

**COMPLICATION OF FREQUENT USE OF HAND SANITIZER IN
COVID PANDEMIC- A PROSPECTIVE STUDY**

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Article Received on
18 March 2022,

Revised on 08 April 2022,
Accepted on 28 April 2022

DOI: 10.20959/wjpr20225-23974

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ABSTRACT

During the Coronavirus pandemic, counteraction is the way to restricting the spread of the sickness. The successive handwashing and utilization of sanitizers brought about prominent skin changes among some. During the ongoing COVID-19 pandemic, anticipation is the way to restricting the spread among people. In the uninteresting of the present life, a hand sanitizer is a simple and incredibly practical choice to hand washing. In any case, triclosan, a typical dynamic fixing found close by sanitizers that is advantageous in killing organisms found on hands, may likewise prompt the improvement of resistance in microorganisms. There are opposite symptoms of hand sanitizers as well. The alcohol content and other microbes killing ingredients can

cause skin sensitivity. Tingling or a burning sensation on hands. Hand sanitizers can likewise dry out upper skin layers, making it strip. One more perilous synthetic found close by sanitizer when consumed or utilized inappropriately is 1-propanol. This fixing is a sort of alcohol used to make cleaners, and can be harmful to people whenever gulped. Aftereffects incorporate diminished breathing and pulse - and even passing. It can likewise aggravate skin or eyes, whenever uncovered. It is found that recurrence use of hand sanitizer has no connection with Coronavirus status. The individual will be positive in future, which doesn't have anything to do with recurrence of utilization of hand sanitizer. Females are at more gamble for the complication of hand sanitizer. From the gathered 50 information, 20 subjects

confronted the intricacies of hand sanitizer. Since, testosterone excitement causes an expansion in skin thickness, which represents why a man's skin is around 25% thicker than a lady. The article further plunges into an examination between hand sanitizers and soap to give pros and cons of the utilization of soap against the utilization of hand sanitizers. One of the points of the article is to concentrate on the symptoms of sanitizers in order to foster a wary methodology while utilizing hand sanitizers and accordingly a thorough rundown of results of the utilization of hand sanitizers is given.

KEYWORDS: Covid-19, hand sanitizer, alcohol-based hand sanitizer, flaking, erythema, depigmentation, pain, cracking of epidermis.

INTRODUCTION

The Covid affliction 2019(COVID-19) is a pandemic infection which is accelerated through SARS-CoV-2 and its freaks which principally results respiratory framework.^[16] Researchers previously perceived a human Covid in 1965. It achieved a typical virus. Soon thereafter, specialists found a group of tantamount human and creature infections and named them after their crown-like appearance. Seven Covies can taint people. On 31 December 2019, WHO used to be educated regarding examples of pneumonia of obscure reason in Wuhan City, China. A novel Covid was perceived as the explanation by Chinese experts on 7 January 2020 and used to be immediately named "2019-nCoV". It is a still up in the air and unfurl from Wuhan, China. On walk eleven 2020, WHO proclaimed COVID-19 as pandemic.^[7] Coronavirus Patients might be suggestive like presence compromising respiratory side effects, moderate or normal signs like fever, dry hack, body throb and so forth or asymptomatic.^[14] For undesirable people or matured have high danger of mortality.^[7] More seasoned people and those with fundamental ailments like cardiovascular infection, diabetes, constant respiratory sickness, or most malignant growths are more prominent no doubt to increment significant disease. Anybody can get unwell with COVID-19 and become fundamentally debilitated or bite the dust at whatever stage in life. SARS-CoV-2 spreads from one human to another.^[7] The infection can spread from a polluted individual's mouth or nostril in little fluid particles when they hack, snuffle, talk, sing or relax. These particles range from bigger respiratory beads to more modest sprayers. It is important to practice respiratory manners, for instance through hacking into a flexed elbow, and to remain homegrown and hole up till improve if feel unwell. No particular medication is except for found towards COVID yet immunizations are really evolved towards COVID. WHO directed restorative

lifestyle with appropriate insusceptible device as a preventive proportion of occurrence of COVID.^[15] The remarkable method for forestalling and slow down transmission is to be appropriately educated about the confusion and how the infection spreads. Shield ourself as well as other people from tainting by remaining somewhere around 1 meter from others, conveying an appropriate equipped veil, and washing hands or the utilization of a liquor based rub much of the time. Receive an immunization shot when it's our move and notice neighborhood direction. CDC suggests washing of hands with water and cleanser for least of 20 seconds and donning facial coverings for halting the spreading of COVID.^[1]

