

The Care in Collective Health, Environmental and Welfare: Research and Field Actions of a Veterinary Clinic School in Brazil

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Abstract: The Public Health attends to the knowledge of techniques used for intervention in issues related to health of the general population aiming the promotion of improvements to people's quality of life. It is basically multidisciplinary as it involves several knowledges, including Veterinary Medicine. To this care movement of human and animal health it has been given the name of One Health. The purpose of this research is to inform and act on the control and prevention of communicable diseases of domestic and synanthropic animals to man, connecting the Collective Health, the Epidemiologic aspects, Health, Education, Preventive, Responsible Ownership and Animal Welfare. The goal was to increase the previous acquired knowledge of the students with the practice promoting actions focusing the Collective Health, becoming them more and more able to dedicate themselves to during graduation, in several related areas: Public Health, Epidemiology, Environment, Permanent Education in Health and NASF (Núcleo de Apoio à Saúde da Família - Family Health Support Center, a specific health program in Brazil). The veterinarian is intrinsically linked to those issues and might be part of specific studies and situations related to conservation and environmental protection.

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I. Introduction

The World Health Organization (WHO) define health as "A state of complete physical, mental and social welfare, not only the absence of affections and diseases"[1]. Therefore, Collective Health covers a wide range of Health Care that contemplates these goals established by WHO.

The ecological dimension of Health is understood by the relations between Health, Sanitation and Environment, especially in those communities in need. Environmental Health covers some of the following measures: public water supply and sanitation; health of workers; domestic waste management; housing hygiene; control of environmental risks to Health; safety in the use of chemical substances, such as heavy metals, agrochemicals, organic solvents [2,3].

In the following text are listed some of the injuries detected by professors of the Veterinary College of UNIFESO that must be worked out in the communities by the students together with the local health agents in Teresopolis city (in Rio de Janeiro State, Brazil) with the purpose of alerting and spreading Collective Health.

1.1 Tick borne diseases

In Brazil, both in cities and rural region, is common to find animals such as oxen, horses and dogs carriers of different species of *Amblyomma* and *Rhiphcephalus sanguineus* [4,5] vectors and / or hosts of zoonoses. Those animals are used as sentinels for important diseases in Public Health. At least five agents of the family Anaplasmataceae have been described as infectious to humans, including *Ehrlichia chaffeensis*, *E. ewingii*, *E. canis*, *E. platys*, *Anaplasma phagocytophilum* and *Neorickettsia sennetsu* [6]. Almost all species of *Ehrlichia* can infect humans becoming an important concern. Parasitic diseases that cause human granulocytic ehrlichiosis can naturally infect several animal species. An specific concern about these parasites, especially those that causes canine monocytic ehrlichiosis, is that they may be pathogenic to humans [7].

Some parasites transmitted by ticks and other vectors is not yet known but has an important zoonotic potential. No human cases of the diseases caused by *Mycoplasma haemocanis*, *Mycoplasma haemofelis*, *Hepatozoon sp.* and *Rangelia vitalii*, but there should be extensive investigation in this sense. [8-10].

There is an increasing interest in tick-borne diseases, and research has shown that a tick may contain more than one hemoparasite. *Babesia* is one important example of a hemoparasite that may be transmitted. However, *Rickettsia rickettsii* which causes Rocky Mountain Spotted Fever may also be transmitted by those vectors [8,11].

Brazilian Spotted Fever is an acute febrile infectious disease which can manifest with a mild clinical picture or even subclinical, but also can present severe forms with high rates of lethality. It is caused by a bacterium of the genus *Rickettsia*, transmitted by ticks of the genus *Amblyomma*. The most serious cases are those in which the diagnosis was delayed. The diagnosis is made by the indirect immunofluorescence (IFN) reaction [5,12].

Ticks of the genus *Amblyomma* and *Ixodes* can also transmit the Lyme disease, that is caused by bacterial spirochetes of the *Borrelia burgdorferi* sensu lato complex, with several species of varying degrees of pathogenicity [13].

