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A STUDY ON PATTERN OF FACEMASK WEARING AND HANDWASHING TO PREVENT COVID-19 TRANSMISSION AND ASSOCIATED FACTORS AMONG DAILY WAGE WORKERS

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ABSTRACT

Introduction: Our world has been literally stunned by the SARS Covid-19 virus, and humanity is trying hard to get things back to normal. As it is well known to us, the pathogen being a virus, treatment options are minimal and managements are mostly focussed on symptomatic relief, and the best cure we have is prevention. The vaccines are the definitive answer, but it would require a substantial time period for it's coverage to become effective enough, and wearing masks and handwashing remains the best options we have. Most of the variations in the intensity of the disease spread, outbreaks and resolution of the disease load are all closely associated to the effectiveness of the practices of handwashing and mask wearing. So at the moment, we need to have a clear picture of populations that are failing to effectively practice it, reasons which may be leading to it, and factors that are leading to it. Only with this clear picture at hand of knowing where exactly we are going weak, can we strengthen our fortresses against an enemy we cant see with eyes. **Methodology:** Cross sectional study design based on patient interviews between January and March of 2021. The participants were randomly selected and interviewed. Since the setting of the pandemic did place restrictions on effectively interviewing subjects in person, the study utilised social media platforms to extract information from the study subjects. A bivariate analysis was employed to study the socio demographic patterns of mask wearing and hand washing being practiced among daily wage workers in Kerala. **Discussion and Results:** The study results were in line with the psychological effects expected during the pandemic and fear of disease and death. A statistically significant difference was found between the trends of handwashing and mask wearing amongst married and unmarried workers, and this was, as expected, attributed to their realisation of being the support system of the family and not wanting to fall ill to the disease, and in the worst case, have serious health consequences. More than 90% of the study subjects did practice mask wearing and handwashing diligently because of the fear of the disease and believed that these practices could protect them from the illness. Another 90% of study subjects wore masks and washed hands frequently for they did not want their region of residence to be declared as a contamination zone and closed off. 82% of the study subjects stuck to the practice because of governmental pressure.

KEYWORDS: As it is well known to us, the pathogen being a virus, treatment options are minimal and managements are mostly focussed on symptomatic relief, and the best cure we have is prevention.

INTROODUCTION

SARS-CoV-2 appears to be transmitted person-to-person through respiratory droplets and close contact, as previously seen in severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV), the two other zoonotic coronaviruses. This highlights the necessity of practicing respiratory hygiene and hand hygiene, and using appropriate personal protective equipment and masks.

Additional airborne precautions such as N95 masking or other approved masking techniques should be used by all when going outside their home. The World Health Organization (WHO) has strongly recommended HCWs to ask patients to cover their nose and mouth with a tissue or elbow when coughing or sneezing, to provide masks for patients who are suspected of having COVID-19, and to perform appropriate hand hygiene.

Hand hygiene with alcohol-based hand rub (ABHR) is widely used around the world as one of the most effective, simple and low-cost procedures against COVID-19 cross-transmission. By denaturing proteins, alcohol inactivates enveloped viruses, including corona viruses, and thus ABHR formulations with at least 60% ethanol have been proven effective for hand hygiene. ABHRs such as those recommended by the WHO,

containing ethanol (80% v/v) or iso-propanol (75% v/v) as active components, have a marked virucidal effect against SARS-CoV and MERS-CoV. Our study was done to understand how much of the daily wage workers of the state of Kerala follow the hand washing procedure and mask when they are in public.

Although vaccination is supposed to be the ultimate solution at controlling the virus, it is well evident that vaccination drives would be taking another few years to reach completion, and in the meantime, the virus is undergoing more mutations and the disease is spreading at a very rapid pace. The death toll due to the pandemic is also alarming. So till vaccination drives reach a safe proportion to have a good hold of the pandemic, wearing a mask and handwashing are the only tools left at hand. And the disease rate going up to hazardous levels at times are mainly due to these two factors not being followed in a strict manner. So till then, it is much needed to understand about how the practice of handwashing and mask usage is varying between communities, about communities where the practice lacks effectiveness, and the reasons which may be contributing to the failure to establish strict usage of these, for appropriate social and legal measures to be implemented for the strict following of these practices.

