

TO STUDY AN AWARENESS, EFFECTIVENESS AND PREFERENCE OF CONSUMERS TOWARD VARIOUS TYPES OF HAND SANITIZER USED DURING COVID-19**N. R. Joshi¹ and K. Parmar²**¹Faculty of Management Studies, Ganpat University, Kherava, Mehasana, Gujarat, India²Faculty of Management Studies, Ganpat University, MBA-(Pharmaceuticals)¹nrj01@ganpatuniversity.ac.in, ²kunjalparmar19@gnu.ac.in**ABSTRACT**

Purpose/Objective – The purpose of this paper is to better understand the effectiveness, awareness and preference of hand sanitizer during COVID-19. **Design/methodology/approach** – A between-subjects experiment is conducted among 250 consumers who are using hand sanitizer during COVID-19. Conclusive research design was used. In single cross-section designs, only one sample of the respondent is taken and information is obtained from this sample only once. To gain the specific required data the survey was conducted through the structured questionnaire. Independent T test is carried out to measure effectiveness, awareness and preference of hand sanitizer during COVID-19. **Research Findings** – From the research, 86.4% of respondents were had awareness about the hand sanitizer during the COVID-19 pandemic. There is a significant difference between strongly effective against bacteria, virus, mild spore, corona virus, fungus and awareness about various types of hand sanitizer used for COVID-19. From the research, 100% use to prefer the hand sanitizer during the COVID-19 pandemic. There is a significant difference between strongly effective against bacteria, virus, corona virus, fungus and preference about various types of hand sanitizer used for COVID-19. **Research implications** – People with the age group of 30-35 and more than 35 are rarely using the hand sanitizer or do not prefer to use hand sanitizer during this pandemic. So pharmaceutical company can target the people fall in this age group, by explaining and creating the awareness about the hand sanitizer.

Keywords: Hand sanitizer, COVID-19 pandemic, effectiveness, awareness and preference of hand sanitizer.

Introduction

Corona virus disease-19 is major challenging time for the survival of the human being. As the COVID-19 has been spread all over the world and due to its high spreading efficiency human are mentally disturbed. Corona virus can cause the severe cold with the fever and sore throat. It also causes the pneumonia and bronchitis. It has two strains, which on combination makes seven strains of human corona virus. The covid-19 strain which spreading now a days is found to be the new sub strain of the beta corona with the 70% genetic material of the SARS-CoV. It is said to be having the 96% of the similarity of the bat. The pandemic have resulted in the lockdown worldwide. It is because continuous many individuals have low immunity may suffer from the common cold because of the consumption of the beverages. And because of common cold the individual may have the chance of getting infected from the corona virus. In many countries it is said that corona virus is highly spreaded or is highly active during the winter. And some the country does not accepts that fact about the corona virus. The vaccination of the COVID-19 is still in the process. Some of the country has also claim

that the vaccination is being prepared and is under the clinical trial. Some have claimed that the clinical trial is also being done and are ready with the results. In India also the major pharmaceutical companies like Zyduscadila are also focusing on the preparation of the Corona Virus Vaccination. The research and development team are working very hard for the preparation of the Corona virus vaccination. To maintain the hygiene, individual use take care by using the appropriate defense mechanisms like wearing mast, hand glows, keeping distance and also using hand sanitizer.

Hand Sanitizer

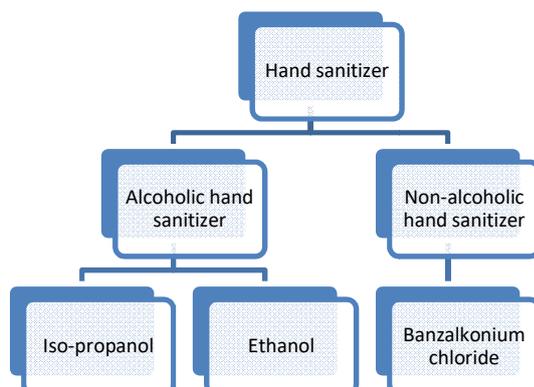
Hand sanitizer is the liquid, gel or foam like alcoholic agent use to decrease the infectious agent on the hand. Most the hand wash or soaps are used to clean the hand but for the effective results for killing the germs on hand the hand sanitizer is used. Greenaway, RE, Ormandy, K, Fellows). As it does not required water while using and also being dried directly because of the alcohol present in it. Many people incorrectly wipe the hand after using the hand sanitizer. It was first introduce in the 1966, especially in the hospital for the new babies as they are very sensitive and can cause

