ORIGINAL RESEARCH

Overview on epidemiological and clinical manifestation of COVID-19 in Albanian adults

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Abstract

On March 9, 2020 the first two cases of Sars-Cov-2 were identified and hospitalized in Albania. In this paper we present a retrospective analysis of 3000 consecutive COVID-19 confirmed cases in Albanian adults admitted at the Infectious Diseases Service which includes three tertiary care wards, part of Tirana University Hospital Center "Mother Teresa". The period included in this analysis is from March 2020 – April 30, 2021.

The paper provides a general overview including demographic distribution, symptomatic diversity and clinical signs manifested among cases, as well as the association observed with underlying pathologies. The analysis included 1944 males and 1056 females. Overall, the age groups included range from 15 to 99 years (median 65 years; mean value 63.4±13.4 years).

There were no statistically significant age differences between males and females (mean ages were: 63.5±13.1 in females and 63.3±13.5 in males; median ages were: 64 years in females and 65 years in males; P=0.67).

There was evidence of a statistically significant difference between sexes regarding the presence of symptoms, which were more predominant in males (P<0.001). On the whole, we observed 19 cases with specific signs and symptoms, most of them (82.9%) among patients who reported the presence of such symptoms 5-14 days before hospitalization.

The comorbidities encountered were ranked according to systems and organs, classifying them in 22 categories, among which the most frequent were hypertension (52%) and diabetes mellitus (26.4%). Age was a strong risk factor for severe illness, complications, and death.

Analyzing symptom onset with total symptoms and comorbidities, it showed that some patients were affected for many days with few symptoms and few comorbidities. It seems they started as mild cases for many days unpredictably precipitating. There were also a few cases with many comorbidities, but a few symptoms upon hospital admission.

Keywords: *adults, Albania, clinical manifestations, Covid-19, epidemiology.*

Conflicts of interest: None declared.

Introduction

It's the second year of the pandemic, from the identification of the first cases of Sars-Cov-2 in Wuhan, Hubei province of China, characterized by acute respiratory syndrome and silent hypoxemia (1-3). This new clinical syndrome was similar to SARS COV and MERS but with faster and much more contagious designation named COVID-19. On March 11, 2020 WHO declared a global pandemic situation, of which our country was a part. On March 9, 2020 the first 2 cases of Sars-Cov-2 were identified in Albania and hospitalized in Infectious Diseases (ID) service of UHC Tirana. The ID service was adapted to receive patients with Covid-19. From the identification and hospitalization of the first two cases and so far in this service that includes 3 Covid hospitals, over 8000 patients have been hospitalized (4). Facing a new syndrome in our country not encountered before with similar forms SARS Cov and MERS, based on the initial media data or the first articles on it that focused on symptoms such as fever, dry cough, dyspnea, asthenia; we focused on each of the signs and symptoms referred by the patient, the variety of clinical forms, concomitant diseases clinical forms that appear. In the first 12 weeks, cases were hospitalized with positive RT-PCR of mild forms to severe in order to receive early medical treatment and limit the spread of the virus, through negativity in the hospital and then "self-isolation" after discharge for up to 14 days (3). As the months went by and the progressive increase of cases and the emergence of new genetic variants of Covid-19 we encountered as a result a wider spectrum of clinical forms, the severity of the presentation and the most affected age groups.

The purpose of this study is to present a general overview of Covid-19 in Albanian adults including demographic distribution, symptomatic diversity and clinical signs manifested, the association with accompanying pathologies.

Methods

We conducted a descriptive retrospective analysis of 3000 consecutive COVID-19 confirmed cases hospitalized in Infectious diseases hospital service which include three hospitals, part of Tirana University Hospital Center 'Mother Teresa'. All three hospitals are tertiary care institutions. Cases were admitted in hospital from March 2020 to April 2021.

Study inclusion was based on the hospital admission criteria consisting of proved cases of non-pediatric age. Covid hospitals in Tirana, the capital, were the same and admissions are representative of the pandemic characteristics because there were no different filters accepting patients.

Demographics, symptoms and comorbidities were analyzed through counting and descriptive statistics as frequencies (and percentages) and mean and standard deviation were calculated.

Data were elaborated through IBM® SPSS® Statistics 26 software (5).

Results

Based on gender; females were n=1056 (35.2%), mean (SD): 63.5±13.1 years; males were n=1944 (64.8%) mean (SD): 63.3±13.5 years. There was statistically significant difference between sexes, P<0.001 (Table 1 and Figure 1).

