

# Impact of Covid-19 on the Activities of Psychiatric Structures in Africa: The Case of the Dalal Xel Mental Health Center in Thies, Senegal

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**Abstract:-** The objective of this study was to assess the impact of COVID-19 on the activities of the Dalal Xel Mental Health Centre in Thies, both in terms of care and revenue. This was a retrospective, descriptive and analytical study of information from the center's electronic database, comparing patients received during the first wave of covid-19 in Senegal (02 March 2020 to 30 November 2020) with a reference period corresponding to the subsequent year (02 March 2019 to 30 November 2019). There were no significant variations in the socio-demographic characteristics of patients in 2020 with those in 2019 for the same period. For care activities, average decreases of 19%, 52%, and 85% were noted from 02 March 2020 to 30 November 2020 compared to the same period in 2019 for outpatient consultations, outpatient primary care, and hospitalizations respectively. A drop in the center's revenue was observed from March 2020 onwards, reaching its lowest rate in May 2020 corresponding to 1.7% of the center's total revenue. This study shows that the current epidemic at COVID-19 has had a strong impact on the care activities and revenue of the Dalal Xel mental health center in Thies. Despite the center's resilience efforts, effective measures must be taken to avoid the abandonment of care for patients and the proper functioning of the center in a context of limited resources in the mental health field.

**Keywords:-** Impact, COVID-19, Mental Health, Dalal Xel, Senegal.

## I. INTRODUCTION

Emerging in December 2019 in Wuhan [1], Hubei Province (Central China), the SARS-Co. V 2 (Covid-19) related coronavirus disease has spread rapidly around the world to such an extent that in early 2020, the World Health Organization (WHO) declared it a public health emergency of international concern [2]. Because of its rapid spread, its dangerousness, the ease with which it is transmitted, and the lack of pre-existing scientific data, it was clear that urgent

action was needed to halt the exponential progression of this pandemic [3].

Since the emergence of Covid-19 in the world, the SARS-Co. 2 viruses have already undermined the most efficient health systems [4] and the projections on the health systems of low-income countries are more worrying according to several studies [4, 5]. This reality does not spare our country, Senegal, especially in the field of mental health.

Prior to the COVID-19 pandemic, mental health systems in the African Region were already challenged by several issues. Mental health provision in developing countries is very limited. Few countries have a mental health policy [6], insufficient resources are allocated to mental health [7], and there is a lack of integration of mental health care into general care [8], to name but a few. With this pandemic surrounded by uncertainty, it is justifiable to question the impact of the pandemic on access to psychiatric care in Africa. Indeed, with the sudden onset of the pandemic in Africa and particularly in Senegal, mental health structures were not prepared for a reorganization in this context which has completely disrupted the care system. A WHO study assessing the impact of covid-19 on mental health care showed that 41% of the countries participating in the study experienced partial or complete disruption of home and community-based outreach services (including social care services) for people with mental, neurological, and substance use disorders [9].

In Senegal, we did not find any specific studies on the consequences of the covid-19 pandemic on the activities of psychiatric care services. It is within this framework that we began this work, the objective of which was to evaluate the impact of COVID-19 on care activities at the "Dalal Xel" Mental Health Centre in Thies, Senegal.

## II. MATERIALS AND METHODS

### A. Setting of the study

This study took place in the "Dalal Xel" mental health center in Thies, located 70 km from the Senegalese capital, Dakar. It is a private health establishment specializing in the treatment of mental disorders. It occupies a special position in the organization of psychiatry in Senegal because of its history [10], but also because of its active file of patients (on average 15,000 patient visits per year). Since 2002, it has been approved by the Ministry of Health, and psychiatrists and interns in training are assigned to it. The center is a not-for-profit establishment and is open 24 hours a day to all persons in need of medical and psychosocial assistance, regardless of their religious, social, political, or economic status. The center has a staff of about 40, including a permanent psychiatrist, supported by interns and nurses in training. The main activities are hospitalization with four 48-bed units, one of which is reserved for women, outpatient consultations, electroencephalography examinations, and occupational therapies (occupational therapy, music therapy, etc.). In addition, the "Dalal Xel" mental health center in Thies is implementing a care policy aimed at getting closer to the communities through various actions, for example, periodic primary health consultations carried out in several localities in the region (e.g. Bambey) and in the surrounding areas (e.g. "Louga", "Mbacké", "Richard Toll"), strengthening the follow-up of sick people thanks to telephone links, home visits with awareness-raising sessions and family mediation, and guaranteeing access to care for the destitute people.