infection very easily the sanitizer were recommended by the doctors to their families (Pittet, D). Alcoholic rub kills many bacteria and virus present on the hand. It also kills the antibiotic resistance bacteria and tuberculosis bacteria. It is effective on Virus like flu virus, common cold virus and corona virus. It is very less neither effective on nor virus and clostridium difficile. As there is inconsistency in the effectiveness, hand sanitizers can be recommended to control the transmission of infectious diseases, where accessibility to soap and water is difficult. (Moadab, A, Rupley, KF, Wadhams, P.)

The alcoholic based sanitizers are mainly contains of the isopropyl alcohol, ethanol or n-propanol. With about 65percent to 95percent are most effective. In some preparation the fragrances are also use but they are mainly avoided to decrease the allergic reaction. The care should be taken while using it as it contains alcohol, which is highly flammable in nature. Alcoholic sanitizer is more effective in compression of the non-alcoholic hand sanitizer. Non-alcoholic sanitizer contains benzalkonium chloride or triclosan. 90% Iso-propyl kills 99.99% of germ. 70% alcohol (ethyl ethanol) kills 99.9% germs with in the 30 second and 99.99% to 99.999% within the 60 seconds.

Types of hand sanitizer

Mainly two types of hand sanitizer are present in the market.



Mostly the alcoholic rub is use in the hospitals especially for the disinfection of the surgical appliances. Alcoholic rub is more preferred over the non-alcoholic rub. (Bloomfield, S.F.)Hand sanitizer bottles are dispense with

the dosing pump and can be refill. The surgical hand disinfection is use with the elbow controller.(Mcdonnell, G.; Russell, A.D).

Literature Review

Pallavi Singh, Ipshita Potlia, Shitanshu Malhotra,(2020), This study evaluated that washing hands with soap and water are more practical and efficacious than using the sanitizer on greasy and soiled hands. An alcohol-based sanitizer, if used correctly and in appropriate volume, can disseminate certain type of micro-organisms. In India, most of the people rely on hand washing. At the time of pandemic, the attention is driven towards hand sanitizers. It is widely and practically acceptable more in hospitals and clinical settings. Ahmed, K, Ahmed, H, Ahmed, FA, (2020)

Simmone, A. (2015) For proper hand washing, the US Centers for Disease Control and Prevention suggested:

- Wash hands with clean running water and lather hands with the application of soap.
- Scrubbing of palms, backs, fingers, between fingers, and under nails, which should cover all surface.
- Time period should be for 20 seconds of scrubbing as the time it takes to sing "Happy Birthday" twice.
- Lastly, rinse under clean, running water, and dry with a clean towel or air dry hands. At present, alcohol-based handrubs are the only products to reduce or inhibit the growth of microorganisms with maximum.

WHO recommends an alcohol-based formulation for the following reasons:

- To benefit from its evidence-based intrinsic advantages: fast acting and broad-spectrum activity, excellent microbicidal characteristics, lack of potential emergence of resistance;
- To overcome the lack of accessibility to sinks or other facilities (including clean running water or towels in some poor and remote areas) to perform hand cleansing actions that require the use of water (hand washing and hand antiseptis using a formulation different from a waterless agent);

- To improve compliance with hand hygiene by reducing the time required to perform it and the convenience of the method;
- To reduce costs: the annual cost of hand hygiene promotion including recourse
- To an alcohol-based handrub may not exceed 1% of HCAI costs (see also Part III, Section 3).

