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Mask Hygiene Practices And Difficulties Faced On Use Of Face Mask During Covid 19 Pandemic Among Adults In Khordha District: A Cross Sectional Study

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Abstract: Hygienic mask use plays a significant role in effectively preventing contagious respiratory disease. The COVID pandemic has made wearing masks mandatory for all. All need to follow mask hygienic practices to avoid respiratory infection. Wearing a mask all the time may also lead to discomfort and difficulties. Objective: The study assessed mask hygiene practices and difficulties faced among adult mask users. Materials and method: 306 adults from UPHC Nayapalli and CHC Mendhasala of Khordha district participated in the study. Participants self-reported the mask hygiene practices and difficulties faced with mask usage using the structured tools. Results: 49% of participants were using fresh masks daily. Breathing problems were the most common (48.3%) difficulty faced by participants followed by 47.3% ear discomfort, foul odor after prolonged usage of mask (38.8%), and communication problems (34.9%). Conclusion: The present study shows that people are not using masks hygienically, which is mandatory to prevent further contamination. People face various difficulties while wearing the mask, affecting mask hygiene practices. Awareness and motivation are necessary to achieve long-term adherence to mask use.

***Index Terms*:** Mask hygiene, Problem in using a face mask, Covid-19, Mask practices.

Abbreviations: CHC Community health Centre, UPHC Urban primary health Centre, MHP masks hygiene practice**,** DFM Difficulties faced on use of face mask.

I. INTRODUCTION

Corona virus disease (COVID-19) is a newly discovered communicable illness which is caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). Persons infected with corona virus disease develop mild to moderate sickness and it can be improve without any particular treatment. Elder persons or who are having co morbidities are more chances to develop serious illness.[1]

As of December 20, 2020, case fatality rate of COVID-19 worldwide is reported to be 2.24% and 1.45% for India and for Odisa it is 0.59%. There are 219 Countries and Territories around the world have reported a total of 115,380,161 confirmed cases of the corona virus.[3]In India, Maharashtra have reported the highest cases of COVID 19, followed by Karnataka, Punjab and Madhyapradesh.[4] MOHFM has given some advices to the population to fight against corona virus transmission. According to MOHFM recommendation, use of face mask is as important as physical distancing and frequent hand washing. Along with that respiratory etiquette should be followed, strict practice of covering mouth and nose while coughing and sneezing, Arogya Setu app should be downloaded and all must report about their health status (in case of illness) to state and district helpline.[6] Several studies have also suggested the extensive, genuine and compulsory make use of face mask in crowdie places like in, restaurants, grocery stores and other public

places to prevent the transmission of the pandemic, slowing the spread of COVID 19 and to avoid from further infections.[1,5,7]

A survey of 2,459 people residing in the US has found that, Men don't like to put on face masks as they think face is covered by people who are week or feel shame. Wearing Face masks alters some person's communicative ability along with reduces the auditory information received by the sender. As the interruption of lip-reading, which is a critical optical signal, produce message more demanding because more intellectual efforts are required to understand the speech of others, particularly in strident places. As a result, still if a person listens eagerly, the face masks blocks reading lips, which diminishes communication[10]. Face mask is simple cost-effective way of reducing.[12]

According to the researcher's observation, people were not maintaining mask hygiene; many people came in various health institutions such as wearing loose mask and dirty mask, not fitted properly on their face, repeated touching face under mask, removing their mask while talking.[13] Despite the widespread provision of information on how to protect ourselves and stop the spread of COVID-19, many people ignore the latest recommendations and failing to wear face coverings in public.[14] So it is very necessary to find out the practices regarding mask hygiene and what all are the difficulties people are facing while using mask in COVID pandemic. A cross sectional descriptive research conducted in Hong Kong during a nonepidemic state between January and February 2017, to assess the practice and technique of using face mask on 1500 adults and was enlist by quota sampling technique. Observation checklist is used to assess 12 steps of technique in using face mask. Results found that 90% of the samples had not done hand hygiene before wearing on (91.5%), taking off (97.3%), or after disposing (91.5%) face mask.[20, 25]

II. NEED OF THE STUDY

The COVID-19 pandemic brought unprecedented changes to daily life, including the widespread use of face masks as a crucial public health measure to prevent virus transmission. While face masks proved effective in reducing the spread of infection, their proper use and maintenance posed significant challenges. Incorrect mask hygiene practices, such as prolonged use without replacement, improper disposal, and lack of cleaning in reusable masks, not only reduced their effectiveness but also increased the risk of secondary infections.

