The use of social media in the tutorial education program in veterinary medicine as an instrument for the dissemination of health education

Uso das mídias sociais no programa de educação tutorial em medicina veterinária como instrumento de difusão da educação em saúde

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ABSTRACT
This study reports activities developed by the Veterinary Medicine Tutorial Education Program (PET Veterinary Medicine group) at the Federal Rural University of Rio de Janeiro (UFRRJ) during the COVID-19 pandemic. This health crisis scenario has created the need to reinvent, develop, and expand pedagogical practices to disseminate health-related information to control diseases, maintain extension activities, and provide continuing education. Students were divided into pairs or trios to choose Health Education topics and create card or reel publications on PET Instagram page. Allied with this, Information and Communication Technology was used in this process to produce educational podcasts related to mental health and safety in food acquisition, preparation, and consumption. Before publishing posts, reels, or podcast episodes, group members discussed the subject with the supervisor for suggestions and corrections. Publications on Instagram® were made weekly, with a selection of pandemic-related health topics for podcasts. The group members were responsible for inviting guests, conducting interviews, editing the episodes, and publishing them. It was possible to determine the reach of publications on the Instagram® platform using its tools. This study revealed that the primary audience for the publications consisted of young women. Furthermore, the main cities of the users who viewed the page were Rio de Janeiro, Seropédica, and Nova Iguacu. The PET Veterinary Medicine group produced and published two podcast themes related to health education. These themes were: "The Veterinary Doctor and Christmas Dinner: What Do They Have to Do with Each Other?" and "Mental Health and Challenges of Remote Teaching". During the analyzed period, it was observed that the first podcast obtained 108 reproductions, while the second reached 59 reproductions. The project allowed the dissemination of essential public health topics in an innovative way, contributing to health education and continued interaction between UFRRJ, its students, the teaching staff, and society.
Keywords: podcast, one health, university extension.

RESUMO
O presente estudo relata as atividades desenvolvidas pelo Programa de Educação Tutorial de Medicina Veterinária da Universidade Federal Rural do Rio de Janeiro (UFRRJ) durante a pandemia da COVID-19. Tal cenário de crise sanitária potencializou a necessidade de se reinventar, ampliar e criar práticas pedagógicas na divulgação de temas relacionados à saúde para controle de agravos, manutenção das atividades de extensão e educação continuada. Através do uso da mídia social Instagram, os discentes foram divididos em duplas ou trios para escolha de temas relacionados à Educação em Saúde e elaboração de publicações na página do Instagram do PET, em formato de modelo de cards ou reels. Além disso, uma Tecnologia de Informação e Comunicação, empregada também nesse processo, foi a produção de podcasts educativos com elaboração de episódios relativos à saúde mental e segurança na aquisição, preparo e consumo de alimentos. Antes das publicações dos posts, reels ou episódios de podcast, havia uma discussão sobre o tema com os membros do grupo e a tutora, para sugestões e correções. As publicações para a rede Instagram eram feitas semanalmente, enquanto para a produção dos podcasts foi realizado seleção dos assuntos de relevância em saúde no contexto da pandemia; os integrantes do grupo ficavam responsáveis pelo convite, entrevista, edição e publicação dos episódios. Utilizando ferramentas do Instagram, foi possível determinar o alcance das publicações pela plataforma, onde o principal acesso às publicações foi de mulheres jovens, e as principais cidades dos usuários que visualizaram a página foram Rio de Janeiro, Seropédica e Nova Iguaçu. Quanto ao Podcast, os dois temas relacionados à educação em saúde produzidos e publicados pelo grupo PET Medicina Veterinária foram: “O Médico Veterinário e a ceia de Natal: o que tem a ver?” e “Saúde mental e desafios do ensino remoto”. Durante o período analisado, o primeiro obteve 108 reproduções, enquanto o segundo alcançou 59 reproduções. O projeto permitiu a divulgação de temas de importância em saúde pública de forma inovadora, contribuindo para a educação em saúde e continuidade da interação entre a UFRRJ bem como seu corpo discente e docente e a sociedade.