Hand sanitizer, can also be known as hand rub and hand clean, which are the advertisers applied to the hand surface by utilizing the expectation of disposing of regular microbes. There are innumerable types of hand sanitizer accessible in market like fluid structure, gel, and froth. In a condition had been cleaning cleanser and water are available for washing of hand or rehashed hand washing may furthermore compromises regular skin hindrance, the usage of hand sanitizer is supported.^[22] Individuals for the most part centers around hand sanitizer than cleanser for keeping up with hand cleanliness.^[3] Achievement charge of hand sterilization stick to the utilization of hand sanitizer which is planned in various sorts and assortments like liquor based absolutely or water-based hand sanitizer, antimicrobial cleansers.^[2]

As per U.S.FDA hand sanitizer is seen and managed underneath over-the-counter cases.^[4] Various kinds of hand sanitizers are overall formed depending on dynamic fixing consolidated. Thus, hand sanitizer can be ordinarily classified into two sorts: liquor free hand sanitizer and liquor based hand sanitizer. Liquor based absolutely hand sanitizer join 60-95% of liquor, as n propanol or isopropanol, ethanol. Liquor free item are fundamentally sanitizers like benzalkonium chloride and triclosan, which is an antimicrobial specialist. A portion of the hand sanitizer may furthermore incorporate emollient like glycerin, which is presented as a soothing specialist, aroma and thickening specialists.^[22]

Hand sanitizer has happen itself practical in microbe death, yet its use may also confer viewpoint results.^[5] Cleaning synthetic substances while washing can infiltrate the epidermis of hand and will go into the respiratory device.^[12] Isopropyl has unreasonable sub-atomic weight when interestingly, with the ethanol thus demonstrates outrageous inconvenience than ethanol.^[15] Focal troubled framework, respiratory melancholy, sickness, pores and skin and mucous film contamination were bestowed through ethanol and isopropanol.^[15] Hand

sanitizer can aggravate skin, reason dermatitis, skin jumble, depigmentation, chipping, erythema and so forth.^[1]

Dermal contact with ethyl liquor can likewise intention sensitivities, pores and skin aggravation and eye disturbance. While tingling, redness, skin dryness, break could likewise be set off through expanded usage of ethanol-based hand sanitizer.^[8] Contact dermatitis and aggravation of skin has been accounted for. Constant utilization of ethanol may likewise prompt better combination of glyoxyuronic corrosive and influences its consideration in the body. 160-250 ml of isopropyl liquor is articulated as deadly portion. On effective utility it can create circumstance like obviousness. CH_3CO is the metabolic result of isopropanol which causes extensive term despairing of focal scared framework. Gastritis, ketosis, hypoglycemia, irritation to gastrointestinal mucosal coating, respiratory despondency, extended serum creatinine, are the said feature outcomes of isopropyl liquor.

Bothering of pores and skin is accounted for because of the assimilation of isopropyl liquor through skin. Incessant openness may moreover reason dryness, rash, tingling redness.^[7]

Hazard of getting dermatitis is extended because of the traditional utilization of hand sanitizer.^[1] Hazard of hand dermatitis is reached out because of the normal openness or contact with the aggravations. Development of rankles, dryness, redness and breaks are much of the time seen. so it is essential to utilize a hand cream after the use of sanitizer, where lotion may likewise contain mineral oil which act contrary to dermatitis.^[1]

METHODOLOGY

Study design

The research data on the topic of interest was collected by prospective study. A prospective study watches for outcomes, such as the development of a disease, during the study period and relates this to other factors such as suspected risk or protection factors.

Study Setting and Study population

Our site of study was community set up so we five members each one collected 160 data from different populations. We conducted the study in campus and hostel of Jamia Salafiya Pharmacy College, Pulikkal, Malappuram, Manjery, Vadakara and Balussery. Total will get 800 data from which only 50 subjects will have reported signs and symptoms associated with complications of hand sanitizers.

