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People's Perceptions of Access to Medicines' Determinants During Pandemics: A Survey During Covid-19 in Algeria

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Abstract
Studying access to medicines dimensions is crucial in helping policy makers to take suitable measures that ensure equitable access for citizens. The present paper aims to define the determinants that shape Algerian people's perceptions about access to medicines during Covid-19 pandemic. Data were collected via a questionnaire and Microsoft Excel software was used to code, present and analyze data.
The results revealed that 68.75% of participants reported they had access to requested medicines and 31.25% think they had not. Respondents were interested in the type of medicines followed by the time factor, the price, the origin of the drugs, and the location of pharmacies respectively. 50% affirmed that their perceptions are the same during and out of Covid-19 period. The geographic dimension determinants were the most significant. Surprisingly, the financial dimension determinants were not important at all. The result is due to the effect of a third-party payment system.

Keywords:
Access to Medicines;
Access Determinants;
Covid-19;
Pandemic;
People's Perceptions.
JEL Classification Codes: L65; H51; I13; I18; P46

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1. INTRODUCTION

The world health organization estimates that more than one-third of world's population lacks regular access to needed medicines; they generally belong to developing countries. In these countries, 83.5% of children's death, under five years old, is due to the lack of access to essential drugs (Timmermans & Hutadjulu, 2000). By 2017, there were 2 billion people around the world with lack of access to essential medicines (CHAN, 2017).

Lack of access has many facets: it is a concern in developed and developing countries (Abbas, Hasan, Curley, & Babar, 2020; Vella & Wilson, 2017); and it matters for rural and urban areas (Ooms, Klatser, van den Ham, & Reed, 2019). In another hand, having similar health systems doesn't necessary mean the same level of access (Aaltonen, Ragupathy, Tordoff, Reith, & Norris, 2010); and having different health systems can lead to some access similarities (Babar, Gammie, Seyfoddin, Hasan, & Curley, 2019). Those ambiguities make access to medicines' definition, determinants, and dimensions still unclear, knowing that some research included irrelevant dimensions like accommodation (Roy Penchansky, 1977, 2000; R. Penchansky & Thomas, 1981). For them access to medicines' and access to healthcare services' dimensions are the same. Paniz, Fassa, Maia, Domingues, and Bertoldi (2010) denied the validity of this idea.

The most complete workshop about defining and measuring access to medicines was the workshop of the WHO-MSH that took place in Ferney-Voltaire, France in 2000; it concluded that access to medicines is constituted of five dimensions: availability, accessibility, affordability, acceptability, and quality as a crosscutting dimension (Roy Penchansky, 2000). Another key

work was of R. Penchansky and Thomas (1981) who replaced quality by accommodation. The overwhelming majority of papers focused only on two dimensions at most; mainly availability, affordability or both (Odoch, Dambisya, Peacocke, Sandberg, & Hembre, 2021; Paniz et al., 2010; Perehudoff, 2020; Petrou & Vandoros, 2016; Rockers et al., 2019). Emphasizing two dimensions creates the illusion that the others are less important or immeasurable. Some works gave special importance to geographical access (Tharumia Jagadeesan & Wirtz, 2021). Garcia et al. (2019) and Rizk, Elkholy, Barakat, Elsayed, and Abd El Fatah (2021) was the only works that took in consideration all the dimensions described by Penchansky and Thomas.

In some papers, studying access to medicines refers to studying only the dimensions as abstract concepts (Ooms et al., 2019), while some research went beyond and discussed access using specific indicators, factors, or determinants without referring them to any access dimension. In fact, all access to medicines' dimensions are important to achieve full access (Garcia et al., 2019; Liberman, 2011) however, we do not know if determinants and indicators that constitute the dimensions are all important as well. The present paper discusses the importance of some determinants related to the three common access dimensions between WHO-MSH workshop and R. Penchansky and Thomas (1981) paper. The accommodation dimension is excluded because it's proper to healthcare service access. Quality is not addressed because it is not an independent dimension in the WHO-MSH work. The exclusion of availability will be also justified later in the coming paragraphs.