Palavras-chave: podcast, saúde única, extensão universitária.

1 INTRODUCTION
Veterinary Medicine is a science that serves the community with a broad and multidisciplinary approach, performing functions in different areas (CORDEIRO, 2017). The exchange of knowledge between human and veterinary medicine can benefit public health by assisting in the control of diseases and illnesses. This was demonstrated during the COVID-19 pandemic, which was officially declared by the World Health Organization on March 11, 2020 (CAVALCANTI, 2021).
Given the emergence of COVID-19, a new infectious disease caused by the SARS-COV-2 virus with high transmissibility and mortality rates (GUSSO et al., 2020), it has become necessary to create, reinvent, and expand new pedagogical practices. Digital tools facilitate health extension and educational actions, fostering academia-society interaction (OLIVEIRA et al., 2020). These can be considered significant resources in times of crisis, as they expand the range and enable diversity in guidelines, overcoming geographical barriers (SILVA et al., 2020) while maintaining health security and essential social distancing.

*Instagram®* is a popular free social network widely used today. In Brazil, it is estimated that 79% of Internet users use *Instagram®*, which corresponds to 77 million users (mLABS, 2023). Through the application, we find companies and individuals that promote their products, news, and ideas, among others. Therefore, this tool has a high potential for business and interactions due to a large number of diverse connected users. Since social media reaches a considerable portion of the population, it is responsible for ensuring that content and information related to health are accurate and reliable and is recognized as an effective teaching tool in health education (MEDERO et al., 2023).

*Podcast* is another Information and Communication Technology (ICT) that allows the continuity of teaching processes. The adoption of informal language in audio messages has made them more accessible to the general public. This medium of communication carries a message that can be easily accessed with limited resources (DIAS et al., 2012). A key attribute of podcasts is their ability to foster an educational and humanized approach among people who share a familiar universe through experiences and voices (FREIRE, 2013). Podcasts have the potential to foster active learning among students, facilitate dialogues between students and underrepresented communities in mainstream discussions, and significantly contribute to enhancing blended and active learning strategies in curriculum planning (MOORE, 2022). Nonetheless, the use of podcasts in health education is still little known despite their use being an excellent technological communication strategy (SILVA, 2018).

Scientific dissemination updates and teaches major basic principles and communicates the value of scientific work to the public (MASSARANI, 2018). It is
crucial for the general population to have a basic understanding of science in order to make common decisions in their daily lives, particularly on health-related issues. This knowledge can empower individuals to acquire autonomy and develop a critical and reflective mindset towards science (TELES; OLIVEIRA, 2020).

Health education is a tool for scientific literacy (TELES; OLIVEIRA, 2020), providing careful dissemination and discussion of scientific issues to enhance understanding of the world (MAGALHÃES et al., 2017). In this regard, popular health education must also be prioritized by valuing the population's prior knowledge and scientific knowledge (FALKENBERG et al., 2014; SARAIVA et al., 2022).

Zoonoses are infections that are naturally transmitted between human beings and other vertebrates and can spread from food, water or the environment directly. Zoonoses alone represent 60% of world known infectious diseases, with a high proportion (70%) of pathogens coming from wildlife hosts (GUHA et al., 2022). With the acceleration of globalization, zoonotic emerging and re-emerging infectious diseases seriously harm human and health, husbandry development, and food security (EDITORIAL/ECLINICALMEDICINE, 2020). Throughout history, several epidemics and pandemics have been associated with zoonotic origins, with rapid spatial and temporal spread worldwide (ZHAO et al., 2022). The control of zoonoses is the primary objective of Veterinary Medicine in public health, promoting health and bringing benefits to both humans and animals as well as the environment (XAVIER; NASCIMENTO, 2020).

