in Shanghai, China. The intervention consisted of a school-based multimodal approach with an eight-session group CBT for adolescent students, psychoeducation for teachers, and group behavioral parent training. Anxiety was evaluated immediately after the intervention and at 6 months based on Screen for Child Anxiety Related Emotional Disorders (SCARED). There was no significant difference in SCARED score between intervention ($n = 32$) and control ($n = 24$) groups at baseline. However, the intervention group showed significantly reduced anxiety scores in all domains immediately after and on follow up. Effect sizes were small immediately after the intervention (Cohen's $d = 0.4$ to 0.48); the effects of the intervention persisted at 6 months with medium effect size (Cohen's $d = 0.61$ to 0.89). In contrast, there was no difference in effect sizes for the control group on continuous follow up

Li and Wang conducted an RCT involving 28 male participants (age 12 to 19 years) with IA based on the Online Game Cognitive Addiction Scale (OGCAS) and IAS. Participants in the intervention group underwent a 12-session six-week course of CBT lasting for 45 minutes each, and the control group received 45-minute interview sessions on their gaming and internet habits. The mean change in pre-post self-rated anxiety scale (higher values indicate worsening anxiety) for the CBT group was -4.6 while it was $+4.22$ for the control group. Moreover, the mean change of pre-post self-rated depression scale (higher

values indicate worsening depression) for the CBT group was -8.08 while it was +5 in the control group.

Problematic Interactive Multimedia Use

One RCT of good quality conducted by Liu et al. (n = 46) showed that use of behavior group therapy over six sessions resulted in significantly reduced internet usage among adolescents (posttreatment intervention group: 11.43 hours/week (SD 5.75) vs control group: 27.52 hours/week (SD 11.4), $p < 0.001$).

In summary, indirect evidence shows beneficial effects of NPIs, primarily CBT, in reducing IA/IGD symptoms and reducing internet and smartphone use among adults screened to have IA / IGD. Evidence also shows indeterminate effects of NPIs on mental health issues including anxiety and depression. Among adolescents screened positive for IA / IGD with and without other mental comorbidities, NPIs, particularly CBT, also show benefit in reducing IGD symptoms, anxiety and depression symptoms, and internet use.

4.7.4 Additional Considerations

No cost-effectiveness studies were found on interventions to prevent IA / IGD.

4.7.5 Recommendations from Other Groups

Guideline	Recommendation	Strength of Recommendation	Level of Evidence
Preventing problematic internet use during the COVID-19 pandemic: Consensus guidance (Kiraly et al. 2020)	<p>Being conscious of, self-monitoring and regulating one's screen time are essential. Reducing access or exposure by putting the smartphone/device somewhere where it is not constantly available when engaging in technology-free activities and turning off or muting notifications and associated sounds on mobile devices may be helpful methods of such self-regulation.</p> <p>Monitoring and regulating children's behavior is also crucial and may best be done by involving them in rulemaking. Parents are role models; thus, regulating their own information and communications technology (ICT) related behaviors may help children establish controlled use as well.</p> <p>Parents are encouraged to actively participate in the ICT-related behaviors of their children to help regulate children's usage and promote adaptive online activities.</p> <p>Use digital wellbeing apps which can be helpful in raising awareness and self-regulation. Having pre-scheduled technology-free periods or programs and setting specific limits for oneself can all help maintain a healthy balance between screen-based and screen-free activities. Tracking per-session, daily, weekly, and monthly limits may be helpful to minimize time online and financial expenditure.</p>	-	Expert opinion

	Seeking help if needed. If experiencing high levels of distress or significant difficulties controlling internet use or specific online activities, mental health professionals should be contacted. Helplines and telehealth consultations might be available depending on the country of residence. Seeking help in early stages may be especially effective to relieve symptoms.		
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4.8 Advice on Physical Activity

RECOMMENDATIONS

Adapted from the 2020 WHO guidelines on physical activity and sedentary behavior

1. **Children and adolescents should do at least an average of 60 minutes per day of moderate- to vigorous-intensity, mostly aerobic, physical activity, across the week.** (Strong recommendation, moderate certainty of evidence)
2. **Vigorous-intensity aerobic activities, as well as those that strengthen muscle and bone, should be incorporated at least 3 days a week.** (Strong recommendation, moderate certainty of evidence)
3. **Children and adolescents should limit the amount of time spent being sedentary, particularly the amount of recreational screen time.** (Strong recommendation, low certainty of evidence)
4. **All adults should undertake regular physical activity.** (Strong recommendation, moderate certainty of evidence)
5. **Adults should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week, for substantial health benefits.** (Strong recommendation, moderate certainty of evidence)
6. **Adults may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for additional health benefits.** (Conditional recommendation, moderate certainty of evidence)
7. **Adults should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.** (Strong recommendation, moderate certainty of evidence)
8. **To help reduce the detrimental effects of high levels of sedentary behavior on health, adults should aim to do more than the recommended levels of moderate- to vigorous intensity physical activity.** (Strong recommendation, moderate certainty of evidence)