The consumer alcoholic sanitizer contains around 60%-90% of alcohol volume by volume. Mostly the alcoholic hand sanitizer in market contains 60%-80% of alcohol.

- Antiseptic is also used. Antiseptic like chlorhexidine and quaternary ammonium derivatives is mostly used.
- Sporicides like hydrogen peroxide, which remove the bacterial spores is used.
- Emollients and gelling agent is used to prevent the dryness of the skin.
- Some amount of sterile water and sometimes foaming agent, colorants or fragrances are added.

The choice of components for the WHO handrub formulations takes into account cost constraints and microbiological efficacy. Where commercially-available and validated (ASTM or EN) products are already used and well accepted by HCWs, they should obviously be regarded as acceptable even if their contents differ from those of the WHO formulations described below. The following two formulations are recommended for preparation in-house or in a local production facility up to a maximum of 50 litres:

Formulation I

To produce final concentrations of ethanol 80% v/v, glycerol 1.45% v/v, hydrogen peroxide 0.125% v/v. Pour into a 1000 ml graduated flask: a) ethanol 96% v/v, 833.3 ml b) hydrogen peroxide 3%, 41.7 ml c) glycerol 98% ,14.5 ml. Top up the flask to 1000 ml with distilled or boiled and cooled water and shake the flask gently to mix the content.

Formulation II

To produce final concentrations of isopropyl alcohol 75% v/v, glycerol 1.45% v/v, hydrogen peroxide 0.125% v/v: Pour into a 1000 ml graduated flask: isopropyl alcohol (with a

purity of 99.8%), 751.5 ml hydrogen peroxide 3%, 41.7 ml glycerol 98%, 14.5 ml.

Top up the flask to 1000 ml with distilled or boiled and cooled water and shake the flask gently to mix the content.

Research Methodology

Research Objective

1. To find out awareness of the people toward various types of hand sanitizer used for COVID 19.
2. To find out preference of the people toward various types of hand sanitizer used for COVID 19.
3. To find out effectiveness of the people toward various types of hand sanitizer used for COVID 19.
4. To measure an association between various demographic factors like Age, Gender, Occupation & qualification of respondents and carry health sanitizer, extra features of Hand sanitizer, awareness of the people about various types of hand sanitizer used for COVID 19 & preference of the people about various types of hand sanitizer used for COVID 19.

Research Design

Research design is a blue print that indicates different method use in collecting the data and analyzing the information required for the solving the research problem and achieving the research objective. Two types of research has been use in this research exploratory research design and descriptive research design. In the descriptive research design population survey and data analyzing is done.

Exploratory Research Design

Exploratory research design is used for the fundament information in identifying factors most relevant to the context being studied and to gain a better understanding about the research area being studied. It is conducted for obtaining the quantitative and for the qualitative information. For the quantitative research the secondary data are used obtained from the online sources like Google scholar. For the quantitative research the information is obtained from the senior officers of the West coast Pharmaceutical work limited.

The information obtained was mostly focused on the effective use of the hand sanitizer in the current year and was also focused how to satisfy the customers need of the hand sanitizer. It was also focused to the disadvantages and advantages of the frequent use of hand sanitizer. This also includes the proper use or safety precautions.

Conclusive Research Design

For further conclusive research design was used. This research describes the characteristics of the group, such as salesperson, organization consumers and market areas. These also determine the perception of product characteristics. In single cross-section designs, only one sample of the respondent is taken and information is obtained from this sample only once. To gain the specific required data the survey was conducted through the structured questionnaire. The data was collected by having public survey. Data collection tool was structured questionnaire. Type of question used in the single cross-section design was open ended question and close ended question. Open ended questions are the question which respondents answer in their own words and close ended questions are the questions which are having multiple-choice, dichotomous or a scale.