Amidst the pandemic, it was crucial for the population to have access to health education information and other fields of knowledge. Communication between health professionals and the public played a vital role in disseminating information about the infectious agent, its forms of transmission, and prevention behaviors. This helped develop a sense of individual and collective responsibility and enabled people to apply appropriate prevention measures in addition to interventions from government agencies (FULONE et al., 2022). The present study aims to report on the health education activities developed by the Veterinary Medicine Tutorial Education Program (PET Veterinary Medicine group) at the Federal Rural University of Rio de Janeiro. The group utilized podcast
production and dissemination platforms, as well as the social network platform Instagram®, to facilitate the distance teaching-learning process in health. These digital tools show promise in enabling effective health education from a distance.

2 METHODS

2.1 DISCLOSURE ON THE SOCIAL NETWORK INSTAGRAM

The students from the Pet Veterinay Medicine group were divided into pairs or trios in a drawing. They chose the theme to address on the PET Instagram page (@petmedvetufrrj) through a prior discussion on the subject. The selected topic was then used to produce publications. After choosing a topic related to Health Education, the pairs or trios produced a script using Word Online. They shared a link with the supervisor and other students to provide corrections and suggestions. The publications were posted weekly on the Instagram news feed and took two formats:

2.2 CARD TEMPLATES AND REELS MODELS.

The Card Template, material in art format, was created on the Canva platform, containing images and explanatory texts on single health topics, mainly related to Veterinary Medicine. The Card model is a multiple post feature, which enables the addition of up to 10 pieces of art in a single publication, allowing for a continuation of the displayed content from the cover. The images were accompanied by a caption that provided additional information about the subject. The caption contained hashtags, commonly used on social media platforms, to guide users to a page where they can view other publications related to the same topic. This approach is similar to using keywords in an article to help readers find related information.

The Reels Model is a format for creating short videos that are no longer than 60 seconds. The videos were made with a clear and objective script to increase the number of views on the page. Additionally, subtitles with explanatory content were added to complement the video and enhance its message.
2.3 DISCLOSURE THROUGH PODCASTS

About podcasts, the topics were selected based on relevant health issues during the pandemic. The group members were responsible for inviting guests, conducting interviews, editing the episodes, and publishing them. Professionals with expertise in the area were chosen by the Petians for the interview, and the invitation was sent by email. After accepting the invitation, recommendations for an ideal recording were made available, including a silent environment, quality sound equipment, and a stable internet connection. In compliance with the listed requirements, the conversation was recorded in an online meeting via Skype, and the audios were extracted and edited using the Audacity application. For the publication, the Anchor application was used to add a theme and description to the episodes and make them available on the leading streaming platforms: Spotify, Deezer, and Google Podcasts. Furthermore, PET's Instagram biography includes a link to the page containing information about the group and their podcast episodes, providing easy access for visitors.

2.4 OBTAINING DATA RELATED TO THE PUBLICATION

The methodology employed to assess the dissemination of health education topics on the group’s social network platforms consisted of a quantitative analysis of data gathered from Instagram® publications, which is the primary social media used by the PET group, and the publication of Podcasts using the tools provided by Anchor app, respectively. The insights function provided data on accounts reached, number of shares, likes, and views from March to December 2021. Furthermore, it was possible to obtain more specific data about followers, such as city, age group, and gender. Such information and the number of followers on the PET Instagram® page were obtained by analyzing the activity report on the platform. This analysis aimed to evaluate the audience retention in content delivery and identify the need to modify post models and topics covered.

The Anchor application provided statistical data on podcasts, including the number of reproductions, top-performing episodes, performance graphs, and streams per episode as of October 9, 2023.
3 RESULTS AND DISCUSSION

Since the start of the project in March 2021, a total of 40 Health Education posts have been made and recorded. Information on the topics covered in the Card format, the number of shares, the number of user accounts reached, and the number of "likes" received in the publications can be seen in Table 1. The data was sorted in descending order based on the "shares" criterion. The themes that received the most shares were "Can cats go for a walk?", "How to ease your pet's anxiety?" published in Reels format, and "The 5 freedoms of animals" (Figure 1).

