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HEALTHCARE INNOVATION IN EMERGING COUNTRIES: lessons learned from the Indian and Brazilian inclusive healthcare programs at the bottom of the pyramid (BoP)

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Abstract

Healthcare is a troubled industry all over the world. Indian government together with healthcare stakeholders has made a difference by adopting innovative practices at the BOP. On the other hand, Brazilian government, despite having a unique prosperous national healthcare system lacked at having strong compliance and governance practices. This paper presents a discussion about the challenges and opportunities found on Indian and Brazilian BOP healthcare programs and make a comparison between them. The paper explores concepts such as bottom of the pyramid (BOP) innovation and shared value practices, explaining how the whole value chain could be well exploited. Secondary data was used to explore the Indian cases and the Brazilian cases were shown by secondary data and complemented with primary data collected at a Brazilian healthcare system user interview. The result is the writers' suggestion that if Brazilian healthcare public policy adopted some Indian´s practices it could be more effective for the whole Brazilian population.

Keywords: Healthcare innovation; Bottom of the pyramid; Sustainability.

1. Introduction

Healthcare is a troubled industry all over the world as Sir Nigel Crisp states (SINGH; LILLRANK, 2015). The challenges for both rich and poor countries are similar : how to shift focus from cure to prevention ; how to integrate various technologies and care pathways ; how to maximize the gains from science and technology ;how to fund health systems that can provide equitable access to healthcare for the whole population.

Recent research increasingly relates health inequalities to social factors such as poverty, nutrition, hygiene, water and sanitation, education, empowerment of women and housing. This would mean that to make any lasting impact on population healthcare outcomes, addressing issues along the complete range including these social determinants of health is essential (SINGH; LILLRANK, 2015).

Within these challenges, Prahalad and Hart (2002) draws company´s attention to the opportunities at the bottom of the pyramid markets. The authors say that if multinational companies look at the population of the bottom of the global economic pyramid of the emerging countries, about 4 billion people, as potential customers, they may be positively surprised by the opportunities of economic growth, innovation and social impact.

Doing more with less has been the concept behind innovation. To meet many low-income people, belonging to the bottom of the economic pyramid of emerging countries such as Brazil, Russia, India, African countries and China, in a decent and sustainable way, some paradigms must be broken.

Prahalad (2010) suggests companies should look at the population of the bottom of the pyramid with daily income between $2 - 5 dollars, as potential customers. Managers should stop looking at the poor as victims, on the contrary, they should respect them as consumers, individuals who have specific needs and a specific purchase condition. By understanding the

poor´ needs and life reality, the companies may come out with disruptive innovation and at the same time solve serious global social problems. A co - creation process assumptions that consumers are equally important as consumers and problem solvers. Companies should listen to them to come up with innovative solutions.

According to Prahalad (2010), different strategies focused on the bottom of the pyramid to eradicate poverty have been studied by several world industries. They have come up with new and creative approaches that transform poverty and societal problems into business opportunities. The companies, then, solve societal problems by creating profitable business opportunities. It is a win-win business relationship between companies and society.

Adding to Prahalad´s ideas, Porter and Kramer (2011) bring the Creating Shared Value strategy and say that it may re signify the whole healthcare value chain. Private companies' investment on healthcare education by working with NGOs and government policies as well as other small local business may diminish government inefficiency to finance healthcare access to the whole population.

In the Healthcare field, the term healthcare innovation is used to characterize inventive models of care delivery, financing, system support, product launch, technology, or workforce training that create dramatic improvements in access, affordability, and/or quality, often advancing progress across all three dimensions. The industry aims to identify models that are sustainable, scalable (can grow within their original target market), and replicable (can be exported and adapted to additional markets) (ODERO et all, 2016). These types of healthcare innovations, while not exclusively, are most often found in the private sector, often target low-income or bottom of the pyramid (BOP) markets, and often have a social mission.

