



## A comparative study of different designs of home-made cotton masks to evaluate their degree of comfort and design features

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**Abstract:** Face masks help slow down the spread of the coronavirus that causes COVID-19. It is also important that masks should be combined with other preventive measures. This study was undertaken to assess the knowledge regarding COVID-19 and preventive measures to be followed to prevent the disease spreading. It was seen that 100% of people knew about the virus and how to protect themselves from it. Most of the respondents found face mask A more comfortable, and the design of this mask was preferred by most of the respondents. More than 50% of respondents did not know how to stitch the face mask.

**Key Words:** Coronavirus, Cotton face mask, COVID-19, Homemade masks, Pandemic

### 1. INTRODUCTION:

A face mask helps slow the spread of the coronavirus that causes COVID-19. It is also important that masks should be combined with other preventive measures, such as frequent hand washing and social distancing to slow the spread of the deadly virus.

### 2. TYPE OF MASK:

**Surgical Mask:** A medical mask or surgical mask is a loose fitting disposable mask that protects the wearer's nose and mouth from contact with droplets, splashes, and spray that may contain germs. It filters out large particles in the air.

**N95 Mask:** The N95 mask offers more protection because it can filter out both large and small particles when the wearer inhales. The mask is designed to block 95% of very small particles. It also helps with easy breathing.

**Cloth Mask:** A cloth mask is intended to trap droplets that are re-released when they are widely used by people in public places or social gatherings.

Surgical and N95 masks may be in short supply and should be reserved for health workers. Cloth masks are easy to make and can be made at home. One can use leftover fabric at home for stitching masks. They are cheaper and can be washed, ironed, and reused.

### Some Dos for wearing a cloth mask

- Wash or sanitise your hands before and after putting on and taking off your mask.
- Place your mask over your mouth and nose.
- Tie it behind your head or ear loops.
- Don't touch your mask while wearing it.
- If possible, wash your face mask daily and iron it.
- Keep your masks in a sealed bag.
- Remove the mask by untying it or lifting off the ear loops without touching the front of the mask or your face.
- Wash your hands immediately after removing your mask.

A cloth mask can be made with a three layer fabric and filter pocket design where a tissue paper or filter paper is inserted inside the pocket for better protection. The Bihar government had ordered the wearing of masks in public



places in view of the COVID-19 pandemic and rising cases of infectious disease in the state. There has been a sudden surge in demand for face masks. Masks are not available on the market. So it has been felt that if we learn to prepare masks, the crisis of getting face masks will be solved. So this study was undertaken to train housewives on how to design different types of cotton masks cut and stitched. Five designs were selected for the study and to find the most comfortable design of cotton masks for long wearing.

### 3. MATERIALS AND METHODS:

For preparing the mask, cotton fabric and half centimeter width elastic tape were taken. Five different designs of cotton masks were stitched and given to 120 respondents who were selected by purposive random sampling technique from the age group of 25-50 from different places in Bihar. The respondents were asked to wear the mask for at least 6 hours, gradually increasing the time, and then their opinions were noted down after asking the questions for statistical analysis. The masks were given the names of A. B. C. D. and E., respectively.

### 4. RESULT AND DISCUSSION:

Table 1 – Ranking of mask design,

N=120

S. No.	Item	Excellent	Ranking score	Very good	Ranking score	Good	Ranking score	So-So	Ranking score	Don't like	Ranking score	Total ranking score	Rank
1	A	75	$75 \times 4 = 300$	25	$25 \times 3 = 75$	13	$13 \times 2 = 26$	7	$7 \times 1 = 7$			408	I
2	B	48	$48 \times 4 = 192$	44	$44 \times 3 = 132$	23	$23 \times 2 = 46$	5	$5 \times 1 = 5$			375	II
3	C	32	$32 \times 4 = 128$	67	$67 \times 3 = 201$	16	$16 \times 2 = 32$	5	$5 \times 1 = 5$			366	III
4	D	34	$34 \times 4 = 136$	40	$40 \times 3 = 120$	38	$38 \times 2 = 76$	4	$4 \times 1 = 4$	4	$4 \times 0 = 0$	336	V
5	E	43	$43 \times 4 = 172$	37	$37 \times 3 = 111$	28	$28 \times 2 = 56$	10	$10 \times 1 = 10$	2	$2 \times 0 = 0$	349	IV

From Table 1, it was found that the design of mask A was most preferred by the respondents and scored high in the study area. Mask A was followed by design B, design C, design E, and D. They said that design A is easy to sew and the looks of this mask suits all.