Table 1. Health Education themes on PETVeterinary Medicine Instagram account from March to December 2021, including the number of shares, accounts reached, and likes.

<table>
<thead>
<tr>
<th>Publication themes</th>
<th>Shares</th>
<th>Accounts Reached</th>
<th>Likes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can cats go for a walk?</td>
<td>113</td>
<td>1,049</td>
<td>140</td>
</tr>
<tr>
<td>How to ease anxiety in your pet?</td>
<td>55</td>
<td>3,466</td>
<td>148</td>
</tr>
<tr>
<td>The 5 freedoms of animals</td>
<td>54</td>
<td>854</td>
<td>99</td>
</tr>
<tr>
<td>Signs in LIBRAS* used in Veterinary Medicine</td>
<td>50</td>
<td>2,971</td>
<td>165</td>
</tr>
<tr>
<td>Bacterial resistance and the indiscriminate use of antimicrobials</td>
<td>28</td>
<td>779</td>
<td>76</td>
</tr>
<tr>
<td>Giardiasis</td>
<td>21</td>
<td>763</td>
<td>88</td>
</tr>
<tr>
<td>The principle of comprehensiveness and the Veterinary Doctor in SUS **</td>
<td>18</td>
<td>738</td>
<td>85</td>
</tr>
<tr>
<td>Plants toxic to dogs and cats</td>
<td>13</td>
<td>966</td>
<td>110</td>
</tr>
<tr>
<td>Do not keep your pet confined or chained</td>
<td>7</td>
<td>759</td>
<td>75</td>
</tr>
<tr>
<td>What is sporotrichosis?</td>
<td>1</td>
<td>789</td>
<td>80</td>
</tr>
<tr>
<td>Scabies (sarcoptic mange)</td>
<td>0</td>
<td>733</td>
<td>72</td>
</tr>
</tbody>
</table>

(*) LIBRAS: Brazilian Sign Language. (**) Brazilian Unified Health System. Source: The Authors (2023).
The theme referring to the popular belief that cats can and should go for walks had the highest number of shares, which indicates the potential of this tool for disseminating information. According to the Brazilian Institute of Geography and Statistics (IBGE), the population of domestic cats in Brazil reached 23.9 million in 2020 (IBGE, 2010). The estimated population of domestic cats was expected to reach 30 million in 2022, indicating the growing number of these felines in home environments and, consequently, an increasing concern for veterinary medical care by their owners. This panorama justifies the publication's reach and prominence. It aimed to show the risks of these animals on the streets without supervision and the dissemination of zoonoses, such as sporotrichosis. This disease has been considered hyperendemic in the state of Rio de Janeiro since 1998 (FALCÃO, 2019).

Cats are considered more susceptible to infection due to sharpening their claws on trees, burying their feces, grooming themselves, and fighting with other cats. These habits expose them to infections and contribute to the dissemination of zoonotic pathogens (ABDULKARIM et al., 2021). Furthermore, unneutered free-roaming cats can lead to
another problem: unwanted reproduction, since females are highly fertile and produce many kittens. The reproductive approaches, such as early sexual maturity, seasonally polyestrous cycling, and multiparous pregnancies, contribute to the prolific nature of the cat population (KUTZLER, 2007). Therefore, releasing these animals into the streets is a threat to human health, as it endangers animal welfare (ABDULKARIM et al., 2021).

The theme related to anxiety in animals came in second place in the sharing criteria; however, it reached the most significant number of Instagram accounts. The Reels publication aimed to exemplify effective measures against anxiety signs in pets, a prominent issue in the given context. The COVID-19 pandemic significantly impacted global mental health, with a 25% increase in the prevalence of anxiety and depression (PAHO, 2022). However, most people are unaware of the potential problems that can affect their pets mental health and well-being. Lutzke et al. (2021) correlated the pandemic with behavioral changes in companion felines. Changes in routine in their home environment affected them physically, socially, and mentally. This period of isolation resulted in the emergence of several problems related to stress in dogs and cats, including abandonment, separation anxiety. The increased contact interaction was also associated with increased stress-related behaviors excessive/compulsive self-grooming and fear in cats and aggression, fear, and touch sensitivity in dogs (KRUG et al., 2021; TAKAGI et al., 2023). Therefore, it is crucial for pet owners to learn methods to prevent anxiety signs in their pets, and PET Veterinary Medicine social media can help guide them.