1.2 Diseases transmitted by flies, mosquitoes and triatomines

Musca domestica is known as the carrier of eggs and larvae of helminths (*Ascaris lumbricoides*, *Trichostrongylus axei*, *Enterobius vermicularis*, *Taenia solium* and hookworms in humans; *Toxocara canis* and *Ancylostomum caninum* in dogs) and protozoa (*Entamoeba histolytica*, *Giardia intestinalis* and *Cryptosporidium parvum*). They are responsible for causing manifestations of intestinal parasitoses with greater or lesser severity depending on parasite load, infectious agent and host (age, nutritional status and immune response). Its increase in urban environment occurs mainly due to the lack of hygiene and accumulation of garbage and the waste of the companion animals deposited in the environment [14].

Giardiasis is mainly transmitted by contaminated water. It is not yet known whether *Giardia canis* also infects humans, but some infections in humans (*Giardia lamblia*) may be related to infections in domestic and wild animals. Contamination of urban water sources with *Giardia* is generally attributed to domestic sewage. In rural areas, domestic and wild animals can cause contamination of springs [15].

Phlebotomine mosquitoes *Lutzomyia* sp. are vectors of agents of Tegumentary Leishmaniasis (*Leishmania braziliensis*, *Leishmania mexicana* and *Leishmania amazonense*) and Visceral Leishmaniasis (*Leishmania chagasi*). In the Anophelini and Culicini tribes, there are vectors of malaria-causing plasmodia (*Plasmodium vivax*, *Plasmodium falciparum*, *Plasmodium ovale* and *Plasmodium malariae*) and some viruses such as Yellow Fever [14].

Barber beetles are vectors of Chagas disease, caused by *Trypanosoma cruzi*. *Trypanosoma cruzi* naturally lives in the blood of some animals, especially dogs, cats and rodents in general. We have already found forty-two (42) species of insect vectors of Chagas disease in Brazil, in which thirty (30) inside domestic environment. Among the five species most frequently captured and behaving as vectors are *Triatominae brasiliensis*, *Pseudo maculata*, *Triatominae infestans*, *Panstrongylus megistus* and *Triatominae sordida*. In 2012, there was a notification about the presence of a barber in the neighborhood called "The Spanish", in Teresopolis [16,17].

1.3 Diseases transmitted by fleas and lice

Tunga penetrans may lead to the clinical condition called foot bug. In dogs, fleas may transmit larvae of *Dipylidium caninum*. Those that parasitize domestic dogs and cats are *Ctenocephalides felis felis* and *Ctenocephalides canis*, but infestations by *Xenopsyllacheops* and *Pulex irritans* are often found. As *Pulex irritans* and *Xenopsyllacheops* may cause bubonic plague because these may be vector of the bacterium *Yersinia pestis* humans may be in risk when those infestations occur [14].

In Brazil, there are two main areas of natural foci of bubonic plague: Northeast of Brazil and the city of Teresópolis in Rio de Janeiro. The focus of Teresópolis is in a region called Serra dos Órgãos, in the limits of Teresópolis, Sumidouro and Nova Friburgo cities [18].

1.4 Diseases transmitted by rats and bats

Among several diseases transmitted by rats and bats, the most common are rabies and leptospirosis. Man, who deals directly with animal creations can be infected with leptospirosis from contact with sick or carrier animals. Therefore, human leptospirosis is an occupational disease that occurs more frequently in veterinarians, farmers, and whites. Currently, the main occupational risk group in the world is the one that deals with dairy cattle herds and pig farms. In addition to these professional categories, sugarcane planters, rice planting workers, miners, trash collectors and others are also in risk of exposure. Although less frequent and purely accidental, it is possible for men to become infected in recreational and leisure activities while bathing in rivers, streams, lakes and springs that receive animal waste or fishing and practicing sports in contaminated environments [19].

