Assessment of the results of three surveys relating to the COVID-19 pandemic in Greece. Pharmaceuticals, personal care/protection and cleaning products use.

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SCOPE

The aim of this study is to:

- Reveal the effect of COVID-19 pandemic in Greece on people and the environment.
- Record the amount of chemicals that have been used during the four 'waves' of the pandemic, through the cleaning, personal care and pharmaceutical products' use.
- Capture the reactions of people on the vaccinations' necessity and their willingness to adapt, the consumption of alcohol and caffeine and the environmental concerns of participants.
- Apprehend the disposal habits of the protective equipment and SARS-CoV-2 antigen test kits.

METHODOLOGY

The survey was performed through three questionnaires that were released during the three periods of outbreak of the pandemic, the first (2020), the second and third (2021) and the fourth (2022). The questionnaires were comprised of a total of 57 multiple-choice questions which were organized into 6 sections, as described herein:

- Section 1: Demographic characteristics.
- Section 2: Health condition of the participants.
- Section 3: Working condition, before and during the pandemic.
- Section 4: Cleaning, disinfection and personal care habits, before and during the pandemic.
- Section 5: Disposal habits of products related to health and the pandemic.
- Section 6: Assessment of "the benefits of the measures" with respect to the environment.

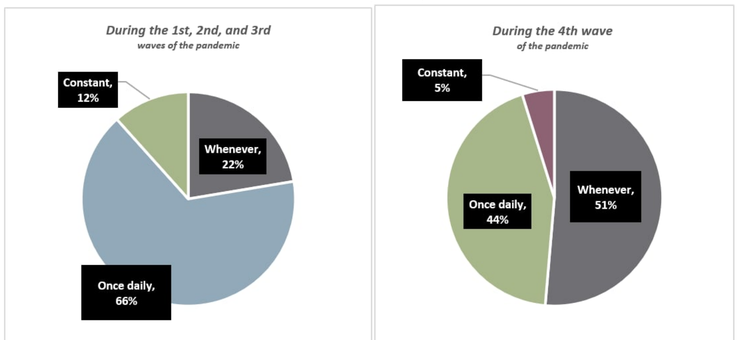
Two questionnaires were created with Google Docs tool and the one with Limesurvey. All of them were released via internet with the aim to reach random sample of population, above 18 years old, in Greece. The first questionnaire was answered by 900 participants, the second by 260 and the third by 1332. Further analysis of the responses were conducted using statistical methods on excel and SPSS. Particular importance was given to the comparison of the frequency and/or the amount of products used, before and during the pandemic.

RESULTS

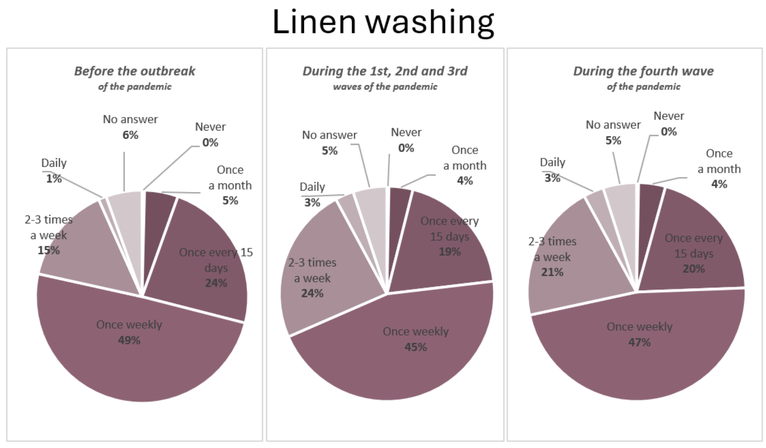
The main findings of the three surveys are the following:

- An increase (up to three times more) in the consumption rates of laundry detergents, liquid hand soap and disinfectants was observed, such as surface disinfectants, liquid hand antiseptics, antiseptic wipes, sodium hypochlorite solutions (liquid bleaches) and ethyl alcohol solutions, during the pandemic.
- During the fourth "wave" the usage rates of those products were still higher than before the pandemic, though slightly lower than during the three previous "waves". This can be attributed to the fact that people got familiar to the situation and became less obsessed with cleaning and disinfection.
- Furthermore, participants sough information about the pandemic less frequently during the fourth "wave" in comparison with the previous "waves".
- The most popular products for hand hygiene among the participants were liquid soap and antiseptic gel.
- The most popular products for house and surface disinfection were sodium hypochlorite solutions and general use detergents.
- Additionally, it was observed a decrease in consumption of cosmetics, personal care products and alcohol during the pandemic, probably because of the constrains that were posed to any kind activities outside the house.
- Caffeine consumption did not show any change before and during the pandemic.
- The majority of the participants disposed antiseptic wipes, personal protective equipment, SARS-CoV-2 antigen test kits and pharmaceutical products to regular bins.
- Most of the participants have concerns about the environmental impacts of the pandemic on the water resources and the environment.
- Protective face masks were by far the main personal protective equipment among participants. Protective gloves were popular during the first "wave", however their use significantly reduced during the following "waves". This is in line with Greek Ministry of Health's directions and compulsory protective measures.
- Another clear finding was the positive attitude towards the vaccination from the majority of the participants and the fact that most of them were completely vaccinated during the third wave in the middle 2021 or they were about to receive the last dose of the vaccine.
- Finally, an investigation of correlation between demographic data and other responses was conducted and certain correlations were revealed. Such as:
  - Older people were more cautious in having contact with infected persons and visiting crowded places, in contrast to younger people.
  - As a result younger people were more susceptible to be infected by the virus.
  - Women and older people appeared to be more environmentally conscious.

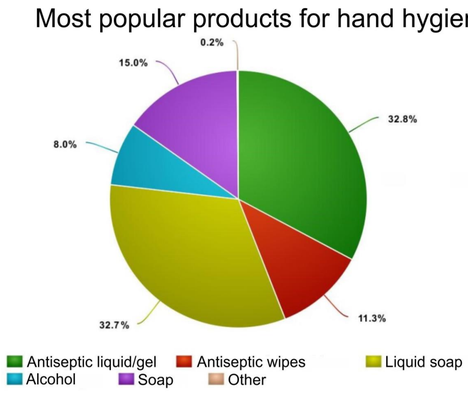
How frequent is the participants' updating concerning the pandemic?



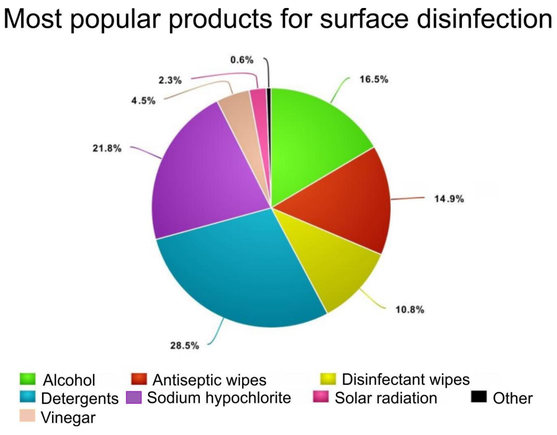
Linen washing



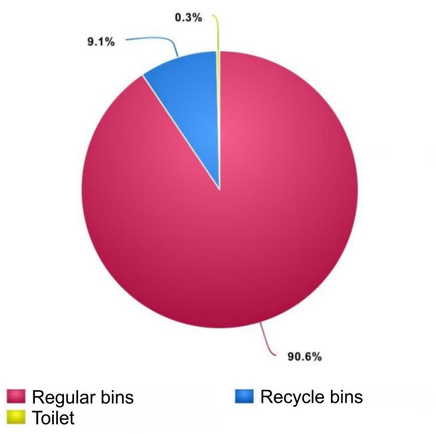
Most popular products for hand hygien



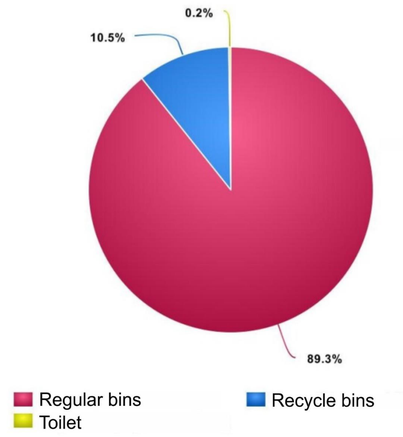
Most popular products for surface disinfection