### B. Type and period of study

This was a retrospective, descriptive and analytical study of data from the center's electronic database, comparing patients received during the 'first wave' of covid-19 in Senegal (02 March 2020 to 30 November 2020) to a corresponding baseline period in the subsequent year (02 March 2019 to 30 November 2019).

### C. Study population and eligibility criteria

The study concerned all patients of both sexes and all ages who were received at the "Dalal Xel" mental health center in Thies for all care modalities (outpatient, inpatient). We included in the study the passage of patients who were received during the two comparative periods: from 02 March 2020 to 30 November 2020 and from 02 March 2019 to 30 November 2019. We decided not to include in the study patients whose information was missing from the electronic database or administrative registration errors (identity errors or duplicates) and all patients received for other reasons other than consultations or hospitalizations (electroencephalography examinations, medical certificates, psychiatric expertise, etc.).

### D. Data collection and processing

Data were collected from the center's electronic administrative and financial databases. The variables collected, on an Excel sheet, were the number of consultations carried out

at the center and at the primary health care sites and the number of hospitalizations carried out during the identified periods. For primary care, we collected only the visits to the Bambey and Louga sites for reasons of fair comparison between the two years of our study period, as the other two sites (Mbacké and Richard Toll) started in the year 2020. About the profile of patients, we collected data on age, sex and origin. We compared the statistics of these different variables according to the two periods. We also calculated the variations in revenue between the two periods. The results were presented using charts, tables, and graphs constructed using Microsoft Excel 2013.

### E. Ethical considerations

Anonymity and confidentiality were respected throughout the data collection process. The protocol was approved by the director of the institution.

### F. Bias

This work is based on a secondary analysis of data from the center's electronic database. Therefore, we are not able to control for biases depending on the reporting conditions at the time of patient registration. Nevertheless, each patient who comes to the center is accompanied by a family member and immediately registered in the database by a trained person before seeing the consulting doctor. It can therefore be estimated that the number of patients received in the center is accurately verified. As for the financial revenues, we can express reservations about the fact that the revenues are managed by one person and not a team, which would have allowed the financial observations to be discussed among the center's staff.

## III. RESULTS

Of 32,780 patient visits recorded during the study periods, 24,577 (74.98%) visits were included in the analysis, of which 10,995 were in 2020 (02 March-30 November 2020) and 13,582 in 2019 (02 March-30 November 2019).

### A. Characteristics of patient passage in 2019 and 2020

Table I below gives a general overview of the profile of visits to the "Dalal Xel" center in Thies. For the period considered in our study as the "first wave" of the Covid-19 epidemic in Senegal (02/03 to 30/11 - 2020), there were no significant differences between the ages of patients with the year 2019 for the same period. However, for the study period, the most representative age range was [21-40] years. Most patients were female (5723 - 52.1% in 2020 vs. 7162 - 52.7% in 2019). Furthermore, a significant change in regional origin was observed between the two periods. Indeed, there was an increase in the proportion of patients from the Thies region for the 'first wave' covid-19 period with 6,928 patients (63.0%) in 2020 vs. 4,558 patients (33.6%) in 2019. The other regions saw their rate drop in 2020 (37%) in contrast to the previous year (65.7%).

Table I: Characteristics of visits to the "Dalal Xel" center in Thies in 2019 and 2020.

	03/03 to 30/03 2019 (Reference period) N= 13 582 (100%)		03/03 to 30/11 - 2020 (First wave covid19) N= 10 995 (100%)	
	Frequency	Percentage	Frequency	Percentage
<b>Age groups</b>				
0-20 years	2 977	22%	2 033	18.5%
21-40 years	6 698	49.3%	5 950	54%
41-60 years	2 791	20.5%	1 619	14.7%
61 and over	1 116	8.2%	1 393	12.7%
<b>Gender</b>				
Female	7 162	52.7%	5 723	52.1%
Male	6 419	47.3%	5 272	47.9%
<b>Origin (Region)</b>				
Thies region	4 558	33.6%	6 928	63%
Other regions	8 931	65.7%	4 066	37%
Other countries	93	0.7%	00	00%

**B. Outpatient consultations at the "Dalal Xel" mental health center in Thies in 2019 and 2020**

Figure 1 on the evolution of outpatient consultations at the "Dalal Xel" mental health center in Thies from 02/03 to 30/11 of the years 2019 and 2020, shows a decrease in outpatient activities for all the months concerned by our study in the year 2020, except for November where we have an increase of 12%. The months where we have a significant decrease are March (28%), April (63%), and May (67%). In general, we noted an average decrease of 19% from 02 March to 30 November 2020 compared to the same period in 2019.

