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Pendulum migration and healthcare in border área

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Abstract *This article aims to reflect about the importance and the potential impact of pendulum migration in the pursuance for healthcare, and, specifically, about the peculiarity of this kind of mobility in border areas. It describes the context in which the pendulum migration is inserted for the modification of the urban space in the 20th century, makes initial comments about legal aspects of the theme in health sector, and describes the reality of the Brazil-Argentina-Paraguay triple border as an important location of pendulum migration for the pursuance of healthcare as an illustrative fact. In this way, hypotheses are formulated about the causes of the pendulum migration impact on patient's health like the effect of the distance covered from home to healthcare facilities, and organizational aspects related to healthcare like the uncertainty about having or not health assistance due to international mobility. It concludes that this kind of mobility is very common in the pursuance of healthcare despite the traditional approach to the theme mentioning only work or study. Besides that, it is very important to study its impact on health and to include this theme on the cross border healthcare debate.*

Key words *Pendulum migration, Prognosis, Cross border healthcare*

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Introduction

Temporary migration of people seeking health care service is a subject rarely explored when planning health services and actions since it influences the adherence to treatments and the prognosis of patients. Pendulum mobility or pendulum migration (PM) is the daily movement of people between their home and workplace or school[1]. The term has been used especially when this mobility implies that a person resides in one municipality and works or studies in another one. This is an important fact, for it distinguishes PM from immigration, since in the second case there is a definite change of residence.

The study of this kind of human mobility has taken on great importance since the second half of the 20th century. With the growth of cities, urban centers have emerged, in which the greater concentration of industrial, commercial and service activities in relation to other areas contributed to these nuclei becoming a reference for neighboring regions, thus establishing a hierarchical relationship with satellite areas in terms of labor market. These areas of greater importance are called functional regions[2]. They have a great importance in the PM context since it is precisely for these regions with the largest and most diversified labor market and supply of educational institutions that most of the pendulum mobility occurs[3]. Thus, PM is the unit of measure of a functional region.

Despite the contribution brought by this concept and its research to the study of human mobility and its associated factors, when evaluated against the criteria of healthcare sector, it shows an important limitation: they consider work and study to be the main motto of the pendulum migratory movements, disregarding the pendularity to seek healthcare services[3-5]. Most of the scientific output that intends to relate human mobility to health outcome addresses the immigration process, often highlighting a negative effect of immigration on health such as late diagnoses and reduced access to services[6]. Thus, PM is virtually a blind spot in the production of knowledge of its relationship with people's health. Although there is the term pendulum migration in English scientific literature, surveys often use the term commuting to refer to daily mobility to work or study facilities. In health literature, a study shows that the longer the commuting time, the worse the perception of one's own health[7], which included a randomized trial on university students who are supposed to commute to another campus or not commute at all. The students submitted to commuting[8]showed tendency for higher blood pressure. However, although they seek to establish a relationship between pendulum movements and health, only mobility to work and study have been considered, not including the search for healthcare services. It is possible that PM for the purpose of seeking health care corresponds to a different phenomenon with its own peculiarities.

Healthcare-oriented PM is a very common process throughout the world[9]. In the private sector, many people travel to reference centers in specific private services without having to move permanently from the city where they reside. In Brazilian public health, PM is a legally established population movement. The federal Law 8080/1990 emphasizes in Articles 8 and 10 that the Unified Healthcare System (Sistema Único de Saúde - SUS) is organized in a hierarchical and regionalized manner, providing that municipalities can create intercity consortia to carry out actions and offer services jointly[10]. Therefore, small municipalities can establish partnerships with larger municipalities which contain a greater amount of hard technology, so their citizens can move to these "functional health regions" when necessary and then return to their original municipality.

