

## Changes in Dietary Pattern and Lifestyle in Adults during Lockdown Due to the COVID-19 Pandemic: A Systematic Review Protocol

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### Abstract

The purpose of this protocol is to demonstrate a systematic process for reviewing the existing literature on dietary and lifestyle changes during the COVID-19 pandemic lockdown. The research design is a systematic review using electronic bibliographic databases (PubMed, Science Direct, Google Scholar, DOAJ, CrossRef and ProQuest) and includes a list of reference articles. At least two reviewers will independently screen, extract and select studies using the PRISMA flow chart which will include information on demographics, diet and lifestyle changes, and their impact on health according to the inclusion and exclusion criteria that have been established. Quality assessment of articles that have been screened using JBI guidelines. A qualitative synthesis analysis will be carried out to summarize the research results from each article. This protocol forms the basis for a structured plan to conduct a systematic review that will present evidence and summarize research results related to changes in diet and lifestyle due to the COVID-19 lockdown and their impact on nutritional and health status. This information is important for health promotion policies and the development of dietary and lifestyle guidelines and food security during the pandemic and beyond.

Systematic review registration: PROSPERO CRD42020221776

**Keywords:** change, COVID-19, lockdown, diet, lifestyle, adult.

### Introduction

The world is in an uproar with Coronavirus Disease 2019 (COVID-19), which is a severe acute respiratory syndrome caused by SARS coronavirus 2 (SARS-CoV-2) and was first reported in late 2019 in Wuhan, China. This COVID-19 spread rapidly beyond China and the Asian continent, where in March 2020, the World Health Organization (WHO) declared the COVID-19 disease a pandemic (Burki 2020; Cucinotta and Vanelli 2020; Jiang et al. 2020). More than 55 million confirmed cases and 1.3 million deaths were reported as of 19 November 2020 worldwide (WHO 2020).

Previous experience from Severe Acute Respiratory Syndrome (SARS) outbreaks demonstrated the effectiveness of timely quarantine and isolation measures (WHO, 2015 & Giubilini et al., 2018). However, quarantine is an unpleasant experience that causes loss of freedom, uncertainty of disease status, and boredom that can affect a person's health status (Brooks et al. 2020). Quarantine can cause anxiety and stress. Studies in quarantined subjects have shown a high prevalence of psychological distress and a high prevalence of symptomatic disorders, including emotional distress, depression, stress, low mood, irritability, insomnia, and post-traumatic stress (Hawryluck et al. 2004; Lee et al. 2005). & Jeong et al. 2016).

The main consequences of quarantine-related stress are lifestyle and dietary changes. These dietary changes can be caused by reduced availability of goods, limited access to food, and the choice to switch to unhealthy foods (Mirco et al. 2020). Sedentary behavior, anxiety, and boredom caused by confinement at home can affect motivation to eat, change lifestyle patterns, reduce food quality (Naja and Hamadeh 2020), and encourage overconsumption (Scully, Dixon, and Wakefield 2009 & Chaput et al. 2011), although calorie intake should be limited by reducing physical activity during quarantine. Psychological and emotional responses to the COVID-19 outbreak (Wang et al. 2020 & Montemurro 2020) may increase the risk of developing dysfunctional eating behaviors. Negative emotional experiences can lead to overeating, which is called "emotional eating" (Havermans et al. 2015 & Sidor and Rzymiski 2020).

Research in Poland during the lockdown period showed that more than 43% of the time there was a change in diet more than before and almost 52% experienced an increase in snack consumption, more than 45% of smokers experienced an increase in the frequency of smoking during this period. In addition, nearly 30% experienced weight gain, especially in overweight and obese individuals, and only 18% experienced weight loss (Sidor and Rzymiski 2020). In contrast, another study in Italy showed that 3.3% of smokers decided to quit smoking, but showed similar results regarding the perception of weight gain observed in 48.6% of the population and a slight increase in physical activity was reported (Di Renzo et al. 2020). Limited access to food and mobility due to the COVID-19 pandemic lockdown has a major impact, especially on adults, because adulthood is a productive age to work, do physical activity, regulate diet to get optimal health. This pandemic condition can be a problem and requires special attention because it can psychologically suppress the community so that changes in diet and lifestyle occur as a result of COVID-19.

Previous research has shown inconsistent results and limited evidence because there has been no systematic literature review to evaluate the effects of the COVID-19 pandemic lockdown on dietary and lifestyle changes (Cai 2020), so a systematic comprehensive summary is needed. This systematic review research design will show results with better validity (internal and external), which are expected to be a reference in determining health promotion strategies regarding diet and lifestyle during the pandemic and after. In addition, it can also be used as a basis for determining food security policies during a pandemic. The overall aim of this study was

to investigate dietary and lifestyle changes in adults during the lockdown due to the COVID-19 pandemic. The overall objective of this systematic review protocol is to present a systematic process by which information will be comprehensively gathered on dietary and lifestyle changes in adults during the COVID-19 pandemic lockdown. This protocol will systematically include key research questions based on established eligibility criteria, describe a systematic literature search strategy, explain inclusion and exclusion criteria, describe data extraction procedures, assess study quality and analyze data from eligible studies.

