

## Privacy control in the most used mobile health applications in Mexico during the first year of the pandemic by COVID 19

### Control de privacidad en las aplicaciones móviles de salud más utilizadas en México durante el primer año de la pandemia por COVID 19

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**Abstract:**

The pandemic caused by Covid 19 meant great changes in people's lives due to the sanitary authorities of each country encouraging confinement to reduce the spread of the transmission and to avoid the collapse of health systems. When faced with this situation, the usage of mobile applications was essential to keep the continuity of activities, for instance, work, education, and entertainment. Additionally, some countries take advantage of the use of mobile applications to facilitate the monitoring of the pandemic and the early warning of new cases of transmission with the implementation of a diagnostic scale. According to the World Health Organization, this type of tool is fostered because of its multiple advantages, and the results of different investigations which show opportunity areas that impede an appropriate treatment of personal data.

This report shows the results of the first research in Mexico, in which it was identified the most mobile health applications used in the country during the first year of the pandemic, as well as the conditions that offer to provide transparency in practices following the treatment of data and the functions available to people have control of their data and also their privacy. In the first place, the results are applied to the health applications taking into consideration the judgment of the researcher, it is estimated that both methodology and recommendations can be useful in technologies that use similar schemes of data processing.

**Keywords:**

health, control of data, health applications, COVID-19

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**Resumen:**

La pandemia por COVID 19 significó cambios en la vida de las personas debido a que las autoridades sanitarias de cada país promovieron el confinamiento para reducir la velocidad de contagio, evitar el colapso de los sistemas de salud. Ante tal situación el uso de aplicaciones móviles fue fundamental para mantener la continuidad de actividades como el trabajo, la educación y el entretenimiento. Adicionalmente, algunos países aprovecharon el uso de aplicaciones móviles para facilitar el monitoreo de la pandemia y la detección temprana de nuevos contagios mediante una escala de diagnóstico. Si bien, el uso de este tipo de herramientas es promovido tiene muchas ventajas y es promovido por la propia Organización Mundial de la Salud, los resultados de diferentes investigaciones revelan áreas de oportunidad que impiden un tratamiento adecuado de los datos personales.

En este reporte se presentan los resultados de la primera investigación en su tipo en México, en la que se identificaron las aplicaciones móviles de salud más usadas en el país durante el primer año de la pandemia, así como las condiciones que éstas ofrecieron para transparentar sus prácticas en cuanto al tratamiento de datos y las funcionalidades dispuestas para que las personas mantuvieran el control de sus datos y por lo tanto su privacidad. Si bien los resultados son aplicables en primera instancia a las aplicaciones de salud, a juicio del investigador se estima que la metodología y las recomendaciones puede ser de utilidad para tecnologías que utilicen esquemas similares de tratamiento de datos.

**Palabras Clave:**

Health, control de datos, apps de salud, COVID 19

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**INTRODUCTION**

The 2020 year will be remembered all over the world, as the year that changed drastically the way of living people. In Mexico, the

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handshake was substituted by a fist greeting, and wearing masks, and sanitizers became articles of first necessity.

In addition, homes turned into schools and offices, and all of this caused confinement measures and social distancing that health authorities incite to reduce the spread of the transmission and hospital overcrowding during the pandemic by Covid 19, and after it.

As a result of this situation, Information and Communication Technologies (since that moment ICT) played a relevant role, each time more dominant in people's lives. In the words of Guillermo Rodríguez Abitia (UNAM, 2021), an official of The National Autonomous University of Mexico (NAUM), the pandemic increased the implementation of ICT to a level than in comparison to normal conditions would have taken 10 years. About the use of mobile applications (since that moment apps), a report by the company Sensor Tower mentions that in 2020 increased by 23% the number of installations compared to 2019 figures (Chan, 2021), the same report points out that by 2022 the trend is estimated to remain on the rise (SaaS Rank, 2021).

The life of Mexicans during the pandemic suffered changes and adaptations, there was a way of continuing to do the activities that were invaluable such as work, education, health, and recreation. In this context, due to the impossibility of being face-to-face in the same place, the meetings were done virtually through applications like Zoom, Microsoft Teams, Google Meet, and Google Classroom. As well as applications of instant messaging including WhatsApp, Telegram, and Messenger from Facebook were important to keep communication not only with relatives, friends, or colleagues from work, but also simplify trade and education activities.

Different from other pandemics that have been before in the history of humanity, the pandemic of Covid 19 appeared at a moment in which there was a huge quantity of data and tools that made easier the reception, processing, analysis, and exploitation. As a consequence of this situation, countries like China, Singapore, Korea, India, Israel, and Uruguay implemented apps as part of their control strategies whose main purpose was to get inhabitants informed, monitor the index of transmissions, and facilitate the early diagnosis (Agudelo, et. al., 2020). In Mexico, the sanitary authority promoted the use of the app Covid 19 MX, also the app of the Mexican Social Security Institute (MSSI).