Moreover, individuals faced various difficulties in using face masks, including discomfort, skin irritation, breathing difficulties, and communication barriers. These challenges further impacted compliance and highlighted the need for awareness regarding proper mask hygiene practices.

This study aims to explore mask hygiene practices and the difficulties faced during the pandemic to identify gaps in knowledge and behavior. Understanding these aspects will help inform strategies to promote proper mask usage, enhance user comfort, and improve preparedness for future health emergencies.

III. RESEARCH METHODOLOGY

The methodology section outline the plan and method that how the study is conducted. This includes Universe of the study, sample of the study, Data and Sources of Data, study's variables and analytical framework. The details are as follows;

3.1Population and Sample

In present study quantitative approach with descriptive cross sectional study design is used to assess the mask hygiene practices, and difficulties while wearing face mask. The research variables included were general data about mask usage, clinical data, Mask hygiene practices, and Difficulties faced while using mask. The Demographic variables included were age, gender, education, occupation, religion and socioeconomic status. The target population were Adults of Khurda district And the Accessible population Adults of Khurda district present in CHC Mendasal and UPHC Nayapali at the time of data collection. The present study was conducted in CHC Mendasal is one of the public health care centres in Khorda, Odisha. UPHC Nayapalli – UPHC is different from conventional rural PHC in terms of size, functions and facilities. UPHC Nayapalli is situated at the centre of the city. It covers approx 49000 population. Per day approx 50 patients came in UPHC. The total sample size calculated using convenience sampling was 306, 139 from CHC Mendasal and 139 from UPHC Nayapalli.

3.2 Data and Sources of Data

The MHP **(mask hygiene practice)** tool was constructed by the researcher to assess the mask hygiene practices. This section presents data regarding mask hygiene practices. These practices are further categorized into 3 sections, which are as follows: hand washing practices among mask wearers, healthy mask hygiene.

The DFM **(Difficulties faced on use of face mask)** tool is developed by the researcher to assess difficulties of the participants while wearing face mask. This DFM tool consists of 13 items which shows the various difficulties encountered by the participants while wearing mask. The three point responses included in this tool were Always, Sometimes, and Never. The self-constructed tool has validity of 93%.

3.3 Theoretical framework

Administration approval was obtained from Principal, College of Nursing for conducting the study. Ethical approval was obtained from institutional ethical committee, Reference number: IEC/AIIMS BBSR/Nursing/2020 – 21/03 and from the CMO of CHC Mendhasala and UPHC Nayapalli. Participants were informed regarding study through participant information sheet, informed consent was obtain from the participants, Anonymity and confidentiality was maintained by the researcher.

3.4Statistical tools and econometric models

Collected data of 306 subjects was analysed according to the objectives of the study using descriptive statistics by using SPSS-16. Data was analysed using descriptive statistics such as frequency, percentage, mean and standard deviation.

IV. RESULTS AND DISCUSSION

Table 1- Frequency distribution of demographic data of adults

n=306

Sno	CRITERIA	RESPONSES		
1	Age in years (Mean ± S.D)	**f**	(Mean ± S.D) 35.02± 8.64	**%**
2	Gender	Male	209	68.3
		Female	97	31.7
3	Education	Primary	6	2.0
		Higher secondary	18	5.9
		Diploma	15	4.9
		Graduation	177	57.8
		PG	81	26.5
		PhD	9	2.9
4	Occupation	Govt service	43	14.1
		Private	82	26.8
		Business	36	11.8
		Students	65	21.2
		Housewife	57	18.6
		Unemployed	5	3.5

		Driver	14	10.7
		Social worker	04	2.8
5	Religion	Hindu	276	90.2
		Muslim	30	9.8
6	Socioeconomic status	APL	165	53.9
		BPL	141	46.1

Data presented in table 1, shows that the mean age of subjects is 35.02± 8.64.

