

COVID 19 Patients /Southern of Iraq: Character and Dermatologic Manifestations

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Abstract

Background: the spread of coronavirus diseases (COVID-19) in China and then around the world where the current study explores the link between skin manifestations and COVID-19. **Methods:** A cross sectional study including all diagnosed cases of COVID-19 in Thi-Qar and Al-Muthana governorates, where started by the diagnosis of the 1st case in Thi-Qar province, and ended with the 21th of April 2020, the cases were distributed as 62 cases from Thi-Qar and 54 cases from Al-Muthana, information had been gathered from COVID -19 isolation unites in the two main hospitals of isolation, Al-Husain teaching Hospital and Al-Muthana teaching hospital. **Results:** The result showed that there are 116 cases of SARS-COV2 infection was recorded in Thi-Qar and Al-Muthanna, the high percentage of infection was detects in the middle adult 80(69%) in the age group over 60 years old. The distribution of infection according to the gender revealed significant differences where the males comprise (87.75%) of cases. The direct contact route of transmission was predominant among patients 101 (87.1%). Also, the highest percentage was live 110(94.8%). According to the results there was a negative relationship between the two variables was detected, there is no correlation. So, there is no correlation in skin manifestations according to the system involvement among COVID-19 infected cases with the pearson correlation (0.327). The results show non-statistical significance in skin manifestation according to biography among only who had dermatological lesions at p value (0.248). Also, there are non-statistical significant in source of infection according to skin manifestation and no correlation between skin manifestations and death with corona virus. **Conclusions:** It can be concluded from the current study that there is no close correlation between skin manifestations and COVID-19 infection, a very weak direct relationship because some patients may not show any symptoms and these are considered negative signs, meanwhile the unique skin lesion are zinc like deficiency(acrodermatitis enteropathica)not reported in any other areas.

Key word: COVID 19, southern of Iraq, acrodermatitis enteropathica

Introduction

There are two types of coronavirus before the emergence of SARS: OC43 and 229E, both of which cause acute respiratory diseases. Also, there were many expectations that coronaviruses that infect humans have a close association with hepatitis, intestinal diseases, multiple sclerosis, skin inflammation or other diseases

but so far These links have not been established ¹. In 2003, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spread ². Also, in 2019 Wuhan, a group of pneumonia infections has spread, where an unknown origin has been announced, as these cases have been confirmed linked to coronaviruses by Chinese health authorities. The cause of respiratory syndrome cases that have spread in China is a virus that the disease is called coronavirus, as this disease is closely related to bats ³. There is a group of coronaviruses that exist in animals that can convert into human coronaviruses that cause acute respiratory disease and that it spreads from

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one person to another and that causes the disease known as COVID-19. Symptoms of coronavirus may include fever, cough, difficulty breathing, chills, muscle pain, headache, repeated shaking with chills, sore throat, or new loss of taste⁴. Perhaps, sick people are asymptomatic and able to transmit the disease to others where the most susceptible group to the virus ranged ≥ 80 years of age⁵. As of 10 February 2020, WHO has reported a total of 40,554 confirmed cases of laboratory-confirmed COVID-19 infection in the world⁶. The disease can be diagnosed using a real-time polymerase chain reaction (RT-PCR)⁷. As there are many studies and experiments carried out for the purpose of discovering a treatment for Coronavirus, Chinese experts recommend that patients with COVID-19 be given 500 mg of chloroquine twice a day for ten days twice a day⁸. Whereas, antimicrobials did not work in treating patients with human coronavirus⁹. Where there is a certain category of people suffering from acne or rosacea due to wearing masks during the epidemic period to prevent infection with corona virus also repeated use and many disinfectants and sterilizers as it led to the occurrence of contact dermatitis both in Corona virus patients and healthy people, where a study indicated that people with psoriasis are more susceptible to heart disease, depression, and others from health cases that are considered to be the most vulnerable group they are most susceptible to infection with corona virus¹⁰. There is a study that indicated that 88 patients are infected with Corona virus, where they suffer from skin symptoms, itching and redness. The study indicated that there is no correlation with the severity of the disease¹¹. COVID-19 virus may weaken a person's immunity in the early stage of the disease as symptoms appear within 14 days as there is no strategy to treat the disease. All scientists are in a race to find a cure to kill the virus¹². This study aimed to determine the relationships between the skin manifestations and COVID 19 infection.