Data collection tool

Data are collected by interviewing the people after collecting their consent. Interviewing methods are person-to-person interview (Is a data collection method where the researcher is in the same location as the participant and asks questions to which the participants respond) and telephonic interview (Is a data collection method when the interviewer communicates with the respondent on the telephone in accordance with the prepared questionnaire). The collected variables are patient demographics (Name, age, sex), complications of hand sanitizer, frequency of usage, whether patient has been tested covid positive or negative, composition of hand sanitizer, medication taken for complications.

We systematically reviewed the available literature in PubMed, Google scholar, Science directs up to 2022. The search terms we used are hand sanitizer, compositions and complications. A manual search was also performed.

Inclusion criteria

1. Individuals of all age groups
2. People of both sex (Male & Female)
3. People irrespective of Covid status
4. Patient who was willing to participate

Exclusion criteria

1. Patients already have skin problems (psoriasis, eczema, scabies etc.) are not included in this study
2. Drug induced skin problem
3. Genetically determined skin problems.

RESULT AND DISCUSSION

Table 1: Gender v/s frequency of complication.

Sl. No.	Gender	Frequency of complications
1	Male	20
2	Female	30

From table 1.1, it is clear that females are at more risk for the complications of hand sanitizer. From the collected 50 data, 20 males faced the complications of hand sanitizer. Because, testosterone stimulation causes an increase in skin thickness, which accounts for why a man's

skin is about 25% thicker than a woman. Generally, women and men lead different life style. while considering the fact that the women do majority of dishes and laundry, makes their palm skin thinner.^[20] Sex hormone highly influences sebum content in male.^[20] Pores (tiny openings) in men are larger and more prominent than women due to active sebaceous gland.so, men skin shows more oiler and shinier than female. In male, collagen reduces at steady rate while the female skin gets affected especially after menopause. Amount of lactic acid is higher in male when compared to female, so male skin appears to be more hydrated than female skin and lower pH level than women.

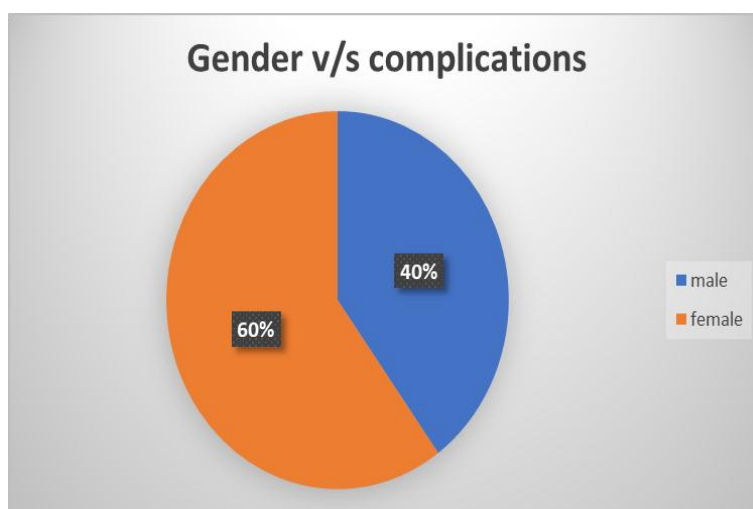


Chart 1: Gender v/s complication.

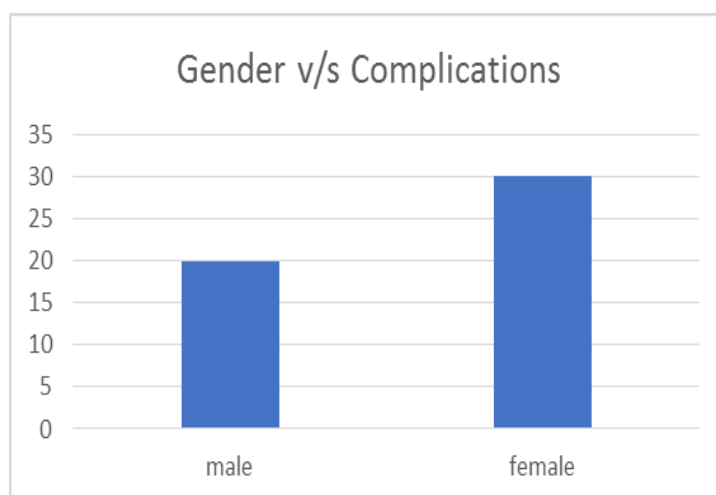


Table 2: Symptoms v/s frequency of occurrence.