9. **All older adults should undertake regular physical activity.** (Strong recommendation, moderate certainty of evidence)
10. **Older adults should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous intensity activity throughout the week, for substantial health benefits.** (Strong recommendation, moderate certainty of evidence)
11. **Older adults should also do muscle strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits.** (Strong recommendation, moderate certainty of evidence)
12. **As part of their weekly physical activity, older adults should do varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity, on 3 or more days a week, to enhance functional capacity and to prevent falls.** (Strong recommendation, moderate certainty of evidence)
13. **Older adults may increase moderate intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous intensity activity throughout the week, for additional health benefits.** (Conditional recommendation, moderate certainty of evidence)
14. **Older adults should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.** (Strong recommendation, moderate certainty of evidence)
15. **To help reduce the detrimental effects of high levels of sedentary behavior on health, older adults should aim to do more than the recommended levels of moderate to vigorous-intensity physical activity.** (Strong recommendation, moderate certainty of evidence)

Evidence-to-Decision Considerations

Two international guidelines that met preset criteria for adapting were considered by the guideline panel: WHO Guidelines on Physical Activity and Sedentary Behavior 2020, and the Canadian 24-Hour Movement Guidelines for Adults Aged 18-64 Years or Older: An integration of physical activity, sedentary behavior and sleep 2019. No relevant guideline from the Philippines was found. Both guidelines included recommendations on

the type, intensity, and duration of physical activity for adults. The WHO guidelines covered both pediatric (children and adolescents) and adult (adults and older adults) populations. Level of evidence and strength of recommendation, as well as links to the evidence summaries, were provided by both guidelines.

Eight out of 8 panelists (100%) voted to adapt the 2018 WHO Healthy Diet Fact Sheet, which is based on the 2003 WHO technical report on Diet, Nutrition and the Prevention of Chronic Diseases, the 2012 WHO guidelines on Sodium and Potassium intake, the 2015 WHO guidelines on sugars intake, and the 2018 WHO guidelines on saturated fatty acid and trans-fatty acids. The panel decided to adapt the WHO guidelines because of potential applicability issues with the American guidelines.

4.9 Advice on Healthy Diet

RECOMMENDATIONS

Adapted from the 2018 WHO guidelines on saturated fatty acid and trans-fatty acid intake for adults and children

1. **In adults and children whose saturated fatty acid intake is greater than 10% of total energy intake, WHO recommends reducing saturated fatty acid intake.** (Strong recommendation, moderate certainty of evidence)
2. **In adults and children, WHO suggests reducing the intake of saturated fatty acids to less than 10% of total energy intake.** (Conditional recommendation, low certainty of evidence)
3. **WHO suggests using polyunsaturated fatty acids as a source of replacement energy, if needed, when reducing saturated fatty acid intake.** (Conditional recommendation, low certainty of evidence)
4. **In adults and children whose saturated fatty acid intake is less than 10% of total energy intake, WHO suggests no increase in saturated fatty acid intake.** (Conditional recommendation, low certainty of evidence)

Adapted from the 2015 WHO guideline on sugars intake for adults and children

5. **WHO recommends a reduced intake of free sugars throughout the life course.** (Strong recommendation, moderate certainty of evidence)
6. **In both adults and children, WHO recommends reducing the intake of free sugars to less than 10% of total energy intake.** (Strong recommendation, moderate certainty of evidence)
7. **WHO suggests a further reduction of the intake of free sugars to below 5% of total energy intake.** (Conditional recommendation, very low certainty of evidence)

Adapted from the 2012 WHO guideline on sodium intake for adults and children

8. **WHO recommends a reduction in sodium intake to reduce blood pressure and risk of cardiovascular disease, stroke, and coronary heart disease in adults.** (Strong recommendation, very low certainty of evidence)
9. **WHO recommends a reduction in sodium intake to control blood pressure in children.** (Strong recommendation, very low certainty of evidence)

10. WHO recommends a reduction to <2 g/day sodium (5 g/day salt) in adults.
(Strong recommendation, very low certainty of evidence)

11. The recommended maximum level of intake of 2 g/day sodium in adults should be adjusted downward based on the energy requirements of children relative to those of adults.

