

Hospital Clinical Performance in a Post Covid-19 Era. The Experience and Lessons learned from our retrospective survey at the Obstetrics & Gynecology University Hospital (OGUH) “Queen Geraldine” Tirana, Albania

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ABSTRACT

Introduction: All the restricted and lockdown measures including the closure of the social and economic life that many Governments around the world applied to reduce the consequences of the COVID-19 Pandemic caused serious consequences in the activity of the health system. One of the most important and negative impacts of dealing with COVID-19 was the reduction in the volume and required of the structure of hospital activities. One of reported consequences was a slow pace on which the hospital's activity is returning to normal as defined by pre-pandemic levels. The main purpose of our survey was to assess the rate of return of these indicators to a more normal state, i.e. towards the levels set before the COVID-19 Pandemic.

Study Method: We retrospectively analyzed the hospital clinical activity at the OGUH “Queen Geraldine” during the period from 2018 to 2023. Analysis of hospital clinical indicators covered the following periods: two years before the COVID-19 pandemic (2018 and 2019); two years during the COVID-19 pandemic (2020 and 2021); and, two years after the COVID-19 pandemic (2022 and 2023). The evidence from similar studies suggests that the above period definition will allow us to compare these indicators of the clinical performance (diagnoses, more specifically) for these three periods and draw the relevant conclusions. The OGUH clinical activity has been analyzed with the most frequent diagnoses of the main services such as Obstetrics, Gynecology, Obstetrics Pathology, Abortion and Outpatient Services. We calculated the average values for each of the three periods: before COVID-19 (A), during COVID-19 (B), and after COVID-19 (C). We analyzed the data using Excel and SPSS programs to obtain more descriptive and analytical statistics, making the appropriate comparisons and correlations. Statistical significance was estimated if $p < 0.05$ in 2-tailed P values.

Results: Our study shows that the hospital's clinical performance indicators during the pandemic period (2020 and 2021) suffered a significant decline (Table 1). The comparison of the trend of the main clinical diagnoses in the periods before, during and after the COVID-19 pandemic in our hospital is reported in the (Table 2). Specifically: Normal births suffered a decline by 10.87% for the period during the pandemic compared to the period before the COVID-19 pandemic. The rate of decline continued even when the health emergency has been declared over, but was reduced to the previous level by 2.15%. This downward trend

was much more pronounced in other diagnoses with a specific weight and more so for the clinical activity of OGUH "Queen Geraldine" related to Hysterectomy (15.6%), Abortions (26.38%/24.78%), Menometrorrhagia (27.24%) and Pregnancy Pathology (26.82 %). As an outsider to our expectations, Plastics Surgery and Ambulatory Activities (Visits, Pap tests, Colposcopy, etc.) resulted to have increased as compared to other services in decline mentioned above.

Conclusions: The clinical activity of "Queen Geraldine" OGUH was severely affected by the COVID-19 pandemic. This impact was clearly reflected in various clinical performance indicators, leading to a significant decrease in the pace of these indicators returning to normal. More specifically, the smallest decrease was found in acute care (Obstetrics), while the largest decrease has been recorded in elective care (Gynecology, Abortion, etc.). A key finding was that, during the post COVID-19 period, the rate of decline has slowed down a lot, and there is still a gap compared to the level of the period before COVID-19. This slow return to the normal levels (set before the COVID-19 pandemic) has its own causes, which must be carefully analyzed and interpreted in order to draw lessons and successfully preventing as well as minimizing any negative effects when dealing with similar situations in the future.

