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Retrospective Study Of The Clinical Characteristics Of Cases With Covid-19

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Abstract
background: COVID-19 pandemic placed immense pressure on health systems. The disease is transmitted by inhalation or contact with infected droplets. The symptoms are usually fever, cough, sore throat, breathlessness, fatigue and malaise.
The aim of this study *was to determine the clinical characteristics of cases with covid-19**.***
Design: *Observational retrospective study was followed in this study**.***
Study setting: *This study was conducted at Tanta main university hospital and Itay El-baroud general hospital.*
Subjects: *A purposeful sample of 100 adult isolated patients from the previosly mentioned settings was included in the study.* ***Collection tools:*** *one tool was used to collect data in this study* ***"Covid-19 clinical characteristics assessment sheet"*** *this tool consists of 2 parts: Part (1): Demograhic data of the studied cases with covid-19 Part (2): clinical characteristics of studied cases with covid-19.*
The results were as follow: *the results indicated that around one third of the participants were dead and there was highly significant relationship between hypertension, diabetes mellitus, serum Ferritin level and blood group* ***A*** *and death (p<0.001**).** ICU admission rate was 71% and 35% of covid-19 cases needed invasive mechanical ventilation.*
Conclusion: *it was concluded that the majority of confirmed covid-19 patients were old males. The highly reported signs and symptoms were fatigue, weakness, anorexia, tachypnea and fever. Hypertension and diabetes mellitus were the most reported comorbid diseases of confirmed covid-19 patients**.***
Recommendations*: Generalize the awareness of the most reported clinical characteristics of covid-19 to help health care providers to make the correct initial suspected diagnosis of COVID-19.*
Keywords: *retrospective study, clinical characteristics, covid-19.*

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I. Introduction

One of the main infections that mostly affect the human respiratory system is the coronavirus. The severe acute respiratory syndrome (SARS)-CoV and the Middle East respiratory syndrome (MERS)-CoV are two examples of prior coronavirus (CoV) outbreaks that have been previously identified as agents that pose a serious hazard to public health. Late in December 2019, a number of people were initially diagnosed with pneumonia of unclear cause and admitted to hospitals **(Rothan & Byrareddy, 2020)**.

Epidemiological evidence connected these individuals to a wholesale market in Wuhan, Hubei Province, China that sold seafood and wet animals. Based on the estimated reproduction number of the 2019 Novel (New) Coronavirus (COVID-19, designated by WHO on Feb 11, 2020), On January 30, 2020, the World Health Organization (WHO) announced that the Coronavirus Disease 2019 (COVID-19) was a ‘‘Public Health Emergency of International Concern,” and declared it to be a pandemic on March 11, 2020 **(Bai et al., 2023**).

According to the initial epidemiological research, fever, dry cough, headache, and dyspnea are the primary signs of the illness, which can proceed to pneumonia. As a result of the disease's global expansion and the ensuing rise in patient numbers, other symptoms started to surface in scientific studies. Coronaviruses naturally fall into four main categories and are primarily responsible for respiratory and gastrointestinal tract

infections: The four types of coronaviruses are beta, corona, delta, and alpha **(da Rosa Mesquita et al., 2021; Masand, Jadhao, & Jadhav, 2021; Woo et al., 2012**).

The COVID-19 pandemic, the largest to strike the planet this century, has devastating effects on all facets of life and, in the initial wave, directly impacted human activity. An unparalleled worldwide crisis is being brought on by the effects on the social care system, the economy, and interpersonal connections. SARS-CoV-2 has a significant, immediate, and adverse effect on population health. It affects people who have the disease, those who are close to them, and the wider public, which is negatively impacted by the pandemic's social repercussions. **(Clemente-Suárez et al., 2021)**.

Awareness of the clinical charecteristics of covid 19 can help health care providers to make the correct initial suspected diagnosis of COVID-19, facilitating the adoption of necessary measures for early clinical management, as well as procedures that reduce the spread of the virus, such as social isolation and/or quarantine. It also helps to assess the effects of the COVID-19 pandemic on population health, where the possible interventions at the health level are discussed, the impact in economic and social areas, and the government and health systems interventions in the pandemic, and finally, possible economic models for the recovery of the crisis are proposed **(Xiang et al., 2021)**.