Epidemiological aspects: in 3,000 cases with a range from 15 years to 99 years, mean (SD) was 63.4±13.4 years, P= 0.667 (Table 1).

Table 1. distribution of participants by age-group

Age group	Number	Percentage
15-19	4	0.1%
20-29	43	1.4%
30-39	150	5.0%
40-49	246	8.2%
50-59	**554**	**18.5%**
60-69	**945**	**31.5%**
70-79	**760**	**25.3%**
over 80	298	9.9%
Total	*3000*	*100.0%*

Figure 1. Distribution of particiaptns by gender and age-group
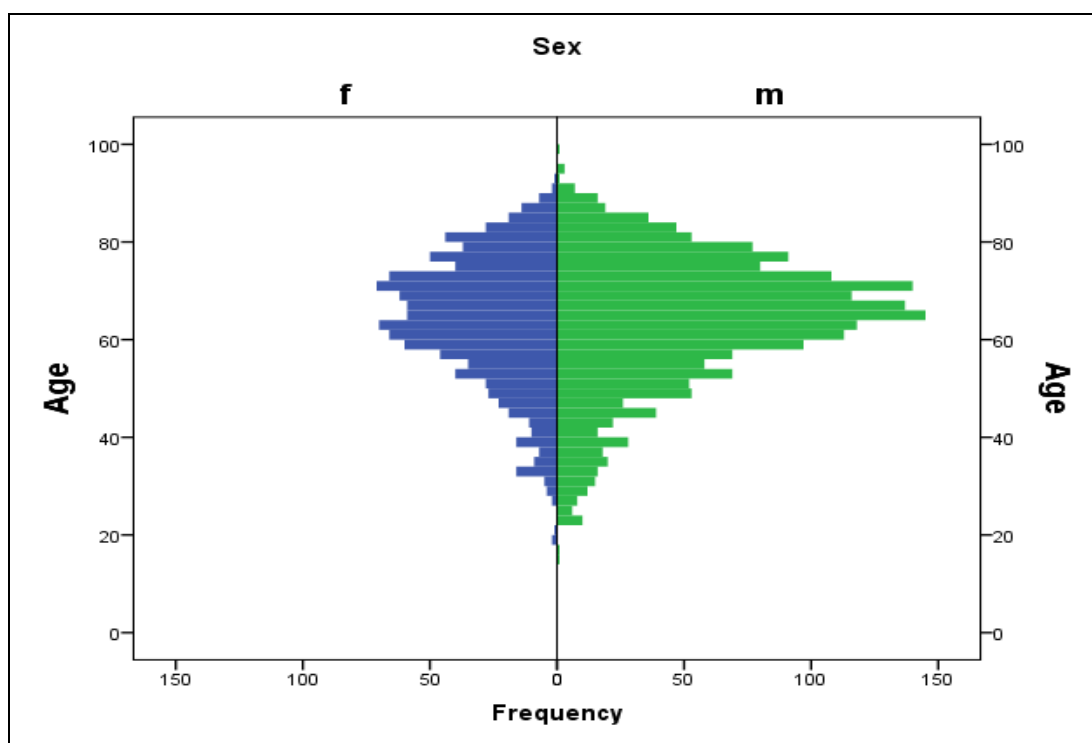
Based on the place of residence, the highest frequency was encountered in Tirana, the capital city of Albania (n=1348, 44.9%), due to the higher population density and testing capacities in the capital; UHC serves at the same time as a secondary and tertiary center for the capital in contrast to the districts, as well as in contrast to the regional hospitals are expected to be cases of larger age groups, and with higher gravity.

Clinical aspects: We identified 19 clinical signs and symptoms referring from the day of onset to the hospitalization (presented in Table 2).

