

# Use of Face Shield as a COVID - 19 Safety Protocol: A Meta-Analysis

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**Abstract:** Using a qualitative meta-analysis approach, this study determined and establish evidence of face shield use as a safety protocol. A systematic review of different research studies was done. The review aims to describe the current guidelines of Inter Agency Task Force (IATF) on the use of face shield as a COVID – 19 safety protocol and to gather and examine current research on the effectiveness of the use of face shield, compliance of the public and factors that affect the public's compliance on the effectiveness of the use of face shield and the negative effects on the use of face shield. Results shows that based on several research studies and simulation. Face shield has lesser effectivity compared to other safety protocol measures such as wearing of KN95 mask. This will also lead to accumulation of COVID – 19 aerosols that might be inhaled by the person if improper mask was used. Another study also proved that face shield hampers communication. Therefore, wearing of face shield should be voluntary. Hence, the government should focus on more important programs and policies such as strengthening of the country's response to the pandemic particularly in providing insurance to the majority and prioritizing the health of the citizens in the government programs that will be implemented.

**Keywords:** COVID 19, Face Shield, IATF, Meta – Analysis, Safety Protocol.

**How to Cite:** Dr. Keith Nester A. Lavin RN, LPT; Ernesto Jastia Jr. MBA, MMHM; Valerie De Guia, MSME; Dr. Emerson G. Aliswag DNS, Phd, PDSML, FPNA; Dr. Mark Jheran Alvarez Phd, RN, CNE; Dr. Noel P. Ligaya RN; Dr. Irfan Hussain Khan; Dr. Dovie B. Ponciano RN, MAN. *International Journal of Innovative Science and Research Technology*, 10(3), 1255-1260. <https://doi.org/10.38124/ijisrt/25mar1012>

## I. INTRODUCTION

The use of face shield is advocated by CDC (2021) for health workers in health facilities at risk of droplet infections or splattering of body fluids. This has been the same practice observed in European Union, Japan and other rich western countries. The same is in obedience to the guidelines offered by WHO (2021).

However, in the Philippines, the IATF (2020) required the use of face shield in close spaces under a warm climate for all the public to follow. There are sanctions and penalties imposed to violators. IATF has been criticized by local doctors and scientist from this move stating (OCTA Research, 2020) saying the use of face shield traps moisture and enhances risk for droplet infection.

Despite heavy opposition from experts, IATF proceeded to implement the use of face shield, adding to the financial burden of already financially affected Filipinos. A year after,

IATF (2021) changed the policy and abolish its use in public but open spaces, maintaining their position that face shield indeed, is effective to prevent COVID19 infections.

There is a clear need to establish as researched backed, empirical evidence to clearly draw the line whether face shield is useful for the public or not and whether its use increases or reduces the risk of COVID19 infection. There are a lot of research materials available on the internet about this topic, thus the use of meta - analysis is best fitted to find the answer once and for all.

Because this study will evaluate and compare series of research about face shield use in the public, it will provide a strong basis on the usefulness of face shield d in the prevention of COVID - 19 infections amongst the public in public spaces.