In addition, in 2015, guided by The United Nations, the world leaders agreed to 17 goals for a better world by 2030. These goals have the power to eradicate poverty, fight inequality and stop climate change. Guided by these goals, it is now up to everybody, governments, businesses, NGOs and civil society to work together to build a better future for everyone (UN,2015). CEOS are beginning to understand that private companies will have a very important role in this global agenda (BLACKROCK, 2019).

Added to this agenda, the rapid evolution of technology through the Internet Era, increasingly within reach of all, brings new opportunities to achieve and scale commercial performance in emerging countries. The smart phone becomes a strong ally for the strengthening of commercial actions at the bottom of the pyramid. By using lean processes to be agile and simple translates into business efficiency and profitability at the bottom of the pyramid while productive innovation and business profitability are consolidated for the exponential growth of companies (SINGH; LILLRANK, 2015).

At this perspective, emerging countries´ governments and external partners have addressed programs to eradicate both chronical and infectious diseases, such as diabetes, malaria and diarrhea.

The purpose of this paper is to demonstrate through the analyze and discussion of Indian and Brazilian healthcare programs how innovative business models can be implemented in developing countries aiming to benefit its population by providing a sustainable healthcare assistance. The authors analyzed both Indian and Brazilian cases through secondary data revision, nevertheless, to better understand the Brazilian reality, an interview was conduct with one user of the Brazilian Healthcare system.

2. Cases discussion

2.1 BOP strategies in Indian healthcare programs

The Indian cases explored below show how Indian government worked in a collaborative way with external partners to address Indian Healthcare system´s problems. Dr. Vishwas Mehta (2015) states that the Indian government has taken initiatives towards health care innovation by creating an ecosystem that may spread innovation. The specialist defines Ecosystem as an environment where organizations and individuals who are working on tackling healthcare problems or who must play a role in solving these problems are cooperating. Besides creating the National Health mission, Indian government understands the importance of having private companies operating to improve healthcare together with the NGOs and community agents as well as volunteers (SINGH; LILLRANK, 2015).

Indian Medical specialists such as Drs Anne Snowdon, Karin Schnarr and Dr. Charles Alessi state that national healthcare systems face similar challenges all over the world. The proliferation of noncommunicable diseases changes the demand for services. Information and communication tecnologies empower patientes and turn them into consumers asking to be better treated. Advances in pharmaceuticals, devices, analytics and methods provide the service supply together with increasingly effective tools. Healthcare costs are reaching unsustainable leves.The trend is towards value-based healthcare systems, health and wellness, patient engagement, prioritization, and healthcare programs´quality (SINGH; LILLRANK, 2015).

Humanization of healthcare requires an innovative look at the whole healthcare system. Innovation should address how services are organized, financed, produced, delivered and distributed in order to attend the whole population, specially the ones at the bottom of the pyramid.On the other hand, communication on this policy, has been a great problem. Since the access to education is limited, the population at the bottom of the pyramid has difficulty to understand healthcare procedures and consequently has difficulty to change their mindset towards prevention. Looking for diseases cures may be easier at a first glince. However, accelarating learning capabilities towards an ecosystem effort may be a good way to more consistent healthcare outcomes.

According to the Uttar Pradesh Parliament member, Mr. V. K. Singh, innovation aims at creating new value or finding ways to produce known value with less waste. The innovation process is long and complex, but can be manageable with systematic methods, such as lean and collaborative approaches (SINGH; LILLRANK, 2015).

The healthcare ecosystems in developed and emerging countries are different. Therefore, analyzing emerging countries models may contribute to a mindset change towards healthcare innovation to address a broadened number of the world population. Aravind Eye Clinic, then, is an excellent healthcare innovation case in terms of procedures, management and business models to solve cataract surgery access to the people of the bottom of the pyramid. Aravind is a textbook case of how the fundamental drivers of productivity, division of labor, specialization and standardization can be applied in healthcare. Aravind Eyecare's founder, Dr. Venkataswamy ("Dr. V"), realized that curable blindness was plaguing many people in India. He also realized that, as an experienced ophthalmologist, he had the skills to address this problem. He also understood that in order to reach a great number of poor people who could not afford expensive and long treatments he would have to develop a very efficient method and so, collaborative working was the way out to study and design a successful methodology.

