



NON PHARMACEUTICAL INTERVENTIONS FOR COMMUNITY PREPAREDNESS AND RESPONSE - *PROS AND CONS IN A PANDEMIC OUTBREAK SITUATION LIKE COVID-19*

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ABSTRACT

Pandemics like Covid-19, has impacted the world in its entirety causing health crisis and mortality across countries, this has result in increased burden on healthcare sector viz a viz, has caused social, economic and political impact. The globe has faced such pandemics in the past like the Zika, Ebola, Asian flu or the Swine flu pandemic, that has taken a huge toll on the lives of the people and impacted the growth and economy of different countries to a varying extent. In situation of pandemic outbreak we are left with very limited or no pharmacotherapeutic tool like vaccines, antiviral and other drugs that could limit or combat the hazardous effort of the disease causing pandemics. In such scenarios, non pharmaceutical interventions (NPIs) encompassing interventions at the individual levels that requires maintaining hand hygiene, covering their sneezes and coughs, maintaining distance from other individuals and isolation from the sick, and community level interventions, that emphasize on the importance of social distancing by means of lockdowns, closure of public institutions, schools, offices, prohibition of public gathering, quarantine and isolation techniques with appropriate healthcare interventions play a very important role in containing the spread of the infection and the disease causing microorganism. In this article we attempt to highlight the pros and cons of such Non Pharmaceutical Interventions and its impact on curtailing the spread of disease, social and emotional impact on the people and the socio economic impact on the country amidst the pandemic.

KEYWORDS : Covid-19; Non-Pharmaceutical Interventions; Pros and cons; NPIs

INTRODUCTION:

A pandemic is defined as a global outbreak of a disease, the world has witnessed dreaded pandemics in the recent past, history records the crippling effects of such pandemics across the globe. Every pandemic starts as an epidemic first, which means the rapid spread of a disease across a particular region or regions. Its worthy to note that not all epidemics can become a pandemic. The Zika virus outbreak of 2014 began in Brazil which made its way across the Caribbean and Latin America was an epidemic, similarly the Ebola outbreak was an epidemic which occurred in West Africa from 2014-2016.² The most deadly pandemic in the history was the Spanish flu of 1918 causing 20-50 million deaths worldwide.³ Asian flu pandemic in the years 1957-1958, was triggered by a new strain of influenza A virus (H2N2) that was supposed to be originating from East Asia, claiming life of over 1.1 million people worldwide.⁴ 1968, witnessed the Hong Kong flu pandemic caused by new strain of (H3N2) virus claiming an estimated 1 million people worldwide.⁵ The (H1N1) Swine flu pandemic in the year 2009-10, caused by new strain of the same virus thought to cause the Spanish flu, which infected around 700 million to 1.4 billion worldwide, although the mortality was comparatively lesser.⁶ On March 12, 2020, the World Health Organisation declared COVID-19 as a pandemic, wherein it began as an epidemic in China lately in the year 2019 in the Hubei province of China in the capital city of Wuhan and later spread like a wave to engulf the countries across the globe, causing health crisis, social, economic and political impact across the world. In such a scenario, where the pandemic progresses rapidly and there is no much evidence on the pharmacotherapeutic interventions that can combat such pandemics, a strategy called as "Non Pharmaceutical Interventions" (NPIs) can prepare the community to respond adequately in scenario of an outbreak.

WHAT DO WE UNDERSTAND BY NON-PHARMACEUTICAL INTERVENTIONS (NPIs)

When the world meets a pandemic situation there are different approaches to address and combat the spread of the illness. In such a scenario, the pharmacotherapeutic interventions like drugs, vaccines, anti-viral medications may not be available in sufficient quantities across the globe, that can prevent the spread of the disease or its associated complications. In such a situation, NPIs play an important role that includes both, actions that can be taken by the individuals and the households and the social distancing policies that the community can enact that can limit the spread of a such disease which are contagious and can easily spread from one person to another like the Covid-19, that has created a major chaos in the globe. NPIs serve as the most important tool that the country can have, that will be available and

accessible at the local level, but are also effective in limiting the spread of the disease and reducing mortality.