Significance of the study

The SARS-CoV-2 virus has significantly affected the health, economy, and socio-economic fabric of the global society. The costs involved in the containment and treatment of this infectious disease are very high, which even the wealthiest and developed countries are finding it difficult to sustain. COVID-19 pandemic has severely impacted the crude, stock market, gold and metals and almost all areas of the global market (**Mofijur et al., 2021)** .

Globally, rates of new COVID-19 cases and deaths continued to increase, with almost 4 million new cases and 60 000 new deaths recorded. Cumulatively as of 15 November 2020, 53.7 million confirmed cases and 1.3 million deaths have been reported to WHO (**WHO, 2020**).

The coronavirus disease COVID-19 continues to spread at the regional and global levels. As of seven January 2023, the global cumulative incidence reached 743 078 799 reported cases and 6 747 366 associated deaths at a case-fatality ratio (CFR) of 0.91% **(Al-Mandhari, Brennan, Abubakar, & Hajjeh, 2022)**.

II. Subject And Methodology

The Aim of the study:

The aim of this study was to determine the clinical characteristics of cases with covid-19.

Research Questions:

What are the clinical characteristics of cases with covid-19**?**

Research Design:

Observational retrospective study was followed in this study.

Setting:

This study was conducted in Tanta main university hospital and Itay El-baroud general hospital in Egypt.

Subjects: A purposeful sample of 100 adult isolated patients from the above mentioned settings were included in the study.

Study Duration

The data were collected throughout a period of 4 months from the beginning of November 2021 up to February 2022.

Tools for data collection

Data that collected used the following tool: Tool of data collection that was used to achieve the purpose of the current study is one tool which is **"Covid-19 clinical characteristics assessment sheet".**

This tool was adapted from (Zhao, 2020). Modifications were added by the researcher after reviewing the relevant literatures (Wang, 2020), (Chua et al., 2021), (Ghelichkhani, 2020) it was used to assess the clinical characteristics of patients with covid-19; **this tool consists of 2 parts:**

Part 1: demographic data of studied cases with covid-19.

This part included: age, sex, time from illness onset to hospital admission and APCHII score.

Part 2: Clinical characteristics of studied cases with covid-19.

This included acute signs and symptoms of admission, Comorbidities, Laboratory findings, Imaging results, treatment and clinical outcomes of studied cases with covid-19.

Outcomes: this included**:**

- **Discharge.**
- **Death.**
- **Complications and the hospital length of stay of discharged patients.**

Pilot study:

A pilot study was carried out on 10 cases (10 % from the study sample) to test the clarity and applicability of the research tool and they were excluded from the study.

Field work:

Firstly, the researcher asked to review clinical medical records, nursing records, laboratory findings, and radiological examinations for all patients with laboratory confirmed covid-19 infection. The researcher started collecting the admission data of the included patients each patient separately in the assessment sheet form modified by the researcher.

Data was categorized by the researcher as demographic data, chronic medical histories, signs and symptoms on hospital admission, ICU admission, laboratory values on admission and pre-discharge (haemoglobin concentration, lymphocyte count, platelet count, arterial blood gas analysis,ESR, CRP, IL6, D dimer, partial pressure of oxygen (PaO2), and lactate concentration), treatment protocol, blood group, and clinical outcomes. The researcher independently entered and cross checked the complete data of each patient separately into a computerized data base.

The time required to complete each separate case data was about 2 hours daily regardless follow up data of discharged patients which was filled later. **Then** the researcher communicated with patients or their families to ascertain epidemiological and symptom data which were not available from records such as post charge complications.

After that requests for clarifications were sent to the clinicians who were responsible for the patients as possible. The data were collected throughout a period of 4 months from the beginning of November 2021 up to February 2022.

Administrative item:

An official permission was obtained by submission of a formal letter issued from the Dean of Faculty of Nursing Helwan University to the general managers of Tanta main university hospital and Itay Elbaroad general hospital After explanation of the study aim and objectives an approval to collect data of this study was obtained.

Ethical Considerations:

The researcher approval was obtained from the ethical committee of the Faculty of Nursing Helwan University. Then went to general managers of Tanta main university hospital and Itay Elbaroad general hospital, interviewed with them, read the protocol papers and research tools, then signed with approval, Then the researcher was directed to responsible employee, who coordinated the entry into the archive unit in the hospital.

The anonymity, privacy and the confidentiality of the data were assured.