There were 68.3% males and 31.7% females. Most (57.8%) of the subjects were degree holder whereas only 2.0 % have completed primary education only. Most 26.8% of the subjects involved in private job, 21.2% were students and only 3.5% were unemployed. Majority 53.9% of the subjects were above poverty line and 46.1% were below poverty line. Most 90.2% were Hindu and 9.8% were Muslim.

Section 2 - Frequency and percentage distribution of subjects on clinical data

In this section, frequency distribution of adults on clinical data is presented. It includes participants with history of any respiratory and cardiac illness. It is represented by bar graph.

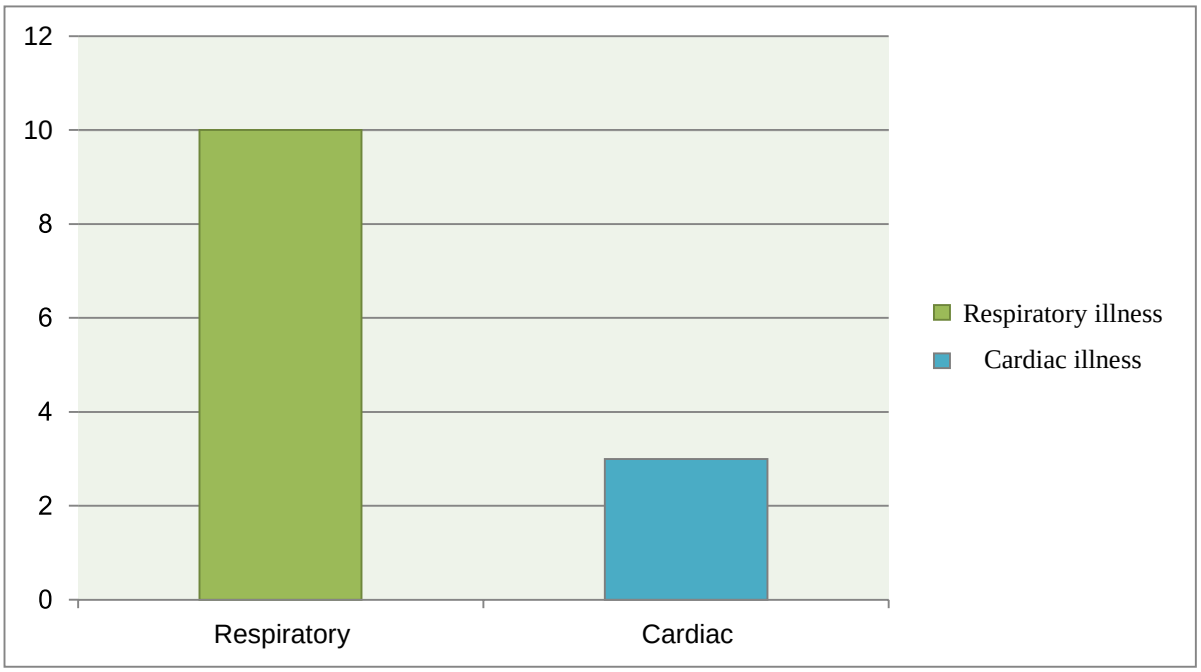

Figure 1- Bar graph showing clinical data of adults

Data presented in figure 1, shows the history of respiratory and cardiac illness. Only 3 participants were having cardiac illness whereas 10 participants were having respiratory illness.