The aim of the present paper is to find answers to the following questions: According to the people's perceptions, are all

determinants important to shape access or non-access to medicines? amongst the important determinants, how do people rank them? for every single determinant, what are the limits adopted to make difference between access and non-access? are access/non-access to medicines determinants the same during pandemics and under normal circumstances?

2. Method

In this paper, "medicines" refers to pharmaceutical and para-pharmaceutical products. Data were gathered using an unrestricted self-selected survey approach according to Couper (2000). A questionnaire (Arabic/French), was distributed via LinkedIn and 543-Algerian Facebook groups. This approach was the most suitable to contact respondents because of the confinement forced by high authorities to prevent the spreading of Covid-19 and the absence of an official consumer database that enable researchers to conduct probabilistic surveys. Data were collected from 4/12/2020 to 12/22/2020. Microsoft Excel was used to code, present and analyze data.

In the first section, the respondents were asked to provide information about the nature of their income, their individual monthly income (IMI), family monthly income (FMI) and the medicines they looked for during covid-19 pandemic. They constitute the main groups of medicines for non-chronic diseases widely consumed in Algeria (ZIANI & BRAHAMIA, 2016) and preventive products promoted through the official campaign. The respondents should tell us either they think that they had access or not to the medicines they looked for during Covid-19 pandemic. According to the responses, they were oriented to section 2 or 3. They had to express/justify their perceptions regarding access or

non-access by selecting *Yes* or *No* for all listed access to medicines determinants using the suitable formulation as showed in Table 1.

Table 1. Selected items formulation in case of access or non-access to medicines

Main Question: *Do you think that you obtained the needed drugs during Covid-19 pandemic?*					
Response = Yes			**Response** = No		
From the following elements, what are the reasons that made you think that you got the needed drugs?			*From the following elements, what are the reasons that made you think that you did not get the needed drugs?*		
		Yes **No**			**Yes** **No**
Item 3:	The family income **enabled** me to buy the needed drugs		Item : 3	The family income **did not enable** me to buy the needed drugs	
Item 8:	The drugs I needed **were available** in the *wilayat* where I live		Item 8:	The drugs I needed **were not available** in the *wilayat* where I live	
Item 14:	The drugs provided by pharmacies **were imported** or produced in a foreign laboratory		Item 14:	The drugs provided by pharmacies **were not imported** or not produced in a foreign laboratory	

Source: By authors from the questionnaire

The Last section was about the habits and preferences to purchase medicines (ie: payment modalities, generic medicines' preferences). Some determinants are eligible to be converted into indicators by analyzing the responses to 6 additional questions.

To get the global rank of the items that influence the respondents' perceptions, for each item, the sum of all responses was calculated after replacing them by a descendant weight. For example, the weight of rank 1 is 5 and the weight of rank 5 is 1.

3. Results

304 responses were received with no missing data, because all questions were automatically controlled to be mandatory. The number of observations is enough because descriptive studies emphasize on the number of respondents rather than the population representation (Couper, 2000) like the survey conducted by Rizk et al. (2021).

Table 2. Summary of respondent's demographics (N = 304)

Gender	**n (%)**
Female	190 (62.5)
Male	114 (37.5)
Age	**n (%)**
18- 35	139 (55.59)
36-45	96 (31.58)
46-55	30 (9.87)
56-65	7 (2.30)
> 65	2 (0.66)

Source: By authors from the software

Table 3. Respondents' economic status

Income Type	**n (%)**
Daily	7 (2.30)
Weekly	3 (0.99)
Monthly (wage, grant, pension…)	200 (65.79)
Open (handicraft, shop, project,…)	14 (4.61)
No income	80 (26.32)
IMI compared to the NGBW	**n (%)**
IMI < 1 (to be selected even there is no individual income)	102 (33.55)
1 ≤ IMI ≤ 2	66 (21.71)
2 <IMI ≤ 3	53 (17.43)
3 < IMI ≤ 4	12.17
4 < IMI ≤ 5	17 (5.59)
5 < IMI ≤ 6	10 (3.29)
IMI > 6	19 (6.25)
FMI compared to the NGBW	**n (%)**
FMI < 1	36 (11.84)
1 < FMI ≤ 2	68 (22.37)
2 < FMI ≤ 3	63 (20.72)
3 < FMI ≤ 4	39 (12.83)
4 < FMI ≤ 5	27 (8.88)
5 < FMI ≤ 6	21 (6.91)
FMI > 6	50 (16.45)