Statistical Analysis:

Statistical analysis of the data

Data were fed to the computer and analyzed using IBM SPSS software package version 23.0**.** Qualitative data were described using number and percent. Quantitative data were described using mean, standard deviation. Significance of the obtained results was judged at the 5% level.

III. Results

Table (1): Distribution of the studied cases with Covid-19 according to demographic data (n = 100)

Variables	No.	%
Age (years)		
18 – 30	**8**	**8.0**
31 – 40	**12**	**12.0**
41 – 50	**11**	**11.0**
51 – 60	**20**	**20.0**

More than 60	**49**	**49.0**
Min. – Max.	**18.0 – 90.0**	
Mean ± SD.	**58.26 ± 17.61**	
Gender		
Male	**70**	**70.0**
Female	**30**	**30.0**
Time from illness onset to hospital admission (n = 96)#		
Min. – Max.	**0.0 – 24.0**	
Mean ± SD.	**6.70 ± 4.19**	
APCHII score		
Min. – Max.	**2.0 – 20.0**	
Mean ± SD.	**8.77 ± 5.64**	

SD: Standard deviation; #: 4 cases NA

Table (1) **illustrates Distribution of the studied cases with Covid-19 according to demographic data**, Regarding demographic data, it can be noted, about one half of confirmed cases aged more than sixty years old, the majority of them were males (70%).

It was also noted that the mean and standard deviation of **Time from illness onset to hospital admission** and **APCHII score** were (6.70 ± 4.19 and 8.77 ± 5.64 respectively).

Table (2): Distribution of the studied cases with Covid-19 according to acute signs and symptoms of admission (n = 100)

Variables	N	Not present		Present	
		No.	%	No.	%
Respiratory signs and symptoms					
Dyspnea	97	28	28.9	69	71.1
Tightness of chest	97	26	26.8	71	73.2
Tachypnea	97	25	25.8	72	74.2
Productive Cough	97	41	42.3	56	57.7
Nonproductive Cough	97	95	97.9	2	2.1
Hemoptysis	97	92	94.8	5	5.2
Sore Throat	95	91	95.8	4	4.2
Rhinorrhea	95	89	93.7	6	6.3
Anosmia–Hyposmia	67	44	65.7	23	34.3
Gastrointestinal signs and symptoms					
Abdominal pain	89	80	89.9	9	10.1
Vomiting	97	82	84.5	15	15.5
Diarrhea	96	88	91.7	8	8.3
Nausea	81	44	54.3	37	45.7
Anorexia	79	19	24.1	60	75.9
Hypogeusia–Ageusia	76	25	32.9	51	67.1
Neuro-psychological signs and symptoms					
Chills/ Fever	100	26	26.0	74	74.0
Dizziness	97	46	47.4	51	52.6
Headache	97	85	87.6	12	12.4
Disturbed level of consciousness	100	76	76.0	24	24.0
Tremors / Seizures	97	95	97.9	2	2.1
Anxiety and depression	43	16	37.2	27	62.8
Miscellaneous signs and symptoms					
Red eyes / eye irritation	100	99	99.0	1	1.0
Fatigue	90	6	6.7	84	93.3
Unspecified pain/body aches	93	73	78.5	20	21.5
Asthenia/weakness	96	20	20.8	76	79.2
Sweats	100	80	80.0	20	20.0

Table (2) illustrates distribution of the studied cases with Covid-19 according to acute signs and symptoms of admission, it was noted that the majority of cases complained of fatigue and weakness, anorexia, tachypnea and fever (93%, 79%, 75%, 74%, 74% respectively).