Sl. no.	Signs and symptoms observed	Frequency of occurrence
1	Flaking	14
2	Pain	18
3	Dryness of hand	16

4	Cracking of epidermis	8
5	Erythema	8
6	Depigmentation	5
7	headache, dizziness, vomiting	1

From table 2, most commonly occurring signs and symptoms in people associated with frequent use of hand sanitizer are dryness of hand, flaking with associated pain. The least commonly occurring is headache. This can be correlated with the frequency of uses.

Tab 3: Symptoms v/s frequency.

Sl. no.	Signs and Symptoms	Frequency of usage
1	Flaking, Pain	5 times/day
2	Excess dryness, cracking of epidermis, pain	6 times/day
3	Flaking	6 times/day
4	Erythema	4 times/day
5	Depigmentation	7 times/day
6	Dryness of skin	3 times/day
7	Dryness of skin	3 times/day
8	Cracking of epidermis, Pain	5 times/day
9	Depigmentation	8 times/day
10	Flaking, Erythema	5 times/day
11	Nausea, Vomiting, Dizziness	12 times /day
12	Dryness of skin	3 times /day
13	Dryness of skin	5 times /day
14	Excess dryness, pain	6 times /day
15	Erythema	4 times /day
16	Cracking of epidermis, pain	4 times /day
17	Excess dryness	5 times /day
18	Flaking, Pain	7 times /day
19	Flaking	5 times /day
20	Dryness of skin	3 times /day
21	Redness	3 times/ day
22	Flaking, Pain	5 times/ day
23	Excess dryness, cracking of epidermis, pain	6 times/ day
24	Dryness of skin	3 times/day
25	Depigmentation	5 times/ day
26	Depigmentation	8 times/ day
27	Flaking, Erythema	5 times/ day
28	Depigmentation	7times/ day
29	Erythema	4 times/day
30	Flaking	6 times/day
31	Flaking	5 times/day
32	Depigmentation	6 times/day
33	Cracking of epidermis, pain	7 times/day
34	Dryness of skin	4 times/day
35	Erythema	4 times/day
36	Flaking, pain	7 times/day

37	Dryness of skin	5 times/day
38	Depigmentation	6 times/day
39	Dryness of hand, pain	5 times/day
40	Flaking, pain	4 times/day
41	Flaking, Erythema	5 times/day
42	Dryness of skin	6 times/day
43	Dryness	4 times/day
44	Cracking, pain	7 times/day
45	Excess dryness	6 times/day
46	Dryness	3 times/day
47	Flaking, pain	6 times/day
48	Erythema	4 times/day
49	Flaking, pain	5 times/day
50	Excessive Dryness	7 times/day

The clinical manifestation associated with increased frequency of usage is nausea and vomiting. In our study, out of 50 subjects 30 of them are using hand sanitizer in a frequency of 3-5 times/day and the signs and symptoms were found to be dryness, flaking, erythema, pain, cracking of epidermis. 19 of them are using sanitizer in a frequency of 6-8 times/day and the signs and symptoms were found to be depigmentation, flaking, pain. Out of 50 subjects only one individual is following hand sanitizer in a frequency of 9-12 times/day and the signs and symptom was found to be nausea, vomiting and dizziness.

Table 4: Symptoms v/s Standard deviation.

Sl. no.	Sign and Symptoms observed	Standard deviation
1	Flaking	1.6329
2	Pain	3.2659
3	Dryness of hand	2.449
4	Cracking of epidermis	0.8164
5	Erythema	0.8164
6	Depigmentation	2.0412
7	Headache, dizziness, vomiting	3.6742

From the standard deviation data, low standard deviation data 0.8164 (cracking of epidermis and erythema) indicates that the value tends to be close to the mean of the set, while high standard deviation 3.6742 (headache, dizziness, vomiting) indicates that the values are spread out over a wide range. From this, cracking of epidermis and erythema seems to occur more frequent among the reported complications. While, headache, dizziness and vomiting seem to be occurred less frequent.

