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Access to Medicine in Developing Countries

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Abstract In developing countries, access to medicine confronts several barriers that induces an increase in the rates of mortality and morbidity. The objective of the following paper is to present evidence on the status of accessing medicine in developing and to outline its barriers. The article collects its data from ten resources that address the topic of identifying barriers that reduce access to medicine in developing countries. Collected data confirmed the increased rate of morbidity and mortality in developing countries due to reduced access to medicine especially medicine for treating chronic diseases. As for the barriers confronted in accessing medicine, the health system was involved and held responsible for the unstable availability and unaffordability of medicines. Results collected from articles also confirmed that pharmaceutical companies and medication research centres of universities are also responsible and considered as a barrier for accessing medicine since their patents for drugs limit medicines availability and increases prices. Furthermore, citizens of developing countries were also held responsible considering their lack of support to the attempts of improving the health system and their lack of knowledge that can be improved through personal efforts. The lack of support is explained by collected data by being related to the unstable availability of medicines and to the previous experiences that make the quality of provided service questionable. The international community was also included and held responsible for the reduced access to medicine in developing countries. The responsibility of the international community can be resumed by stating that developed countries mainly focus on communicable diseases to protect their societies and do not commit to their statements of respecting human rights but support intellectual property instead.

Keywords Access to medicines, Developing countries, Morbidity and mortality, Health system and barriers preventing access to medicines

Key Messages

Barriers preventing access to medicine in developing countries are responsible for increasing mortality and morbidity rate.

The responsibility for the low access to medicines lays on the international community, health system set by governments, pharmaceutical firms and universities and patients as well.

The major barriers outlined are:

- Intellectual property and drug patents supported by the international community, universities, and pharmaceutical firms.
- The low economic status and poor education of individuals in low and middle income countries.
- The international focus on reducing the prevalence of communicable disease and neglecting the importance of also addressing non-communicable diseases especially chronic diseases by increasing access to its medicines.
- The health systems defined by governments that does not guarantee the availability and affordability of medicines nor its appropriate dispense.

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1. Introduction

The administration of medicines is a treatment used in a number of chronic diseases such as primary hypertension and other acute diseases as well, such as acute coughing in upper respiratory tract infection (Kemp et al., 2013; Smith et al., 2012). However, several barriers such as the cost of medicines can prevent the access to this treatment (Kemp et al., 2013). Another example of the barriers preventing access to medicine is limited availability in the public sector (Kemp et al., 2013). In other terms, only one third of medicines are available in the public sector whereas the remaining two third are provided by private facilities in higher prices (Kemp et al., 2013). In developing countries, the impact of barriers preventing the access to medicines is significant such as increasing chronic diseases morbidity and mortality (Mendis et al., 2007). As an example of the increase in mortality, the world health organisation confirms that 72% of 35 million people that died in 2005 due to chronic diseases took place in developing countries (Kotwani, 2010). Thus, this paper aims to highlight the lack of access to medicine

and the contributing barriers that may be related to policies elaborated by the health system. As an example of these policies, the health system has defined a list of essential medication to be provided by the public sector to ensure its availability at cheap prices, but the debate remains whether the medicines included are sufficient or additions are required.

2. Methods

Data was collected from journal articles and papers addressing the issue of lack of access to medicines. The keywords used to search for journal articles relevant to the issue are access to medicines, developing countries, morbidity and mortality, health system and barriers preventing access to medicines. In addition, an inclusion and exclusion criteria were defined and utilised to guarantee relevancy to the issue studied in this research. As a start, the inclusion criteria included articles written in English with a date of publication less than ten years. Plus, the inclusion criteria also included all articles that exclusively studied the access to medicines in developing country. On the contrary, the exclusion criteria excluded all studies conducted in languages other than English, studies that are out-dated (with a date of publication older than ten years). Similarly, the exclusion criteria excluded studies that address the inability to access medicines in developed countries as well.