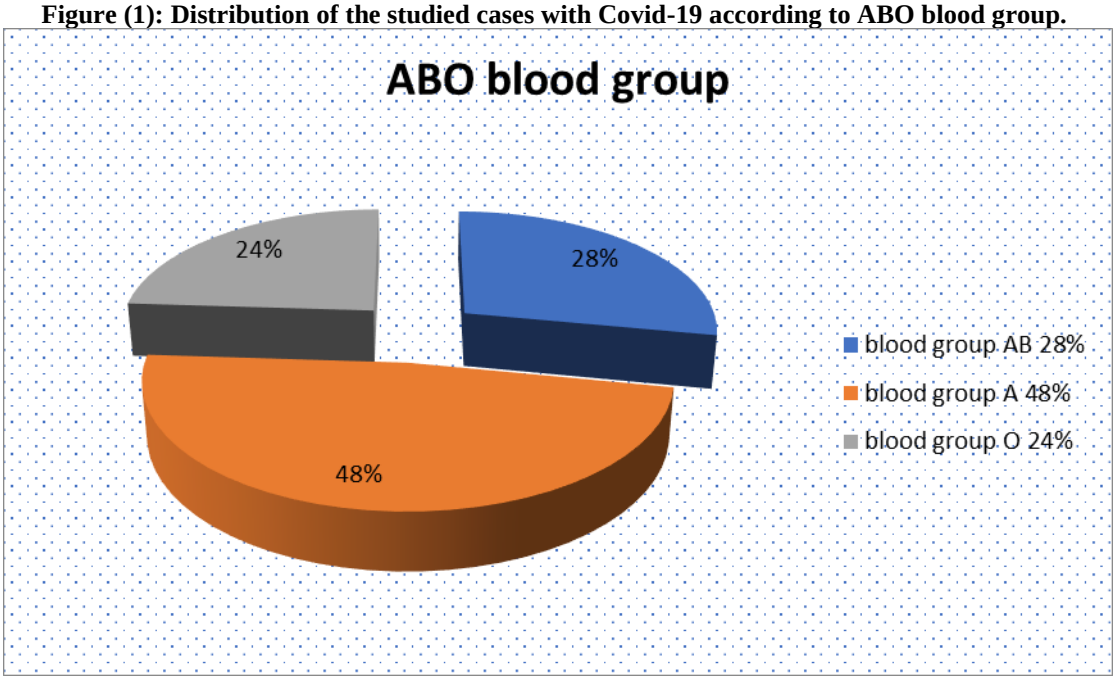
Table (3): Distribution of the studied cases with Covid-19 according to comorbidities (n = 100)

Variables	**N**	**No**		**Yes**	
		No.	**%**	**No.**	**%**
Comorbidities					
Hypertension	**100**	**38**	**38.0**	**62**	**62.0**
Diabetes	**100**	**46**	**46.0**	**54**	**54.0**
Coronary heart disease	**100**	**68**	**68.0**	**32**	**32.0**
Chronic obstructive lung disease	**100**	**90**	**90.0**	**10**	**10.0**

Carcinoma	**100**	**90**	**90.0**	**10**	**10.0**
Chronic kidney disease	**100**	**86**	**86.0**	**14**	**14.0**
Liver dysfunction	**100**	**97**	**97.0**	**3**	**3.0**
Smoking	**67**	**54**	**80.6**	**13**	**19.4**

Table (3) illustrates Distribution of the studied cases with Covid-19 according to comorbidities, according to this table it was noted that, about two third of cases suffered from hypertension (62%), and about half of cases were diabetic (54%) and 32% of cases had ahistory of coronary heart disease.

Figure (1): Distribution of the studied cases with Covid-19 according to ABO blood group.



Figure(1) illustrates distribution of the studied cases with Covid-19 according to ABO blood group, this table indicates that that blood group A was associated with a higher risk for acquiring COVID-19 compared with non-A blood groups (48%), whereas blood group O was associated with a lower risk for the infection compared with non-O blood groups (24%).

Figure (2): Distribution of the studied cases with Covid-19 according to imaging features (n = 100)