Another important aspect is that PM occurs in both medium-sized cities and functional metropolitan regions, with an average of 1399 people per day in the Cascavel-Toledo axis, neighboring and medium-sized cities in Paraná countryside[4] and 120,425 and 1,015,222 in the metropolitan area of Porto Alegre and São Paulo, respectively[3,11]. These metropolitan areas have a positive PM balance, that is, during business hours they receive more people than they send through this form of mobility. With such a large daily volume of people many of them will eventually use public health services and if they think these services have better quality than those in their hometown, they will look for ways to make regular use of them. When there are consortia signed for specific services that regulate this flow of patients, funds are transferred between the municipalities that use these services. However, it is also used in many other health care modalities in addition to signed agreements. The extra population that comes from PM is rarely considered for the purpose of fund transfer and public policies formulation, thus generating an excess in the number of people when compared to the provision of health care funds.

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All PM aspects become more complex when we consider the international PM for the use of public health services. When two countries border each other and have socioeconomic disparities and offer different quality health services, it is common that people use PM to seek health care services abroad. It occurs very frequently in certain regions of the border of Brazil as is the case of the Brazil-Argentina-Paraguay triple border. Estimates of the Brazilian Institute of Geography and Statistics (IBGE) and the Ministry of Foreign Affairs are very dissenting. The first one shows around 4,926 Brazilians residing in Paraguay[12] and the second, according to data from the Brazilian embassies, 349,842 *Braziguayans* (Brazilian citizens living in Paraguay), 200,000 in the very region neighboring the triple border – potential users of the Brazilian health care system[13]. With this population surplus and the transfer of funds for health care based on the population residing in the municipality, there is a constant financial lag. If the origin of these people is disclosed, it is possible that the access of the health care system be reduced for them, which leads many to find unofficial ways to prove an address in the Brazilian city in order to be attended. This creates a vicious cycle that is difficult to solve: in order to formulate public policies that include international PM patients, they need to be mapped and quantified; for that to happen however, it is necessary to identify them, which might lead to health care interruption. In terms of epidemiological research, this is a challenge: how to measure a population that does not want to be measured?

In 2007, Foz do Iguaçu joined the SIS-FRONTEIRAS program, and part of the budget allocated to the municipality was used to build the Maternal and Children Center (Centro Materno Infantil - CMI) for the purpose of performing prenatal follow-up of Brazilian pregnant women living in Paraguay. A study carried out with this population showed that *Braziguayan* pregnant women who received prenatal care at the CMI, delivered their babies in Foz do Iguaçu and declared themselves to be residents in Paraguay had more prenatal consultations, a higher probability of having had their first visit still in the first trimester and their first puerperal consultation up to one month after the childbirth, when compared to pregnant women of the same profile who declared themselves to be Brazilians during hospitalization despite being in fact *Braziguayans*[14]. The authors consider that these patients and their families hide these data to avoid receiving worse treatment than the Brazilian patients, or even to be denied care. Therefore, they would purposely look for a hospital at an advanced stage of pregnancy to make sure that health care would not be denied. These findings occurred despite all of these groups having official access to the service at CMI. The results of the study suggest that when a pregnant woman recognizes her right for access to healthcare (illustrated by the assumption of her residence country at the time of delivery), her follow-up and health outcomes may not differ from pregnant women living in Brazil.

The context of assistance provided to these pregnant women through a service created for this specific purpose does not apply to the majority of foreigners and *Braziguayans*. Many of these people who seek access to public health services in the Brazilian city of the triple border do so in an informal way, and are therefore subject to the risks of dubious accessibility to their needs.

There are two main hypotheses that relate PM to the seeking for health care services and health outcomes: the distance patients travel between their residence and a health care facility, and the administrative aspects necessary for the use of these services to occur.