## II. THEORETICAL/CONCEPTUAL FRAMEWORK

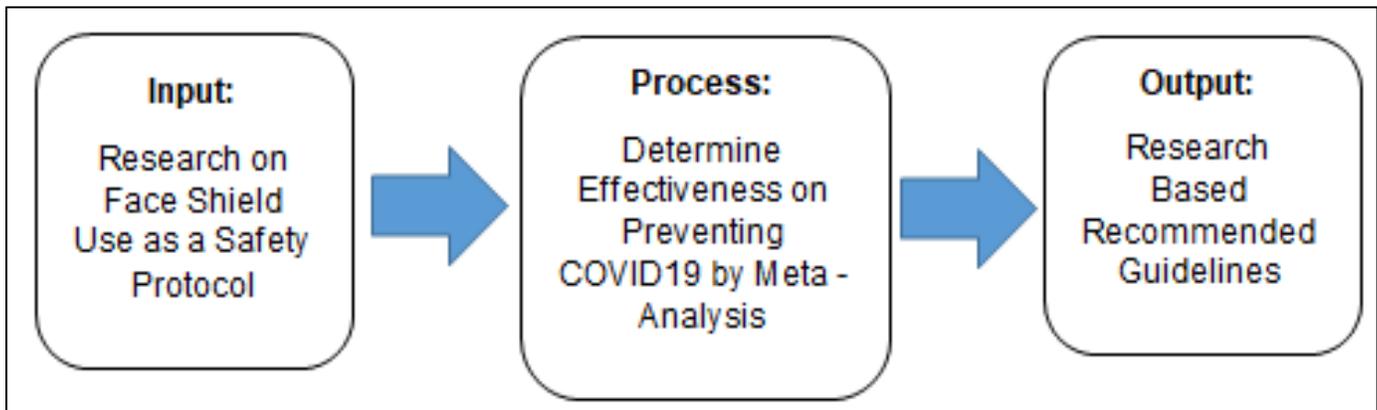


Fig 1 Theoretical/Conceptual Framework

### ➤ *Statement of the Problem*

The Study is conducted to determine and establish Evidence of Face shield Use as a safety protocol

Specifically, it aims to answer the following:

- What are the guidelines of IATF in the use of face shield?
- What is the current research on the effectiveness of the use of face shield?
- What is the compliance of the public on the IATF guidelines on the use of face shield?
- What are the factors that affect the public's compliance on the use of face shield?
- What are the negative effects of the use of face shield?

### ➤ *General Objectives*

- To determine and establish Evidence of Face shield Use as a safety protocol

### ➤ *Specific Objectives*

- To describe the current guidelines of IATF in the use of face shield.
- To gather and examine current research on the effectiveness of the use of face shield.
- To gather data on the compliance of the public on the IATF guidelines on the use of face shield.
- To determine the factors that affect the public's compliance on the use of face shield.
- To formulate research - based recommendations on the use of face shield as a safety protocol

### ➤ *Scope and Limitation*

The study is about the use of face shield as a safety protocol, it will be a Meta – analysis to be conducted in the December 2024.

## III. METHODS

### A. *Research Design*

This study used qualitative approach to describe the determine and establish evidence of face shield use as a safety protocol. The study will use meta – analysis to describe the current guidelines of Inter Agency Task Force (IATF) on the use of face shield as a COVID – 19 safety protocol and to gather and examine current research on the effectiveness of the use of face shield, compliance of the public and factors that affect the public's compliance on the effectiveness on the use of face shield. This design will also lead to the formulation of recommendations on the use of face shield as a safety protocol

### B. *Participants of the Study*

The researcher will include all literature and research studies starting from the year 2020 up to 2021 on the Inter Agency Task Force (IATF) guidelines and other related references pertaining to the use of face shield as a COVID – 19 safety protocol.

### C. *Instrumentation*

The researcher will utilize Google Scholar and related site as a tool for gathering data on different research studies on the use of face shield as COVID – 19 safety protocol. The systematic review will provide a quantitative estimate and will focus on the following: the current guidelines on the use of face shield as a COVID – 19 safety protocol, compliance of the public and the factors that affects public's compliance on the effectiveness of the use of face shield and the negative effects on the use of face shield.

#### D. Data Gathering Procedure

##### ➤ Phase I. Pre – Data Gathering

The researcher will propose a topic and present the data and title to the research professor in a synchronous class session through MS Teams. The professor will check the title and do some necessary advising and needed of the title and statement of the problem. The researcher will submit the skeleton of the research plan presenting the title, author/s, statement of the problem with general and specific objectives. Included in the skeleton of research plan are the methodology, research design, and table presenting the statement of the problem, source of data, tools for data collection and data analysis.

##### ➤ Phase II. Data Gathering

The researcher will look on different literature and research studies focusing on the following data: the current guidelines on the use of face shield as a COVID – 19 safety protocol, compliance of the public and the factors that affects public's compliance on the effectiveness of the use of face shield and the negative effects on the use of face shield.