FMI = Family Monthly Income **NGBW** = National Guaranteed Base Wage **IMI** = Individual Monthly Income

Source: By authors from the software

The majority of respondents [Table 2] where females (62.5%) and aged under 56 years old (97.04%). The revenue status was assessed using three items (Table 3). 65.79% receive a monthly income. Whatever the income type, the majority (33.55%) receives an IMI less than the national guaranteed base wage (NGBW) at the time of the research, followed by those who receive a monthly income between one-time and two-times the NGBW (21.71%). The group of people with an FMI between one-time to three-times the NGBW was predominant (43.09%). During the survey period, the respondents reported they, mostly, looked for Antiseptics, Analgesics and Alcohol respectively. Anti-

diarrhea medicines were the less requested (Table 4). 68.75% reported they had access to the medicines requested during the pandemic and 31.25% think they had not.

Table 4. Requested medicines during Covid-19 pandemic

Medicines	**Yes (%)**	**No (%)**
Antiseptics	249 (81.91)	55 (18.09)
analgesics/pain relievers	177 (58.22)	127 (41.78)
Alcohol	177 (58.22)	127 (41.78)
Vitamins	140 (46.05)	164 (53.95)
Anti-flu	105 (34.54)	199 (65.46)
Antipyretic	96 (31.58)	208 (68.42)
Antibiotics	83 (27.3)	221 (72.7)
Anti-inflammatory	70 (23.03)	234 (76.97)
Anti-diarrhea	41 (13.49)	263 (86.51)

Source: By authors from the software

3.1. Importance and ranking of access to medicines' determinants

To assess whether every determinant is important or not, determinants of access and non-access are treated as the same. For example, when a respondent says that he had access to medicines and chooses *Yes* for Item 8 (Table 1), and another respondent chooses *Yes* for the same Item when he says that he had not access, it means that item 8 is important in both cases.

Results revealed that all financial purposes did not influence the respondents' perceptions regarding access to medicines,

including the medicines prices, individual income, family income, the possibility of getting medicines for free, being covered by health insurance and compensable medicines. The other unimportant items were availability of generic drugs and imported or produced by a foreign laboratory drugs (Table 5).

Respondents reported that their perceptions were influenced by geographical reasons including the availability of drugs in the street where do they live, in the *wilayat*, and at most in Algeria. The time factor, availability of genuine drugs and medicines produced by a national laboratory constituted also important (Table 5).

Regardless the importance of the determinant, respondents argue that the type of medicines is the most important factor (1113 points score) followed by the time spent to look for medicines (1029 points), the medicines' price (866 points) and the medicines' origin (782 points). The location of the pharmacy was the less important (770 points).

3.2. Limits to differentiate between access and non-access

The time factor limits

Regardless of getting access or not, the majority of respondents (45.72%) think that medicines are considered as not accessed when they look for them for over three days. They constitute: 51.58% of those who did not get access, 45.97% of those who said that the time factor is important and 45.16% of those who considered time as not important. Hence, the standard of getting access is 3 days. Beyond that limit, medicines are not accessed.

The location factor limits

Respondents (45.72%) declared that there are less than three neighborhood pharmacies and they usually use transportation to get medicines from two pharmacies at most (50%). Both responses were predominant for those who think they get access (44.98%, 51.2%) or those who think they didn't get access (47.37%, 47.37%), those who think the location of pharmacies is important (42.26%, 52.57%), or those who don't care about the location (50.39%, 46.51%). The combination between the number of neighborhood pharmacies and those reached by transportation expressed in the responses, whatever the perception regarding access, means that the standard of access is three neighborhood pharmacies; under that number is a sign of non-access.