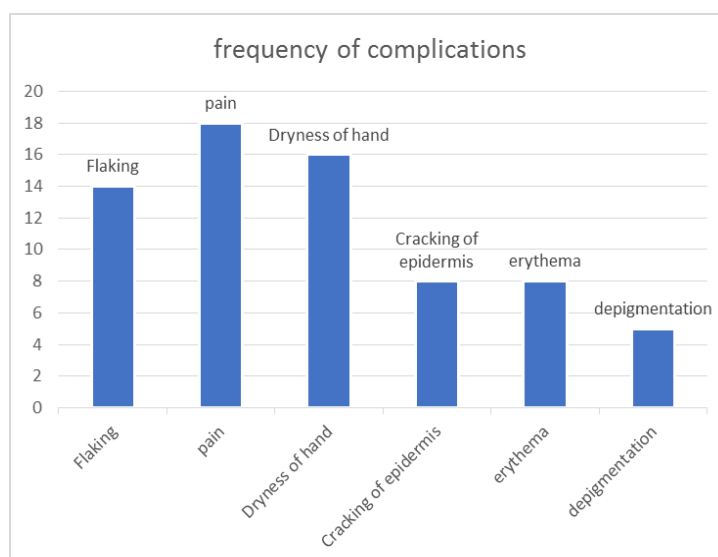
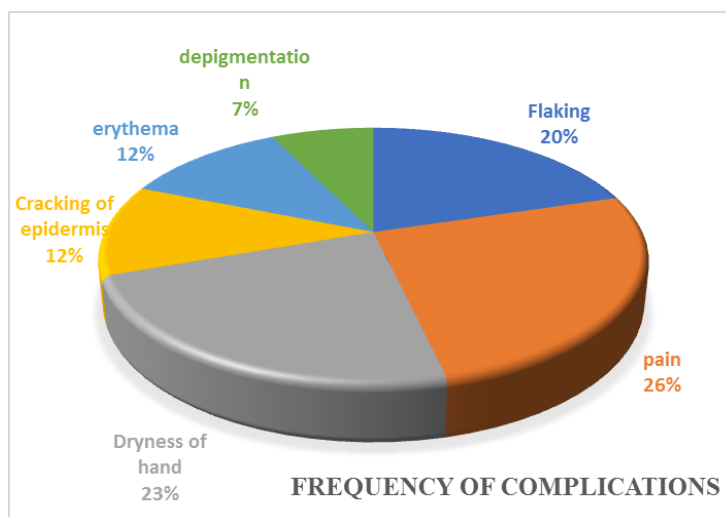


Table 5: Frequency v/s covid status.

Sl. no.	Frequency of usage (times/day)	Covid status (positive/negative)	Sl. no.	Frequency of usage (times/day)	Covid status (positive/negative)
1	5 times/day	+	21	3 times/ day	-
2	6 times/day	-	22	5 times/day	-
3	6 times/day	-	23	6 times/day	-
4	4 times/day	+	24	3 times/day	+
5	7 times/day	-	25	5 times/day	-
6	3 times/day	-	26	8 times/day	+
7	3 times/day	+	27	5 times/day	-
8	5 times/day	+	28	7 times/day	+
9	8 times/day	-	29	6 times/day	-
10	5 times/day	-	30	4 times/day	+
11	12 times/day	+	31	5 times/day	-
12	3 times/day	+	32	6 times/day	+
13	5 times/day	-	33	4 times/day	-

14	6 times/day	-	34	4 times/day	-
15	4 times/day	+	35	6 times/day	+
16	4 times/day	+	36	7 times/day	+
17	5 times/day	-	37	3 times/day	-
18	7 times/day	-	38	5 times/day	-
19	5 times/day	-	39	4 times/day	+
20	3 times/day	+	40	6 times/day	+
41	5 times/day	-	46	7 times/day	-
42	6 times/day	-	47	5 times/day	-
43	7 times/day	-	48	6 times/day	-
44	4 times/day	-	49	5 times/day	-
45	4 times/day	-	50	4 times/day	-

From the above table, it is found that frequent usage of hand sanitizer has no correlation with covid status. The subject using in a frequency of 12 times/day was covid positive, while those using in a frequency of 3 times/day was found to be Covid negative. So, we cannot generalize that the increased frequency of usage of hand sanitizer alone cannot prevent occurrence of covid. The person will be positive in future, which has nothing to do with frequency of usage of hand sanitizer.

