SELF-MEDICATION FOR PREVENTION OF COVID-19 IN UNIVERSITY STUDENTS OF THE NORTHEAST OF MEXICO

Maria DR González-González, Myrna L. Yeverino-Gutiérrez, Karla Ramírez-Estrada and Omar González-Santiago

SUMMARY

The COVID-19 pandemic has provoked an enormous impact around the world. The objective of this study was to determine the prevalence of self-medication for the prevention of COVID-19 during 2020 in a sample of university students from the northeast of Mexico. An electronic survey composed of two sections was used; the first section collects sociodemographic information, and the second section information related to self-medication for prevention of COVID-19. A total of 284 students responded to the survey, 26% reports having self-medicated to prevent COVID-19, and 34.5% reports having a family member that self-medicated to prevent COVID-19 infection. The main products used to prevent infection were vitamins, NSAIDs, and herbal products. It is concluded that, in 2021, a significant percentage of university students in northeastern Mexico reported self-medication to prevent COVID-19 infection.

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has provoked an enormous impact around the world (Ali, 2020) and Mexico has been one of the most affected countries; in fact, the true impact in Mexico has probably been underestimated (Ibarra-Nava et al., 2020). Several risk factors associated with severity and mortality of the disease have been reported in the literature. Among them are age >55 years, multiple pre-existing comorbidities, hypoxia. Specific computed tomography findings are indicative of extensive lung involvement, and diverse laboratory test abnormalities and biomarkers of end-organ dysfunction are present (Gallo-Marín et al., 2021).

Until now, the US Food and Drug administration (FDA) has authorized the antiviral drug remdesivir and two combinations of monoclonal antibodies for emergency use in certain patients. In addition, several vaccines are available, three of which (Pfizer-BioNTech, Moderna and Johnson & Johnson) have been approved by the FDA. Furthermore, baricitinib has been approved in Japan (Mouffak et al., 2021). Despite available drugs, therapeutics for the prevention and treatment of COVID-19 are still in great need.

Fear, anxiety and even paranoia can proliferate during a pandemic, all of which can lead to emotional and less than rational responses, such as self-medication (Freckelton, 2020). In addition of these, the ‘infodemic’, which refers to an excess of information (both true and false) that makes it difficult for people to access reliable sources and obtain valid guidance when it becomes most necessary for decision-making (Garcia-Saiós et al., 2021), could contribute to self-medication with medicinal drugs or other products that have no confirmed efficacy, worsening the situation (OPS, 2020).

Considering the risks that implied in self-medication, the objective of this study was to determine the prevalence of self-medication for the prevention of COVID19 in a sample of university students of northeast Mexico during 2021.

Methods

An anonymous survey composed of two sections was used: the first section collects information regarding age and gender; the second section collects information through open questions about the use of preventive treatments, type of treatment used, whether a relative has used preventive treatments and other aspects about COVID self-prescription. The data of the survey are available as a supplementary file at https://doi.org/10.6084/m9.figshare.20205353.v1.

Due to COVID19 pandemic restrictions throughout Mexico, a convenience sampling was performed; the survey was applied online and was available for three months in the FORMS platform from February to April 2021. Students from the Universidad Autónoma de Nuevo León were invited through the social networks Facebook and Instagram. Responses were grouped by gender and the differences was tested with the chi-square test. A p-value <0.05 was considered significant. The data that support the

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AUTOMEDICACIÓN PARA LA PREVENCIÓN DEL COVID-19 EN ESTUDIANTES UNIVERSITARIOS DEL NORESTE DE MÉXICO
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RESUMEN
La pandemia del COVID-19 a provocado un enorme impacto en el mundo. El objetivo de este estudio fue determinar la prevalencia de automedicación para prevenir el COVID-19 en una muestra de estudiantes universitarios del noreste de México. Se utilizó una encuesta electrónica compuesta de dos secciones, la primera sección recolecta información sociodemográfica y la segunda información relacionada a la automedicación para la prevención del COVID-19. Un total de 284 estudiantes respondieron la encuesta, 26% reportaron automedicarse con la intención de prevenir y 34,5% reportaron tener un familiar que se ha automedicado para prevenir la infección por COVID-19. Los principales productos utilizados para prevenir la infección fueron vitaminas, AINES, y productos herbales. Se concluye que, en el 2021, un importante porcentaje de estudiantes universitarios del noreste de México reportaron automedicarse para prevenir la infección por COVID-19.

findings of this study are available at https://figshare.com/articles/dataset/Data_Self-prescription_for_covid_prevention_Mexico_2021/16799773.