Table 2-Frequency and percentage distribution of subjects on data about mask usage

(n=306)

S.NO	CRITERIA	RESPONSES		
1	Mask usage outside of the house.	Yes	**f** 306	**%** 100
2	Received	Yes	302	98.7
	information how	No	04	1.3
	to use mask.			
3	Source of	T.V	208	68.8
	information	Newspaper	37	12.2
	(n=302)	Social media	49	16.2
		Others(parents ,Relative and friends)	08	2.64
4	Total number of masks person	Mean± SD	3±1.6	
	have			
5	Frequency of	Daily	192	62.7
	changing face	Within 2 days	90	29.4
	mask.	Weekly	18	5.9
		Never	06	2.0
6	Storage of mask.	Hanged on wall	138	45.1
		Behind door	32	10.5
		Bathroom	26	8.5
		On the table	64	20.9
		Almirah	11	3.5
		Any	35	11.4
		Other (polythene,pocket,rack,bed,bag,purse)		

According to table no. 2, 100% participants are using mask when they go out of their houses. 98.7% participants are having information that how to use a mask. Television (68.8%) is the main source of information. 62.7% participants changes their mask daily. Most of the participants (45.1%) hang the mask on wall when not in used. Type of mask used by participants is depicted in figure 3.

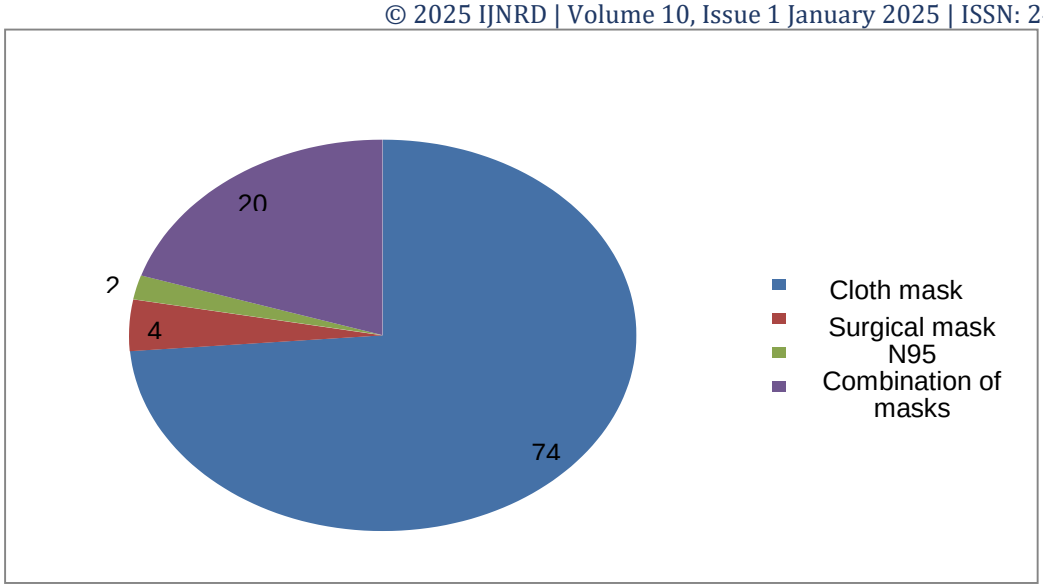

Figure 2 – pie diagram showing type of mask used by participants

According to figure 4, majority (74%) of participants are using only cloth mask whereas 20% participants are using combination of masks in their daily use.

Table 3-Hand washing practices among mask wearers

(n = 306)

	STATEMENT	Always		Very often		Sometimes		Rarely		Never	
		f	%	f	%	f	%	f	%	f	%
1	Washed hands for 20 seconds with soap and water before wearing the mask.	133	43.5	28	9.2	86	28.1	27	8.8	32	10.5
2	Usage of hand sanitizer instead of hand washing before wearing the mask.	70	22.9	36	11.8	88	28.8	32	10.5	80	26.1
3	Handwashing/sanitizing done after touching the mask in between.	14	4.5	12	3.9	62	20.2	29	9.5	189	61.7
4	Hand washing/sanitizing done after removing the mask.	15	4.9	20	6.5	22	7.1	33	10.7	216	70.5

Table 3 shows, Majority of 43.5% participants always washed hands before wearing the mask on the other hand 10.5% participants do not. Participants preferred hand washing over hand sanitizer. Maximum (61.7%) participants don't do hand wash after touching the mask in between. 70.5% participants don't do hand wash after removing the mask, only 4.9% participants wash their hands after removing the mask.