Sampling Design

Sampling method is generally bifurcated as non-probability and probability. Non probability sampling depends on the individual’s perception of the person carrying the research rather than chance to choose sample elements. Probability sampling in which unit considered as samples were selected by chance (Malhotra and Dash, 2014). For

collecting data from respondents, convenience and non-probability sampling was used. Convenience sampling tries to get a sample of convenient elements. Target populations of our research were all the consumers of the hand sanitizer. Target Area and sample size of our research were Gujarat state and 250respondents respectively.

Data analysis software:

- SPSS: Statistical Package for social Science

Research Gap

The researches on the study of the effectiveness, awareness, usefulness and preference have not been done. So this research is all about the effectiveness, awareness, usefulness and preference of the hand sanitizer during the COVID-19 pandemic. This is the uniqueness of the research done.

Data Analysis and Its Interpretation:

Reliability Test:

- A. Cronbach alpha is a statistical used to determine the internal consistency of research data.
- B. The acceptable value of Cronbach Alpha is 0.7 or above.

Reliability Statistics

Cronbach's Alpha	N of Items
.859	6

Interpretation

From the above table Test of Reliability statistics. Our research shown that Cronbach's Alpha value is 0.859 which is more than 0.7 which means research data are reliable.

Independent T Test

Awareness about various types of hand sanitizer used for COVID 19.

Sr. No.	HYPOTHESIS	P VALUE	RESULT
H1	There is significant difference between strongly effective against bacteria and awareness about various type of Hand Sanitizer.	0.000	Accept
H2	There is significant difference between strongly effective against virus and awareness about various type of Hand Sanitizer.	0.000	Accept
H3	There is significant difference between strongly effective against mild spore and awareness about various type of Hand Sanitizer.	0.000	Accept
H4	There is significant difference between strongly effective against corona virus and awareness about various type of Hand Sanitizer.	0.000	Accept
H5	There is significant difference between strongly effective against fungus and awareness about various type of Hand Sanitizer.	0.000	Accept

Interpretation

From the above Table, Independent T test of awareness about various types of hand sanitizer used for COVID-19 and strongly effective against bacteria, virus, mild spore, corona virus, fungus shown a significant values (P) are 0.00, 0.00, 0.00, 0.00 & 0.00 respectively at

confidence level, 95%, which is less than 0.05. So, here we accept Alternative hypothesis and reject Null hypothesis. So, there is a significant difference between strongly effective against bacteria, virus, mild spore, corona virus, fungus and awareness about various types of hand sanitizer used for COVID-19.

Preference about various types of hand sanitizer used for COVID 19

Sr. No.	HYPOTHESIS	P VALUE	RESULT
H1	There is significant difference between strongly effective against bacteria and preference about various type of Hand Sanitizer.	0.000	Accept
H2	There is significant difference between strongly effective against virus and preference about various type of Hand Sanitizer.	0.000	Accept
H3	There is significant difference between strongly effective against mild spore and preference about various type of Hand Sanitizer.	0.138	Reject
H4	There is significant difference between strongly effective against corona virus and preference about various type of Hand Sanitizer.	0.000	Accept
H5	There is significant difference between strongly effective against fungus and preference about various type of Hand Sanitizer.	0.000	Accept

Interpretation

From the above Table, Independent T test of preference about various types of hand sanitizer used for COVID-19 and strongly effective against bacteria, virus, corona virus, fungus shown a significant values (P) are 0.00, 0.00, 0.00 & 0.00 respectively at confidence

level, 95%, which is less than 0.05. So, here we accept Alternative hypothesis and reject Null hypothesis. So, there is a significant difference between strongly effective against bacteria, virus, corona virus, fungus and preference about various types of hand sanitizer used for COVID-19

Effectiveness about various types of hand sanitizer used for COVID 19.