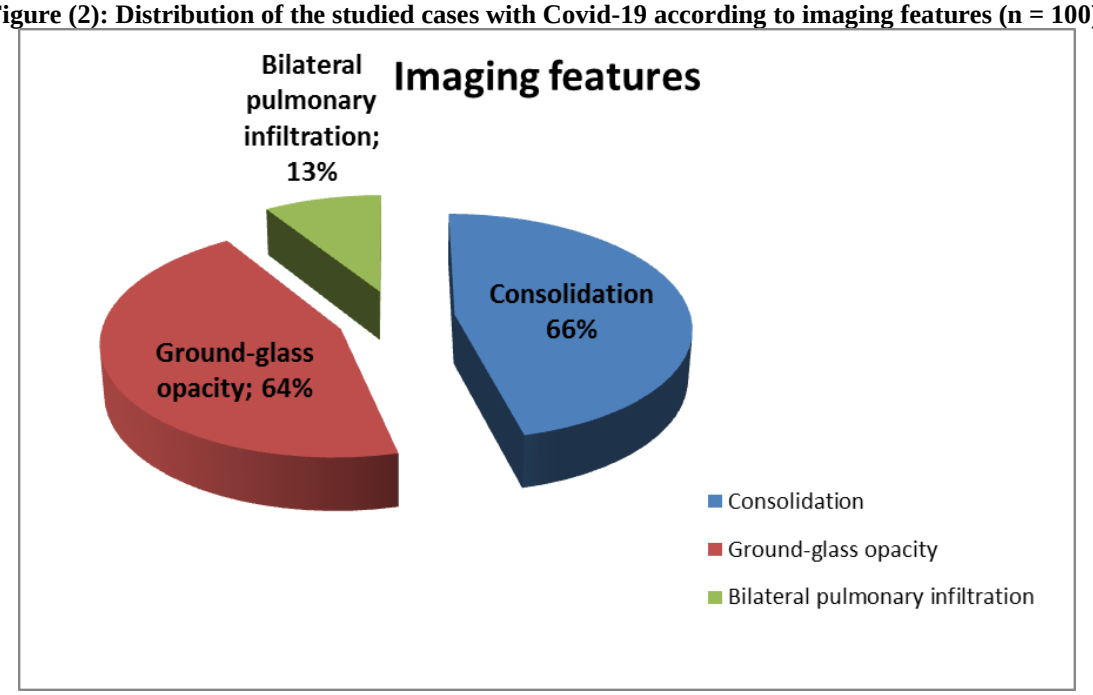


Figure (2) illustrates distribution of the studied cases with Covid-19 according to imaging features, this table indicates that: about two third of cases suffered from lung consolidation and ground-glass opacity (66% and 64% respectively). While only 13% of cases progressed bilateral pulmonary infiltration.

Table (4): Distribution of the studied cases with Covid-19 according to treatment (n = 100)

	No		Yes	
Variables	**No.**	**%**	**No.**	**%**
Treatment				
Intensive care unit admission	29	29.0	71	71.0
Oxygen therapy	13	13.0	87	87.0
Invasive Mechanical ventilation	65	65.0	35	35.0
No invasive mechanical ventilation or high flow nasal cannula	49	49.0	51	51.0
Antibiotics	5	5.0	95	95.0
Antifungal therapy	12	12.0	88	88.0
Antiviral therapy	12	12.0	88	88.0
Glucocorticoids	11	11.0	89	89.0
Intravascular immunoglobulin therapy	51	51.0	49	49.0
Anticoagulant therapy	18	18.0	82	82.0
Prone position ventilation	52	52.0	48	48.0

Table (4) illustrates distribution of the studied cases with Covid-19 according to treatment, this table indicates that, about two third of cases admitted to intensive care unit (71%), it also indicates that the majority of cases received oxygen therapy(87%), one third of them received invasive mechanical ventilation(35%), while half of them received noninvasive mechanical ventilation (51%). It also noted that the majority of cases received antibiotic therapy, Antifungal therapy, Antiviral therapy, Glucocorticoids, Anticoagulant therapy (95%, 88%, 88%, 89%, and 82% respectively). While nearly half of cases received Intravascular immunoglobulin therapy, and Prone position ventilation (49% and 48% respectively).

Table (5): Distribution of the studied cases with Covid-19 according to clinical outcomes (n = 100)

Variables	**No.**	**%**
Discharge		
No	20	20.0
Yes	80	80.0
Death		
No	77	77.0
Yes	23	23.0
The hospitalization days of discharged patients		
Min. – Max.	0.0 – 43.0	
Mean ± SD.	11.49 ± 8.84	

Table (5) illustrates distribution of the studied cases with Covid-19 according to clinical outcomes, this table indicates that, **death rate was 23%** of cases and Mean ± SD of the hospitalization days of discharged patients were11.49 ± 8.84.

Table (6): Relation between acute signs and symptoms of admission and clinical outcomes.