Animal welfare is a growing public concern in most countries (BROOM, 2011), and this topic was addressed in the publication "The 5 freedoms of animals", which ranked third in terms of the number of shares it received. Applied ethological studies of cognition, motivation, and the complexity of social behavior in animals have led to a rapid development of the science named animal welfare. This field of study focuses on the state of individual animals and their attempts to cope with the environment they are in. Well-being is related to all mechanisms involving physiology, behavior, emotions, and pathological responses (BROOM, 2011).

Although the publication regarding the use of Libras (Brazilian Sign Language) in Veterinary Medicine was not among the three most shared topics, it achieved the
second-highest number of accounts reached (n=2971). According to the demographic census carried out in 2010 by IBGE, the number of deaf people in Brazil exceeded 10 million, which corresponds to 5% of the population (IBGE, 2010). Furthermore, the World Health Organization estimates that around 900 million people may develop deafness by 2050 (ONU, 2020).

Federal Law Nº 10,436, enacted on April 24, 2002, acknowledges Brazilian Sign Language as a legitimate means of communication and expression, along with its associated resources. The law recognizes Libras as a linguistic system for transmitting ideas and facts (BRASIL, 2002). In Article 3 of this Law, public institutions and companies providing health care services must guarantee adequate care and treatment for people with hearing impairments. Thus, there is an undeniable demand for developing tools and languages accessible to this part of the population. The post aimed to explain essential language accessibility within the medical-veterinary context for people with hearing impairment, facilitating their access to the environment. Additionally, it is important to highlight the care taken by the Pet group in promoting access for deaf people to their video content through the use of subtitles.

According to the Insights provided by the platform, the main cities of users who viewed the page were Rio de Janeiro (32.0%), Seropédica (10.3%), and Nova Iguaçu (4.6%). As for group age, the highest frequency was observed among those aged 25-34 years (43.0%) and 18-24 years (38.7%). Regarding gender, the female audience was larger by 7 (6.9%). About the number of followers, since the creation of the group’s Instagram account on October 6, 2017, until February 28, 2021, the day before they started publishing content related to health education, the PET Veterinary Medicine group had accumulated 1,247 followers. Throughout the publication period, the number of followers increased considerably by 117%, reaching a total of 2,714 followers on September 30th of this year. This increase enabled greater dissemination of publications.

As for Podcasts on health education, produced and published by the group, two topics were covered: "The Veterinary Doctor and Christmas Dinner: What Do They Have to Do with Each Other?" and "Mental Health and Challenges of Remote Teaching". Table
Table 2 displays the number of reproductions, accounts reached, and likes received, broadcast on the Spotify platform.

<table>
<thead>
<tr>
<th>Podcast Themes</th>
<th>Reproductions</th>
<th>Accounts Reached</th>
<th>Likes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Veterinarian and Christmas Dinner: What Do They Have to Do with Each Other?</td>
<td>108</td>
<td>834</td>
<td>49</td>
</tr>
<tr>
<td>Mental Health and Challenges of Remote Teaching</td>
<td>59</td>
<td>685</td>
<td>67</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>167</strong></td>
<td><strong>1519</strong></td>
<td><strong>116</strong></td>
</tr>
</tbody>
</table>

Source: The Authors (2023).

Using the Podcast to disseminate health knowledge also resulted in significant engagement, as evidenced by the high number of listeners and accounts reached for the two topics covered. The term "Podcast" was coined in 2004 by combining the words "iPod" (a device created by Apple for playing audio files in MP3 format) and "Broadcast". Podcasting is a communication and information technology that uses the RSS (Real Simple Syndication) format to collect and distribute news, music, and other types of information (CHO et al., 2017; RODMAN and TRIVEDI, 2020).