Table 2. Clinical signs and symptoms

	Frequency	Percent
1. Sore throat	723	24.1
2. Syncope	18	.6
3. Weakness	2959	98.6
4. Headache	1452	48.4
5. Mialgia	2166	72.2
6. Arthralgia	2090	69.7
7. Anosmia	1553	51.8
8. Anorexia	1483	49.4
9. Sweats	2188	72.9
10. Vomiting	332	11.1
11. Diarrhea	505	16.8
12. Dyspnea	2645	88.2
13. Cough	2469	82.3
14. Dry mouth	9	.3
15. Thirst	4	.1
16. Poliuria	3	.1
17. Chest pain	974	32.5
18. Paleness	2591	86.4
19. Face congestion	72	2.4
20. Fever	2769	92.3

Among the most common signs and symptoms there were weakness 98.6%, fever 92.3%, paleness 86.4%, dyspnea 88.2%, cough 82.3%, myalgia 72.2%, sweats 72.9%, arthralgia 69.7%. We also monitored symptoms such as heart rate (hr), respiratory rate (rr), Oxygen saturation level and at the time of hospitalization in 3000 patients were encountered (hr) with a range 19-170 and mean (SD) of 86.2±14.3; rr with a range 39 and mean (SD) of 20.8±3.3; and Oxygen saturation level with a range 40-99 and mean (SD) of 82.7±11.1 (Table 3).

Table 3. Heart rate, respiratory rate and oxygen saturation level

Parameter	N	Minimum	Maximum	Median	Mean	Std. Deviation
Heart rate (/min.)	3000	19	170	85.0	86.2	14.3
Respiratory rate (/min.)	3000	10	49	20.0	20.8	3.3
SatO2 - lying position	3000	40	99	84.0	82.7	11.1

Most symptoms and signs were observed in 82.9% of patients who showed symptoms from 5-14 days before hospitalization (Figure 2).

Figure 2. Day of the symptoms onset
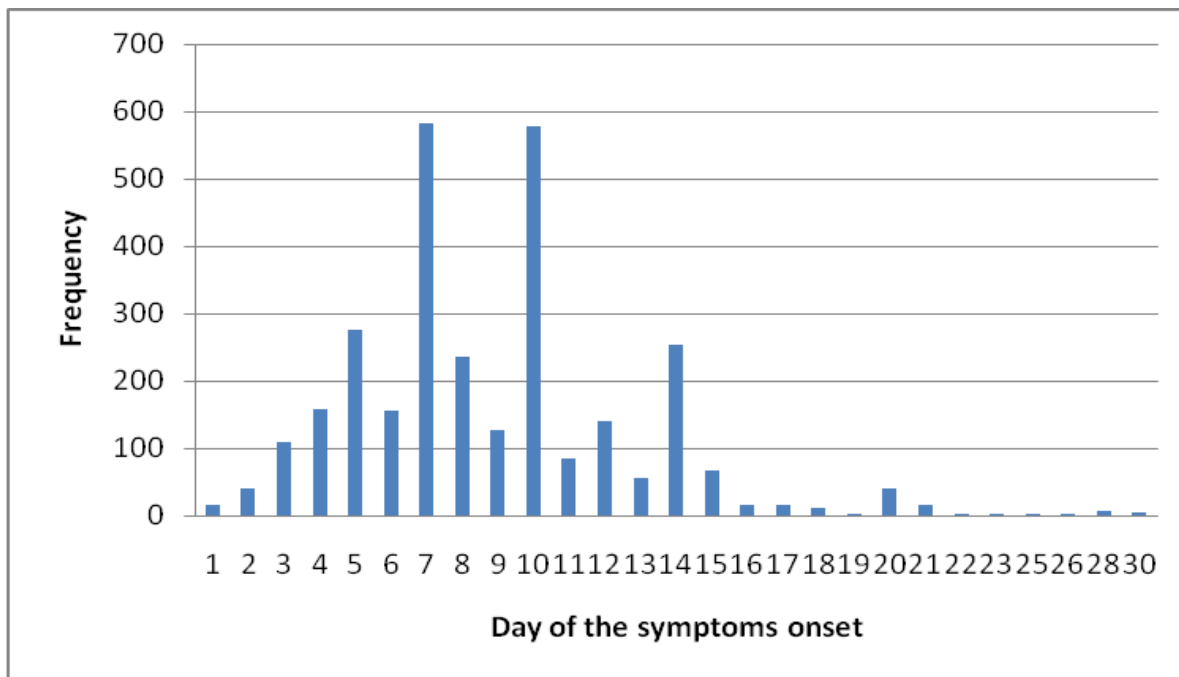
We also analyzed the number of symptoms per patient, we identified that the predominant cases were 7-11 signs and symptoms. There was a significant positive correlation between the onset of symptoms and the total number of symptoms N=3000, R = 0.161, P <0.001 (Figure 3).
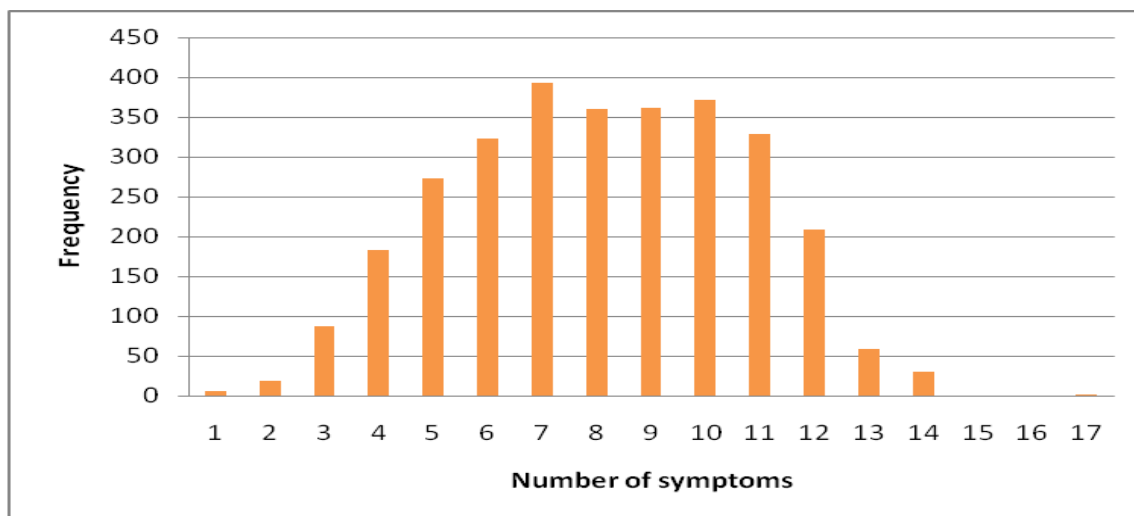
Figure 3. Number of sings and symptoms