Results
A total of 284 students completed the survey; 66% of them correspond to females. (Table I). Twenty percent of all individuals reported to self-medicate with the intention of preventing COVID19. In this respect, there was no significant difference by gender (22.5% vs 16.5% for females and males respectively; p= 0.24). On the other hand, 34.5% of participants reported having a family member that used preventive treatment for COVID19; no significant difference was observed between them (Table II).

Discussion
Self-medication for COVID-19 has been the object of few studies, with a prevalence ranging from <4% to 88% in the general population; this high variability could reflect specific factors of each country which merit more research (Quicho-Lopez et al., 2021). In this work, the prevalence of self-medication in students of UANL, for prevention of COVID19 was higher (23%) than reported for the general population of other countries,

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>% of self-reported use of preventive treatment</th>
<th>% with a family member who used preventive treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Total</td>
<td>284</td>
<td>20.4</td>
<td>79.6</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>97</td>
<td>16.5</td>
<td>83.5</td>
</tr>
<tr>
<td>female</td>
<td>187</td>
<td>22.5</td>
<td>77.5</td>
</tr>
</tbody>
</table>

P value 0.24 0.13

TABLE I
SELF-MEDICATION FOR PREVENTION OF COVID-19 INFECTION
such as Poland, Saudi Arabia, and India, where the prevalence was 11.3% (Makowska et al., 2020), 22.1% (Alyami et al., 2020), and 16.3% (Azhar et al., 2021), respectively. Several factors reported in the literature could be responsible for the high prevalence found in this study, such as long waiting time in healthcare facilities, difficulty in obtaining physicians' appointments, an insufficient amount of available beds/space in healthcare facilities, insufficient stock of essential medicines, and delay in attention (Parulekar et al., 2016). In addition, the fear and fake news misinformation regarding treatments and miracle cures on the web and social networks also could have contributed to this result (OPS, 2020).

Concerning the most common products used for the prevention of COVID-19 (vitamins 53.9%), similar results have been reported in the general population of Saudi Arabia (Alyami et al., 2020) and Bangladesh (Ahmed et al., 2020). On the other hand, medicinal drugs such as acetaminophen and NSAIDs, which were the second most common in this study, have been reported in the literature to be self-medicated mainly for COVID-19 symptomatic treatment of fever (Ahmed et al., 2020) not for prevention of the infection. Herbal products also have been found to be self-medicated for the prevention or treatment of COVID-19 in other studies (Villena-Tejada et al., 2021).

Considering that the population studied has a high education level, the use of chlorine dioxide (3.9%) as a preventive product for COVID-19 is worrying. It is possible that their use is higher in less educated individuals and, the general population of Peru has been reported its use in 8% of individuals (Soriano-Moreno et al., 2021). This compound is not safe for humans, due to its observed thyroid suppression, DNA damage and neurotoxicity in several animal models; alarmingly, it has been consumed to treat COVID-19 in many Latin-American countries, including Mexico (Mostajo-Radji, 2021).

Although responsible self-medication could empower individuals to take control of their wellness in general, it could produce other undesirable consequences such as polypharmacy, adverse effects, drug interactions, antibiotic resistance, incorrect diagnosis and, increased drug expenses (Malik et al., 2020).

To face self-medication implies combating misinformation by academics and authorities at all levels, since it is a potential source for the use of miracle cures. In addition to this, in the case of Mexico and other developing countries, the empowerment of community pharmacist's role should be promoted by health authorities, since they could contribute to combating misinformation and irresponsible self-medication.

Conclusion

In the year 2021, an important percentage of students of the Universidad Autonoma de Nuevo León, Mexico, reports to have self-mediated to prevent COVID-19. The main product used was vitamins.

**REFERENCES**


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