Material and Methods

A cross sectional study including all diagnosed cases of COVID-19 in Thi-Qar and Al-Muthana governorates, where started by the diagnosis of the 1st case in Thi-Qar province, and ended with the 21th of April 2020, the cases were distributed as 62 for Thi-Qar and 54 for Al-Muthana, information had been gathered from COVID -19 isolation units in the two main hospitals of isolation, Al-Husain teaching Hospital and Al-Muthana teaching hospital, where the admission of suspected COVID 19 cases whatever their severity, and quarantine of the contact, we dealt with the only positive cases that proved as COVID -19 positive nasopharyngeal swab, ethical consideration had been attained from the whole responsible for this critical situations, verbal consents from all patients had been gained, full identity of patients were registered and coded and involvement of other system as diagnosed by first line clinician doctors who dealt with the COVID19 in the hospitals and important dermatological symptoms and signs that mentioned by patient and the final dermatological lesion as diagnosed by dermatologist, SPSS version 25 used for statistical analysis to find the association, relationship and differences of our outcome with specific determinants of interest, where p value < 0.05 consider as significance, excel sheet also had been used for graphing.

Result

A cross sectional analytical study recruit (116) COVID-19 patients with mean of (39.9828 \pm 11.90395 years),

The result showed that there are total number of samples in Thi-Qar and Al-Muthanna is 116 cases with corona virus, the results showed that there was a high percentage in the middle adult 80(69%) in the age group over 60 years old while the lowest percentage was in children 3 (2.6%) as shown in the Figure (1).

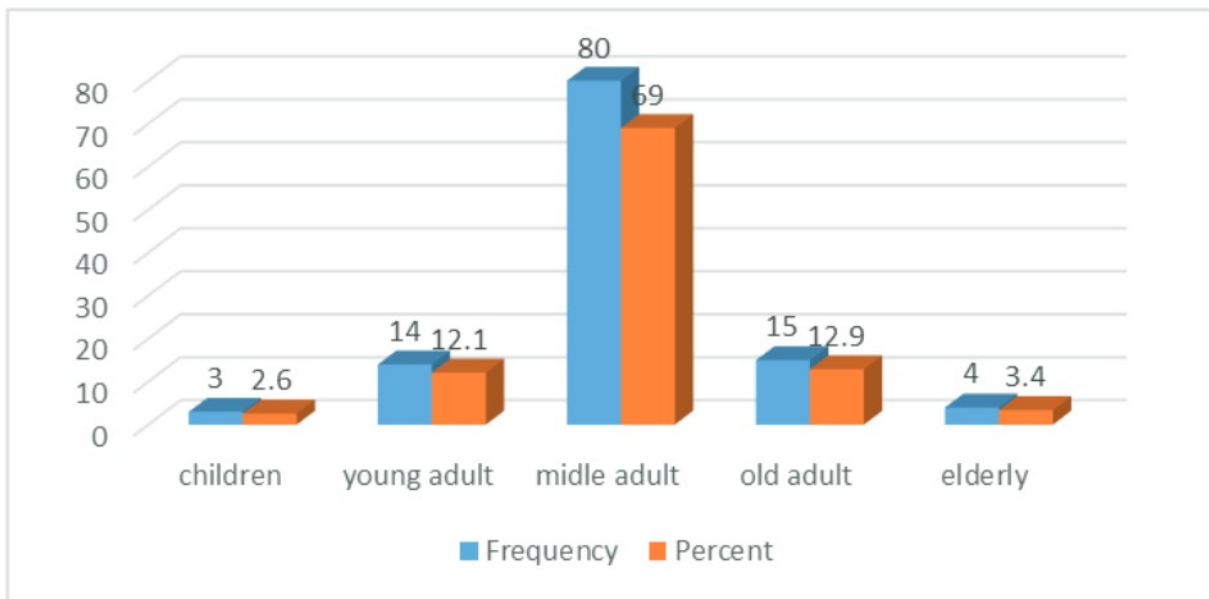


Figure 1: Age distribution of COVID-19 patients

The results show the gender distribution of COVID-19 among the studied population with highest percentage of infections in males (87.75%), while the lowest percentage is among females, (29.25%).