Dr. V had to understand the problem deeply, both from the perspective of the individuals who encounter the issue every day, that is, the patient, and from an ecosystem level. He realized

that there was a relatively simple procedure that could be used to treat curable blindness, he designed a replicable, efficient pattern that could be scalable. His method brings people from developed countries to be treated in India due to the excellence in procedure and results, as well as low costs.

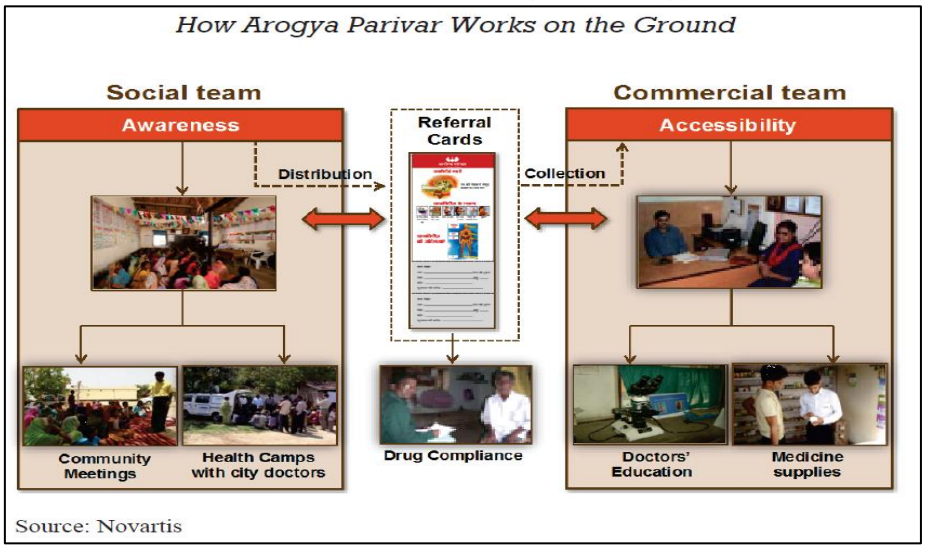
Within this perspective, Novartis, a multinational company founded in 1994, with a strong philanthropic presence in India, began its innovation process to eradicate malaria and tuberculosis at the Indian rural population. Novartis created Arogya Parivar, which means Health Family in Hindu, in 2007 as a for profit social business to serve those living at the bottom of the pyramid in rural India. The initiative offers education on the basic health issues, treatment options and prevention through affordable medicines. Arogya Parivar treats people in low income standards as individuals with some purchasing power. By increasing health awareness through a market-based approach, the company can better meet its needs, prevent harm, increase its productivity and incomes and empower its entry into the formal economy.

Arogya Parivar is based on six "A's" - Awareness, Adaptability, Availability, Affordability, Adherence and Alliances. These principles work in an integrated way to ensure long-term impact in rural areas. Their focus is on healthcare where they strive to reach underserved patients followed by education through partnerships with other like-minded agencies including hospitals, civil society, advocacy groups and academia in order to make a difference in the world. As Barki and Aguiar (2013) states, it is a triple win relationship: the company wins, the beneficiaries win, and society wins.

Poor people need two tools to be active in the healthcare system: an appropriate financial system to access healthcare plans and education; and, a better understanding of care and prevention practices. At the bottom of the pyramid the best mechanism is a low monthly payment that fits monthly income and the information must come through help groups (healthcare takers), community people, volunteers and NGOs that may be close to people and lead them to new health habits.

Companies may finance this education by working in a collaborative way with NGOs and community agents. Governments may help through the availability of medicine distribution channels.