WHY ARE NON-PHARMACEUTICAL INTERVENTIONS NECESSARY IN A PANDEMIC OUTBREAK

The use of the Non Pharmaceutical Interventions are important even if the drugs and appropriate vaccines are available, because these can prevent an individual to inadvertent exposure, decreasing the number of sick patients, reducing the burden on the healthcare setup and reducing morbidities and mortalities. In a scenario of a viral pandemic, the development of vaccines can take around 4-6 months, Hence most countries would not have vaccines available for treatment their patients, countries who can afford the vaccines, would also not have enough of them to treat all of their sick patients, due to the reasons of decreased availability and production. In such a scenario NPIs play an important role in containing the spread of such illness, as they are easily affordable, accessible, effective and doesn't require specialised skills to implement at a community level.

IMPACT OF NON-PHARMACEUTICAL INTERVENTIONS IN A PANDEMIC

NPIs helps a country to achieve its objective by producing either of the following results:

- It pacifies the spreading of illness and delays the effects of the pandemic which helps in bargaining time for a country and its people to be more prepared and direct their response to pandemic appropriately and effectively.
- It also helps to number of people who gets exposed with the disease causing microorganism and its subsequent development of infection, which results in lesser people that would get sick and die, reducing the burden on the healthcare system, that would enable them to tackle the admitted sick patients and provide quality of care.
- NPIs helps to keep the local businesses and public utilities operational, as more people would be able to stay on the job as only a few sick people would be present in the community that are treated appropriately by the healthcare professional, this would not cripple the economy of the country and basic necessities like water, groceries, electricity, transportation etc will be functional.

NON-PHARMACEUTICAL INTERVENTIONS THAT WOULD BE HELPFUL IN A PANDEMIC SITUATION

INDIVIDUAL INTERVENTIONS:

It is noteworthy that the pandemic virus like the Covid-19 will be

similar in many ways to a seasonal influenza virus. Hence most of the countries of the world, their governments, municipalities and the families within these municipalities can follow these interventions to effectively control the pandemic.

The most important preventive measures are:

a. **Frequent hand washing:** It is noted that a good hand washing practice usually helps to decrease the amount of virus that may be transmitted which carrying out routine social formalities like hand shaking, touching surfaces of inanimate objects referred to as the fomites like the house gates, door handles, switches, groceries etc. It is advisable that an individual would wash their hand frequently with soap and water, in the present context of Covid-19 it is advised to wash hands with soap and water for atleast 20 seconds duration, if these are not available then alcohol based sanitizers are a good alternatives. The government should take steps to educate the general public on the process and protocols of maintaining proper hand hygiene techniques and importance of clean hands, it's the duty of the government to also ensure sufficient access to soaps and hand sanitizer availability in the market. Stock hoarding practices limit the efficacy of such a method, wherein the poor accessibility and availability to soaps and sanitizers becomes a major hindrance to success using this method.

b. **Habitual covering when you cough or sneeze:** Covering your cough or sneeze with a tissue, sleeve, mask or handkerchief, usually helps to lessen the viral load in the form of aerosols and prevents the spread of virus. It is advisable to use disposable tissues, masks or any material that could be disposed off safely after use, to prevent fomite induced infections. Wide educational campaigns can ensure success of these strategies. Stock hoarding of masks and tissue papers is a major hindrance, it not only fails this strategy but also deprives the needy of their basic safety, who fights on the frontline battling a pandemic like Covid-19.

c. **Social distancing "Keep your distance":** social activities like talking, singing, shouting, coughing, sneezing etc can result in the generation of large droplets in the air and these droplets can generally travel to a distance of one to two metres, hence maintaining social distancing can help curtail the spread of infection in the community to a larger extent. In a country like India and others, complete lockdown is imposed with an objective to prevent social gathering, overcrowding and to stop the droplet spread of infection, inadvertent wandering in groups, in shopping malls, markets and public transportation can fail this strategy to a larger extent and result in a rapid rise in the number of cases. Public education and awareness about the reason for lockdown, reason for social distancing, and the motive behind it should be brought about through ads in the media, and by creating educational programs with speakers who are influential and popular among the general public.

d. **Separation of the sick from the healthy people:** this is an important intervention to check the spread of infection during the period of infectivity from the sick to the healthy individual. Ideally isolation of such cases needs to be considered on a voluntary basis, and the sick has to be instructed to observe other protocols of covering their cough and sneeze, hand hygiene and wearing masks. These people should not be allowed to go to public places and religious gatherings where they can potentially spread the infection to a vast majority of people that may result in exponential upsurge of cases in shorter time. Family members of these sick people should be advised home quarantine and strict vigilance should be maintained to ensure they doesn't step out of their home throughout the incubation period of the virus (7-14 days in case of Covid-19) if at all they are infected, as they can spread the infection to other healthy individuals in the community. Rapid screening, quick identification of the sick, advise to family members on when to seek medical help, supporting the family with essential commodities like food and medicines can result in success of this intervention.