Sr. No.	HYPOTHESIS	P VALUE	RESULT
H1	There is significant difference between strongly effective against bacteria and effectiveness about various type of Hand Sanitizer.	0.000	Accept
H2	There is significant difference between strongly effective against virus and effectiveness about various type of Hand Sanitizer.	0.000	Accept
H3	There is significant difference between strongly effective against mild spore and effectiveness about various type of Hand Sanitizer.	0.000	Accept
H4	There is significant difference between strongly effective against corona virus and effectiveness about various type of Hand Sanitizer.	0.000	Accept
H5	There is significant difference between strongly effective against fungus and effectiveness about various type of Hand Sanitizer.	0.000	Accept

Interpretation

From the above Table, Independent T test of effectiveness about various types of hand sanitizer used for COVID-19 and strongly effective against bacteria, virus, mild spore, corona virus, fungus shown a significant values (P) are 0.00, 0.00, 0.00, 0.00 & 0.00 respectively at confidence level, 95%, which is

less than 0.05. So, here we accept Alternative hypothesis and reject Null hypothesis. So, there is a significant difference between strongly effective against bacteria, virus, mild spore, corona virus, fungus and effectiveness about various types of hand sanitizer used for COVID-19.

Chi Square Test

Sr. No.	HYPOTHESIS	P VALUE	RESULT
H1	There is significant association between occupation of respondents and carry health sanitizer in COVID 19.	0.000	Accept
H2	There is significant association between occupation of respondents and extra features of sanitizer in COVID 19.	0.000	Accept
H3	There is significant association between qualification of respondents and awareness of various types sanitizer in COVID 19.	0.043	Accept
H4	There is significant association between qualification of respondents and carry health sanitizer in COVID 19.	0.001	Accept
H5	There is significant association between gender of respondents and extra features of sanitizer in COVID 19.	0.005	Accept
H6	There is significant association between gender of respondents and awareness of various types sanitizer in COVID 19.	0.000	Accept
H7	There is significant association between gender of respondents and preference of various types sanitizer in COVID 19.	0.000	Accept
H8	There is significant association between age of respondents and extra features of sanitizer in COVID 19.	0.036	Accept

Interpretation

From the above Table, research shown that, significant values (P) are 0.00, 0.00, 0.043, 0.001, 0.005, 0.000, 0.000 & 0.036 respectively at confidence level, 95%, which is less than 0.05. So, here we accept Alternative hypothesis and reject Null hypothesis. So, this concluded that

- There is significant association between occupations of respondents and carries health sanitizer in COVID 19.
- There is significant association between occupation of respondents and extra features of sanitizer in COVID 19.
- There is significant association between qualification of respondents and awareness of various types sanitizer in COVID 19.
- There is significant association between qualification of respondents and carry health sanitizer in COVID 19.
- There is significant association between gender of respondents and extra features of sanitizer in COVID 19.
- There is significant association between gender of respondents and awareness of various types sanitizer in COVID 19.
- There is significant association between gender of respondents and preference of various types sanitizer in COVID 19.
- There is significant association between age of respondents and extra features of sanitizer in COVID 19.

Research Finding

1. Reliability Statistics Cronbach alpha the value is 0.859 which is more than 7 so I accept my data are reliable.
2. From the research, 86.4% of respondents were had awareness about the hand sanitizer during the COVID-19 pandemic.
3. There is a significant difference between strongly effective against bacteria, virus, mild spore, corona virus, fungus and awareness about various types of hand sanitizer used for COVID-19.
4. From the research, 100% use to prefer the hand sanitizer during the COVID-19 pandemic.
5. There is a significant difference between strongly effective against bacteria, virus, corona virus, fungus and preference about various types of hand sanitizer used for COVID-19.
6. From the research, 50.8% of respondent were using hand sanitizer before COVID-19 pandemic also and 9.6% of respondent were using hand sanitizer occasionally. 39.6% of respondent were not using the hand sanitizer before the COVID-19 pandemic.
7. From the research, during the pandemic the customer start to carry hand sanitizer specially pocket hand sanitizer with them while travelling, family and friends get to gather and even in the office too.