3. Results

According to Sampat (2009), one of the main barriers to accessing medicines in developing countries are patents (Sampat, 2009). The study blames universities in developing countries that do not seek medication exclusively for local diseases that are not as frequent in developed countries. Plus, the article also clarifies how patents restrict generic competition allowing exclusive producers to impose high prices and limiting the access of developing countries to these medicines. In addition, the study suggests how universities in developed countries can and are responsible for reducing the gap in access to medicines between developed and developing countries. Universities in developed countries own a number of key drug patents such as drug patents for approximately the quarter of HIV/AIDS medications. This ownership puts patients partially under academic control that can be used to reduce prices especially in developing countries where a lack of access to drugs for HIV and AIDS can be catastrophic. However, Sampat also discusses how this solution can have negative impacts especially in reducing firms' motivation to produce and market the inventions achieved in academic laboratories. The reason behind such a potential impact is the decrease in the firms' profits when abdicating their patents for drugs frequently sold in developing countries which are not usually produced by the main firms of developed countries.

According to Emmerick et al. (2015), the health system plays a significant role in increasing the access to medicines (Emmerick et al., 2015). The study discusses the barriers faced by household members living in Latin America and Caribbean area (LAC) when accessing medicines for chronic illnesses. The three countries included in the study to represent LAC are Nicaragua, Honduras and Guatemala. Among the major results concluded by this research is the high percentage of 70% of patients with chronic diseases seeking health care in the formal health system while the informal one is also available. Researchers confirmed that this percentage is lower in acute illnesses but also highlighted how these results confirm that a well-functioning health system can considerably increase the access of people with chronic diseases to medicines. In addition, Emmerich et al. (2015) also concluded that among barriers for accessing medicines, LAC region experience low availability of medicine in the public sector and unaffordability of medicines provided by the private sector. Aside from affordability and availability, other barriers are detected in LAC regions such as low level of education especially in elderly people that pay for medications while it is offered for free in several countries in LAC regions such as Nicaragua and Honduras. Plus, geographical inaccessibility and prejudgments on the quality provided by the public sector were also identified by this article as barriers for accessing medicines.

Bigdeli et al. (2013) surpass the focus on the barrier of supply in limiting access to medicine to shed the light on broader barriers due to how the health system and its levels perceive access to medicine (Bigdeli et al., 2013). The research identifies five levels of the health system and the barriers faced at each level in accessing medicine. The first level is about individuals, households and communities. On this level, barriers can be resumed as worries concerning affordability and people expectations regarding quality and the service provided by health workers. At the level of health service delivery, barriers usually involve the discontinuous availability of medicines, prescribing or dispensing unnecessary medicines, compromised quality of service by providing counterfeit medications. Then, at the level of the health sector, barriers lay in how the pharmaceutical sector responsible for setting medicine's prices is governed by the health system. At this level, efficient governance is necessary in order to establish cooperation relation between the different blocks of the health system. Finally, the last two levels of the health system, the national and the international level, include on one hand barriers such as corruption in the government that may deprioritise the social sector and the impact of industry, medicine trade and economic status on health goals on the other hand. This study has discussed the importance of an effective donor's agenda that aims to globalise health funds which in other terms can be interpreted as help offered by high-income countries to low and middle-income countries.

Leisinger et al. (2012) provide arguments that involve the

economy, public health and human rights and that support the cause of increasing individuals' access to medicine, especially in low and middle-income countries (Leisinger et al., 2012). Based on human rights, the author explains that since increasing access to medicine may reduce mortality and morbidity rate and since good governance is defined by distributing resources based on people's needs, it is certainly a human right that vulnerable individuals and poor population have sufficient access to medicines. As for the economic argument presented in the article, people's poverty can be considered as the main barrier to having access to medicines which leads to poor health while it is their only asset. Regarding the argument of public health, the literature confirms the unavailability of two third of medicines in the public sector and their expensive availability in the private sector. Furthermore, the study does not only present rationales for increasing access to medicine, but also identifies who are capable of implementing changes to solve the issue. The blamed authorities respectively, are the nation state and its health system, the non-governmental organisations with their notable contribution to specific health diseases such as HIV/AIDS. The last community that was held responsible is the international community and their donor support programs that neglect, non-communicable diseases and puts yield programs depending on the economic status of funding countries.