Keywords: Pandemic; COVID 19; Obstetrics-gynecology university hospital; Performance; Rhythm

Background

The first cases of COVID-19 in Albania were officially confirmed on 8th March, 2020, even though signals of the presence of this pandemic were seen since the start of February 2020. From this day onwards, the Albanian Government, by means of the normative act, applied numerous pandemic control measures such as those of physical and social distancing. In this situation, a first lockdown was imposed to the entire population – that lasted for about a month. The country's total lockdown was eased gradually and in stages, but measures such as physical distancing remained in place, and so were the wearing of mandatory masks as well as hygiene-related measures. Other measures were also implemented as part of partial lockdown, the introduction of remote working, closure of schools and universities and the development of online learning. It should be noted that these measures are considered among the harshest applied as compared across all the countries affected by COVID-19 and had serious negative impacts on the social and economic life of the country, thus also on the healthcare system. The adopted health policies were mainly focused on the control measures aiming to avoid the overloading of the healthcare system (ambulatory services, but above all our hospital settings) and would create free capacities to treat those infected and more severely ill from COVID-19. This goal was intended to be realized through several ways, the most important of them being the limitation of planned (elective) surgical interventions that would create spaces in the intensive care units (reanimation). This policy, combined with other psycho-social restrictions, also brought about a change in the existing structure of hospital and ambulatory activity. For the purpose of this study, we have defined the period from 2022 onwards as the post COVID-19 period (that correspond with the health emergency from COVID-19 was declared over by WHO). This period was characterized by the gradual return to the normalization of the country's social and economic life. By naming the period itself, we understand that getting back to normal and pre-COVID levels is an ongoing process and as such requires time. Our aim in this study was to analyze the process towards the normalization of the clinical performance indicators (outcome measures) of OGUH "Queen Geraldine", always comparing them with the impact of the restrictions imposed during the COVID-19 pandemic.

2. Study method

This is a cross-sectional study. In a retrospective way, we

analyzed the clinical activity of the hospital in OGUH "Queen Geraldine" over a six years period from 2018 to 2023. This selection was made in order to study the hospital activity during three periods (two years each) and more specifically; the first period **before** the COVID-19 pandemic (2018 and 2019), the second period during the COVID-19 pandemic (2020 and 2021), and the third period **post** COVID-19 pandemic (2022 and 2023). In this way, we were able to analyze and compare the results of the hospital's clinical performance for each period and evaluate its impact on the hospital's trends as well as the rate of return to the normal (pre-COVID-19 state). More specifically, we have calculated the averages of the hospital's clinical performance indicators such as the rate of decrease/increase of the main diagnoses such as Cesarean Sex, Hysterectomy, Pregnancy Pathology, Abortions, etc.

Selection of cases: The study cases were selected retrospectively from the hospital information system and we calculated and evaluated the clinical performance indicators according to the above services. The diagnoses were evaluated according to the ICD 10 system. The data were treated according to the code of ethics, preserving the anonymity of the patients.

Statistical analysis: We processed the data using Excel and SPSS programs for descriptive statistics, which enabled us to present them as tables and graphs, as well as to calculate average indicators, SD, SE, Median, etc. The evaluation is mainly based on descriptive statistical methods. To be more detailed, we have calculated the two-year averages of the three mentioned periods, for all the main indicators of clinical performance related to Obstetrics, Gynecology, Abortion and Outpatient (daily) services. Analytical statistics were carried out using the SPSS package (v. 22), making the appropriate comparisons by means of the relevant tests. To reflect the values of the t test and the p value which enabled us to evaluate the statistical significance of the comparisons of the indicators between the selected three periods under analyses, we have built 3 special tables, (**Table 3**, **Table 4** and **Table 5**). Statistical significance is defined as $p < 0.05$ in 2-tailed P values.

3. Results

The results of our study are summarized in several combined tables and graphics to better describe and facilitate their understanding. In (**Table 1**), we present the dynamics of the main diagnoses that were expected to have the greatest specific weight in the clinical activity of OGUH "Queen Geraldine"

specified according to Obstetrics, Gynecology, Obstetrics Pathology, Abortion and Outpatient Clinics. This table show the figures in a chronological order for the years 2018 to 2023, and the number of cases of patients with the respective clinical diagnoses in Obstetrics (Vaginal Delivery, Cesarean Section), Gynecology (Hysterectomy, Enukl, Cyst, GEU, etc., Plastics), Abortion (Spontaneous Abortion, Paid Abortions), Pregnancy Pathology (Menometrorrhagia), Ambulatory Service (Visits, Pap Tests, Colposcopy, Ultrasounds).

