

Hand sanitizer-related calls at the National Poisons Information Centre, India during the lockdown period of the Covid-19 pandemic

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ABSTRACT

Background. Hand sanitizer (HS) has been increasingly used during the Covid-19 pandemic. We compared the telephonic calls received by the National Poisons Information Centre (NPIC), New Delhi, India, related to its unsafe exposure and inappropriate use during the lockdown and pre-lockdown periods.

Methods. We analysed and compared telephonic call records of 3 months of pre-lockdown and 3 months of the lockdown and HS-related calls in different age groups and zones during these periods.

Results. The centre received 4000 calls; of these 1583 (40%) were related to household products of which only 63 (4%) were related to HS. There was an 8-fold increase in the number of calls received at the NPIC during the lockdown compared to the pre-lockdown period seeking medical attention following unsafe exposure or inappropriate use of HS. More calls were received from the south and north zones and, in the majority of these cases, HS was ingested accidentally. In some cases, HS was ingested intentionally for suicide during the lockdown.

Conclusions. Our study shows that unsafe exposure of HS is common under conditions of stress as seen during the lockdown period of the Covid-19 pandemic. It should be kept out of reach of small children. Further, providing psychological help and counselling to older age groups under conditions of stress are important issues of concern.

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INTRODUCTION

Covid-19, a global public health crisis, emerged in late 2019 in Wuhan province, China and thereafter spread all over the world. According to the WHO, it infected 5.9 million individuals and resulted in 367 166 deaths as on 31 May 2020.¹ The first Covid-positive case was reported in December 2019 from China, on 23 January 2020 from the USA and on 30 January 2020 from India.^{2–4} This disease spreads through a RNA virus that gets transmitted through droplet, aerosol or close contact with contaminated surfaces.¹⁵ Although several countries adopted cluster containment strategies, Covid-19 has been shown to

affect a large number of individuals through contact and spreads even by touching the nose, mouth and eyes with infected hands or contact with fomites and surfaces.^{5–8} As the disease pathology and treatment measures were not well understood, preventive public health measures remained the mainstay to curtail the spread of infection.⁹ The emphasis has been to maintain distance, self-isolation, use of mask and frequent hand wash. Frequent decontamination of surfaces and hands has been advocated as an effective means to maintain hygiene and such practices have increased during the Covid-19 pandemic.¹⁰

Although hand wash with soap and water is effective and is the recommended method to maintain hand hygiene, the use of hand sanitizer (HS) has become more popular due to its convenience.¹¹ Its demand had increased tremendously during the early period of the pandemic as it has been increasingly used at home, workplace, marketplace, hospitals, healthcare clinics and could be easily carried while travelling. During this period, a large number of formulations of varied composition also became available in the market.¹² Although the majority of HS contain ethanol or isopropyl alcohol as the disinfectant, their increased demand and stocking has resulted in the availability of various spurious products in the market. Some of the available formulations have either been found ineffective or not used as recommended, thereby raising concerns related to their unsafe exposure seeking medical attention.¹² Our study was carried out to determine the incidence of calls received at the National Poisons Information Centre (NPIC), All India Institute of Medical Sciences (AIIMS), New Delhi, India, related to HS during 3 months of the lockdown and an equivalent period before that to address issues related to unsafe exposure or inappropriate use of HS. We also analysed the presenting complaints.

METHODS

The NPIC at AIIMS, New Delhi, provides information on different aspects of poisoning, first-aid measures to the general public and management-related guidelines to the treating physicians telephonically round the clock. The details of the call such as age, sex, place, type of poison, mode of exposure, symptoms/clinical findings, treatment given, if any and the query raised are recorded. The data generated were categorized into different types of poisonings and calls related to HS were analysed according to zones (East, West, North, South and Central) and age (>0–13, >13–19, >19–45 and >45 years) during the pre-lockdown (December 2019 to February 2020) and the first lockdown period (March to May 2020). In India, the lockdown had four phases and the duration of phase 1 was 21 days (25 March to 14 April 2020); phase 2 was 19 days (15 April to 3 May 2020); phase 3 was 14 days (4 to 17 May 2020) and phase 4 was 14 days (18 to 31 May 2020).¹³

The approval of the Institutional Ethics Committee was obtained to carry out this study (IEC-900/04.09.2020, RP-29/2020). Anonymization of the data was done by removing caller/patient identifiers and by generalizing quasi-identifiers such as gender, age and place.