Vialle-Valentin et al. (2015) aim to highlight the reduced access to medicines used for treating non-communicable diseases, especially chronic diseases such as hypertension and diabetes. The paper claims that non-communicable diseases have been neglected while emphasising on the importance of addressing communicable diseases such as HIV/AIDS (Vialle-Valentin et al., 2015), and Kenya. The results of the study confirm that less than half of the population in each the low and middle-income countries involved in the study are Jordan, Philippines, Ghana, Uganda of the five countries has access to medicines for treating their chronic disease. The research also concluded the impact of education, that led to an increase in the probability of finding medicines in the house of the patient diagnosed with the chronic disease while poverty decreased this probability. Another finding of the study irrelevant to the issue of access to medicine was the correlation between the location of residency and chronic disease diagnosis. In other terms, people living in the capital of Uganda were more likely to be diagnosed with chronic diseases. The crucial finding outlined by the study is that the unavailability of medicine in low and middle-income countries is identified in both private and public sectors.

Ritz et al. (2010) aid to identify issues retrieved in developing for accessing medicines using previously conducted studies and confirm the need for further research concerning the topic (Ritz et al., 2010). The number of publications included in this study is 761 publications. The collected studies, exclusively from the PubMed search engine, usually addressed the impact of intellectual rights, selecting essential medicines or the quality of medicines on accessing medicines in developing countries. The bibliometric analysis concluded a gap of knowledge in the research network concerning access to medicine. The paper accuses the lack of knowledge of being responsible for the inappropriate selection of essential medicine to work on clarifying their use and to ensure their sustainable availability at affordable prices. The research results include the need of patterns set to improve prescribing and utilisation of drugs which explains the increased focus on monitoring drug administration for adverse reactions. The authors recommend that future research is conducted by researchers from developing countries for better relevancy. In other terms, researchers from developing will be able to select which issues and questions to be addressed first for being acknowledged of the need of their society.

Ahmadiani et al. (2016) discuss how pharmaceutical companies are responsible for the decreased access to medicines, especially in developing countries (Ahmadiani et al., 2016). The article explains that the responsibility laid on pharmaceutical is illustrated in the decreased number of firms that produce medicines for rare diseases considering the low profit compared to other diseases with bigger markets. In addition, the responsibility of pharmaceutical companies is also explained by discussing the impact patents, agreements and other legal structures adopted by these firms and that forms barriers to accessing medicine. The research also confirms how these strategies followed by pharmaceutical companies and the absence of firms that produces generic will lead to higher morbidity and mortality rate. Regarding developing countries, the authors assure that the negative impacts of pharmaceutical companies on accessing medicine will be significantly severe compared to countries with high income. Aside from the economic explanation for the difference in the severity of impacts, the article explains that developing countries also present higher need for medicine considering their health status that is lower than in developed countries while these medicines are under patents. Furthermore, this study states that the lower the national income is, the poorer the health insurance coverage is and the higher health expenses out of the pocket are which forms another barrier for accessing medicine.

Jacobs et al. (2015) highlight the importance of an appropriate health system to improve access to medicine (Jacobs et al., 2015). The article assesses a newly formed public health system implemented in Cambodia, a developing country, that aims to develop the services provided for people with no - communicable diseases. The evaluation of the new system was limited to studying the access to the medicine of individual with hypertension and diabetes, both chronic conditions representing non–communicable diseases. Results were obtained after collecting data by interviewing representatives from society, health system and health care providers. Findings include an agreement on the prevalence non-communicable disease on one hand and the ineffectiveness of the health system on the other hand. The ineffectiveness of the health system was first described on the level of delivery as the unstable availability

of medicines for individuals with chronic conditions, and those who had access were mostly patients with chronic conditions in secondary or tertiary level. As for financing, few facilities received from the Cambodian government a minimal budget for non–communicable diseases. Concerning workforce, around half of the centres specialised in providing health care did not include one practitioner that has completed training for managing non-communicable diseases.