The preference/acceptance limits

Respondents prefer genuine medicines (80%). People who think they got access thanks to the availability of genuine medicines in pharmacies, affirmed their perceptions by selecting genuine medicines when they were asked to specify which type do they prefer (80.17%). Also people who think they suffered from non-access because of unavailability of genuine medicines, affirmed their perceptions by declaring that they prefer genuine medicines (78.95%). Surprisingly, both categories responded that they prefer genuine drugs too (82.14% and 71.43% respectively). Therefore, it's hard to discern the threshold between access and non-access concerning the type of drugs.

The financial factor limits

Most respondents who think they had access and they rely on their IMI (26.79%), they earn a monthly income less than three-

times the NGBW. The FMI of the majority who had access and rely on the family income (41.07%) is limited between one and three-times the NGBW. If we take into consideration also those who think they didn't get access, the pervious percentages rise to 27.48% and 41.40% respectively. It can be argued that access cannot be achieved unless the IMI or the FMI is at least equal to the NGBW.

3.3. Determinants' validity during Covid-19 pandemic and out of pandemic period

The participants were asked to specify whether the determinants, on which they based their perceptions, are the same out of pandemics period. The respondents who felt getting access affirmed that the financial determinants (76.44%), the geographical determinants (71.63%), the time ones (68.27%), the type of medicines (74.64%), and their origins (77.40%) are the same during and before the pandemic, whereas the respondents who lacked access said that all determinants were different during covid-19 compared to the period before the pandemic. But when we combine the responses of both groups, it appears that all determinants are the same during and before covid-19 with a percentage over than 50%.

Table 5-a. Important determinants influencing access to medicines' perceptions (*number of answers for participants who think they had access to medicines*)

Question: *Do you think that you obtained the needed drugs during Covid-19 pandemic? (Yes)*			
Item 1/Section 2: *The drugs were cheap*		**Item 8/Section 2**: *The drugs I needed were available in the Wilayat where I live*	
Yes	No	Yes	No
49	160	195	14
Item 2/Section 2: *My individual income enabled me to buy the needed drugs*		**Item 9/Section 2**: *The drugs I needed were available in Algeria*	
Yes	No	Yes (n)	No
112	97	190	19
Item 3/Section 2: *The family income enabled me to buy the drugs*		**Item 10/Section 2**: *I did not spend a lot of time looking for the drugs*	
Yes	No	Yes	No
118	91	172	37
Item 4/Section 2: *I could get drugs for free*		**Item 11/Section 2**: *The drugs I purchased were genuine*	
Yes	No	Yes	No
8	201	116	93

Item 5/Section 2: *I am covered by health insuranc*e		**Item 12/Section 2**: *The drugs I purchased were generic*	
Yes	No	Yes	No
133	76	112	97
Item 6/Section 2: *Most of the drugs I needed are compensating*		**Item 13/Section 2:** *The drugs provided by pharmacies were produced in a national laboratory*	
Yes	No	Yes	No
60	149	174	35
Item 7/Section 2: *The drugs I needed were available in a pharmacy close to my residence (street or the neighborhood)*		**Item 14/Section 2**: *The drugs provided by pharmacies were imported or produced by a foreign laboratory*	
Yes	No	Yes	No
148	61	90	119

Table 5-b. Important determinants influencing access to medicines' perceptions (*number of answers for participants who think they had not access to medicines*)

Question: *Do you think that you obtained the needed drugs during Covid-19 pandemic? (No)*