Figure 1: Arogya Parivar



Source: Novartis BoP strategy for healthcare in rural India, 2014.

Figure 1 shows the whole educational process and business modal at Arogya Parivar:

villagers are primarily served by the public healthcare system, which is underfunded, overstretched, inadequate where many healthcare workers have little formal medical training and pharmacies are poorly stocked. Patients, either, men, women or children, remain undiagnosed because of a lack of awareness of even the most basic issues. So, daily basis healthcare educators, usually women, speak to villagers about diseases and help them recognize symptoms. These educators are usually connected to the local NGOs as well as volunteers. Besides, there is also a health care supervisor figure who is connected to local doctors, NGOs, local hospitals and drugstores. The whole team is also working to ensure local pharmacies are well stocked with the necessary medicines even on remote locations. In periodic basis, the whole ecosystem players organize healthcare camps to update information and procedures and offer villagers preventive care and treatment.

Novartis also organizes training sessions for doctors in the evening after work and a large part of the discussion focus on one, two or three diseases at a time and provide facts and information about products. As time has passed, villagers are aware of basic diseases and when something looks like a possible disease, they are able to easily connect local doctors and partners for a primary treatment. The whole business model is more of a public healthcare awareness implementation campaign than any other traditional medical procedure. Novartis declared that it took 60 months to achieve the new company, Arogya Parivar, break even, but the knowledge acquired about the new consumers and market at the Bop filed was payable and worth investing.

2.2. BOP strategies in the Brazilian healthcare program

Brazil is one of the five largest countries in the world, with a population over 200million people, over 84% of whom live in urban settings. This is a significant difference with Indian reality. It is the sixth in the ranking of pharmaceutical market with US$ 64.3 billion, with an average growth rate of 5% considering units sold in the last five years in the retail market (IQVIA report 2019).

Brazilian healthcare system has been suffering from two specific changes in the last decades: the increase number of people over 60 years old and the increase in the non-communicable diseases, particularly cardiovascular and infectious diseases. Cardiovascular disease is the primary cause of deaths in Brazil. According to the Brazilian Society of Cardiology, cardiovascular disease and its complications are responsible for 30% of all death cause in the country; which means more than one thousand deaths per day, making 400,000 deaths a year (2015 report of Brazilian Society of Cardiology)

On the other hand, Brazil has a free universal healthcare program named *SUS -Sistema Único de Saude* (Healthcare Universal System), which has enormous inefficiency for several reasons. The continental size of Brazil is the first one. The country is wide and there are several places with no access by healthcare professionals. Furthermore, government lacks on maintaining employee's education updates in technology and procedures. A great part of government medical agents still treats poor people as nobody. Although some effort to change this behavior has been made, little results have been achieved.

The system is then, decentralized, shifting healthcare delivery and financing responsibilities to state and municipal levels. Municipality is responsible for the management and provision of primary care services and states help to set policy goals and provide both technical and financial assistance. More than 75% of the population depends exclusively on the *SUS* for healthcare assistance. However, low quality and long waiting time in lines for

appointments, surgeries and certain medications make the system inefficient, and opened great opportunities for private companies.

Many Brazilians choose to seek for healthcare in the private sector by paying for private insurance plans and having access to private clinics and hospitals. This procedure is regulated by the National Supplementary Health Agency (*Agência Nacional de Saude Suplementar*), which monitors private plan costs and ensures that a minimum quality of private services is met. Nevertheless, Brazil´s declaration of the "right to healthcare" states that all citizens are entitled to free healthcare assistance, although little is provided for the people at BOP. The Brazilian Constitution of 1988 declares as one of the fundamental rights for all citizens, access to healthcare assistance. According to the Brazilian laws, the federal government has the duty to formulate and implement actions that ensure the access of the population to the services of promotion, protection and recovery of healthcare assistance throughout the Unified Healthcare System (SUS).