Lexchin (2013) presents an example of how developed countries contribute to improving access to medicine in developing countries in order to achieve a globally optimised health system (Lexchin, 2013). The developed country took as an example in Lexchin (2013) is Canada that stated, particularly in Romanow Commission, its commitment to the cause of improving access to medicine especially in developed country to globalise an optimised health system that respects the right of humans in having such as a system. However, the study that was reviewing Canada's response in six international cases where intellectual property was competing with improving access to medicine, did not detect results compatible with Canada's statement. For example, in the first case, South Africa was in court due to pharmaceutical firms sued for disrespect of intellectual property while South Africa was attempting to increase citizens' access to medicine, but Canada chose to remain neutral instead of defending South Africa and committing to previous statements. Regarding the five remaining cases, Canada was supporting intellectual property in its competition against improving access to medicine. Moreover, the research also identified a domestic similar position for the Canadian government where intellectual property was always supported by increasing access to medicine.

Magadzire et al. (2015) examine the success of implementing chronic dispense unit in South Africa (Magadzire et al., 2015). The chronic dispense unit is a part of the public sector that is exclusively specialised in providing medicines for stable patients with chronic diseases in the Western Cape Province. The implementation of the chronic dispense unit is expected to decrease the workload imposed on pharmacists and improve the quality of service for the patient by reducing the time they usually spend waiting. The research conducted as a case study confirmed the effectiveness of the implemented system in ensuring the availability of medicine supply stably. The success of the system can also be measured by the increase in the number of healthcare facilities enrolled in the system. The limitation of the system can be resumed in missed appointments that yielded unnecessary workload and financial losses. The study concluded that chronic dispense unit is a system that helps increasing access to medicine, but it certainly does not allow overcoming all challenges especially that it only addresses patients whose clinician assessment proves their stability.

According to Zaidi et al. (2013), Pakistan is also among developing countries confronting the burden of a limited access to medicine (Zaidi et al., 2013). The article states that Pakistan's health aystem is responsible for the lack of access to medicine. The main flaws identified by investigating the current health issue were identified such as a sub-optimal availability of drugs for people. Other identified issues include irrational prescription of medications and pricing policies that are not evident but described as counterproductive.

As Other Aspects of the medical field, According to Holt et al. (2012), there is tropical diseases in developing countries that do not constitute a commercial market with significant financial benefit for pharmaceutical companies (Holt et al., 2012). Access to medicine for treating Neglected Tropical Diseases (NTD) in developing countries is usually provided by donations given by western organisations that, according to the article, may be profit-driven. However, in order to face this unstable dependency, developing countries with emerging economies have started to develop their own pharmaceutical industry and to set sustainable strategies to address their NTD burden.

Since, according to Medicine Editors at the Public Library of Science PLoS, drug companies may be responsible for limiting access to medicine in developing countries, they may contribute to avoiding future impact of limited access to medicine (PLoSME, 2010). For example, the article mentions the lawsuit that drug companies filed when South Africa essayed to permit importing less expensive versions of generic drugs. Plus, this literature also highlights how drug companies are responsible for facilitating access to medicine instead of limiting it. For instance, drug companies are to invest in research that addresses neglected diseases. Plus, Pharmaceutical companies are also thwarted by the guidelines on human rights responsibilities of drug companies, on excessive pricing and seeking more protection for their intellectual laws to limit the competition with cheaper version of a generic.

4. Discussion

The ten collected resources discussing access to medicine in developing countries have provided clear illustration and explanation of potential barriers reducing this access. The reduction access is accused of consequently contributing to an increase in mortality and morbidity in low and middle-income countries (Leisinger et al., 2012). As for the discussed barriers provided by most studies, it is possible to divide them into levels and perspectives. In other terms, a number of barriers can be identified on the level of health system while other barriers can be detected on the level of pharmaceutical firms especially from a legal perspective and finally, more barriers can be identified on level of individual using a socioeconomic and educational level (Bigdeli et al., 2013). In addition, international barriers have also been highlighted such as the lack commitment of developed countries to building an optimised and global efficient health system (Lexchin, 2013). Another international barrier for improving access to medicine is the reduced international

focus on non-communicable diseases exclusively prevalent in developing countries considering the low profits a smaller market can lead to (Lexchin, 2013).

On the level of health systems, a number of variables have been used to assess and evaluate the effectiveness in multiple developing countries such as South Africa and Cambodia. The variables, mainly include the availability of medicine since the private sector in developing countries has about two third of medicine available in higher prices compared to the public sector that usually only has one third available (Leisinger et al., 2012). Thus, it is possible to state that there is not a stable availability of medicine nor in the private nor public sector. The second variable used for assessing access to medicine on a health system level is affordability since developing countries have a low national income which leads to a reduced coverage of health expenses and increases out of pocket expenditures (Ahmadiani et al., 2016).

