The Impact of Mask Distribution and Promotion on Mask Uptake and COVID-19 Rates in Bangladesh

A growing body of scientific evidence suggests that face masks can slow the spread of COVID-19. There is, however, limited rigorous evidence on the extent to which mask-wearing is effective in reducing transmission in a real-life situation with imperfect and inconsistent mask use over time. In Bangladesh, where increasing mask use continues to be a public health priority, researchers partnered with IPA and Bangladeshi policymakers to test various strategies to increase mask-wearing and assess the impact of community mask wearing on SARS-CoV-2 infection rates. We found that a combination of free mask distribution, information provision, in-person reinforcement and role-modeling tripled mask usage at a low cost and that this increase was sustained 10 weeks into the intervention, even after the mask promotion ended. Results on the impact of the mask distribution and promotion strategies on SARS-CoV-2 infections are forthcoming.

Policy Issue

Currently, institutions such as the World Health Organization (WHO) recommend masks as part of an overall portfolio of protective behaviors. Conversations with scientific advisors to institutions such as WHO and the U.K. government indicate that high-quality evidence on the effectiveness of universal mask-wearing would have a high chance of influencing policy decisions about mask use by governments.

Existing evidence to comprehensively answer policy-makers’ questions is limited. First, while laboratory evidence shows that masks can reduce exhaled viral load and thus the probability of transmitting the virus, the extent to which this effect manifests in the real world, where masks may be worn imperfectly and inconsistently over a period of time, is uncertain. Second, there is limited evidence on effective ways to rapidly promote mask usage. Third, critics argue that such adoption may lead to compensatory risky behaviors such as reducing physical distancing which may have a net increase in transmission. Finally, little is known on the effectiveness of different types of masks in a real-life situation: particularly the extent to which surgical masks may differ in effectiveness from cloth masks.

This research aims to fill these gaps by conducting the first large-scale
cluster-randomized evaluation on the impact of mask-use on rates of COVID-19, measured through SARS-CoV-2 antibody testing and self-reported symptoms. The results of this evaluation will serve as global evidence for the fight against the pandemic. Moreover, these results will be particularly useful to effectively promote the use of masks in densely populated countries, where other health measures such as physical distancing may be more difficult to implement.

**Evaluation Context**

Bangladesh, the eighth most populous country in the world (165 million people), had approximately 1,179,827 COVID-19 cases as of July 2021.\(^1\) It is also one of the most densely populated countries (density of 2,890 people/mi\(^2\)),\(^2\) making other preventive measures such as physical distancing extremely difficult to implement. In Bangladesh, the government has strongly recommended mask use since early April 2020. This policy was initially accompanied by consistent public messaging, as well as attempts by police and NGOs to confront those who were seen in public without masks. The Bangladeshi government formally mandated mask use in late May 2020 and began fining non-compliers.

Despite the recommendations of health experts on the use of masks, IPA and local partners documented a decline in self-reported usage of mask-wearing from early April to late May and discrepancies between self-reported mask-wearing and actual mask-wearing in Bangladesh. Our data suggest that by May 2020, only 48 percent of people were wearing a mask. In crowded spaces like mosques, this number was only 37 percent. Although actual numbers could be lower. There is therefore a need to encourage universal mask wearing in public.

**Details of the Intervention**

Researchers partnered with the Ministry of Health and Family Welfare, the Bangladesh Medical Research Council, and a2i to evaluate the effectiveness of various strategies on increasing mask-wearing and assess the impact of community mask wearing on rates of COVID-19.

To select participating villages, the research team chose 1,000 rural and peri-urban villages based on population data and in-person IPA scoping. They used a pair-wise randomization to select 300 intervention and 300 comparison villages within the same upazila (Bangladesh is divided into 492 upazilas). Paired villages were similar in terms of (limited) COVID-19 case data, population size, and population density. All villages are at least 2 km apart to minimize spillover risk. Comparison villages continued mask wearing as usual.

**Mask Distribution and Promotion (Core Intervention)**

All 300 intervention villages received the core mask distribution and promotion intervention for four weeks. The package consisted of main elements consulted from the literature including:

- **Household-level distribution and promotion**: Three masks were distributed free to each household. To emphasize the importance of mask-wearing, the research team showed a brief
video of notable public figures discussing why, how, and when to wear a mask. The video featured the Honorable Prime Minister of Bangladesh Sheikh Hasina, the head of the national Imam Training Academy, and the national cricket star Shakib Al Hasan. During the distribution visit, households also received a brochure based on WHO materials depicting proper mask wearing.