METHODOLOGY
STUDY DESIGN
A cross-sectional survey-based study was conducted and consent was obtained from all the participants. Data were collected and analyzed anonymously. A convenience sample approach was adopted in this study where people from the different parts were invited to participate. Amid the global pandemic, researchers utilized social media platforms to collect data. In this study, online social media platforms (Facebook, WhatsApp) were used to recruit participants.

STUDY PERIOD: 3 months (JAN TO MARCH 2021).

INCLUSION CRITERIA
1. > 18 yrs. of age
2. Both Male and Female.
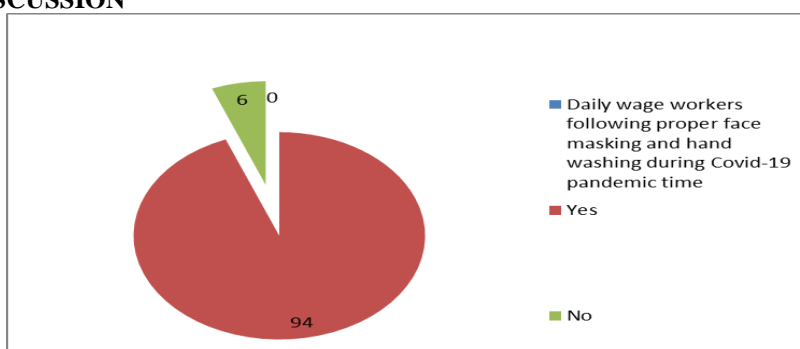3. Willingness to participate in the study
4. Daily wage workers.

EXCLUSION CRITERIA
1. Psychiatric patients
2. <18 yrs. of age
3. Not willing to participate in the study
4. Very sick persons.

SAMPLE SIZE DETERMINATION AND SAMPLING PROCEDURE
Sample size was determined using single population proportion formula.

$$n = \frac{(Z\alpha/2)^2 * p\,(1-p)}{d^2}$$

Considering the assumptions of: $Z\alpha/2$ is the standard normal variable value at (1-α) % confidence level (α is 0.05 with 95%CI [confidence interval], $Z\alpha/2 = 1.96$), p is an estimate of the proportion of facemask wearing among daily wage workers as 50.0%. A proportion of 50.0% was considered since there had been no previous study conducted in the study area or other similar setting, and d margin of error (10.0%).

DATA MANAGEMENT AND STATISTICAL ANALYSIS
The collected data was checked, coded and entered into Excel sheet and exported to SPSS version 22.0 for data cleaning and analysis. Descriptive statistics such as frequencies and percentages for categorical variables and mean with standard deviations for continuous variables were calculated to examine the overall distribution.

Data was analysed using binary logistic regression model with 95% confidence interval (CI). A bivariate logistic regression analysis (Crude Odds Ratio [COR]) and multivariable logistic regression analysis (Adjusted odds ratio [AOR]) were employed. From the bivariate analysis, variables with a *p*-value < *0.250* were considered for multivariable logistic regression analysis. From the multivariable logistic regression analysis, variables with a significance level at *p*-value < *0.050* were taken as statistically significant and independently associated with facemask wearing among daily wage workers of the state.

RESULTS AND DISCUSSION

Figure 1: Daily wage workers following proper face masking and hand washing during Covid-19 pandemic time.

Table 1: Hand hygiene and face masking based data.