Silva (2018) analyzed the influence and contribution of Podcasts to health education and considered that this audio technology can be a very efficient way of learning. The author highlighted the importance of this sound content format for accessing knowledge, particularly in teaching areas and educational processes. Besides, it is important to note the increasing popularity of podcasts among the public. According to research conducted by the Brazilian Association of Podcasters (ABPOD) in 2018, 80.7% of podcast consumers listen for learning purposes, second only for entertainment (87.7%). Moreover, the convenience of accessibility offers the listener the opportunity to use it as a companion in traffic, while undertaking household tasks, during physical activities, and even at work or before going to bed. According to ABPOD, 77% of users utilize the podcast to carry out other activities while listening (ABPOD, 2020). As it is an audio program, it does not demand exclusive attention from users, which streamlines listening and enables autonomy in learning.
One of the chosen themes addressed mental health during the COVID-19 pandemic. In the first year of the pandemic, the global prevalence of anxiety and depression increased by 25%. As a result, concerns over potential increases in these conditions have led 90% of the countries surveyed to incorporate mental health and psychosocial support in their COVID-19 response plans. The pandemic has impacted the mental health of young people, who are at a disproportionate risk of suicidal behavior and self-harm, with women being more severely affected than men (WHO, 2022). Bragé et al. (2020) developed ten podcast episodes that covered the topic of mental health during the pandemic. The authors demonstrated that the use of this technology allowed people to access information in a dynamic and democratic way. This, in turn, contributed to the dissemination of knowledge about psychological issues in the population.

One Health is a modern concept that unifies animal, human, and environmental health, as recognized by the World Health Organization (WHO, 2017). The episode "The Veterinarian and Christmas Dinner: What do They Have to Do with Each Other?" addressed the legal responsibility of veterinary professionals in ensuring animal health. This responsibility indirectly affects human health by guaranteeing the quality of animal-origin products. The unified vision of "One Health" requires understanding the epidemiology of diseases and the role of domestic animals and fauna in zoonotic pathogen exchange. By certifying the health of production herds in all aspects, the veterinarian guarantees the quality of animal products (COSTA et al., 2015).

In the Podcast of the PET group at UFRRJ, publications were primarily accessed by young women. Furthermore, this greater search for health care by women can be justified by the entrenched masculine norms prevalent in society. These norms have resulted in the creation of a masculine stereotype and intensified the inequality between men and women (MACHIN, 2011). Socially established masculinity considers self-care practices a form of vulnerability and weakness, causing men to fear seeking health-related information (OLIVEIRA et al., 2015; SOUSA et al., 2016).

Teaching and learning methods evolve all the time, and to keep up with this advancement, it is necessary to explore technological tools and resources that enable learning (MARTINS, 2020). In this context, the social network Instagram is a valuable
instrument for scientific dissemination since information can virtually reach a larger audience in different locations. Several users from different cities were successfully reached, particularly those in Rio de Janeiro, Seropédica, and Nova Iguaçu. This can be attributed to the proximity of these areas to UFRRJ campuses.

The project covered various topics contributing to the dissemination of information on public health and educating the public with simple and easy access to social media. The UFRRJ PET group utilized Instagram and podcast episodes to share the knowledge they acquired during their academic training with the general population. This helped to promote health education and contributed towards achieving two of the seventeen Sustainable Development Goals (SDGs) outlined by the United Nations: Health and Well-being and Quality Education (ONU, 2015).

4 Conclusion

This study highlights the importance of scientific dissemination and health education as essential instruments to promote the population’s awareness and knowledge of animal welfare and public health. The PET Veterinary Medicine group at the Federal Rural University of Rio de Janeiro managed to reach a wider audience and spread its message effectively, particularly during the COVID-19 pandemic, using social media and its tools. This helped them to disseminate information related to Veterinary Medicine to a diverse audience.

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