The Constitution proposal to provide everything for all inevitably faces the challenge of scarcity. According to Elster et al (2007) the scarcity of a good is due to its insufficiency in serving everyone. On the other hand, Pharmaceutical Assistance (FA) can only be achieved through access to medicine by the patients, in the appropriate quantity and availability. Therefore, the federal healthcare managers are oriented to provide drugs considered essential for daily bases or the ones to eradicate diseases of great impact on public health, as infectious viruses.

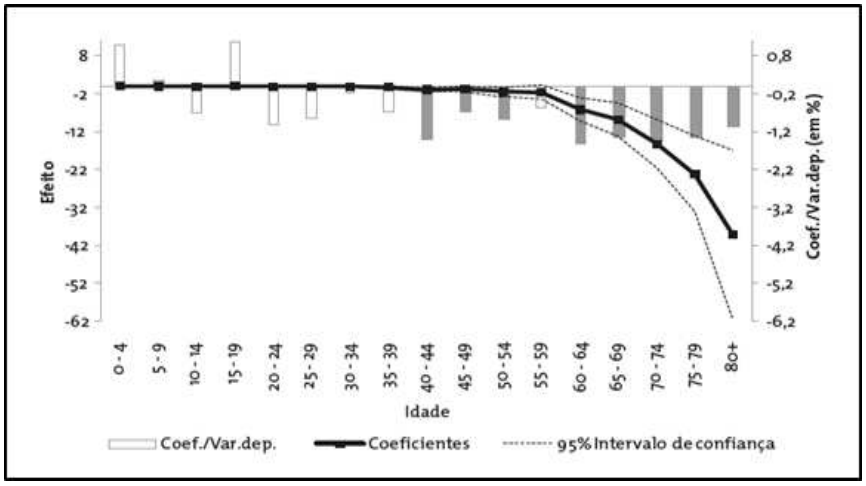
In 2004, the Federal Government launched a national program called *Programa Farmácia Popular do Brasil – PFPB* (Popular Drugstore Program of Brazil), which was a good innovation example on healthcare public policy, establishing a co-payment system as a strategy for BOP to medicine access at the rate of $ 0-1,5 a drug box. Santos Pinto (2011) conducted a research about this program and says the program showed a widespread expansion in the number of people attended. However, there was a serious lack of transparency on numbers. A deep look on inspect and distribution channel showed a serious inconsistency on the financial and sales reports, mainly in the North and Northeast regions of Brazil. The study concludes showing that the population considered the PFPB a good program and took the program´s website as a reference when looking for essential medication rather than looking at public healthcare web sites.

Ferreira (2017) won the 36th BNDES(Brazilian Economic and Social Development Bank) prize for best Master dissertation by developing the first major study to analyze econometrically the impact of the PFPB program when he brings the first evidence of the healthcare consequences of co-payment policies in developing countries. The researcher analyzed the impact of the program's co-payment policy on health indicators for Brazilian municipalities between 2000 and 2012.The research results showed that the strategy to increase access to drugs through PFPB has proved effective in reducing hospitalizations and deaths by complications of cardiovascular disease such as hypertension and diabetes. The reduction of drug cost was positively associated with reduced mortality for circulatory diseases and fewer hospitalizations for diabetes, hypertension, Parkinson's disease, glaucoma and rhinitis as demonstrated in figure 2 and 3.

Regarding variations in age effects, figure 2 shows the causal impact of the program on mortality rates for diabetes and cardiovascular diseases. They were the only diseases that demonstrated a significant difference of the estimators by ages. The lines in figure 2 represent the estimators and their respective confidence intervals. The bars, in turn, are the percentages

of estimators on average age-specific mortality rates, the grey bars refer to significant estimators by at least 10%.