Adapted from the 2012 WHO guideline on potassium intake for adults and children

12. WHO suggests an increase in potassium intake from food to control blood pressure in children (Conditional recommendation, very low certainty of evidence)

13. The recommended potassium intake of at least 90 mmol/day should be adjusted downward for children, based on the energy requirements of children relative to those of adults.

14. WHO recommends an increase in potassium intake from food to reduce blood pressure and risk of cardiovascular disease, stroke and coronary heart disease in adults. (Strong recommendation, very low certainty of evidence)

15. WHO suggests a potassium intake of at least 90 mmol/day (3510 mg/day) for adults. (Conditional recommendation, very low certainty of evidence)

Evidence-to-Decision Considerations

The panel considered three guidelines that met preset criteria for adaptation: WHO Healthy Diet Fact Sheet 2018 (based on various WHO Nutrition Guidelines), Dietary Guidelines for Americans 2020-2025, and the Nutrition Guidelines for Filipinos 2012. All three guidelines are similar in that they all take a life-course approach and recommend healthy diets that include a variety of nutrient-rich food, more vegetables and fruits, and limited amounts of added sugar, salt, and unhealthy fats. The full text manuscript of the Philippine Nutritional Guidelines could not be located and retrieved; the available article did not include a link to the evidence base. However, it seems like the Nutritional Guidelines for Filipinos, which is the basis for the "Pinggang Pinoy," is also at least partly based on the WHO guidelines.

Eight out of 8 panelists (100%) voted to adapt the 2018 WHO Healthy Diet Fact Sheet, which is based on the 2003 WHO technical report on Diet, Nutrition and the Prevention of Chronic Diseases, the 2012 WHO guidelines on Sodium and Potassium intake, the 2015 WHO guidelines on sugars intake, and the 2018 WHO guidelines on saturated fatty acid and trans-fatty acids. The panel decided to adapt the WHO guidelines because of potential applicability issues with the American guidelines.

5. RESEARCH IMPLICATIONS

Development of this guideline engaged several stakeholders including primary care providers and patient representatives. While priority questions were tackled by the guideline, other topics such as alcohol use and testing for sexually transmitted infections were foregone. More formal health needs assessments may also be beneficial in planning clinical guidelines and policies.

Most evidence for effectiveness and safety outcomes were of low certainty. Direct evidence the prevention of internet addiction and internet gaming disorder, which are evolving concepts, is still lacking. Longer follow-ups may be necessary to get a better picture of the benefits and harms of electronic nicotine delivery systems (ENDS). There remains room for robust trials on lifestyle advice and interventions as well as observational studies leveraging causal inference methods.

Cost-effectiveness studies from the Philippines and similar settings are still wanting. Research into other evidence-to-decision dimensions such as patient values surveys and health equity impact assessments.

6. DISSEMINATION AND IMPLEMENTATION

A full copy of this document will be sent to the Department of Health for transmittal and publication. The Disease Prevention and Control Bureau will transmit copies of this CPG to the Philippine Health Insurance Corporation (PHIC) and health maintenance organizations (HMOs) and NGOs involved in a periodic health examination.

All strong recommendations in this guideline can be used for monitoring and auditing practices in institutions. These can be converted to key performance indicators and it can also be used in creating clinical pathways.

The DOH plans to develop a simplified version of this CPG and made it available in the format that will be ready for reproduction and dissemination to the patients in different health care settings. It will also be available for interested parties who might visit the DOH website.

7. APPLICABILITY ISSUES

This CPG does not necessarily supersede the values of its users (i.e., health professionals, hospital administrators, employers, payors, patients), settings, and circumstances. While the PHEX Lifestyle Task Force intends these recommendations for the Filipino population, it recognizes variability in individual risks, preferences, and access among others. Users and policymakers should consider applicability and equity issues according to the unique circumstances.

Although this CPG intends to influence the direction of health policies for the general population, it should not be the sole basis for recreating or abolishing practices that aim to improve the health conditions of many Filipinos, particularly those part of the workforce.

8. UPDATING OF THE GUIDELINES

The recommendations herein shall hold until such time that new evidence on screening, diagnosing or managing various risk factors and diseases emerges and contingencies dictate updating this Philippine Guidelines on Periodic Health Examination. The CPGs will be updated every 3-5 years or earlier if new significant evidence becomes available.

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