Table 1: Main Clinical Diagnosis before, during and after COVID 19.

Year	Vaginal Delivery	Cesarean Sexio	Hysterektomi	Enukl,Cyst,GEU,Hysts etj,...	Plastics	Abortion(spontan, missed, etc.) ...	Paid Abortions	Menometrorragi, SIP,polip etj	Pregnancy Patology	Vizits, pap, kolp.	Ambulatory Ultrasounds
Y. 2018	4224	2896	335	290	254	957	367	1114	1006	986	13982
Y. 2019	3690	2548	339	311	283	777	363	1156	821	1591	20170
Y. 2020	3714	2624	326	308	287	752	350	916	721	1356	17624
Y. 2021	3424	2538	257	252	259	620	235	868	718	1315	15051
Y. 2022	3169	2491	276	230	346	604	284	824	657	1631	14278
Y. 2023	3241	2163	280	285	213	628	269	872	728	1445	11900
Total	21462	15260	1813	1391	1642	4338	1868	5750	3923	6879	93005

For an extra layer of analysis and to enable cross-comparisons, we have created (Table 2) in which we have calculated the average number of cases in the period before the COVID-19 pandemic (A), during the COVID-19 pandemic (B) and after the COVID-19 pandemic (C), as well as the differences (in %) of the 3 above-mentioned periods. This is the logic for the data presented under Table 2 where we also calculated the averages of the periods before (A), during (B) and after (C) the COVID-19 pandemic, and the differences (in %) of the above 3 periods for the main hospital diagnoses.

Table 2: Average values of main diagnosis before, during and after COVID 19 Pandemics at OGUH “Queen Geraldine”, Tirana, Albania.

Period to COVID 19	AVERAGE									Ambulatory	
	Vaginal Birth	C. Sexio	Hysterektomi	Enukl,Cyst,GEU,Hysts etj,...	Plastics	Abortion	Paid Abortions	Menometrorragi, SIP,polip etj	Pregnancy Patology	Vizits,pap,kolp.	Ultrasounds
A. Before	3957	2722	337	300.5	268.5	867	365	1135	912.5	1288.5	17076
B. During	3569	2581	291.5	280	273	686	292.5	892	719.5	1335.5	16337.5
C. After	3205	2327	278	257.5	279.5	616	276.5	848	692.5	1538	13089
Diff. B – A (%)	10.87 -	5.46 -	15.6 -	7.3 -	1.49 +	26.38 -	24.78 -	27.24 -	26.82 -	3.65 +	4.52 -
Diff. C – B (%)	2.15 -	10.91 -	4.85 -	8.7 -	2.38 +	11.36 -	5.79 -	5.19 -	3.90 -	15.16 +	24.82 -
Diff. C – A (%)	23.46 -	16.97 -	21.22 -	16.7 -	4.09 +	40.75 -	32.01 -	33.84 -	31.77 -	19.36 +	30.46 -

For ease and clarity of understanding, the trends of the data from Table 2 are illustrated in the (Figures 1 to Figure 5) below.

Figure 1: Dynamics of main obstetrics diagnosis.

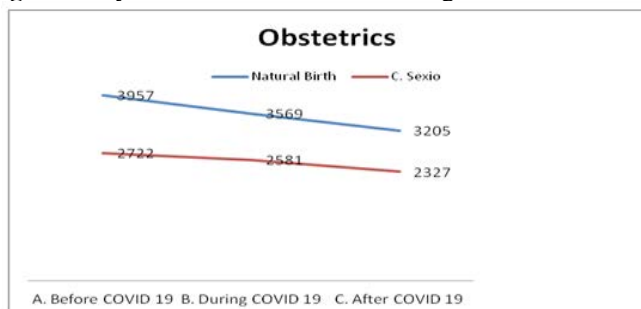


Figure 2: Dynamics of main gynecology diagnosis.