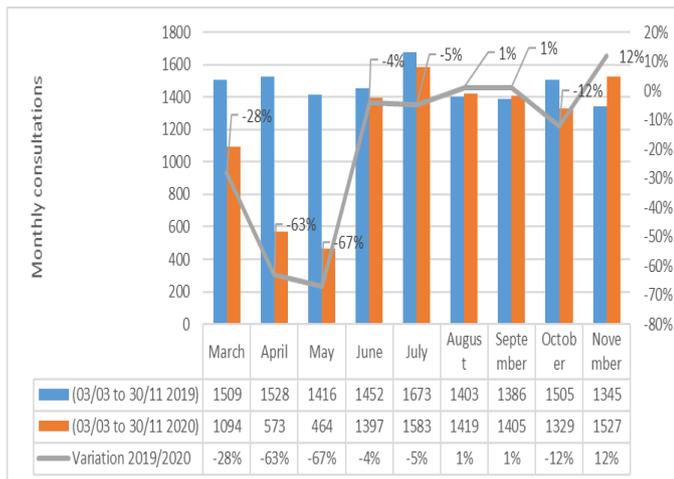


Fig 1: Evolution of outpatient consultations at the "Dalal Xel" mental health center in Thies from 03/03 to 30/11 in 2019 and 2020.

**C. Outpatient Consultations at primary health care sites in 2019 and 2020**

Primary health care at the Bambej and Louga sites combined declined for all months in 2020 (Figure 2), including 100% for the months of April and May. An average decrease of 52% for the 2020 study period compared to the same period in 2019 was observed.



Fig 2: Evolution of primary health care consultations at the Bambej and Louga sites from 03/03 to 30/11 in 2019 and 2020.

**D. Hospital admissions at the "Dalal Xel" mental health center in Thies in 2019 and 2020**

For hospitalizations, all months showed collapses (Figure 3). The months of April, May, and June were the most affected, with respective rates of 71%, 98%, and 92%. As a result, we note an increase in hospitalizations for the month of August 2020 compared to the same month in 2019.

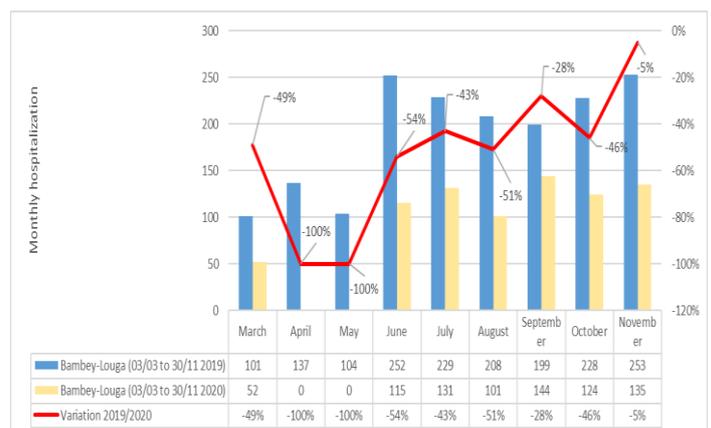


Fig 3: Evolution of hospitalizations at the "Dalal Xel" mental health center in Thies from 03/03 to 30/11 in 2019 and 2020.

### E. The finances of the "Dalal Xel" mental health center in Thiès in 2019 and 2020

Figure 4 shows a drop in revenue from March onwards to reach its lowest rate in May corresponding to 1.7% of total revenue, the normal average per month to reach the 100% budget being around 8%.