Table 4-Healthy mask hygiene practices among adults

n= 306

Sno	STATEMENT	Always		Very often		Sometimes		Rarely		Never	
		f	%	f	%	f	%	f	%	f	%
1.	Usage of fresh mask.	150	49.0	10	3.3	100	32.7	14	4.6	32	10.5
2.	Proper attachment of mask over face	143	46.7	10	3.3	75	24.5	20	6.5	58	19.0
3.	Wash mask with detergent	203	66.3	13	4.2	55	18.0	11	3.6	24	7.8
4.	Take off the mask by ear loop.	225	73.5	08	2.6	30	9.8	09	2.9	34	11.1
5.	After washing, drying mask in sunlight	239	78.1	11	3.6	18	5.9	09	2.9	29	9.5
6.	Do not remove mask while coughing/sneezing	130	42.5	14	4.6	62	20.3	29	9.5	71	23.2

Table 4.2 shows that 49% participants are using fresh mask daily, 46.7% participants are having proper attachment of mask over face, 66.3% are washing their mask with detergent. Mostly 73.5% participants take off their mask by ear loop and 78% participants dry their mask in sunlight. Mostly 42.5% participants do not remove the mask at the time of coughing and sneezing.

Table 5-Unhealthy mask hygiene practices among adults

(n=306)

Sno	Statement	Responses									
		Always		Very often		Sometimes		Rarely		Never	
		f	%	f	%	f	%	f	%	f	%
1	Putting the mask around their neck	52	16.9	9	2.9	110	35.9	26	8.5	109	37.6
2	Putting the mask on the forehead	26	8.49	13	4.2	83	27.1	24	7.8	160	52.2
3	Frequently touching the mask at the centre when in use	45	14.7	13	4.2	115	37.5	19	6.2	114	73.3
4	Removing the mask while talking to someone	41	13.4	16	5.2	97	31.7	11	3.6	141	46.0