## Methods

### *Protocol and Registration*

The protocol in this study used the 2015 PRISMA-P (Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols) guidelines (Moher et al. 2016), while the guidelines for assessing research quality were summarized using The Center for Review and Dissemination and the Joanna Briggs Institute Guidelines. (JBI). The systematic review evaluation will use the PRISMA checklist to determine the selection of studies that have been found and adapted to the systematic review. This protocol has been reviewed and received registration number CRD42020221776 by the PROSPERO institute which is an online open access database of systematic review protocols on health-related topics. All guidelines and registration results are attached (see Supplementary file 1).

### *Eligibility Criteria*

The population to be studied in this study is the adult population. Health workers, patients, pregnant and lactating mothers, athletes, eating disorders and health disorders were excluded from this study.

### *Exposure*

The exposure that wants to be researched in this study is the COVID-19 pandemic lockdown. Studies related to the post-lockdown or COVID-19 period in general will be excluded from this study.

### *Ratio*

Characteristics of study subjects in the pre-lockdown period.

### *Outcomes*

The outcome variables of this study are changes in diet and lifestyle and their effect on nutritional status and health status. Indicators of eating patterns are changes in the type, amount and frequency of eating. While lifestyle indicators are changes in physical activity, sedentary behavior, smoking behavior/tobacco and marijuana use, alcohol consumption, use of face masks,

hand washing behavior and so on. The impact of indicators of changes in nutritional status (changes in body weight, changes in BMI, changes in dietary compliance) and health status (blood sugar levels, blood pressure, etc.)

### *Study design*

Study design is the research design used in the research to be reviewed, in this case research with an observational study design.

### *Report Characteristics*

The type of literature is published articles. The languages used are English and Indonesian. There are no geographical limitations in searching for this research. Letters and editorials, non-research, seminar reviews, case studies, case series and animal studies will be excluded.

### **Source of Information**

Sources of information are all sources used in the search for articles, such as electronic databases or other literature sources and search keywords. Searches in this study will be conducted electronically using PubMed, Google Scholar, Science Direct, DOAJ, ProQuest and CrossRef. The literature search strategy was developed based on research questions and eligibility criteria. The search keywords in this study can be seen in table 1 and the keywords are in Indonesian.

### **Data search strategy**

The data search strategy provides the search method that will be used for at least one electronic database, including search constraints. In this study, the search for articles or journals using keywords and boolean operators (AND, OR, NOT and NEST or brackets and quotation marks) is used to expand or narrow the search to make it easier to determine articles or journals. The search strategy can be seen in the table below:

Table 1. Search Strategy and Keyword Systematic Review “Changes in Adult Diet and Lifestyle during Lockdown due to COVID-19 Pandemic”

Population	Exposure	Results
(Adult) OR (Mature)	(Lockdown) OR	AND (Changes) OR (Alteration)
	(Quarantine) OR	AND (“Dietary Pattern”) OR
	(“Home Isolation”)	(“Dietary Intake”) OR
	OR (“Social	(“Dietary Behaviours”)
	Distancing”) OR	OR (“Dietary Habits”) OR
	(“Physical	(“Food Pattern”) OR
Distancing”) OR	(“Food Intake”) OR	
(“Screen Time”)	(“Food Behaviours”) OR	

Population	Exposure	Results
	OR ("Home Confinement")	("Food Habits") OR ("Food Consumption") OR ("Food Choice") OR ("Eating Pattern") OR ("Eating Behaviours") OR ("Eating Habits")
		AND (Lifestyle)
		AND ("Physical Activity") OR ("Sedentary Activity")
		AND (Smoking) OR ("Tobacco Use")
		AND ("Alcohol Consumption") OR ("Alcohol Drink")
		AND ("Drug Use")
		AND ("Food Purchasing")
	("COVID-19") OR ("SARS-Cov2")	AND ("Face Mask Use")
AND	OR ("nCov-2019")	AND ("Hand Washing")
	OR (Coronavirus)	AND ("Nutrition Risk")
		AND ("Body Mass Index") OR ("Body Weight")
		AND ("Dietary Compliance") OR ("Dietary Adherence")
		AND ("Health Risk")

## Study Notes

### *Data Management*

Data management describes the mechanisms that will be used to manage records and data during the review. Search results from all sources of evidence are documented in the Mendeley library for screening study duplication and Covidence for study selection. The process of extracting data using MS. Excell is done manually.