Variable	**Death**				**Test**	**^{MC}p**
	No		**Yes**			
	No.	**%**	**No.**	**%**		
Respiratory signs and symptoms						
Dyspnea	46	62.2%	23	100.0%	12.234*	<0.001*
Tightness chest	48	64.9%	23	100.0%	11.040*	<0.001*
Tachypnea	49	66.2%	23	100.0%	10.468*	0.001*
Productive Cough	40	54.1%	16	69.6%	1.730	0.188
Nonproductive Cough	2	2.7%	0	0.0%	0.635	1.000
Hemoptysis	5	6.8%	0	0.0%	1.639	0.335
Sore Throat	3	4.2%	1	4.3%	0.001	1.000
Rhinorrhea	6	8.3%	0	0.0%	2.046	0.330
Anosmia-Hyposmia	22	42.3%	1	6.7%	6.560*	0.010*
Gastrointestinal signs and symptoms						
Abdominal pain	4	5.8%	5	25.0%	6.209*	0.025*
Vomiting	15	20.3%	0	0.0%	5.515*	0.019*
Diarrhea	7	9.5%	1	4.5%	0.536	0.677
Nausea	35	57.4%	2	10.0%	13.625*	<0.001*
Anorexia	46	74.2%	14	82.4%	0.486	0.749

Hypogeusia Ageusia	38	63.3%	13	81.3%	1.837	0.237
Neuro-psychological signs and symptoms						
Chills Fever	57	74.0%	17	73.9%	0.001	0.991
Dizziness	38	51.4%	13	56.5%	0.188	0.812
Headache	10	13.5%	2	8.7%	0.376	0.725
Disturbed level consciosness	16	20.8%	8	34.8%	1.904	0.168
Ataxia	0	0.0	0	0.0	-	-
Tremors Seizures	2	2.7%	0	0.0%	0.635	1.000
Anxiety and depression	19	24.7%	8	34.8%	1.562	0.459
Miscellaneous signs and symptoms						
Red eyes eye irritation	1	1.3%	0	0.0%	0.302	1.000
Fatigue	65	91.5%	19	100.0%	1.720	0.336
Unspecified painbody ache	18	24.3%	2	10.5%	1.705	0.346
Hot flushes	0	0.0	0	0.0	-	-
Asthenia weakness	60	81.1%	16	72.7%	0.718	0.387
Sweats	17	22.1%	3	13.0%	0.903	0.553

Table (6) illustrates relation between clinical outcomes and acute signs and symptoms of admission. This table indicates that there was significant relationship between respiratory signs and symptoms and clinical outcomes (dyspnea, tightness of chest, and tachypnea), (P<0.001), and (P=0 .010) for ansomia-hyposomia.

In regard to **Gastrointestinal signs and symptoms**, This table indicates that there was significant relationship between abdominal pain, vomiting and nausea and death (P=0.025, p=0.019, p=0.001 respectively).

Table (7): Relation between Comorbidities and clinical outcomes.

Variable	Death				χ^2	p
	No (N = 77)		Yes (N = 23)			
	No.	%	No.	%		
Comorbidities						
Hypertension						
No	37	48.1%	1	4.3%	14.358*	<0.001*
Yes	40	51.9%	22	95.7%		
Diabetes						
No	44	57.1%	2	8.7%	16.734*	p <0.001*
Yes	33	42.9%	21	91.3%		
Coronary heart disease						
No	56	72.7%	12	52.2%	3.438	p=0.064
Yes	21	27.3%	11	47.8%		
Chronic obstructive lung disease						
No	70	90.9%	20	87.0%	0.307	FEp=0.692
Yes	7	9.1%	3	13.0%		
Carcinoma						
No	68	88.3%	22	95.7%	1.06	FEp=0.446
Yes	9	11.7%	1	4.3%		
Chronic kidney disease						
No	68	88.3%	18	78.3%	1.486	FEp=0.302
Yes	9	11.7%	5	21.7%		
Liver dysfunction						
No	74	96.1%	23	100.0%	0.924	FEp=1.000
Yes	3	3.9%	0	0.0%		
Smoking	N=57		N=10			
No	47	82.5%	7	70.0%	0.844	0.394
Yes	10	17.5%	3	30.0%		

χ^2: **Chi square test**
FE**: Fisher Exact**
*: Statistically significant at $p \leq 0.05$

Table (7) illustrates relation between clinical outcome and Comorbidities, this table indicates that: there was highly significant relationship between hypertension, diabetes and death (p<0.001).

Table (8): Relation between ABO blood group and clinical outcomes.