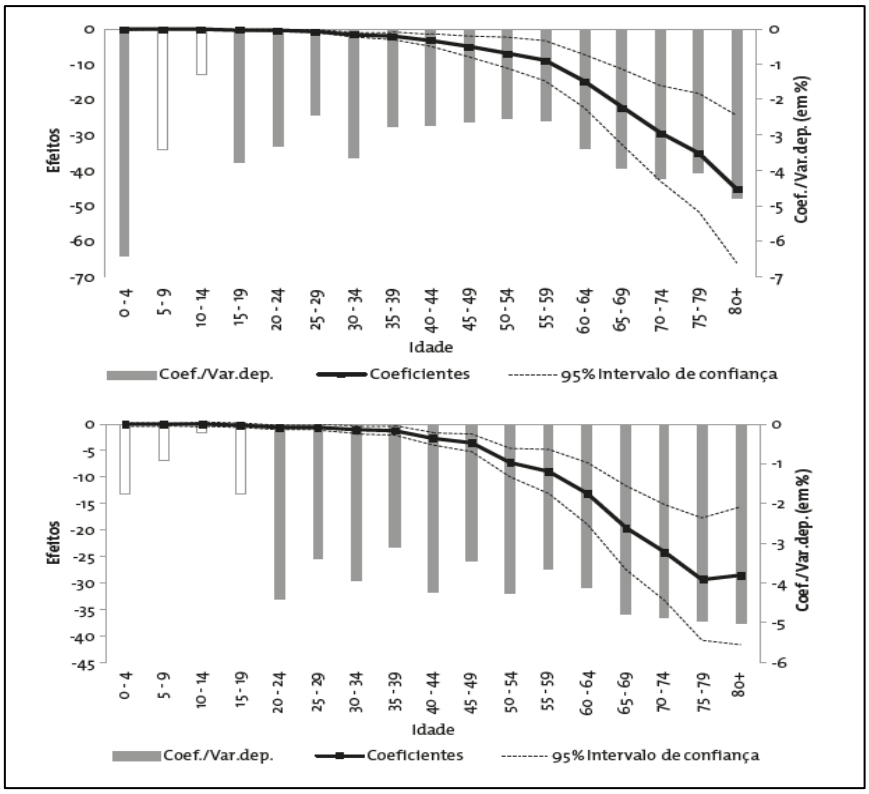
Figure 2: Impact of PFPB over mortality by diabetes



Source: Impact of PFPB in mortality by cardiovascular diseases, Ferreira, 2017 p.76

The results point out that there is strong evidence about the significant impact of PFPB on the elderly since they are the population group most susceptible to such morbidities. The results are consistent in general, nevertheless as shown in picture 3, the program intensified his impact on people with more than 40 years old with cardiovascular disease.

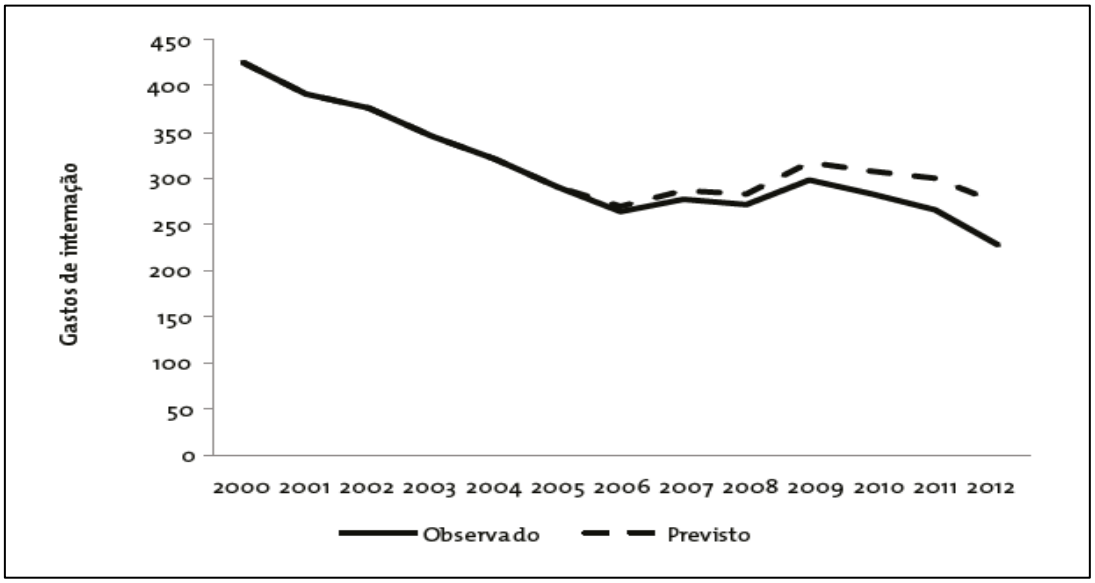
Figure 3: Impact of PFPB in Hospitalizations for Diabetes (UP) and Hypertension (Bottom)