- **Community-level distribution and promotion**: Masks were distributed in markets and other public spaces on three to six days per week during the first four weeks of the intervention. Masks were also distributed at mosques on three Fridays and in the first four weeks of the intervention. The mask promotion was done using public service announcements played by handheld microphones in public areas.

- **Role-modeling and advocacy by local leaders**, including imams discussing the importance of mask-wearing at Friday prayers from a scripted speech provided by the research team.

To test whether types of masks (cloth vs. surgical) differ in real-world effectiveness in preventing COVID-19, households in one-third of the intervention villages received a cloth mask and households in two-thirds of the intervention villages received a surgical mask.

**Incentives and Behavioral Nudges**

To test whether other strategies, in addition to the core intervention, had an additional impact on mask usage, households in intervention villages also received different encouragement strategies. The research team randomly selected villages in the intervention group (total 300 villages) to also receive the following components:

- **Incentives**: Villages were randomized to receive no incentive, a monetary incentive (USD 190 per village to be spent on a communal good) or a nonmonetary incentive (certificate of recognition from the Government of Bangladesh) if village-level mask wearing among adults exceeded 75 percent eight weeks after the start of the intervention.

- **Public commitment (signage)**: To encourage formation of social norms through public signaling, households in half of the villages were asked to display a sign that they were mask-wearing households.

- **Text reminders**: In two thirds of the intervention villages, households received messages twice a week reminding them about the importance of mask use.

- **Message framing (altruistic vs. self-protection)**: In villages with signage, one third of the households received either altruistic text messages or self-protection messages. In villages without the signage, also one third of the households received either altruistic text messages or self-protection messages.

- **Network effects**: In villages with signage, two third of the households received zero, 50, or 100 percent weekly text messages.

- **Verbal commitment**: In villages without signage, two-thirds of the households were randomly asked to make a verbal commitment to be a mask-wearing household or not.

**Outcome Measures & Protocol**

Before the intervention began, the research team obtained informed consent and collected data and blood samples following appropriate and approved public health protocols. All protocols were
approved by the Bangladesh Medical Research Council, IPA, and Yale University.

The research team directly observed mask wearing and physical distancing during the eight weeks of the intervention. Correct mask wearing was defined as wearing either a project mask or an alternative mask over the mouth and nose. A person was recorded as practicing physical distancing if they were at least one arm’s length away from the nearest person.

The investigators conducted a phone survey five and nine weeks after the start of the intervention to understand if participants had respiratory symptoms consistent with COVID-19.

Twelve weeks after the start of intervention, blood samples were collected and tested from participants who provided samples at baseline and participants who reported respiratory symptoms at any point in the evaluation. The blood samples were tested for SARS-CoV-2 antibodies to determine whether the participant had evidence of prior infection with SARS-CoV-2.

**Results and Policy Lessons**

Free mask distribution and promotion, including by credible national figures and local leaders, at the household and community level increased the number of people who wore masks and adhered to physical distancing guidelines. The results of the impact of mask distribution and promotion usage on rates of COVID-19 are forthcoming.

The core intervention package, which included free distribution and promotion at households, mosques and markets, leader endorsement, and periodic monitoring and reminders, more than tripled mask use. In villages that received the intervention, **mask use increased by 29 percentage points** (from 13 percent in the comparison villages to 42 percent in treatment villages). Mask use increased most in mosques (37.6 percentage points). A pilot test suggests that in-person public reinforcement is a critical part of the intervention--mask-wearing increased 28 percentage points when masks were not only distributed but promoted and their use was reinforced.

**The core intervention also increased physical distancing** in villages that received the intervention, contrary to concerns that mask-wearing would promote risky behavior (giving people a false sense of security and reducing physical distancing). On average, physical distancing increased by 5 percentage points across all locations in intervention villages, but the change was larger in some locations than others. In markets, people were substantially more likely to physically distance (7 percentage points increase). In mosques, researchers observed no change. Mask use was sustained 10 weeks into the intervention, even after the mask promotion ended.

None of the behavioral nudges or incentives at the community- or household-level led to additional increases in mask-wearing or physical distancing. Neither text message reminders, public signage, monetary and non-monetary incentives, altruistic messaging, or verbal commitments had any further effect on mask-wearing. Mask color, however, did have an impact on mask adoption.

The total cost of the distribution and promotion campaign, including the cost of the masks themselves, was between $9 to $12 per person who started wearing a mask.
Results on the impact of the mask distribution and promotion strategies on SARS-CoV-2 infections are forthcoming. See here for most current information on ongoing scale-up efforts.

Sources

* Johns Hopkins University (JHU) “COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE)”


* The filtration efficiency of the project's high-quality surgical masks was tested before and after washing. They were found to have high filtration efficiency even after washing, so when they were distributed, recipients were told that they should wash and reuse the masks.