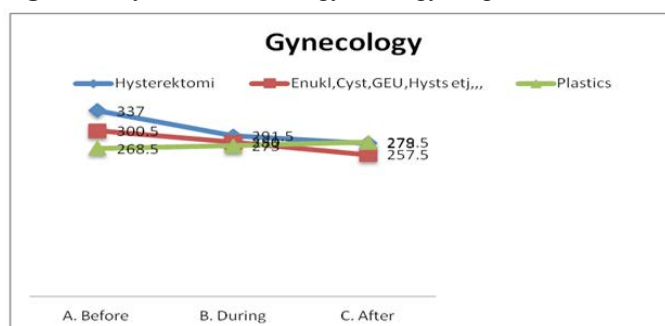


Figure 3: Dynamics of main pregnancy pathology diagnosis.

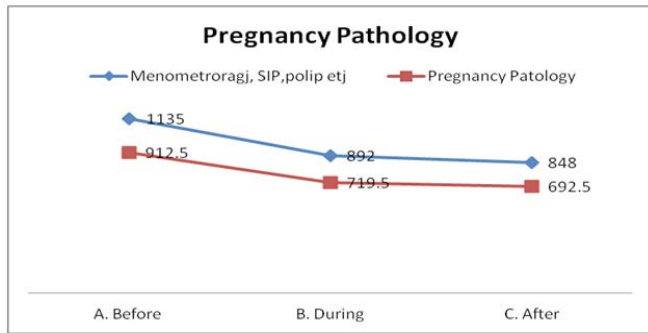


Figure 4: Dynamics of abortions.

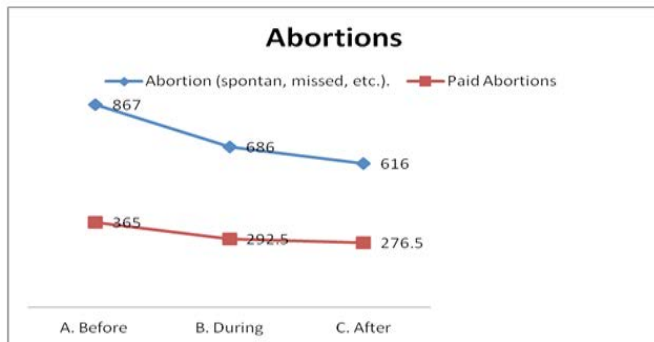
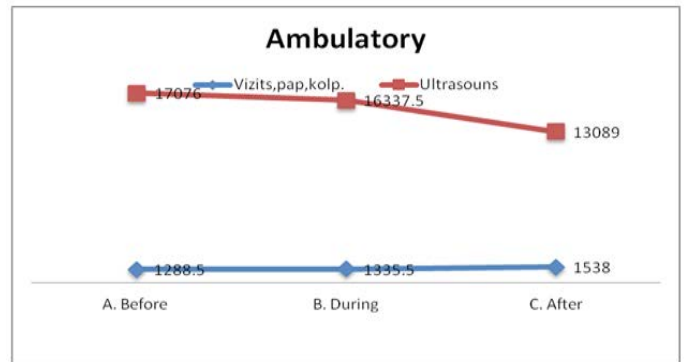


Figure 5: Dynamics of ambulatory service.



Regardless of the seemingly significant changes, to evaluate the statistical significance of these changes, statistical comparison tests were used, and the values of t and p were calculated. The following 3 tables (**Table 3**; **Table 4** and **Table 5**) illustrate what changes were found to be statistically significant versus the rest.

Table 3: Period before and period during COVID 19.