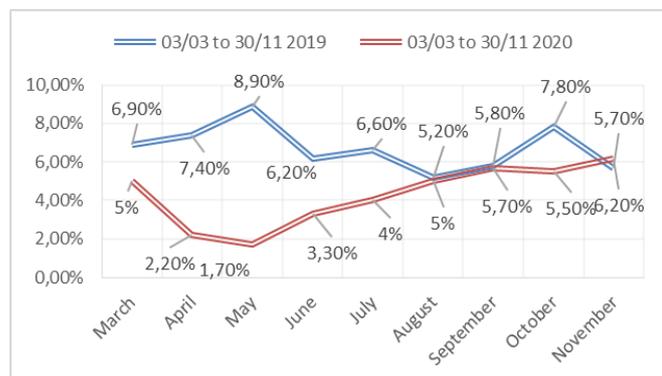


Fig 4: Monthly evolution of finances compared to the annual budget for the years 2019 and 2020.

This curve shows a slow but steady evolution from May to September to reach a level comparable to 2019. In relation to the level of achievement of the annual budget and by activity (forecasted revenue), we noted that the budgetary results for the year 2020 were not achieved for the consultation (65%) and hospitalization (54%) activities.

## IV. DISCUSSION

The results presented here were obtained from information collected retrospectively from the center's electronic databases, which implied a potential bias due to missing data. This limitation is compounded by the fact that our results are preliminary and monocentric, and therefore cannot be extrapolated to other regions or health facilities. Indeed, as explained above, the Dalal Xel mental health center in Thiès is a structure specializing exclusively in psychiatric care. It would be interesting to broaden the scope of this study by including psychiatric services integrated into regional hospital centers, which are witness to the activity of the epidemic in less densely populated areas. Despite the limitations, the contribution of such a study is of definite interest for the knowledge of the extent of Covid-19 on psychiatric care in a context of limited resources.

### A. This Changes in the profile of patients at the Dalal Xel center in Thiès

In our study, we did not find any significant differences between the 2020 and 2019 samples with respect to age and gender. The most representative age group was 21-40 years with an average of 50% of patients. Women were the most representative in both years. This finding differs from other existing studies on the same subject worldwide [11, 12]. However, caution should be exercised when comparing our results with the literature, as the fact that our study took place in an exclusively psychiatric center with a predominantly young female population [13] calls for reservations. Although studies on covid-19 have incriminated the age factor as a risk factor, our study did not find an impact in relation to this

parameter. However, many patients came from the Thiès region in 2020 (63.0%) compared to 33.6% in 2019, which seems to be directly related to the measures taken by the government, notably the restrictions on inter-urban and inter-regional travel and the state of emergency. This means that patients from the Thiès region, where the center is located, had no great difficulty in reaching "Dalal Xel", unlike patients from other regions.

### B. Reduction in activities at the Dalal Xel center in Thiès

During the study period of the 2020 pandemic, the center experienced a considerable reduction in activities as evidenced by our study.

#### ➤ In relation to outpatient consultations at the center

The period from 02 March to 30 November 2020, corresponding to the first wave and intensification of the epidemic in most African countries in general and in Senegal in particular, an average reduction of 19% in consultations, compared to the same period in 2019, was noted. This means a significant drop in the use of services. This situation was more marked for the months of March, April, and May 2020 with respective decrease rates of 28%, 63%, and 67%. This could be explained on the one hand by the constraints linked to the travel restrictions decided by the country's political and health authorities and by the fears of exposure to the virus in psychiatric care facilities on the part of patients and their families. Several authors have also noted this fact [11, 12, 14]. A review of the literature on the use of health care services during a pandemic in West Africa found a 27.6% decrease in service use [15]. This rapid reduction in consultations in 2020 can also be explained by decisions taken by the center's management committee. Thus, it was decided to conduct consultations for all former patients by telephone (teleconsultation, online consultation). In new cases, patients who could not be reached by phone and relapses were consulted on-site [16].

#### ➤ For hospitalizations within the center

The situation remains identical to that observed for consultations. An average decrease of 42% from 02 March to 30 November 2020 compared to the same period in 2019 was observed. Our figures are comparable to those found by Brolin Ribacke et al [15], who noted a 44.3% decrease in hospitalizations during the Ebola epidemic in West Africa. This observation on hospitalizations at the Dalal Xel center in Thiès is justified by the decisions of the center's management committee. Indeed, given the uncertainty of the pandemic, the nature of mental patients with difficulties in controlling barrier measures among them, the institutional authorities of the center decided to considerably reduce or interrupt hospitalizations in order not to take the risk of rapid and widespread contamination.