Residing in a municipality that is not the same where one receives health care or moving long distances to make use of these services may have an impact on the health of patients. There are few studies that correlate the distance patients travel to be rendered health services and their health, which in terms of measured outcomes can be classified into three modalities: descriptive studies on the mobility pattern, studies that evaluate secondary outcomes, and studies that evaluate primary outcomes. The first case can be illustrated by a study with patients enrolled in opioid addiction treatment programs in the United States that aimed to understand the mobility pattern of these patients to the health care facilities as well as the distance covered, means of transportation and other clinical characteristics and sociodemographic variables, not establishing a connection between mobility and health outcomes[15]. Regarding the second modality, a research showed that the distance a patient travels to receive HIV-related care, according to the perception of both patients and health professionals, is related to lower treatment engagement and lower adherence to antiretroviral drugs, especially if distances are greater than or equal to 50km[16]. Another illustrative study was a qualitative Brazilian survey conducted with all health secretaries of the sixty nine Brazilian municipalities bordering

Argentina, Uruguay and Paraguay, which aimed to elucidate the conditions of access and demand for health care services in border cities of the Mercosur[17]. Most secretaries admit this demand exists in their municipalities and consider it to be frequent. However, most of these municipalities do not keep records of the services provided to foreigners and Brazilians living abroad. Only three of them register these services on a regular basis and 21 are able to make estimates. Finally, a study that evaluated the relationship between the distance traveled from a patient's residence to the oncology center, responsible for the diagnosis of colon cancer, showed a positive relation between the service-residence distance and the probability of metastases by the time of the diagnosis, with a higher probability of diagnose in more advanced stage of the disease for patients who live further away from the center[18]. The long distances traveled to the center have the same effect of a reduction in geographical accessibility with all their related outcomes such as delay in diagnosis, disease management and the search for resources in the event of disease complications, leading to the greater probability of patients to develop health outcomes.

The distance traveled elucidates only part of the factors related to health service access. Administrative aspects called organizational accessibility[19] are also related to the access and use of health services in the PM context. Many patients who perform intercity pendulum movements to use these services depend on public transportation or the transportation offered by the city government, which, in a recurring way, present vicissitudes such as delays and unavailability. Patients often come from rural areas, which mean they need to travel long distances to the municipal transport station. When they get to the health center there is often a long wait for the service or even cancellation without notice. With so many operational difficulties provided by these services, it is common for people to question the benefits of such commuting and, may times, decide to skip the consultation. In addition, considering the scope of public health, documents such as SUS card, family card, proof of residence and national identity document may be required. For those who seek health care services in the context of the international PM in the border region mentioned above, the absence of such documentation, in whole or in part, brings the uncertainty if the health service is to be rendered both for Brazilians who live abroad and foreigners who seek care in Brazil. There are also centers in neighboring countries, but individuals often prefer to cross the border to keep their search for care confidential (as is the case of health care for HIV patients) or because they think Brazilian centers have better quality. The accessibility to public health services in Brazilian cities varies for this migrant population, fully operating in emergency services, but partially working in less complex services. Another aspect that involves organizational issues at the centers is the need to actively make contact with patients when the staff feels the need to. When they live in a municipality that hosts a center, health care workers conduct active searches themselves. When patients reside in other municipalities of the regional health service in the same state, the health servers depend on professionals from other cities to reach these patients and find their contacts, which make this process more complex. When patients reside in another country, contact difficulties escalate when there is a need for active search. Telephone contact is not always available because of difficulties in the center (impossibility to making international calls) or because the patient resides in a very small town or rural area. E-mailing usually occurs, although it is currently a less effective form of communication with this audience. Integration between the centers of the cities on both sides of the border is often low so that they can count on each other in terms of active searches for patients.

Therefore, not only geographical accessibility and distances traveled have become part of the causality that relates health care service PM to health outcomes, but also the uncertainties surrounding the organizational access to health care and the difficulties to contact the patients in the active searches.

The study of people's health when they conduct PM looking for health care is an important research object. Traveling long distances or being subjected to organizational uncertainty regarding access to health care when a person is in poor health state is not the same as traveling long distances or being subjected to uncertainties regarding study and work when one is in perfect health and able to carry out work activities. The formalization of Cross Border Health Care[8] among these countries has potential to be a milestone of human development in the Brazilian border region, allowing for the maintenance of international PM, but without its deleterious effects. The international border area is a privileged space to understand PM and its effects on human health as well as to highlight particularities of this re-

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gion that must be considered when public policies are formulated aimed at this territorial strip.

Collaborations

R Zaslavsky: literature review and text design. BNG Goulart: literature review and final review.

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