Item 1/Section 3: *The drugs were expensive*		**Item 8/Section 3**: *The drugs I needed were not available in the Wilayat where I live*	
Yes	No	Yes	No
33	62	21	74
Item 2/Section 3: *My individual income did not enable me to purchase the needed drugs*		**Item 9/Section 3**: *The drugs I needed were not available in Algeria*	
Yes	No	Yes	No
19	76	16	79
Item 3/Section 3: *The family income did not enable me to buy the needed drugs*		**Item 10/Section 3**: *I spent a lot of time looking for the drugs*	
Yes	No	Yes	No
19	76	39	56
Item 4/Section 3: *I could not get drugs for free*		**Item 11/Section 3**: *The drugs I purchased were not genuine*	
Yes	No	Yes	No
24	71	38	57

Item 5/Section 3: *I do not benefit from health insurance*		**Item 12/Section 3**: *The drugs I purchased were not generic*	
Yes	No	Yes	No
17	78	38	57
Item 6/Section 3: *Most of the needed drugs were not compensating*		**Item 13/Section 3**: *The drugs provided by pharmacies were not produced in a national laboratory*	
Yes	No	Yes	No
34	61	24	71
Item 7/Section 3: *The drugs I needed were not available in a pharmacy close to my residence (street or the neighborhood)*		**Item 14/Section 3**: *The drugs provided by pharmacies were not imported or produced by a foreign laboratory*	
Yes	No	Yes	No
27	68	26	69

Source: By authors from the software

4. Discussion

Contrary to Garcia et al. (2019), the results showed that not all determinants are important for Algerians. Unlike Rizk et al. (2021) ENREF 22 ENREF 22 and Rockers et al. (2019), the financial aspect didn't influence Algerians' perceptions regarding access. It's the same result issued by Kamphuis and Kanavos (2021). This can be explained by the Algerian health system based on the third-party payment, via *chifa* card, where the patient pays cash the 20% not covered by health insurance (ZIANI & BRAHAMIA, 2016).

This argument is supported by more than 60% of those who had access or not and were not interested in the financial aspect. The importance of the third-party payment system was revealed by Husnain et al. (2019) but it doesn't meet the results of Vogler et al. (2017). The power of the third-party payment explains the lack of importance of the IMI and FMI in the financial aspect whereas an early study revealed that FMI is an important factor in medicines demand in Algeria (Oufriha, 1990).

The attitude of the participants towards the financial determinants related to health insurance contradicts the results of Garcia et al. (2019) and Morgan, McMahon, and Greyson (2008). It's due to the nature of requested medicines listed in the questionnaire. They are generally inexpensive compared to chronic diseases' medicines, and they are almost compensating drugs at 80%. Among the first three most requested kinds, there are Antiseptics and Alcohol. They are Para-pharmaceutical products and are not expensive. Moreover, Algerian authorities adopted a pricing policy which makes medicines prices under control for imported and national medicines (Kamphuis & Kanavos, 2021) according to the Article N°5 of the executive decree N°20-272 (Journal, 2020a) ENREF 85.

Cheap generic drugs were not important contrary to many papers (Husnain et al., 2019; Liberman, 2011). Firstly, because the respondents do not care about the price (Table 5). Secondly, Algerian people prefer naturally genuine (Table 5) and imported drugs (Chikha & Kahia, 2020). The paradox, is that imported drugs also were not of interest by respondents contrary to Chikha and Kahia (2020). May be it happens, firstly, because people were influenced by the general atmosphere of fear that there will be a

drugs shortage in neighborhood pharmacies and may be throughout the country. In fact, many countries have already banned export of protective equipment or medicines related to COVID-19 (Kohler & Mackey, 2020). Therefore, Algerian people were interested in getting drugs whatever the type and the origin, especially after the cancelation of all international flights early in the beginning of the pandemic and the restrictions of public transportation. This argument is supported by the importance given by the respondents to medicines produced by national laboratories. Secondly, genuine drugs, even though preferred, are likely to be primordial for some consumers only in case of serious health disorders like heart problem and blood pressure as argued _ENREF_35_ENREF_35_ENREF_35_ENREF_48Husnain et al. (2019)_ENREF_35, whereas the medicines listed in the questionnaire are related to less risky diseases.