Variable	Death				χ^2	MCp
	No (N = 14)		Yes (N = 11)			
	No.	%	No.	%		

ABO blood group						
AB	2	14.3%	5	45.5%	6.996*	0.027*
A	6	42.9%	6	54.5%		
O	6	42.9%	0	0.0%		

Table (8) illustrates relation between clinical outcome and ABO blood group: this table indicates that there was significant relationship between blood group **A** and death (p<0.001**)**

Table (9): Relation between Imaging features and clinical outcomes.

Variables	Death				χ^2	P
	No (N = 77)		Yes (N = 23)			
	No.	%	No.	%		
Imaging features						
Consolidation						
No	29	37.7%	5	21.7%	2.001	0.157
Yes	48	62.3%	18	78.3%		
Ground glass opacity						
No	35	45.5%	1	4.3%	12.989*	<0.001*
Yes	42	54.5%	22	95.7%		
Bilateral pulmonary Infiltration						
No	65	84.4%	22	95.7%	1.977	FEp=0.288
Yes	12	15.6%	1	4.3%		

Table (9) illustrates relation between clinical outcome and Imaging features: this table shows that there was highly significant relationship between Ground glass opacity and death (p<0.001).

IV. Discussion

Severe acute respiratory syndrome (SARS-CoV-2) belongs to a group of viruses that cause Coronavirus disease 2019 (COVID-19) which affects the respiratory, gastrointestinal, liver and central nervous system (**Lau, Chan, 2015**). The SARS-CoV-2 novel coronavirus was identified in Wuhan, Hubei province of China in December 2019 by the Chinese Center for Disease and Prevention from the throat swab of a patient and the virus is named severe acute respiratory distress COV-2 by WHO which causes Coronaviruses disease 2019 (COVID-19). The clinical manifestation of the current coronavirus infection is similar to the one occurred in China in 2002 by the name severe acute respiratory distress syndrome. (**Chen et al, 2020**) & (**WHO, 2020**).

Regarding **demographic data and clinical characteristics**, the current study concluded that the majority of affected cases were males (70%).

This may be attributed to what was reported that differences in the levels and types of male and female sex hormones influence the susceptibility to infection by COVID-19 because sex hormones modulate adaptive and innate immune responses. Thus, the reduced susceptibility of females to viral infections can be attributed to the protection from the X chromosome and sex hormones (Jaillon et al., 2019).

Research has identified that males were affected most in the SARS and MERS epidemics (**Badawi et al., 2016**). Thus, the results presented in this study converge with these findings.

These findings were contradicted by Tavakolifard et al (2022) who conducted study entitled "Clinical Symptoms of COVID-19 and Their Association with Disease Outcome." And reported that the majority of cases were female (52.6%).

Previously, older age has been reported as an important independent predictor of mortality in SARS and MERS (**Hong et al. 2018**). The current study confirmed that increased age was more susceptible to infection with COVID-19.

Previous studies inoculated with SARS-CoV found that olders had stronger host innate responses to virus infection than younger adults; Age-related responses with weak immune systems are probable contributing factors for adverse outcomes of the disease (**Wu et al., 2020**)

This result was in the same line with *Xiaobo* et al. (2020) who reported that: The Patients are older in our study than in previous studies". These results also converge with some studies (Oliveira et al 2020) & (Martins et al., 2021) by showing that the population most affected by COVID-19 is between 50 and 64 years of age.

The result of the current study was contradicted by a study conducted by Zhao et al (2020) entitled "A Retrospective analysis of the clinical and epidemiological characteristics of COVID-19 patients in Henan Provincial People's Hospital, Zhengzhou, China" who reported that the largest percentage of cases (31%) were middle aged.

As regards clinical manifestations of hospitalized patients with covid-19, Cough, tighteness of chest, tachypnea and dyspnea were the highly reported respiratory signs and symptoms in this study. The

findings of the current study was in line with **Zhou (2020**) in a study conducted in **Wuhan, China** to identify Clinical course and risk factors for mortality of adult inpatients with COVID-19 and represented that The most common symptoms on admission were fever and cough, followed by sputum production and fatigue.

Much attention has been paid to the study and reporting of gastrointestinal (GI) manifestations, since SARS-CoV-2 ribonucleic acid (RNA) can be detected in stool specimens. The presence of GI symptoms is linked with a 70% increased risk of testing positive for SARS-CoV-2 (**Nobel et al., 2020**). This study showed that anorexia, hypogeusia–ageusia were the highly reported gastrointestinal signs and symptoms.