Robust governmental interventions like, directives to close schools and childcare facilities, encourage employers to let their employees to work from home, preventing community gathering like mass prayers, processions, religious talks, marriages, parties etc and arranging for home delivery of essential commodities like food, medicines and other consumables, can prevent a lot of hands going in together and cross contaminating the stuffs resulting in increased risk of fomite born infections.

BEST TIME TO START A NON PHARMACEUTICAL INTERVENTION

The primary goal of any NPI is to effectively reduce the spread of

illness, and prevent mortalities, hence timing to implement a NPI is of utmost importance. As a recommended general rule, it is stated that waiting until the community sees a cluster of cases of the severe disease following which robust implementation plans needs to be considered by the authorities looking into the benefit and impact analysis. Although individual interventions like hand hygiene, covering the cough, sneeze etc, maintaining safe distancing, being safe from a sick can be initiated early, when the disease hasn't yet reported in the community, but community measures like, closing schools, public offices, transportation etc needs to be considered on a daily basis, looking into the severity of the situation and gauging the benefit and risk assessments of such actions taken.

The plan should be directed taking into account the virulence and contagiousness of the virus and the availability of resources to combat such crisis. It is advised that if the decision is made to use social distancing, then the implementation should start immediately and insights have to be taken from the national and international recommending bodies viz a viz being prepared according to the demands of the local scenario in the community. If there are no cases in the local area, community interventions should be kept on hold, as it may impact the economy and create social hardships without benefiting the public health.

WHAT KIND OF NON PHARMACEUTICAL INTERVENTION BENEFIT THE MOST

As a general rule, no single NPI on its own is beneficial to limit the spread of a pandemic. Hence simultaneous usage of Individual level and community level interventions are considered to offer greater benefit. These interventions can also be used as a general measure along with the vaccines, antiviral or other drugs that may be available subsequently. It is advocated that the individual level interventions should be carried out early and robust campaigns be devised to make the public understand the importance of washing their hands frequently, covering their sneezes, coughs, maintaining distances and importance of isolating sick people from the healthy ones.

As the community level NPIs result in public fear, loss of income and inconveniences, hence these interventions should be used only when needed and be implemented as early as possible when it is needed the most. The severity of a pandemic decides the duration of the community level interventions.

POTENTIAL HARD HITS OF NON-PHARMACEUTICAL INTERVENTIONS

NPIs although stands as an effective tool to contain the contagious nature of a viral or other forms of epidemic, it has some hard repercussion too, these negative implications needs to be taken into consideration before planning the implementation of NPIs. These negative implications could be in the form of Economic hardships due to quarantine and lockdowns, Social hardships as they are totally cut off from their emotional and mental support systems, like religious gatherings, temples, churches etc. NPIs can be met with inadequate public compliance as evident in the current scenario of the Covid-19 pandemic. Inappropriate timings of implementation can be futile and wouldn't fetch desired public health benefits.

CONCLUSION

Although Non Pharmaceutical Interventions can be met with challenges of economic hardships, social breakdown, noncompliance among the general public, its benefit in the form of individual level intervention and community level interventions are multipronged and can help a nation to contain the spread of a dreaded pandemic, if applied judiciously with keen emphasis on the timing of its implementation. Public awareness, robust governmental support and plan, compliance in the community and individual commitment to abide by the teachings of these interventions can make it a success strategy.

ACKNOWLEDGEMENTS

We would like to thank Dr.M.K.Srinivas, IRMS, Bangalore, Dr.Harish H.S, Ophthalmologist Delhi, for reviewing the article and giving opinions, comments and corrections as appropriate. We extend our thanks to faculty and colleagues of Department of Pharmacology, VIMS, Ballari for their presence and support, our families for their continued support and friends for their appreciation and valuable views.

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