On the level of pharmaceutical firms, the intellectual property and drug patents of these companies does not allow competition with other companies that usually leads to generics at low prices (Ahmadiani et al., 2016; Emmerick et al., 2015). Thus, limiting intellectual property of pharmaceutical companies, by setting timeframes for it, for example, will help in increasing the availability on one hand and increases affordability on the other hand. However, collected literature confirms that limiting intellectual property of pharmaceutical companies can have significant negative impacts on access to medicine instead of improving it. The explanation of these negative lays on the need of pharmaceutical firms for motivation which is usually profits made of producing and marketing newly innovated medicines worldwide. It is necessary to note in this context that newly innovated medicines are usually due to the efforts of universities research centres that lack the capability of production and marketing which confirm the need for pharmaceutical companies (Emmerick et al., 2015). Thus, limiting intellectual property may limit pharmaceutical firms' profits discouraging further production of medicine and limiting its availability worldwide especially in developing countries which reduce the access to medicine instead of improving it. However, university, similarly to pharmaceutical companies, have patents for drugs as well which put medicine production under an academic control as well (Sampat, 2009). As an example of academic control on access to medicine is the fact that universities own patents for the quarter of medication for treating HIV/AIDS (Sampat, 2009). The use of this academic control will clarify the priorities of academic institution concerning human rights and financial profits. Human rights are involved since it states the right of each individual to receive a fair health service which includes access to medicine.

Detecting barriers for accessing medicine on the level of individuals in the societies of developing countries is also retrieved in data collected from the literature. Studies proved that a low level of education can be a barrier where elderly patients can for example not be aware of possible free access to medicine (Emmerick et al., 2015; Vialle-Valentin et al., 2015). Another example of the impact of low education is the ineffective prescription of inapplicable drugs due to false diagnosis or due to lack of information about the drugs (Bigdeli et al., 2013). An unnecessary increase in drug dispense leads to the unstable availability of drugs and an increase in expenses that can be used to improve access to medicine for patients that truly need the drug. Aside from the individual's level of education, people's perspective of healthcare provided by the government and their expectations about the quality of care and medicine they may receive can explain their out of pocket expenses on healthcare and reduced use of public health services. For example, while South Africa has implemented a successful health system for stable patients with chronic diseases, individuals do not attend their appointments for reasons uncovered yet (Magadzire et al., 2015).

Regarding the international barriers for increasing access to medicine, developed countries such as Canada, commit to respecting human rights that include the right of every individual to have access to appropriate health care including medication on one hand (Lexchin, 2013). On the other hand, these same developed countries support intellectual properties of pharmaceutical firms and drug patents that increase the prices of medicine and limit their availability which significantly affects access to medicine in developing countries (Lexchin, 2013). Plus, collected literature has assured that the global focus in the context of health addresses communicable disease since it constitutes a global threat while non-communicable diseases are being neglected. Thus, the literature suggests that local university research centres and pharmaceutical firms in developing countries should aim to produce and market medicine that answers the local needs of their area (Sampat, 2009; Ritz et al., 2010). The local production and marketing of medicine in developing countries will aid in improving the availability and access to medicines for non-communicable diseases especially chronic diseases that are responsible for high mortality and morbidity rate.

5. Conclusions

In conclusion, developing countries are currently experiencing high rates of morbidity and mortality especially due to chronic non-communicable disease. Since literature explains that access to medicine is responsible for the high rates of morbidity and mortality, it is a global responsibility that requires the contribution of developed and developing countries to increase the access to medicine. In a nutshell, the increase in access to medicine involves surpassing its barriers that mainly includes affordability and availability on the level of the health system. On the level of pharmaceutical firms and drug patents, the increase in access to medicine will require prioritising human rights on the goal of earning financial profits as motivation for producing and marketing medicine. Regarding the level of individual, health care professionals should take responsibility for their practice

which is this context would be prescribing medicine. Plus, people should avoid negative expectation of the public health system and support the implementation that aims to improve the health status of their society.

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