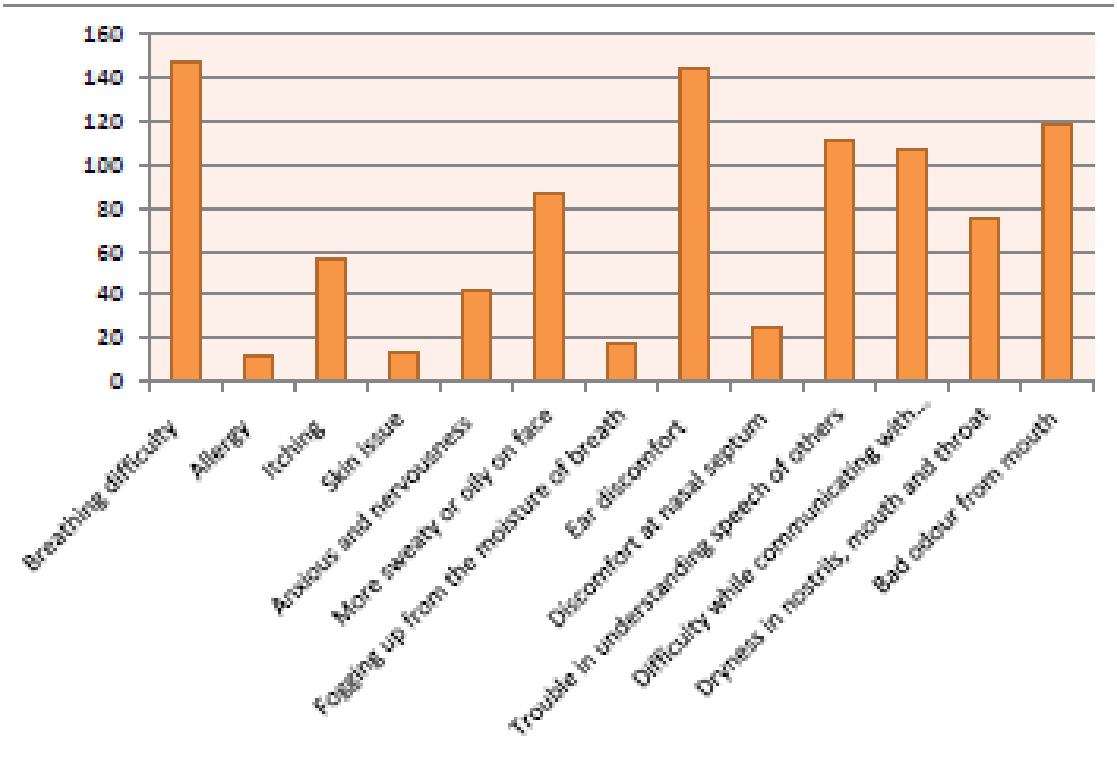

Figure 3- Bar graph showing difficulties faced while using mask

4.1 Discussion

In the present study, age of the participants, gender, education, occupation, religion and socioeconomic status was used as a demographic variable. This coincides with a study conducted in Uttar Pradesh India. The-demographic variables included in this study were age, gender, occupation, education, domicile, area of residence and religion.[28]

This study have similar sample characteristics with respect to age and education as earlier study of china in which average age of subjects were 33 years and 82.4% were having associate degree and higher.[20] In present study average age was 39 years and majority 57.8% were graduate and above. In the

own study 90.2% of the participants are Hindu, although a previous study reported approx 87% Hindu participants.[28]

In present study main source of information 68.8% was television and 16.2% social media similarly the study done in Andhra Pradesh India shows the main source for information is television only (74.5%) and for social media it is 71%.[29] Television is the oldest and trustworthy form of communication, so people rely on the information which is convey from the television rather than the social media. China reported that nearly all subjects (98%) wore mask when going out of their houses in recent days. [7] similarly in present study 100% people are wearing mask when they go out of their houses. It shows that people are adhering to the government guidelines issued during COVID 19 pandemic.

Mainland China reported that most people are using surgical mask,[7] While fabric masks was found to be the mostly used mask among the adults in Khordha in the own study. These differences could be due to economic reasons.

The findings of the study showed that 71.4% were always wash their hands before putting the mask. 62.8% were always wash their hands after taking off the mask, 46.7% were having a proper attachment with mask, similarly the study in Andra-pradesh India shows that 98.2% do hand wash before wearing mask.[29] Whereas the study done in Hongkong showed that more than 90% of the subjects did not perform hand hygiene before wearing mask and 97.35 are respondents not washing their hands after taking off the mask. 24.9% subjects have chosen oversized or undersized face mask.[7] because this studies done before COVID 19 pandemic, so it may be the reason of non-compliance of responders with the mask hygiene practices.

According to present study 64.4% agree that wearing mask for longer hours is uncomfortable similarly 85.7% participants in United States agreed that wearing mask is uncomfortable.[12]

This cross sectional study found that majority of adults are facing some difficulties while wearing mask, these difficulties are breathing difficulties, itching , ear discomfort, communication problem, oily on face .Similarly in other study, the physical challenges of mask wearing were found to be hearing difficulty and glasses fogging up.[26]

In present study 48.3% were reported difficulty breathing while using mask. Whereas study done in Gujarat India showed that 98% of health care professional and 97% of the general public identified dyspnea due to use of face mask.[30]

Present study showed that 18.6% were always feel itch after prolong usage of mask similarly previous study showed that almost 20% always reported itch after prolong usage of the mask.[24]

Based on the assessment of the research, more subjects can be included in the study. Health teaching program could be organized in the community to create awareness regarding mask hygiene practices. For further study the association between demographic variables and factor affecting mask hygiene practices and difficulties can be find out. Comparison between mask hygiene practices and difficulties of urban and rural community can be found out. Correlation between mask hygiene practices and difficulties regarding use of mask can be find out.

V. CONCLUSION

In the present study data was collected from the adults of 18 to 60 years of age. Most of them are highly educated and maximum of adults are Hindus. Fabric mask is used by most of the adults and maintained mask hygiene. Most of the participants are washing their hands before wearing a mask but the percentage of washing hands after removing the mask is very less. Common difficulties reported were breathing difficulty, ear discomfort and communication problem with the use of mask.

Present study shows that people have knowledge about mask hygiene practices but in actual scenario they are not maintaining it. Continuous awareness programme is necessary to motivate them. Physical challenges encountered affects the mask wearing practices of adults.

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