CONCLUSION

We concluded from the potential learn about that performed amongst the people at the pandemic situation. We comprehend that pores and skin changes are frequent among the people. Here problem dealing with the unfavorable effect of hand sanitizers, Covid 19 is big danger to the international health. The spreading of sickness can be prevented with the aid of the usage of hand sanitizer. Hand sanitizers come with certain aspect consequences that can affect your skin and more. They are a critical tool in the combat in opposition to the spread of COVID-19 however now not barring issues of their own. Since it is pretty tedious to wash your hand with soap and water frequently and even carrying cleaning soap and water is now not portable, as a result we decide upon hand sanitizer. Hand sanitizers has confirmed itself useful in killing germs, but using it can have observed many sides effect. Hand sanitizers are two types; one is alcohol based totally and nonalcohol based. Adverse impact more often than not noticed in the everyday usage of hand sanitizers that is dry, cracked pores and skin as well as redness or discoloration, and flaking. It can reason a risk upon ingestion and contact with mucosal layer of eye. The cases of adverse impact are growing because of the overuse of hand sanitizers. Because after the outbreak of COVID-19 in December 2019 usage of hand sanitizer were recommended by using WHO as a preventive measure to control this pandemic, which leads to exponentially improved

utilization of alcohol-based hand sanitizers as hand hygiene. The type of side impact related with the hand sanitizer is attributed to the composition of hand sanitizer. Effective Hand sanitizer incorporates a excessive quantity of alcohol (between 60 and ninety five %) that help to kill germs on your hands. Even if the alcohol content is low, your hand sanitizer can also also incorporate different antiseptic elements that have been acknowledged to reason facet effects. Also, alcohol led to damages the skin with the aid of denaturation of proteins of stratum. "Alcohol induces quite a number cutaneous changes, such as palmar erythema and jaundice. However, alcohol-induced skin hyperpigmentation due to melanin deposition has now not been reported. Aldehyde dehydrogenase 2 (ALDH2), one of 19 human ALDH isozymes, metabolizes endogenous and exogenous aldehydes to their respective carboxylic acids. Reduced ALDH2 considerably influences acetaldehyde metabolism, leading to its accumulation in the physique after the consumption of alcohol and the consequent development of a huge vary of phenotypes". These side effects can be decrease by the usage of chosen fewer stressful products, decreasing pores and skin irritation, use of moisturizing pores and skin products. Give recognition and perfect exercise which assist stop the pores and skin adjustments by way of the use of hand sanitizers, in the main due to the fact of dermatitis is easily preventable and manageable, with everyday hydration of the skin. In our find out about no specific medicinal drug is taken by subjects different than moisturizer and cessation of utilization of hand sanitizer after the incidence of signs and signs of complication. Also, give education to the public about using over-the-counter medications. Sanitizer also gives a disagreeable aspect effect of using hand sanitizer every day and additionally referred to that 'we have to stability the benefit of sanitizer for preventing ailment transmission and their manageable misuse stays a challenge'. Use hand sanitizers in suited manner that is Put enough sanitizer on your arms to cover all surfaces. and rub your fingers collectively until they sense dry (this ought to take round 20 seconds). Do not rinse or wipe off the hand sanitizer before it's dry; it can also not work well towards germs.

Based on the study, we recommend that to observe covid protocols like ideal sporting of mask, comply with social distancing, do take your vaccine at your turn alongside with suitable application of hand sanitizer or hand washing, in order to prevent the incidence of covid-19. Use moisturizer after the utility of alcohol-based hand sanitizer in order to limit the dermatological complications. Try to wear gloves as a substitute of the usage of hand sanitizer often

Limitations

- There are some limitations to the study. Firstly, only face to face and telephonic interview was conducted, with no dermatologist confirming the diagnosis.
- All the symptoms were self-reported; therefore, the chance of recall bias cannot be excluded.
- To improve the outcome of the study physician intervention is important along with patient consent.

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