### *Data selection*

The study selection process was based on the PRISMA flow chart. Screening of each literature according to research questions conducted by at least two reviewers. Two reviewers will extract and manage data independently for each included study using an electronic data extraction form. Screening was carried out based on the eligibility criteria by reading the titles and abstracts of

the literature identified at the evidence search stage. Furthermore, screening is carried out based on the eligibility criteria by reading the full bibliography that passes the title and abstract screening stage. Differences of opinion between the two reviewers will be resolved by discussion. The third review author will represent as a mediator if the dispute cannot be resolved. Variations of differences that may occur depending on age distribution, lifestyle variations, study design, etc. will be clearly stated.

### Data extraction

Data will be extracted according to the inclusion and exclusion criteria based on the PICO-S eligibility criteria in this study which can be described in the table below:

Table 2. Inclusion and Exclusion Criteria Based on PICO-S Eligibility Criteria Systematic Review of Changes in Diet and Lifestyle in Adults During Lockdown due to the Covid-19 Pandemic

PICOS framework	Inclusion Criteria	Exclusion Criteria
population	adult	Health workers, patients, nursing mothers, athletes, eating disorders and health disorders
Exposure	Research related to COVID-19 <i>Lockdown</i>	Studies related to post-lockdown or COVID-19 periods in general
Checklists	Characteristics of <i>pre-lockdown</i> study subjects	-
result	Studies explaining the impact of dietary and lifestyle changes during pandemic lockdown COVID-19	-
Design Study	Observational Studies	<i>Systematic review</i>
Year of Publication	2020 and later	-
Types of Literature	Published	<i>Literature (narrative) review, Comentary, Opinion, Letters and editorials, non-research,</i>

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		<i>seminar reviews, case studies, case series and animal studies</i>
language	English and Indonesian	In addition to English and Bahasa Indonesia

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## **Bias risk assessment**

The purpose of this assessment is to assess the methodological quality of a study and to determine the extent to which the study has overcome possible biases in its design, implementation and analysis. The critical review process is carried out by at least two reviewers. A critical study to assess study validation was conducted for each selected article, using The Joanna Briggs Institute (JBI) Critical Appraisal assessment criteria for an observational study consisting of a Cross-Sectional, Cohort and Case-Control design. Critical assessment to assess eligible studies by researchers. A study was included and considered quality if the study score was 8-10 in the Cross-Sectional Study, the score was 11-15 in the Cohort Study and a score of 9-12 in the Case-Control Study. The three scoring groups were assessed because they were included in the low risk category (low risk) in accordance with previous systematic review research references ((Stockwell, et al., 2021) (Sadighi, Nedjat, & Rostami, 2018).

## **Publication bias**

The risk of bias from the results of a systematic review of several research articles may occur so it is necessary to identify them to minimize publication bias. In this study, the articles selected for analysis were only based on published research, so they did not include unpublished research results such as theses, theses and dissertations, as well as other reports.

## **Data analysis**

This study uses descriptive analysis. The results of the study were presented in the form of tables and accompanied by narration. The methods of analysis with stages are as follows:

1. Analyze article quality ranking based on JBI observational studies
2. Analyze dietary and lifestyle variables and their impact on nutritional status
3. Summarize the results of the study based on qualitative synthesis method based on the

## **Discussion theme**

Limited access to food and mobility due to the COVID-19 pandemic lockdown has a major impact, especially on adults, because adulthood is a productive age to work, do physical

activities, regulate diet to get optimal health. This pandemic condition can be a problem and requires special attention because it can psychologically suppress the community, resulting in changes in diet and lifestyle as a result of COVID-19, which has an impact on nutritional and health status. However, previous studies, showed different results and limited evidence because there was no systematic literature review, so it would be difficult to draw comprehensive conclusions on this topic.

This systematic review protocol considers empirical studies with an observational study design regarding changes in diet and lifestyle during the lockdown due to the COVID-19 pandemic and will examine more deeply the impact of these dietary and lifestyle changes on nutritional and health status, especially in adults. The results of this systematic review are expected to have a better level of validity, both internal and external validation.

Assessment of the risk of bias by assessing the methodological quality of a study and to determine the extent to which a study has overcome possible bias in its design, implementation and analysis. A critical review to assess research validation was conducted for each selected article, using the JBI Critical Appraisal scoring criteria for observational studies. The robust structure of this systematic review protocol is supported because it has been reviewed by the PROSERO agency and has obtained a registration number, which will allow a critical assessment and synthesis of the best evidence regarding dietary and lifestyle changes during the lockdown due to the COVID-19 pandemic and their impact on nutritional status. and health. Thus, firm conclusions will be drawn on this topic so that it can provide insight to the public about healthy eating patterns and lifestyles and can be used as a reference in determining health promotion strategies regarding diet, lifestyle and can be used as a basis. to determine food security policies during the pandemic and beyond.

## **Confession**

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## **Disclosure statement**

No conflicts of interest are expressed by the author

## **Funding**

This study received a special grant from the Ministry of Health of the Republic of Indonesia

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