Ultimately, having the data promptly about the numbers of infections quicken the evaluation of the situation and the formulation of mitigation measures; however, it is important not to lose sight of the context of the pandemic, the data involved corresponded to the setting, physical and health state of people, so their processing must be done according to the international principles in the matter of production of data and also what was mentioned in the article 16 of the Political Constitution of the United Mexican States, the General Law for the Protection of

Personal Data in Possession of Obligated Parties (GLPPDPOP), as well as the Federal Law for the Protection of Personal Data in Possession of Private Parties and its Regulations (PPDPPR).

In the last years, it has become more frequent to hear the news related to bad practices of personal data processing that affect people's privacy. The most remarkable case might be found when a journalistic investigation discovered that an application developed by Aleksandr Kogan, a professor from Cambridge University, it was obtained access to personal information and the contact network was approximately 265,000 people that did not agree to give the respective consent (Newsroom BBS, 2018). Moreover, neither it should be called into question the utility of the apps nor the potential benefits in whatever area they can contribute. Talking about the health sector, as stated by the World Health Organization has recommended its strategy of cyberhealth, the use of mobile applications to narrow the gap in the inequality of access to health services (WHO,2011). The conflict has been identified through areas of opportunity that jeopardize the privacy of people when personal data processing is done through applications. In this sense, personal data processing, researchers like Martínez et al. (2015) point out that there are aspects related to the conditions of privacy that the app providers must resolve because the data involved correspond to the intimacy of the people's lives such as physical and health states.

The revision of practices of privacy of data with the use of health apps also known as mHealth has been an object of previous studies, since then and so far it is important among other things that the manufacturers mention the data received to the users, the purpose of using them, to whom they might be transferred and the procedures through which people could access, rectify, cancel, and oppose to data processing.

From the most significant investigations, it is noted Financial Times in 2013 found that the most used 20 health applications transmitted information to the users of close to 70 companies (Steel & Dembosky, 2013). In 2015, 154 health applications were analyzed, and ascertained that only 19% had a privacy policy (Knorr et al, 2015). In 2016, it was detected an app to monitor the menstrual cycle, contained irrelevant data for the service provided (Felizi & Varon, 2016).

In comparison with the investigations mentioned before ahead, there was no evidence of similar studies in Mexico. While doing this article, it has not been announced the termination of the pandemic and apart from that happening, as it was cited formerly, it is estimated that the use of apps will increase. Therefore, it is considered appropriate to carry out a study that leads to the most used health apps during the first year of the pandemic in Mexico, along with how their practices were clear concerning the privacy of data and the conditions they offered to people to maintain control of their information.

**METHODOLOGY**

Corresponding to a qualitative investigation developed in 5 stages. First of all, was noticed the applications as objects of study. Secondly, the privacy policies were checked. After that, it was analyzed the functioning of the apps from the perspective of the user. Furthermore, the data obtained were examined during the revisions. To conclude, an interpretation of the data gathered was done and conclusions.

**DEVELOPMENT**

To start with, it was needed to know which apps were seen as the most used in Mexico during the first year of the pandemic, in other words, in the period from March 2, 2020, to March 23, 2021. To gather the information, it was consulted the Ministry of Health of the federal government and the Federal Consumer Protection Agency (FCPA), although it was not successful.

Afterward, search on the internet were done with the criteria like “Most used health apps in Mexico”, “Top of the most used health apps”, and “Ranking of the most used apps in Mexico”, even though there were some lists, they do not belong to the type of apps in compliance with the object of study nor the period of the investigation, as a consequence, it was constructed a measurement list.

Following the ranking, it was used data proposed by the site Sensor Tower\* which contains lists(charts)pre-ordered of the mobile applications most used per day, country, category, and platform. Consequently, it was created charts with the applications most used in Mexico with the categories of Medical and Health and Fitness for iPhone and Android, each one of 366 days that are part of the period, having in this way 1, 464 charts (366 days \* 2 categories \* 2 platforms).

The previous information was considered in two bases of data, one of them for iPhone and the other for Android. The apps that were seen as the most used, were the ones that appeared in each of the 366 daily charts that corresponded to the period and in which reports were situated among the first 10 places. Based on the foregoing, the list was formed into 27 apps. Nonetheless, some of them whose main functioning was not capturing data, was highlighted alongside others that were impossible to install, so the final list was formed by the following 19 applications:

**Chart 6.** Sample confirmation

| Application                                     | Platform |         |
|---|----------|---------|
|   | iPhone   | Android |
| Farmacias Del Ahorro                            | x        | x       |
| Pregnancy+                                      | x        |         |
| Flo Menstrual Calendar Cycle                    | x        |         |
| Nike Run Club                                   | x        |         |
| Calm  | x        |         |
| My Blood Pressure                               | x        |         |
| Menstrual Calendar Period                       | x        |         |
| Digital MISS                                    | x        | x       |
| AMMA Pregnancy week to week                     | x        |         |
| Meditopia: Meditation, Sleep                    | x        |         |
| Chopo Mobile                                    | x        |         |
| AutoSleep. Monitor your dream                   | x        |         |
| The pregnancy calculator app week by week       |          | x       |
| Women's Weight Loss App - Workout at home       |          | x       |
| Women's Fitness: Workout for Women              |          | x       |
| Abdomen 6 pack in 30 days - Abdominal Exercises |          | x       |
| Exercises at home - No equipment                |          | x       |
| Men's Weight Loss - Lose Weight in 30 Days      |          | x       |
| Lose Abdominal Fat at Home: Flat Belly          |          | x       |

*Source:* Own authorship

The privacy policy is the document through which manufacturers use to inform the users of the data gathered, the reasons for gathering, and the procedure to access, rectify, cancel or oppose the data processing of those. With the implementation of this practice, manufacturers fulfill some universal principles that are part of personal data processing including the principle of information and facilities that the users be informed of the consent of the treatment of their data.

Given the foregoing, it is a collection of the privacy policies in the version of August 18, 2021, from the 19 apps that were part of the list. Subsequently, they were verified considering the minimal elements based on GLPPDPOP and PPDPPPR and their rules must be informed to people when collecting data, in a way that follows the criteria defined:

1. The app has a privacy policy.
2. It is indicated the name and social reason of the responsible for the data processing.
3. It is indicated which data it captures.
4. The purpose of the processing is indicated.

\* Sensor Tower is a company that provides global information regarding the use of mobile applications through its website available at <https://sensortower.com/>.

5. The means or manner in which consent for data processing is obtained is indicated.
6. The means or manner of revoking consent is indicated.
7. Indicate whether data is shared with others.
8. It indicates the means or procedures for users to exercise their rights of Access, Rectification, Cancellation, or Opposition to the processing of their data.

The analysis of the content of the privacy policies was done through the searching of text with keywords like “responsible”, “personal data”, “consent”, “sharing”, “rights”, in both English and Spanish, or according to the available language. The results of the revision were classified into:

- It is stated when the text is mentioned explicitly the information that corresponds to each criterion, for example, “we share your data with...”
- It is ambiguously stated when the text uses words like “probably”, “in certain situations”, and “we might”, for example, “in some situations we might share your data”.
- It is not stated when within the text is not included the correspondent information.

Thereby from the analysis gathered that from the 19 applications, 16 of them had privacy policies, from those, five indicated the clarity of the person in charge of the data processing, eight indicated the data gathered and the same number shows the data processing purposes. Only 3 of them clearly state the ways to obtain consent to data processing and only one of them is the way to repeal it. Besides, it was found that only two apps indicate the way data are shared with others and four of them, mentioned the procedure to exercise the right ARCO.

To verify the functioning of the 19 applications, it was taken into account the perspective of Solove (2008) who claimed that one of the ways of privacy also implies “the control of the personal information” (p. 1). In addition, on behalf of Trepte et al. (2020) proposed that privacy has at least three paradigms and from his point of view, one of them is privacy as control. From those two references mentioned, an ideal setting for the applications must be considered the functionalities for the users who have their data control from their apps.

Due to the above, to identify the conditions shown in the apps to have users keep control of their data, it was looked the apps menu and the functions of the apps to:

1. To grant consent to the processing of data.
2. To revoke consent to the processing of data.
3. Obtain a copy of the data held by the app about the user.

4. Delete the data that the app has about the user.

Accordingly, the revision found that from the 19 applications, only 4 of them identified the function to grant the consent of data processing and in one of them, was noticed the difficulty of the functionality to revoke consent. In four apps was noticed difficulty in functionality to obtain a copy of the data was, and finally in two cases was found the function to delete the data.

## CONCLUSION

First of all, it is necessary to point out that not having a list of the most used applications in Mexico (in this case on health issues) represented an obstacle to the development of the research. The existence of a list issued either by the government, academia, or civil society would facilitate the visibility of possible privacy violations of Mexicans, either individually or as a whole. Although the methodology presented in this article is experimental, it may be useful to replicate it to create lists that may be of interest not only in health issues but also in education, leisure, and other areas that may be necessary due to the current situation.

The privacy policies collected are extensive and unclear, making them difficult to read and understand. The results of the research show that not all the mobile health applications had privacy policies and for those that did, their content was insufficient to make transparent what data is captured, who carries out the processing, and the purposes of the processing. In other words, users did not have sufficient information to give their informed consent for the processing of their data.

It was also found that the apps did not have sufficient functionalities for users to exercise control over their data in terms of granting consent, revoking consent, obtaining a copy of their data, or deleting it, all through the application itself. We should not lose sight of the fact that the required functionalities are technically feasible, so it would be desirable for manufacturers to make visible the need to incorporate them from the design point of view.

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