Indicator	Before	During	One Sample t Test		
			t value	p value	Significance
Vaginal Delivery	3957	3569	N/I	> 0.05	No
Cesarian Sexio	2722	2581	N/I	> 0.05	No
Hysterectomy	337	291.5	22.75	0.028	Yes
Plastics	268.5	273	N/I	> 0.05	No
Abortion spontan, missed,	867	686	N/I	> 0.05	No
Paid Abortion	365	292.5	36.25	0.018	Yes
Menometrorrhag, etc	1135	892	11.57	> 0.05	No
Pregnancy Pathology	912.5	719.5	N/I	> 0.05	No
Visits, Pap, Colposcopy	1288.5	1335.5	N/I	> 0.05	No
Ultrasound Examinations	17076	16337.5	16.44	0.039	Yes

Table 4: Period during and period after COVID 19.

Indicator	During	After	One Sample t Test		
			t value	p value	Significance
Vaginal Delivery	3569	3205	N/I	> 0.05	No
Cesarian Sexio	2581	2327	N/I	> 0.05	No
Hysterectomy	291.5	278	N/I	> 0.05	No
Plastics	273	279.5	N/I	> 0.05	No
Abortion spontan, missed,	686	616	N/I	> 0.05	No
Paid Abortion	292.5	276.5	N/I	> 0.05	No
Menometrorrhag, etc	892	848	N/I	> 0.05	No
Pregnancy Pathology	719.5	692.5	18.00	0.035	Yes
Visits, Pap, Colposcopy	1335.5	1538	9.87	> 0.05	No
Ultrasound Examinations	16337.5	13089	35.50	0.018	Yes

Table 5: Period before and period after COVID 19.

Indicator	Before	After	One Sample t Test		
			t value	p value	Significance
Vaginal Delivery	3957	3205	N/I	> 0.05	No
Cesarian Sexio	2722	2327	N/I	> 0.05	No
Hysterectomy	337	278	29.50	0.022	Yes
Plastics	268.5	279.5	N/I	> 0.05	No
Abortion spontan, missed	867	616	N/I	> 0.05	No
Paid Abortion	365	276.5	44.25	0.014	Yes
Menometrorrhag, etc	1135	848	13.67	0.046	Yes
Pregnancy Pathology	912.5	692.5	N/I	> 0.05	No
Visits, Pap, Colposcopy	1288.5	1538	N/I	> 0.05	No
Ultrasound Examinations	17076	13089	9.35	> 0.05	No

4. Discussion

Obstetrics and Gynecology University Hospital (OGUH) “Queen Geraldine”, of Tirana, Albania is a tertiary university hospital specialized in Obstetrics and Gynecology. As such, this hospital serves the region of Tirana, but it is also a national reference center, so it serves to diagnose and treat difficult cases referred from all over the country. We want to emphasize here that an important feature of our analysis is the fact of the acute focus of the medical care offered in the Obstetrics clinic with the relatively elective medical care offered in the Gynecology, Abortion, etc., clinics. This way we can better understand the dynamics of the indicators used at the OGUH “Queen Geraldine” during the three study periods, before, during and after the COVID-19 Pandemic. During the six-year period, that was the object of our analyses, the main indicators of clinical performance (Table 1) show that in OGUH “Queen Geraldine”, the most frequent clinical diagnoses are as follows:

Comparing the clinical performance indicators (for the most important diagnoses), for the period **before the pandemic** (years 2018 and 2019) with those **during the pandemic** (years 2020 and 2021) show that: the rate of vaginal deliveries decreased by 10.87%, hysterectomies decreased by 15.6%, paid abortions by 24.78%, and pathologies of pregnancy by 26.83%

Comparing the clinical performance indicators (the most important diagnoses), for the period **during the pandemic** (years 2020 and 2021) with those of the **post-pandemic** period (years 2022 and 2023) show that the rate of natural births decreased but only moderately by 2.15%, Hysterectomies decreased by 4.85%, Paid abortions by 5.75%, pathologies of pregnancy by 3.9%.