Hand hygiene question items	Percentage
Frequent hand hygiene before donning a facemask	
Yes	23%
No	77%
Frequent hand hygiene after removing a facemask	
Yes	40%
No	60%
Frequent hand hygiene after touching frequently touched surfaces	
Yes	35%
No	65%
Methods of frequent hand hygiene	
Duration of frequent hand hygiene practices (in seconds)	
< or equal to 20	77%
>20	23%
With water only	12%
With water and soap	45%
With alcohol based sanitizer	42%
Both water and soap and sanitizer	1%
Face mask related questions	
Cloth mask alone	23%
Surgical mask alone	12%
N95 mask alone	45%
Double masking (surgical and cloth)	12%
Two surgical mask	3%
Two cloth mask	2%
N95 and surgical mask	1%
N95 and cloth mask	2%
Wear mask all the time outside home	
Yes	23%
No	77%
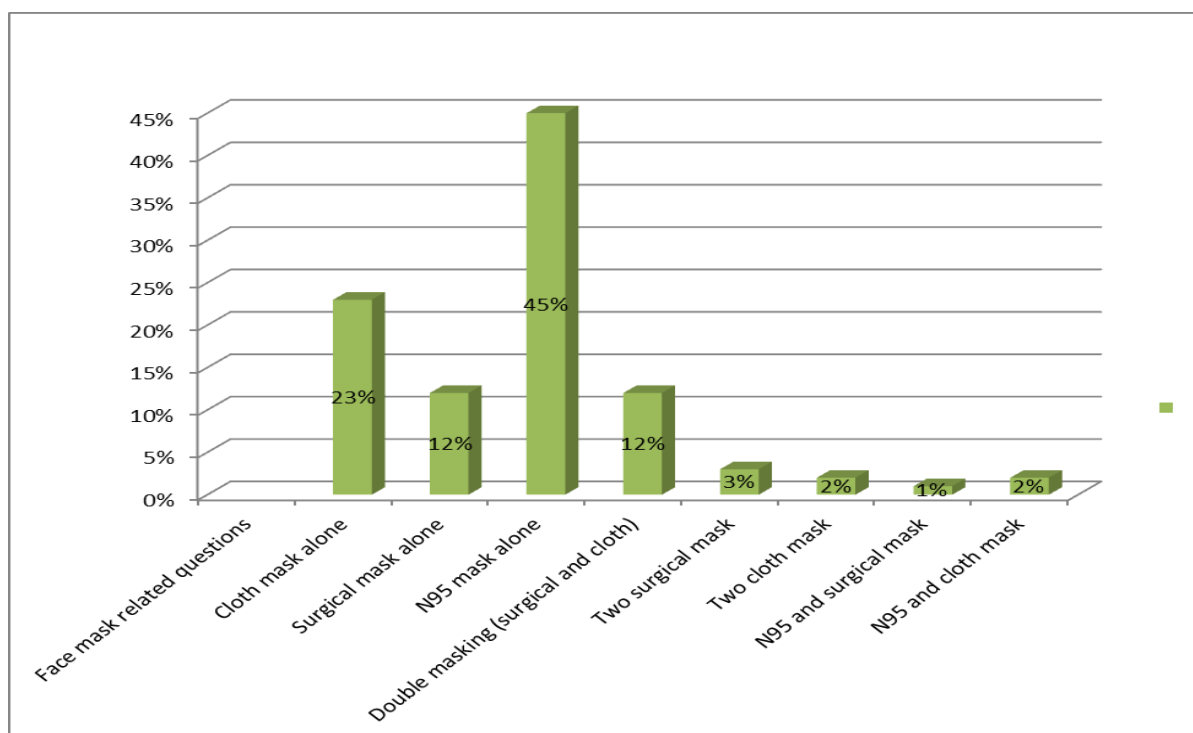
Figure 2: Pattern of usage of face masking.

From our study, it was evident that only 23% of the study subjects were washing hands before putting on a mask, and only 40% of the subjects were washing hands after donning a mask. It was found that only 35% of the study subjects bothered to wash their hands after coming in contact with frequently touched surfaces.

When analysing the methods of handwashing of subjects who did practice, it was found that 77% of them washed their hands for less than 20 seconds. 42% of the study subjects used alcohol based hand sanitizers, while 45% of them used water and soap for the same.

Regarding the practice of mask wearing, 23% of the study subjects used cloth masks while 12% of them used surgical masks. 45% of the study subjects used N95 masks for protection, while 12% of them used both cloth as well as surgical masks for the same. Only 22% of the study subjects were using masks whenever they were outside their homes.

Table 2: Association of socio-demographic and economic factors associated with facemask wearing all the time and hand wash and sanitation regularly when outside the house among daily wage workers at State of Kerala, Jan to March 2021. (n=100)

Variable	Frequency in percentage	Face mask wearing	P value
		yes	
Age in years			
<18	5%	74%	
18-40	55%	80%	0.65
40-60	30%	85%	0.55
>60	10%	70%	0.3
Education			
Below degree	78%	80%	
Above degree	22%	94%	0.03
Place of residence			
Rural	67%	82%	
Urban	33%	93%	0.07
Marital status			
Single	12%	76%	
Married	73%	94%	0.001
Divorced/widow	15%	83%	
Monthly Income			
<10000	44%	81%	
10-20000	51%	83%	0.08
>20000	5%	91%	0.087
House hold size			
<5	32%	91%	0.09
5 and above	68%	92%	0.07

Table 3: Bivariate analysis of behavior related factors associated with proper facemask wearing and hand washing.