##### ➤ Phase III. Analysis and Interpretation

This phase includes meta-analysis of the different literature and research studies on the use of face shield as a COVID – 19 safety protocol. The researcher will evaluate and compare series of research about face shield use in the public to provide a strong basis on the usefulness of face shield d in the prevention of COVID - 19 infections amongst the public in public spaces.

##### ➤ Phase IV. Communication and Dissemination

The researcher will formulate research - based recommendations on the use of face shield as a safety protocol based on the meta - analysis. The final output of this study will be presented in a research forum. A copy will be submitted to St. Paul University of the Philippines as an academic requirement for PhD in Nursing Science.

## IV. RESULTS AND DISCUSSION

### A. Current guidelines of IATF in the use of face shield.

On December 14, 2020, the Inter Agency Task Force (IATF) formulated resolution 88 series of 2020 with the aim of preventing the sharp rise of COVID – 19 cases in the country and, the president placed the entirety of Luzon under Enhanced Community Quarantine (ECQ). With the goal of lessening the transmission of COVID – 19, all persons are mandated to wear full – coverage face shields together with face masks or other facial protective equipment under section 8 general provision 5 (IATF, 2020.). To strengthen the implementation of this mandate, the national government with the help of the local government units (LGU's) and other law enforcement agencies, imposed penalties and punishment to violators of this provision.

The provision on the use of face shield continued from January to October 2021. On November 18, 2021, the Inter Agency Task Force (IATF) through its resolution no.149 mandated the use of face shield as voluntary in areas under alert level 1 to 3. However, the IATF clarified that commercial establishments and employers have the option to order mandatory use of face shield. Use of face shield will remain mandatory in areas such as hospitals, health centers, and public utility vehicles (PUV) (Abalos Jr., 2021).

### B. Current research on the effectiveness on the use of face shield.

According to Center for Disease Control and Prevention (CDC), COVID – 19 are spread through person to person by respiratory droplets which travels into the air when a person cough, sneeze, talk, shout, or sing. Several protective barriers were implemented to lessen the transmission of the virus. One of which is face shield. Li, L., Niu, M., & Zhu, Y. (2020) on their study entitled assessing the effectiveness of using various face coverings to mitigate the transport of airborne particles produced by coughing indoors. The study investigates the effectiveness of various face coverings to reduce cough – generated airborne particle concentrations at 0.3, 0.9 and 1.8 meters away from the source in an indoor environment. The results are that the face shield provided little protection and N95/KN95 masks performed well and should be recommended as effective preventive measures to reduce outward transport of respiratory droplets during COVID – 19 pandemic. In a study of Pan et. al (2021) on the Inward and outward effectiveness of cloth masks, a surgical mask, and a face shield. Among the 11 face coverings which was evaluated for material filtration efficiency, inward and outward protection efficiency on a manikin, The vacuum bag performed best, with efficiencies of 54–96% while the thin acrylic and face shield performed the worst. Another research by Bandaru et.al (2021) points out that wearing of face shield as a personal protective equipment hampers communication and suggests that alternate communication strategies should be implemented. Frontline Tonight reported that according to experts particularly the simulation that was conducted by the University of the Philippines Institute of Civil Engineering Professor Joshua Agar. Wearing of face shields gives a person a higher chance of accumulating COVID – 19 aerosol that might lead to acquiring of the virus though inhalation most especially if the person is not using KN95 mask or double masks.

### C. Compliance of the public on the IATF guidelines on the use of face shield.

Public's compliance is one of the main topics of the Inter Agency Task Force towards the guidelines mandated to lessen the cases of COVID – 19 in the Philippines. In a study by Cocal (2021) on the effectiveness of the Philippine Government Responses to COVID – 19 Pandemic. The number one factor contributing to the failure of the government's responses to the pandemic is the general

public's lack of discipline as perceived by 77.39% of the respondents. This was further emphasized in the news showing people not observing safety protocols such as self – quarantine to persons exposed to COVID – 19, not observing physical distancing and improper wearing of face masks. Two other factors were mentioned are lack of cooperation from the public and in – availability of medical supplies, equipment, and facilities to address the pandemic.