We have summarized the results from the statistical analysis using the SPSS package of the comparison of the averages with the One-Sample test in (Table 3, Table 4 and Table 5). For illustration, we present only one of these tests:

Hysterectomy Period Before COVID 19 - Period During COVID 19

One-Sample Test						
	Test Value = 291.5					
	t	df	(Sig. (2-tailed	Mean Difference	Confidence Interval of the Difference 95%	
					Lower	Upper
Hysterctomi	22.750	1	028.	45.500	20.09	70.91

In more details, the results presented in (Table 3, Table 4 and Table 5) show that:

- In the period before the COVID-19 pandemic, compared to the period during the pandemic, we have seen a decrease in almost all hospital clinical indicators, but more pronounced in:
 - Hysterectomy - $t = 22.75$ $p = 0.028$, statistically significant difference.
 - Paid Abortions - $t = 36.25$ $p = 0.018$, statistically significant difference.
 - Ultrasound Examinations - $t = 16.44$ $p = 0.039$, statistically significant difference
- In the period during the COVID-19 pandemic, compared to the period after the pandemic, we have a moderate decrease/increase of some hospital indicators, but worth highlighting a decrease to:

- Pregnancy Pathology - $t = 18.00$ $p = 0.035$, statistically significant difference.
 - Ultrasound Examinations - $t = 35.5$ $p = 0.018$, statistically significant difference.
- In the period before the COVID-19 pandemic, compared to the period after the pandemic, we have noticed a decrease in almost all hospital indicators, but more pronounced in:
 - Hysterectomy - $t = 29.50$ $p = 0.022$, statistically significant difference.
 - Paid Abortions - $t = 44.25$ $p = 0.014$, statistically significant difference.
 - Menometrorrhagia, etc. - $t = 13.67$ $p = 0.046$, statistically significant difference.

In the post COVID-19 period, the years 2022 and 2023, the indicators of clinical hospital performance began to return to pre-pandemic normal values, but at a very slow pace. What are the causes of this slow normalization process?

In our assessment, the causes of such a slow return to normal process are the same ones that caused the significant decline in the performance and clinical indicators of OGUH “Queen Geraldine”; and more specifically: the fear/panic of the population towards the COVID-19 pandemic, as well as the same lack of flexibility in the easing of restrictive policies applied during the COVID-19 pandemic period (B) in elective services offered in Gynecology, Abortion, Outpatient, etc. In other words, the COVID-19 pandemic, with its ferocity, caused millions of deaths and hundreds of millions of sick people all over the world, and imposed a new model of access and provision of health services at an individual and population level. This model of care conditioned for a period of more than two years significant reluctance and limitations of health care among non-acute health services. Unfortunately, this inducted model continued to be operational even after the end of the COVID 19 Pandemic.

Conclusions

The purpose of our survey was to assess and better understand the clinical activity of the OGUH “Queen Geraldine” and to evaluate the trends in the dynamics of clinical and performance indicators, the rate of return of these indicators to the normal state, i.e. as before the COVID-19 Pandemic. Our analysis showed that the acute medical services, provided by the Obstetric clinic, maintained the same pace as in previous years, so the COVID-19 restrictions had a small impact on their daily activity. We emphasize that birth rates in our hospital have had a gradual decline of about 5.5% in the last decade before the COVID-19 Pandemic. The explanation of this observation is rather complex, with several factors to be taken into consideration; however, we believe to not be of a medical nature. On the contrary, as a result of the restrictions imposed during the COVID-19 pandemic, the elective medical care services, provided by the Gynecology, Obstetric Pathology, Abortion and Outpatient Clinics, had a significant decrease in their clinical activity. Based on our findings, this could be explained by (i) the impact of certain negative factors such as the sense of panic and fear caused by the Pandemic at an individual and population level and, (ii) certain health policies applied for limiting care in elective clinical services in order to maintain free capacities for the treatment of patients with COVID-19 if the need arises.

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