Table 2 – Distribution of respondents' opinion regarding most comfortable masks

N= 120

S. No.	Item	Excellent	Ranking score	Most comfortable	Ranking score	Mode rate	Ranking score	Less comfortable	Ranking score	Not comfortable	Ranking score	Total score	Rank
1	A	78	$78 \times 4 = 312$	16	$16 \times 3 = 48$	15	$15 \times 2 = 30$	11	$11 \times 1 = 11$			401	I
2	B	47	$47 \times 4 = 188$	40	$40 \times 3 = 120$	26	$26 \times 2 = 52$	5	$5 \times 1 = 5$			365	II



3	C	32	$32 \times 4 = 128$	60	$60 \times 3 = 180$	25	$25 \times 2 = 50$	3	$3 \times 1 = 3$			361	III
4	D	35	$35 \times 4 = 140$	26	$52 \times 3 = 156$	26	$26 \times 2 = 52$	5	$5 \times 1 = 5$	2	$2 \times 0 = 0$	353	IV
5	E	31	$31 \times 4 = 124$	39	$39 \times 3 = 117$	36	$36 \times 2 = 72$	7	$7 \times 1 = 7$	7	$7 \times 0 = 0$	320	V

Table 2 reveals that the face mask A was liked by the majority of the respondents and was ranked first. After wearing all the masks for 4-5 hours, the respondents informed that mask A was more comfortable and it was followed by B, C, D, and E score wise. They said that they could wear the mask A for 8–10 hours.

**Table 3 – Respondents awareness regarding safeguarding themselves from Coronavirus**

Respondents	Yes	No
120	120	-----

An appraisal of Table 3 reveals that in the study area, one hundred percent of respondents aware of the COVID-19 virus and know how to protect themselves from this deadly virus. They were all very conscious about wearing masks and storing them safely for future use.

**Table 4 – Distribution of respondents according to their skill of mask preparation**

Respondents	Yes	No
120	64	56

Table 4 contains information regarding the skill of mask preparation of respondents. It was evident from Table 4 that among 120 respondents, 64 (76.8%) had the skill of stitching masks, but 56 (67.2%) did not have the skill of how to cut and stitch the mask but they wanted to learn the stitching process. They said that in the market the cost of masks is high, so they wanted to learn the skill of mask making.

**Table 5 – Respondent’s knowledge regarding preventive measures to avoid spreading of Covid-19**

No. Of respondents	To maintain proper distance	Wash your hands for twenty seconds	Stay at home	All of above
120	49	21	23	22

The only way to stop the spread of the coronavirus is to get the vaccine and follow preventive measures. So the information was collected on the knowledge of respondents regarding preventive measures to avoid the spread of the coronavirus (Table 5). Among the 120 respondents, 49 thought that keeping a safe distance from people would be the most effective way to prevent the deadly virus from spreading. Whereas 21 respondents informed us that their view was to wash their hands with soap for 20 seconds is the best and 23 respondents told us that staying home is the best precautionary measure, 22 respondents had the opinion that all the preventive measures should be followed to avoid the spread of COVID-19. During discussion with the respondents, they were asked about how many hours they could wear the face mask. Most of them informed us that they could wear it for 5-6 hours.

**5. RECOMMENDATION:**

Presently, more than 50% of people don’t know how to stitch a mask. So training can be organized on how to stitch cotton masks through step-by-step demonstration or through video making and uploading them on social media for skill development. If possible, decorative face masks can be prepared for the younger generation to encourage them to wear face masks. Till June 16th, 2022, a total of 195 crore vaccinations have been given in India. Still, precautionary measures as per the advisories being issued by the Ministry of Health and Family Welfare should

be taken by all to prevent the spread of the coronavirus further. So one should wear a mask whenever he/she goes out.

## 6. CONCLUSION:

Knowledge and awareness regarding the spread of any disease and preventive measures can stop or slow down the spread. So it is the duty of all citizens to create an awareness among the public about the preventive measures they should follow so that we can safeguard ourselves from COVID-19.

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