#### ➤ For delocalized primary health care consultations (Bambey and Louga)

An average decrease of 52% for the 2020 study period compared to the same period in 2019 was noted in our study. The months of March and April 2020 are more impacted with a total absence of activity. This situation is always explained by the sanitary restrictions and the travel bans. Even if a

derogation was made for health workers, the decision to avoid traveling was taken by the center to be in line with national directives and unconsciously by a fear of exposure to the virus by the often poorly protected care staff.

This significant reduction in activities, due in large part to the pandemic, led to a drop in the center's attendance and a reorientation of clinical activities to the detriment of traditional care activities [9].

#### C. Impact on the finances of the Dalal Xel center

As for the center's activities, income fell in 2020 with a differential of -21% compared to 2019. This drop could undoubtedly be attributed to the reduction in activities, while expenses remained almost unchanged. Despite the drop in revenue, the administration has done its best to keep salaries intact for all staff, so that despite the resumption of activities in June, the financial curve could not be recovered until November 2020.

This resulted in a relatively low budget forecast of 60% for 2020 compared to 2019 when 82% of the budget was achieved, a gap of 22% due to the pandemic. It should be noted that the Dalal Xel Centre does not receive any financial subsidy from the state. It operates on its own funds with the income generated by the center's activities and some efforts from foreign partners. As Covid-19 has not spared any country in the world, partners have become increasingly "scarce" or more focused on their own countries. This shows the very rapid impact on finances. The situation could be worse if the pandemic continues or if resilience measures are not taken.

#### D. As Resilience of the Dalal Xel centre in Thiès

The emergency measures put in place during the first wave (March-November 2020) involved medium-term changes in the functioning of the Dalal Xel mental health center in Thiès. While the Covid-19 pandemic has profoundly modified the organization of care at the center, it has also had a significant financial and human cost, while all the country's mental health structures are chronically suffering from a lack of material and human investment.

At the Dalal Xel center in Thiès, measures have been put in place to ensure the resilience of the center, its staff, and its patients. Although our study shows some worrying figures, it gives encouraging indicators and hope. The study shows, however, that for its main activities (hospitalization - consultation), the figures started to rise in July. This can be explained by the relaxation of government measures on the one hand, and on the other hand by the fact that, after having put in place a protocol, the center's committee deemed it necessary to resume activities and that the measures taken made it possible to work in safety for the satisfaction of the clientele without exposing either the patients or the parents, and even less so the staff. This resumption of activities, with the aim of continuity of care, was made easy by a certain mastery of the database which made it possible to be in contact with the patients and their parents and to be able to give follow-up appointments to the center as soon as the decision to resume full-time activities was taken.

Ensuring continuity of psychiatric care is a necessity in the case of patients with most chronic illnesses such as schizophrenic disorders, the prevalence of which in Africa is around 18-30% of patients followed up [17, 18]. Despite the resilience of the center, we can ask ourselves what the impact will be in terms of follow-up or abandonment for the patients who are followed up, knowing already the daily difficulties of the latter? Will the structures see new patients arrive with pathologies linked to the effects of Covid-19, or to the conditions of care in a context of social stigmatization of patients affected by Covid-19? These questions remain unanswered and deserve further reflection.

## V. CONCLUSION

The covid-19 pandemic is one of the most significant health crises of the 21st century. It has disrupted the organization of healthcare systems worldwide. From a health point of view, this pandemic mobilized almost all the energies and resources, thus creating a deficit in the treatment of other pathologies, especially chronic ones, but also a considerable drop in the number of people using health facilities. This situation has had a strong impact on these facilities, especially those in the private sector.

The Dalal Xel mental health center in Thiès has not been spared this crisis. Thus, during this "first wave" (from March to November 2020), the Dalal Xel center experienced a considerable drop in the number of consultations and hospitalizations and a total halt in primary health care consultations, at least for two months, thus generating a drop in revenue.

However, thanks to its organization, capacity to react, and resilience, the center was able to put in place a strategy that enabled it to cope with the effects of the crisis and limit its consequences as far as possible. However, is this resilience not cyclical? Thus, for greater resilience in the long term of our psychiatric care structures, effective adaptation measures should be taken: reinforcing the measures taken to avoid the circulation of the virus in the psychiatric centers, making periodic evaluations of the system which we consider necessary to avoid falling into a routine that opens doors to the coronavirus, advocating for an improvement in the quality of psychiatric care services; reinforcing the mental health systems within the framework of the post-COVID-19 investment plans.

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**Conflicts of interest:** The authors declare that they have no conflicts of interest.

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