#### *D. Factors that affect the public's compliance on the use of face shield.*

Some of the factors that affect the public's compliance on the use of face shield includes financial factors. In a news article of Rappler (2021) entitled Review sought for mandatory wearing of face shields in the Philippines. It emphasizes that both the World Health Organization (WHO) and the Center for Disease Control and Prevention (CDC) does not recommend on mandatory wearing of face shields. Lawmakers added that this government policy is anti – poor and Philippines is the only country that requires it. The article mentioned that a survey which was released in February 2021 showed that nearly all Filipinos are compliant with the policy of wearing face masks, only around 6 in 10 individuals adhere to the face shield requirements. Despite the mandatory policy of wearing face shields the Philippines still experienced a surge in COVID – 19 infections on April 2, 2021, peaked at 15,310. The Center for Disease Control also updated their guidelines and recommendations for face coverings to combat COVID – 19, saying that face shields are not recommended protection.

#### *E. Negative effects of the use of face shield.*

In a study conducted by Muzzi et.al (2021) on the effects of SARS – CoV – 2 face protective equipment on verbal communication. Wearing face personal protective equipment impairs transmission of middle – to – high voice frequencies and affects speech intelligibility or how clearly a person speaks so that his or her speech is comprehensible to a listener. Surgical masks are responsible for up to 23.3% loss of speech intelligibility and 69% to advanced face personal protective equipment. In another study conducted by Akagi et. al (2020) on the effect of sneezing on the flow around a face shield, results showed that the high – velocity flow created by sneezing or coughing generates vortex ring structures that capture small size particles such as sneezing droplets and aerosols and transport them to the top and bottom edges of the face shield. The study also confirmed that some particles entered the inside of the face shield and reached the vicinity of the nose which indicates that a medical work or a person wearing a face shield may inhale transported droplets or aerosol if the time when the vortex rings reach the face shield is synchronized with the inhalation period of breathing. Another negative effect of face shield is that it contributes greatly to the pollution and waste. In a study on Waste Management of Medical Personal Protective Equipment and Facemasks: Challenges During and Post COVID-19 Pandemic

(2021). It says that These plastics have a very long shelf life. The unprecedented and sudden increase in the use of facemasks and PPE has increased the amount of waste generated by several times. This has posed a challenge of handling both biomedical waste (BMW) and municipal solid waste (MSW). All of these when mismanaged and disposed discriminately find their way ultimately into the oceans. A detailed summary of the sustainability and waste management issues of facemasks and PPE is provided in this chapter. Present challenges of disposal, the short- and long-term effects of mismanagement, strategies and guidelines to assist proper disposal and possible immediate and futuristic remedies to alleviate the problem have been highlighted and deliberated.

## V. CONCLUSIONS

Based on the results of the study, the researcher concluded that the use of the use of face shield is not recommended in public places but specially indicated only for clinical patient care where splattering is likely to occur.

## RECOMMENDATIONS

Based on the results of the study, the following are hereby recommended:

- Wearing of face shields should be voluntary to all areas until such time that there will be enough evidence that will prove the effectivity of face shield to COVID – 19 virus transmissions.
- The National Government and other government agencies tasked to manage the COVID – 19 pandemic should focus on projects related to medical services such as provision of mass vaccination in a short span of time to strengthen the immune system of the citizens, providing universal insurance to all and strengthening the health services received by the people particularly in relation to hospitalization bills.
- Lawmakers should prioritize the passing of the pandemic law which was introduced by former Senator Miriam Defensor – Santiago with the goal of strengthening national preparedness and response to public health emergencies.
- The public should be properly educated on evidence – based research practices that should be implemented to prevent the transmission of COVID – 19 virus.
- Future researchers may consider and use the results of this study to conduct relevant research.

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