For this study, the standards/limits of people's preferences regarding genuine and generic drugs was unclear contrary to the results of Lakhdar (2018). But what is certain is that Algerian people prefer genuine drugs as reported in the results. Unfortunately, they are obliged to purchase generic drugs for two reasons. First, because generic substances dominate 77.7% of the medicines nomenclature (Keddad, 2020). Second, because of the restrictions implemented on pharmaceutical imports. The new pharmaceutical industry policy promotes the domestic production of imported medicines substitutes (Kamphuis & Kanavos, 2021). Article 4 of the decree N°20-272 confirms that the pharmaceuticals import programs must be directed to complement the national industry (Journal, 2020a)._ENREF_85 During Covid-19, the authorities allowed an exceptional import only for pharmaceutical products used to fight the virus (Journal, 2020b).

In another hand, this restrictive policy on imports risks failing to change the preferences of Algerians. It is proved by the first rank given to the type of medicines when respondents expressed the importance of this suggested determinant amongst the others. Another proof appears by deeply analyzing the income status. The majority of respondents who reported they prefer genuine drugs are people who earn an IMI less than the NGBW (29.22%) followed by those who earn one or two times the NGBW (23.04%). According to that, it is worth to take into account the consumer preferences regarding generic and genuine medicines when studying access to medicines instead of focusing only on the financial aspect in future research.

We preferred to use NGBW as a standard of measurement instead MPR adopted by the WHO as did Rockers et al. (2019) and Yang et al. (2020) because NGBW remains suitable to measure access since it presents the threshold that distinguish the most vulnerable segment of society. The standard/limit of at least one time NGBW concluded by the study seams low, but it is realistic and sufficient because the medicines listed in the questionnaire were not expensive compared to chronic disease medicines. Even in the opened question about requested medicines, only 7% said they looked for chronic disease medicines during the pandemic.

The determinants that shape people's perceptions regarding access were the same before and during Covid-19 at more than 50%. First, because the medicines included in the study are usually used and are naturally available in every house, as responded two participants, and they belong, generally, to over-the-counter medicines; Second, the treatment of Covid-19 was not available in the pharmacies, so its demand was entirely absent at

the date of the survey, and the patients continued to look for the medicines they usually request. The chloroquine, domestically produced, was the treatment adopted by the Algerian health authorities. Since then, its supply has been banned in the pharmacies, otherwise, the demand would have increased dramatically. This argument is supported by responses for open questions.

The study encompasses a number of limitations related to the sample size that is not infallible from coverage error resulting from missing people without internet access. Online survey can be a limitation in ordinary circumstances, but during Covid-19 it constitutes the only solution to conduct the study due to the general confinement forced by high authorities. Couper (2000) stated that there is no pattern to predict the failure or the success of online surveys compared to other survey methods.

More access determinants must be included to better shape people's perceptions. We are aware that the results might be better clear if the research has been conducted for every group separately (ie: antibiotics, chronic disorders' medicines…) or if chronic disease medicines were included. The inclusion of more open questions would, surely, have clarified some disparities and ambiguities. Since the study was conducted during the first year of Covid-19, there is a need for a new survey to assess whether people's perceptions remain the same regarding determinants ranking and importance in the new circumstances characterized by the availability of the vaccine and the appearance of many new mutant strains of Covid-19.

Despite the limitations, the results remain valuable because, to our knowledge, it's the first survey conducted in Algeria about

a set of access to medicines' determinants englobed at once during a pandemic period. The findings provide important new insights that can be used to guide future works. The adopted method enables to track and check for within-country and within-provinces access inequalities.

5. Conclusion

The findings argue that the conception of a successful system that meets Algerian's perceptions regarding access to medicines must be based on the establishment of at least three pharmacies that do not require transportation, a waiting time does not exceed three days, and an IMI and an FMI of at least one time the NGBW. These standards are relevant with maintaining the third-party payment system and the availability of genuine medicines.

The concluded access limits are eligible to be used as indicators to measure access to medicines, named as follows: The number of neighborhood pharmacies, IMI and FMI compared to NBGW and the number of days spent to find drugs.

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