Source: Impact of PFPB in mortality by cardiovascular diseases, Ferreira, 2017 p.76

His findings also suggest that the benefits of the program, with decreased hospitalization expenses and mortality, are greater than their costs. Therefore, there are important evidences that this policy achieved its main goals. Figure 4 demonstrates that expenses with hospitalizations have decreased.

Figure 4: Expenses with hospitalizations during the period 2000 to 2012.



Source: Impact of PFPB in mortality by cardiovascular diseases, Ferreira, 2017 p.76

With less expense in hospitalization, the government could adopt new technologies just launched by Pharmaceutical Companies that are currently not incorporated by the public list of *SUS*. Private sector would not only benefit from taxes reduction and important outcomes, but also would see the pipeline development be adopted by the government with the same logic on the non-progression of the disease.

Another Brazilian government program is *PROADI-SUS* (*Programa de Apoio ao Desenvolvimento Institucional do SUS*), a tax benefit transfer-based program. It is a supporting program to improve *SUS* results taken by nonprofit hospitals of excellence with certified levels recognized by the Brazilian HealthCare Ministry. These hospitals are exempted of paying some social taxes at a company duty towards social security such as *Cofins* and part of social security tax (*INSS*). The hospitals compensate tax exemption by having an excellent research team and technological lab in order to improve healthcare environment for Brazilian population.

To better understand the Brazilian healthcare programs, an interview was made with one *SUS* user and her family. Marcia Cristina Fernandes de Araújo is our interviewed. She is a 38-year-old single mother born in Caxias-Maranhão State, a city of 165.000 habitants in the north of Brazil. She lives in São Paulo city to make money to send back to her family. Marcia has 2 daughters who live with her mother in Maranhão. Her month revenue is about US $ 500,00 and she is a cleaner. Her mother, Joana Araujo, is 58 years old and has serious diseases, heart problems, depression and osteoporosis. Joana is a rural retired worker who earns US$ 249,00 a month and She spends about half of it with medicine every month. As she pointed out, she spends more with drugs than with food. In Caxias city, there is only a simple public healthcare place. There are doctors available, however she does not consider them able to take care of her

cardiovascular disease, therefore she travels every two months to Piaui state, to Teresina city (one-hour distance), where they provide better assistance. Joana (Marcia´s mother) spends US$ 40,00 for a round trip. The drugs she needs are not available at public hospital/pharmacy and her doctor says it is not available at the PFPB either. She has no choice rather than buying the medicine herself with her little earnings, therefore, since she has to afford for her treatment out of pocket and as her earnings are not enough, She makes the decision to often go to the public hospital and be taken care while getting the medicine needed by the government expenses.

We asked our interviewer what she would do if she had quite an amount of money. She said she would pay for her mother's medicine so she could feel better and would have more money to spend with other necessities. This is the typical answer of millions of low-class people, mainly living in the North and Northeastern of Brazil.

2.3. Comparison between Brazilian and Indian healthcare program

Likewise, Indian cases, the *PFPB* shows that beyond access to drug, prevention and education is crucial to reduce mortality as well as healthcare expenses.