Statistical analysis

The data on the Excel spread sheet were analysed and expressed as frequency distribution, per cent and numbers.

RESULTS

The calls received at the NPIC were categorized based on the use or source of substances producing poisoning, for example,

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household products, agrochemicals, pharmaceutical products, industrial products, plant poisons, bites and stings. During the 6 months of this study, the centre received 4000 calls (2127 in pre-lockdown and 1873 during the lockdown) of which 1583 (40%) were in the category of household products and 2417 (60%) in all other categories. Household products were further categorized and of these 354 calls (22%) related to antiseptics, corrosives and disinfectants while 63 (4%) calls were related to HS. Of the 63 calls received in 6 months, 7 were received in the pre-lockdown time (December 2019 to February 2020) and 56 were received during the lockdown (March to May 2020). The majority of callers were clinicians/treating physicians (80%) and the remaining were parents (16%), persons themselves (3%) or relatives (2%). An analysis of calls based on different zones of the country revealed that in both periods the number of calls were higher from south and north zones (2 and 3, respectively, of 7 during pre-lockdown and 29 and 22, respectively, of 56 during the lockdown period; Table I). Further, the call number for men patients was higher compared to women patients (71% v. 29% during the pre-lockdown period and 61% v. 39% during the lockdown period).

Analysis of data revealed that HS had been taken orally in all instances though the volume consumed was not known. The categorization of data based on age revealed that all the 7 cases in the pre-lockdown period were <13 years of age, of which 6 were under 3 years and 1 was 10 years and they all consumed HS accidentally (Table II). The lockdown period included 56 cases of which 48 (86%) had taken HS accidentally while 7 had (13%) used it with a suicidal intent. All the cases in <13 years age group (70%; 39 cases, of which 32 were ≤3 years) had consumed HS accidentally while in teenagers and in adults up to 45 years, 5% and 7%, respectively had consumed it accidentally and 4% and 9%, respectively, had consumed it with a suicidal intent. Some of the individuals who used it for suicidal purposes consumed about 100 ml of HS. The reason for HS consumption by 1 person in the >19–45 years category was not known. In 2 cases who were >45 years, HS was taken accidentally (Table II).

Most of the patients were asymptomatic (76%) when they contacted the centre while some experienced symptoms such as irritation, drowsiness, burning throat and abdominal pain with

fever, dyspnoea and vomiting. The majority of calls were made soon after the consumption of HS and 91% of the queries raised were related to first-aid measures/management while others were made to seek information such as the benefit of gastric lavage (9%), availability of antidote if any (4%), symptoms that might appear later (5%) and duration for observation (2%).

Further analysis revealed that poisoning calls primarily related to alcohol-based HS and included formulations using alcohol/ethanol (32%), isopropyl alcohol (40%) and a combination of alcohol with other ingredients such as hydrogen peroxide, chlorhexidine, propylene glycol or ethylene diamine (24%) and unknown (5%).

DISCUSSION

Hand hygiene has been considered as an important preventive measure against Covid-19 as there was little information about its pathogenesis and treatment. Frequent hand wash and use of HS has been recommended worldwide for this purpose.¹⁴ HS has become a household item during the current pandemic and despite its easy availability in India, it remained a luxury for those who could not afford it while others relied either on hand wash or rarely took any such precautions.¹⁵