The findings of the current study were contradicted by Tsibouris(2020) who reported that diarrhea was the most common finding, followed by nausea/vomiting and abdominal pain.

The current study showed that fever, fatigue and weakness were highly reported clinical characteristics among covid-19 patients. This is in accordance with Lu et al. (2020) who reported that fever and fatigue were highly reported in diagnosed patients with covid-19.

Chronic illness such diabetes and hypertension are identifiable risk factors for morbidity and mortality , **Regarding comorbidities**, the current study revealed that hypertension and diabetes mellitus were the most reported comorbid diseases of confirmed covid-19 patients. This may be attributed to impairment of the immune response. This occurs either as a direct consequence of the disease or because of its medication.

This is supported by previous cohort studies confirming similar findings (**Zhou et al and Docherty et al., 2020**)

In agreement of this study Yan (2020) who conducted a study entitled "Clinical characteristics and prognosis of 218 patients with COVID-19" who reported that diabetes and other chronic comorbidities were associated with poor prognosis. **This study formulated that there was highly significant relationship between hypertension and diabetes mellitus and risk of death.**

This study also revealed that blood group A was associated with a higher risk for acquiring COVID-19 compared with non-A blood groups, whereas blood group O was associated with a lower risk for the infection compared with non-O blood groups. In congruent with this results the study of Zhou *et al.* **(2021)** on Coronavirus patients in Wuhan of china, participants with blood groups of A and O had the highest and lowest risk of this disease, respectively. **the current study table indicates that there was significant relationship between blood group A and death (p<0.001).**

The results of the current study indicate that about two third of cases suffered from lung consolidation and ground-glass opacity (64%). The result is in congruent with the result of a study conducted by Zhao et al (2020) and entitled "A Retrospective Analysis of the Clinical and Epidemiological Characteristics of COVID-19 Patients in Henan Provincial People's Hospital, Zhengzhou, China." And found that multiple ground-glass opacities were seen in X-ray images 65.5% patients.

In chest CT images, reported in a study conducted by Gu (2020) and reported that ground-glass opacity (GGO) was the most common feature (97%) in abnormal CT findings while focal consolidation was (26%).

Another study conducted by Mehrabi et al (2020) entitled "Pitfalls of Computed Tomography in the Coronavirus 2019 (COVID-19)" and found that Thirty-three (33%) showed GGO at CT 45%of them presented with pure GGO, and 54% showed GGO with consolidation. **This study showed that there was highly significant relationship between Ground glass opacity and death (p<0.001).**

The current study indicated non-significant relationship between prone positioning and death. These findings were in agreement with Engerström, *et al (2022)* who conducted a study entitled " Prevalence and impact of early prone position on 30-day mortality in mechanically ventilated patients with COVID-19" and reported no significant association between early use of prone positioning and survival. This study indicates that there was significant relationship between hospitalization days and death.

V. Conclusion

In the light of the present study, it was concluded that the majority of confirmed covid-19 patients were old males. The highly reported signs and symptoms were fatigue, weakness, anorexia, tachypnea and fever. Hypertension and diabetes mellitus were the most reported comorbid diseases of confirmed covid-19 patients.

Two third of cases suffered from lung consolidation and ground-glass opacity (64%). The most common complications were acidosis and ARDS.Concerning clinical outcomes, the **death rate** of cases was 23% with average length of stay of discharged patients was 11.49 days. ICU admission rate was 71% and 35% of covid-19 cases needed invasive mechanical ventilation. There was highly significant relationship between hypertension and diabetes mellitus and risk of death.

VI. Recommendations

Based on the findings of this study the following recommendations are suggested:

- Generalize the awareness of the most reported clinical characteristics of covid-19 to help health care providers to make the correct initial suspected diagnosis of COVID-19.

- Facilitate the adoption of necessary measures for early clinical management, as well as procedures that reduce the spread of the virus, such as social isolation and/or quarantine.
- Adopt public policies aimed at flattening the COVID-19 curve, which requires a combination of strategies to slow the spread of COVID-19 and spread out the epidemic's peak, preventing hospitals from reaching capacity and mortality.
- Develop Electronic Health care system and data recording for decreasing missing data and facilitate retrospective researches.
- Develop targeted interventions for vulnerable groups such as the elderly and those with underlying conditions which can reduce morbidity and mortality.

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