Realizing the gap between healthcare accessibility and awareness, Novartis India Limited started Arogya Parivar, a social business initiative that brings affordable medicine and health education to rural pockets. The Company achieved this by creating awareness, enhancing local availability of drugs and designing affordable healthcare solutions. For profit social business, then, means working with lower product prices, expanding access, improving quality, offering mass customization, that is, standard solutions that can be easily adjusted to individual needs, being profitable and market oriented.

These private educational initiatives for low income class people could lead to a reduction in complications for a lot of diseases. By sharing expenses and efforts with private companies, NGOs and society, government will be present at the individual everyday life. The whole healthcare ecosystem will develop together a learning basis connection where players listen to one another learning from one another and cocreating better models to solve health care problems in the country.

India's cases showed a healthcare collaborative ecosystem where medical professionals supported by the pharmaceutical industry and government institutions were able to connect to local people and professionals to shared knowledge and information. That proved that healthcare outcomes and positive social impacts can only be achieved through innovative and collaborative approaches.

By borrowing experiences like the *PROADI-SUS* and other Brazilian tax benefit programs at education, social assistant and culture already in practice, and by borrowing Indian example, the Brazilian government could allow pharmaceutical companies to transfer a percentage of their income tax payment to support educational healthcare programs led by NGOs. Differently from other countries (developed or not), Brazilian tax rates to manufact medicine is extremely high, so tax benefit transfer in the field could be a valuable approach for more healthcare private initiatives for BoP population. Besides the health and social outcomes, Brazilian government would spend less in basic medicines, being able to focus expenses in development and adoption of new technologies.

If the government through a collaborative work with the pharmaceutical private companies, NGOs and community volunteers approach healthcare problems in a different way, investing through tax benefit transfer in educational program to train medical workers, healthcare takers and inform patients better, we would see better outputs such as increase

number of lectures in the communities, increases number of training courses for medical workers, increase numbers of patient family visits, a better visual marketing campaign to access low income people. All these would bring awareness to the population on the importance of health care prevention habits. Besides, government would have a feedback on the necessary and essential drugs the pharmacies would have to stock and at what sales price to attend both the necessity and buying power of the low-income class. This would avoid long trips for patients to be attended as well as extra expenses. Joana, for instance, would have more money to spend with other necessities of herself and her family.

3. Conclusion

Having in mind these two reference cases, Arogya Parivar in India and the *PFPB* in Brazil, it is necessary to reflect why more BoP initiatives in the pharmaceutical sector are not found. A profitable social business model that educates the community and empowers patients to take healthcare into their own hands can be a possible pathway to healthcare mindset changes and achievement of better healthcare results in Brazil.

The *PFPB* should be redesigned to avoid misled action on sales and financial reports. Policies against corruption should be implemented, pharmacies could get evaluation feedback accordingly to the community's evaluation. Outcomes KPIs could monitor such as increase level of health care environment, citizenship development and development of social capital, just to mention a few outcomes.

Undoubtedly, both Brazilian and Indian experiences have demonstrated that education with access to medicine not only has reduced mortality, but also lead to reduction in expenses with hospitalization. Early diagnostic with right treatment leads to mitigation of severe development of the disease, as demonstrated at the Ferreira Study.

The innovative business model shown throughout the paper states a triple win relationship. Companies win, patients win, and society wins. If society wins, government is fulfilling his duties. By working together by Common Sense responsibility, industry and government came up to a profitable and social business model such as *PFPB* where industry accepted lower profit per drug unit by taking advantage of government power of scalability distribution through the private drugstores spread all over Brazil. It was a win-win business agreement. Based on this experience, a renovation of the *PFPB* program should be done, with new agreement to expand newer technologies and more diseases covered. These initiatives should be adopted not only as government policy but as a state policy. Correcting its problems such as lack of transparency, change of government-level priority, absence of awareness to the importance of learning from the users and lack of perception about private companies potential partnerships, Brazilian SUS system may become one of the best public healthcare system in the world, making a huge difference on the population welfare.

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