Although during the lockdown most people remained at home, there was not much difference in the total poisoning calls received at the NPIC during this period compared with the pre-lockdown period. However, an increase in calls related to cleaners and disinfectants has been reported by other poison centres since the onset of the Covid-19 pandemic.¹⁶ We evaluated the calls received by the NPIC related to HS during 3 months each of the pre-lockdown and the lockdown periods. Compared to the pre-lockdown period, there was an 8-fold increase in HS-related calls during the lockdown possibly due to the easy availability of HS and increase in its use as well as unsafe exposure/misuse during this period.¹⁷ A further analysis of data from all over India showed that the number of calls received from the south and north zone was much higher compared to other zones during the lockdown. Reports indicate that there was an increase in suicidal tendencies in various parts of India, especially in the southern part due to the non-availability of alcohol and alcohol withdrawal symptoms in some persons.^{18,19} The main reasons for suicidal tendencies during the lockdown include social boycott, loneliness, fear of Covid-19 infection and positivity, pressure to be quarantined, financial crisis, work-related stress, inability to return home due to the lockdown and unavailability of alcohol.¹⁹ Depression, anxiety and stress have been reported to be prevalent during the lockdown in the general public.²⁰ On the other hand, the ban on alcohol sale in some states could be a reason for the consumption of alcohol-based sanitizers which were freely available.²¹ In various settings, intentional intake of alcohol-based HS has been shown to result in intoxication.²²

Analysis of data revealed that the number of calls related to ingestion of HS was higher in children up to the age of 13 years primarily due to accidental exposure to HS. Higher incidence of accidental intake of HS in children has been reported by Hanna *et al.* and Patidar *et al.* as well and this could have occurred due to easy accessibility, the casual approach of parents/guardians, and inappropriate storage of the products and lack of supervision.^{23,24} Attractive bright coloured handy small package, the fragrance of the contents and curiosity to explore new objects could also be attributed to this observation. In a recent study accidental ingestion accounted for exposure to HS in children up

TABLE I. Calls related to hand sanitizer from different zones of the country during the pre-lockdown (December 2019 to February 2020) and the lockdown (March to May 2020) periods

Zone	Number of calls	
	Lockdown	Pre-lockdown
East	2	0
West	1	1
North	22	3
South	29	2
Central	2	1

TABLE II. Calls related to hand sanitizer ingestion (accidental or suicidal) in different age groups during the lockdown period

Age group (years)	Numbers of cases		
	Accidental	Suicidal	Unknown
0–13	39	0	0
>13–19	3	2	0
>19–45	4	5	1
>45	2	0	0

to 5 years of age while in 15% of those above 5 years, it had been intentionally ingested.²⁵ In teenagers and adults up to 45 years, fewer calls were received compared to children, and half of these were due to accidental intake and half due to suicidal intent. During the Covid-19 pandemic, psychosocial burden has been globally recognized as the major reason for distress and adverse mental consequences in all age groups due to various factors such as closing of social activities, schools, change in lifestyle and lockdown-related stress.²⁶ The ingestion and abuse of HS have been shown to have worse outcomes.^{22,27}

Broadly there are two categories of HS formulations: non-alcohol based and alcohol-based formulations. Besides alcohol, other ingredients present in HS formulations are used as humectant, emollient, perfume or may possess some other property.^{28–30} During the Covid-19 pandemic increased demand and stockpiling of HS affected its supply in healthcare facilities and due to short supply, a large number of formulations with varied compositions and even falsified formulations became available in the market.¹² HS formulations are known to produce adverse effects following ingestion which may include oral irritation, drowsiness, burning, abdominal pain and vomiting as also reported by others.^{25,31}

Our study has limitations as it is based solely on the calls received at the centre. As most of the cases might have been asymptomatic, they did not call the centre and only those cases who had health concerns called the centre. Further, people who were aware of this centre called the centre for information to help them in any emergency that might arise. Thus, the number of calls received by the centre does not reflect the actual number of people who might have ingested HS during the study period. Further, the data relate only to one-time query and there was no follow-up of these cases.

Our observations suggest that accidental ingestion of HS is of concern in small children and it could be avoided by keeping HS out of their reach and by using packing with childproof caps. On the other hand, in adolescents and adults where intentional ingestion of HS for suicidal intent was noted, psychological help and counselling could have been of help under stressful situations.

Conclusions

The call record of the NPIC, New Delhi, India, showed an increase in HS-related queries during the lockdown and adverse effects related to its unsafe exposure/inappropriate use. Easy availability and access to HS pose a risk of unintentional ingestion in children and misuse/intentional ingestion in adolescents and adults. Although HS did not produce serious adverse effects in the majority of cases, its intake/misuse could be minimized in children by keeping it out of their reach and in teenagers and adults by providing psychological help and counselling under conditions of stress.

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Conflicts of interest. None declared

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