Table 4. Number of sings and symptoms

Percentile	Value
25	6.00
50	8.00
75	10.00

We categorized the concomitant diseases encountered according to the systems and organs and the frequency of occurrence (Table 5).

Table 5. Comorbidity diseases

	Frequency	Percent
DM cat.	**791**	**26.4**
HTA cat.	**1559**	**52.0**
Thyroid disorders cat.	55	1.8
CKD cat.	159	5.3
Neoplasms cat.	78	2.6
Obesity cat.	36	1.2
Diseases of the respiratory system cat.	116	3.9
Cardiac diseases cat.	77	2.6
Cardiac arrhythmia's cat.	74	2.5
Post myocardial infarction cat.	16	.5
CHF cat.	73	2.4
Ischemic heart disease cat.	30	1.0
Prostate cancer cat.	77	2.6
Rheumatic & Dermatologic cat.	57	1.9
POST stroke cat.	40	1.3
Hematological diseases cat.	31	1.0
Diseases of the nervous system cat.	48	1.6
Infectious diseases cat.	22	.7
Mental disorders cat.	32	1.1
Diseases of the digestive system cat.	17	.6
Thrombosis cat.	8	.3
Other health conditions cat.	32	1.1

In 36.3% of cases there were no comorbidity diseases up to 0.1% with 6 comorbidity pathologies (Figure 4).