Variable	Frequency in percentage	Face mask wearing and hand wash	P value
		yes	
Feel fear of COVID-19			
Yes	83%	92%	<0.001
No	17%	8%	
Knowing individual(s) infected with COVID-19			
Yes	88%	91%	0.02
No	12%	9%	
Worry that your city would become lockdown			
Yes	65%	82%	<0.001
No	35%	18%	
Believe that wearing facemask could prevent contracting and spreading of COVID-19			
Yes	80%	94%	0.04
No	20%	6%	
Feel family or peer group pressure in wearing a facemask and regular hand washing			

Yes	60%	82%	0.02
No	40%	18%	
Feel presence of government pressure to wear facemask and regular hand washing			
Yes	93%	92%	<0.001
No	7%	8%	

Our study revealed that the proportion of facemask wearing was higher among married workers than among unmarried. This difference in practice leads the unmarried individuals to be more vulnerable to COVID-19. The reason for marital status being a factor for the wearing of face masks might be the fact that married individuals feel more responsible for the health of their families as well as their own compared to unmarried individuals. The stratification of analysis based on gender and the region of residence were not yielding statistically significant differences among the practices of mask wearing. Stratification of the study subjects based on monthly incomes was also not yielding a statistically significant difference amongst the practices of handwashing as well as mask wearing.

92% of the study subjects were sticking onto the practice of handwashing and mask wearing due to the fear of COVID-19. While 91% of the study subjects who were diligent to the practice of the same were acquainted to a person who was infected with the covid. 82% of the study subjects were sticking on to mask wearing and handwashing because of the apprehension that their city would be going into a lockdown. 94% of the study subjects did believe that these practices could in fact prevent them from being infected with the disease, while 82% did so because of pressure from a peer group or their families. 92% of the study subjects did wear masks because of the legislative mandate to do so.

Table 4: Multivariable analysis of factors associated with facemask wearing and handwashing.

VARIABLES	P VALUE
Married workers	0.001
Fear of Covid-19	<0.001
Worry of city/area becoming quarantine city /lockdown	<0.001
Government pressure	<0.001

This study also found that drivers who reported that there was pressure from the government to wear facemasks were more likely to wear one than others who did not report that pressure. This result is supported by a recent study in the USA where facemask wearing dramatically increased from 41% to 90% among some groups following government pressure.[19] This finding is also similar to studies conducted in Hong Kong[20], in Japan[21] and in Mexico City public transportation during the influenza outbreak.[22] In Kerala, wearing a facemask is mandatory for all with a fine of good amount above 500 for without one on.

CONCLUSION
As said in the introduction of the study, during the transit period till the vaccination cover would be effective enough to prevent the spread of the virus, the only viable and practical tool with us is to strengthen the practice of wearing masks in public places and effectively employing hand washing. It is much needed to find out about the groups where the practice lacks effectiveness and also to have a grasp on factors that are supportive to this practice and those that serve as hindrances for the same.

Statistically significant results obtained did turn out to be meaningful interpretations from the study, that was congruent in terms of biological and social plausibility. Married workers were found to be more actively involved in the practice of face mask wearing and hand washing, and there is a socially plausible explanation for the same, that being married and being responsible for a family do make these subjects more responsible for their health and well being.

The pandemic and the associated death toll, irrespective of the age group, did raise the fear of the disease amongst many of the study subjects, and that is very much in line with about 92% of the study subjects sticking on to mask wearing and hand washing due to the fear of the disease. The associated burden of localities going into lockdown was an unavoidable collateral damage for the steps in controlling the disease, hence it was understandable for the fact that over 90% of the study subjects were wearing masks and washing hands for the fear of their locality being declared a contamination zone. 82% of the study subjects were doing so because of the pressure from a peer group or family, while 92% of the study subjects were regular in wearing masks because of the governmental pressure. Stratification of the study results based on age, monthly income, educational status and the region of residence failed to yield statistically significant differences amongst the practice of washing hands and wearing masks.

AUTHOR CONTRIBUTIONS
All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; have agreed on the journal to which the article will be submitted; reviewed and agreed on all versions of the article before submission, during revision, the final version accepted for publication, and any significant changes introduced at

the proofing stage; and agree to take responsibility and be accountable for the contents of the article.

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