8. From the research, 59.6% use to prefer liquid form of hand sanitizer over gel, foam and spray form of hand sanitizer. 36.8% use the Gel form of hand sanitizer.
9. From the research, around 89.6% of the respondents were aware about the different types of hand sanitizer which is Alcoholic and Non-alcoholic & around 84.4% of the respondent use to prefer alcoholic hand sanitizer over the non-alcoholic hand sanitizer.
10. From the research, the 88.8% believes that hand sanitizer is effective against microorganisms. Hand sanitizer is strongly effective over bacteria, virus and corona virus & fungus. But very weekly effective against mild spores.
11. There is a significant difference between strongly effective against bacteria, virus, mild spore, corona virus, fungus and effectiveness about various types of hand sanitizer used for COVID-19.
12. From the research, as hand sanitizer is now being a day to day product to be use the customers also see further to add some extra features like moisturization, fragrance, no residue left after use and no irritation in their hand sanitizer.
13. The mostly preferred brand by respondent of hand sanitizer are Dettol instant hand sanitizer and least preferred brand by respondent is Sevlon HEX Apro disinfect and hand sanitizer.
14. There is significant association between occupations of respondents and carries health sanitizer in COVID 19.
15. There is significant association between occupation of respondents and extra features of sanitizer in COVID 19.
16. There is significant association between qualification of respondents and awareness of various types sanitizer in COVID 19.
17. There is significant association between qualification of respondents and carry health sanitizer in COVID 19.
18. There is significant association between gender of respondents and extra features of sanitizer in COVID 19.
19. There is significant association between gender of respondents and awareness of various types sanitizer in COVID 19.
20. There is significant association between gender of respondents and preference of various types sanitizer in COVID 19.
21. There is significant association between age of respondents and extra features of sanitizer in COVID 19.

Research Implications to Pharmaceutical Company

- People with the age group of 30-35 and more than 35 are rarely using the hand sanitizer or do not prefer to use hand sanitizer during this pandemic. So pharmaceutical company can target the people with by explaining and creating the awareness about the hand sanitizer.
- Low qualification people are also not ready to use hand sanitizer on the frequent basis. So the low qualified are can also be a target area for the company.
- People are also not using hand sanitizer frequently. Only 13% of the population use it frequently. 25.1% of population can be targeted by the company who are the rarely users of hand sanitizer by creating and knowledge them about the effectiveness of hand sanitizer.
- Around 61% of the population use to prefer liquid form of the hand sanitizer. So by drafting the customers demand a company also increase its market share.
- Around 36% of the people use to prefer 70% alcoholic base hand sanitizer.
- From the research customers are looking forward for the hand sanitizers with extra features like moisturizing, no irritation after use, no residue left after use and fragrance. Mostly preferred moisturizing content mandarin and lemon. Other content are orange blossom and honey pump, aloe and lavender and peppermint.
- Pharmaceutical company can also focus on various demographic factors like gender, qualification, occupation and age of the respondents to improve awareness, preference and effectiveness of the various types of sanitizer for COVID 19.
- 84.4% of the respondent use to prefer alcoholic hand sanitizer over the non-alcoholic hand sanitizer. So

Pharmaceutical Company should give more focus on alcoholic hand sanitizer.

Conclusion

The research was conducted for the customer's perception over the use of hand sanitizer during. The customers use to prefer the hand sanitizer before the COVID-19 but not as effectively as they prefer during the COVID-19 pandemic. So, to meet the customer's requirement of the hand sanitizer effectively the survey was done which show that many

customers have different thoughts towards use of hand sanitizer. This includes the many extra features what customer seems to be added in their hand sanitizer which they would use frequently. Company should also give more focus on features like moisturizing content, no irritation and many more to more prefer of hand sanitizer in COVID-19. Customers are also ready to accept the concept of hand sanitizer during the COVID-19 pandemic which they were not ready to accept it before the before the COVID-19 pandemic.

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