Figure 4. Comorbidities in the study population
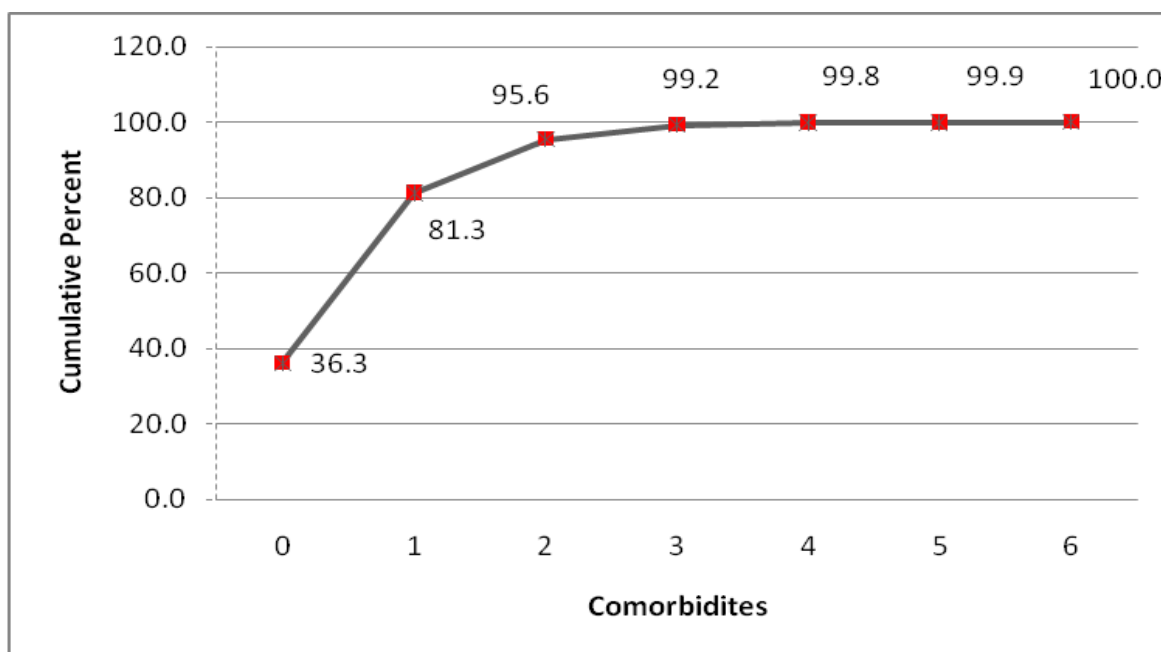
The comorbidities encountered are ranked according to systems and organs, classifying them in 22 categories, among which the most frequent were HTA 52% and DM 26.4%.

From statistical analysis the onset of symptoms depends on age but not on gender and comorbidities. From the regression it was seen that the onset of symptoms "age-related comorbidities were introduced into the regression model; their onset is significantly p = 0.004 for age but the onset of symptoms has nothing to do with comorbidities p = 0.229.

Another correlation we analyzed consisting of the frequency of symptoms according to comorbidities, patients with connective/dermatological and digestive tissue diseases had an average of 8.7 signs and symptoms, followed by the respiratory system with 8.4 and at a lower heart rate and those of the nervous system with 7.1.

To assess the impact of age, sex, comorbidities and the total number of symptoms on the time of symptoms onset, a multivariate model was constructed and analyzed (Table 6).

Table 6. Multiple linear regression model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Age	.016	.006	.054	2.848	.004	.005	.027
Sex	-.248	.151	-.030	-1.643	.100	-.543	.048
Comorbidites	-.107	.089	-.023	-1.203	.229	-.282	.067
Total symptoms	.246	.027	.162	9.014	.000	.193	.300

Discussion

In our study conducted in Albania, the most affected age group was between 50-79 years (comprising 75% of the overall number of participants). There was evidence of a more prevalent moderate type of disease with an increase in the age of the affected patients with Sars Cov 2. On the other hand, the age group over 80 years was less prevalent compared to some studies in other countries, because Albania is characterized by a young population and social centers and asylums are in smaller numbers which explains the lower exposure of older people in Albania (1-3,7). Furthermore, in our study there was evidence of male predomination (with 64.8% of the cases).

We distinguished a variety of 20 symptoms; their manifestation varied from 1-30 days, with greater predominance in the number between the day 5-11 before hospitalization. In the analysis made on their number for each patient, the most predominant ones had 7-11 symptoms.

Age is a strong risk factor for severe illness, complications, and death (15-17). In our study, the most frequent underlying diseases included hypertension and diabetes mellitus (52% and 26.4%, respectively). Our detailed analysis indicated also the time when the symptoms started among patients affected (14-25).

Prediction of symptoms onset (days) was run through multiple linear regression controlling for age, sex and comorbidities. Variables in equation significantly predicted symptom onset $F_{(4, 2995)} = 22.669$, $p<0.001$. Age significantly added to prediction (p=0.004) while comorbidities (p=0.229) and sex (p=0.100) did not.

Analyzing symptom onset with total symptoms and comorbidities indicated that some patients were affected for many days with few symptoms and few comorbidities. It seems they started as mild cases for many days unpredictably precipitating. There were also a few cases with many comorbidities, but a few symptoms upon hospital admission.

In conclusion, this study provides useful evidence about Covid-19 in Albanian adults including its demographic distribution, symptomatic diversity and the clinical signs manifested.

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