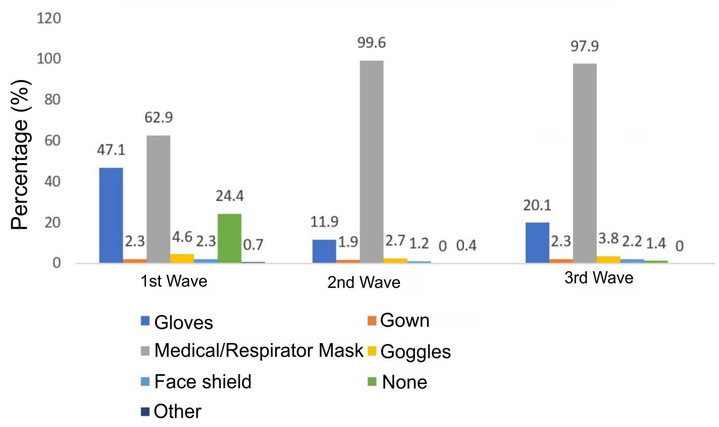
Disposal of antiseptic wipes



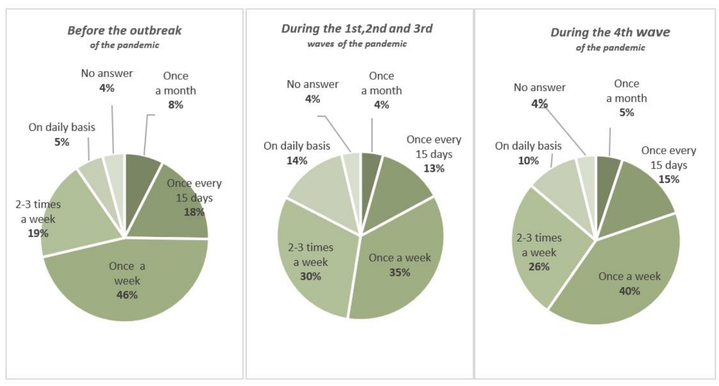
Disposal of personal protective equipment

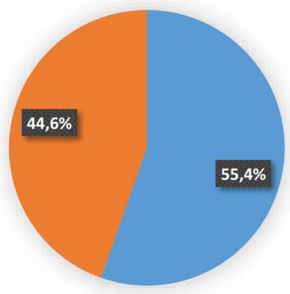


Preferable means of personal protective equipment



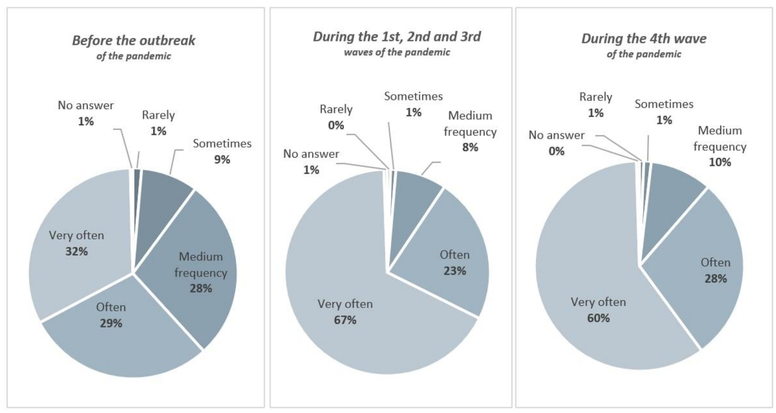
Detergents use





Level of vaccination (mid. 2021)

Hands washing



CONCLUSIONS

- ✔ We try to investigate the impact of the pandemic to people and the environment, through questionnaires.
- ✔ The COVID-19 pandemic caused a severe disruption in every aspect of social and economic life and also had an impact on the environment.
- ✔ It is clear that the pandemic caused a significant escalation of chemical substances that were released in the sewer system from detergent, disinfectants and other cleaning products. These substances may cause problems to wastewater treatment plants' functionality and water resources that receive treated wastewater.
- ✔ It also caused a significant burden of solid wastes from disinfectant products, personal protective equipment and other pharmaceutical products to the landfills, which after their disposal may release chemical substances and plastics in the environment.
- ✔ This knowledge is useful in order to be prepared for a future emergency situation.