In relation to rabies, even in areas where it seems to be eradicated, it can be re-introduced by wild animals if the population of dogs is not adequately immunized. Although vaccination campaigns have been

reducing the incidence of canine rabies, it has to be noted that many deaths of nervous origins in dogs are underreported and no samples are sent from these dogs for rabies screening. More vaccination campaigns and more clarification to the population about the chain of transmissibility, symptoms and attitudes to be taken in case of suspected death of unvaccinated dogs are necessary [20].

1.5 Larva migrans

The main etiological agents of CLM (*Larva Migrans Cutanea*) and VLM (*Larva Migrans Visceral*) are *Ancylostomaspp* and *Toxocaraspp*, respectively, helminths whose natural hosts are dogs and cats. The preventive measures for the control of these zoonoses are: health education, prioritizing the use of shoes and adequate hygiene, tests of parasitological feces and periodic administration of anthelmintics for dogs and cats, birth control of these animals and health professionals' awareness [21].

It is important for the student to know which illnesses should be reported, according to Brazil [22].

The aim of this research was to increase the students' knowledge and practice in public health actions so that they become increasingly able to dedicate themselves to this area when they are graduates, on several fronts of work focused on Public Health, Epidemiology, Environment Education, Continuing Education in Health, as well as NASF (Family Health Support Nucleus). Also from this work of Continuing Education in Public Health is intended to obtain texts, lectures, posters, recorded and printed media, which will help in the dissemination of these actions [4].

II. Material And Methods

The research was carried out from August of 2016 to May of 2017, during the attendance of the social project held in the Clinic-School of the Veterinary Medicine College of University Center Serra dos Órgãos-UNIFESO. This project is called "Animal Health Project" and occur since 2002.

Meetings were weekly held with students and professors to discuss and study the main zoonoses and diseases that could endanger the population.

Residents of poor communities of Teresópolis were invited to take their pets to be registered and consulted at the Clinic-School to evaluate the risks of zoonotic diseases and to learn about their prevention.

The students who participate in the research were asked report, monthly, the activities carried out. From those reports, banners and electronic media were developed for lectures in neighborhoods of associations and public schools of Teresópolis.

III. Results And Discussion

Between August and November of 2016 and from January to May of 2017, the students carried out different fieldwork as: visiting poor communities, presentation of papers in forums and lectures for Health agents. An estimate of 400 animals (dogs and cats) were vaccinated and more than 200 animals were registered in the Animal Health Project, which were treated, including the right to some laboratory tests, for free. During the action, the tutors were guided, by means of booklet, on the existence and the prevention of zoonoses.

Through the lectures, it was possible to alert and disseminate notions about Public Health, regarding the control and prevention of zoonoses, Environmental Education and Animal Welfare, addressing the deficiency of public health education programs, improving perception and understanding of the likely risk that people and animals are exposed, especially in underprivileged communities, as reported by Ceccin [1].

Since Health Education implies the need to provide the most disadvantaged communities with explanations and access to Basic Health, Health and Epidemiological Education, the students that participate in the research offered practical and enlightening solutions based on the understanding of the economic needs of these people, according to Pfuetsenreiter et al. [2].

With the continuity of the actions, it was understood that it is vitally important that the veterinarian must be integrated into the municipal NASF so that joint actions are taken to remedy and prevent these highly dangerous zoonoses, also protecting the integrity of the animals, according to the exposed by the CRMVSP [23].

The actions also served to sediment in the student of veterinary medicine the therapeutic role of pets, provided with health, in the treatment of human emotional dystonias, in the reduction of aggression and conduct disorders in young, in the treatments of chemical dependence and helping to develop altruism and emotional balance. In addition, animals serve as guard and companionship for the elderly, among many other functions, which is in accordance with the work of Possamai [24].

From the reports, it was possible to develop texts that will be presented in lectures and conferences in another moments and actions programmed and also published in scientific journals.

IV. Conclusion

This transdisciplinary movement involving teachers and students in the search for knowledge aroused, especially in the students, a look of care and respect for the less fortunate, and multiplied knowledge about health practices, particularly regarding vector control and prevention of zoonoses.

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