The results of the current study in Figure (2) revealed the ratios of the infections with COVID 19 virus according to the source of infection. The highest percentage was through direct contact 101 (87.1%), while the lowest percentage of infection source by travel 15 (12.9%).

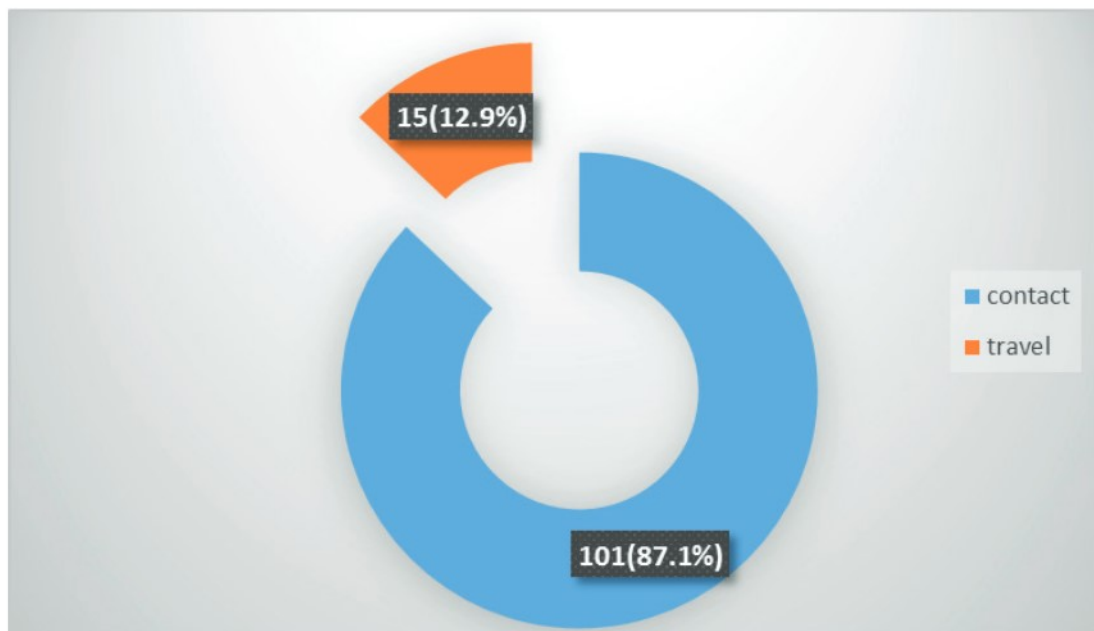


Figure 2: Distribution according to source of infection

The current study showed in the distribution of coronavirus infection according to systematic manifestation other than dermatology in COVID-19 where the high percentage of patients showed no any system involvement 70(60.3%), while the lower percentage shown in cardiac patient 1(0.9%).

The above figure shows results according to skin manifestation of COVID-19 where the highest percentage in no skin manifestation 75(64.77%), while in urticaria 18(15.5%), pruritis 13(11.2%), acrodermatitis enteropathica 7(6%) and chickenpox like 3(2.6%) .

The results show distribution according to final outcome where the highest percentage was live 110(94.8%), while the lowest percentage was death 6(5.2%).

The table below shows the skin manifestations according to biography among all COVID-19 patients where the highest percentage urticarial detects in middle adult 53 (66.3%), while the lower percentage in child 1(33.3%). Also, the high percentage in male 63 (69.9%). The result show in pruritus highest percentage in middle adult 10(12.5%), while in chicken pox like highest percentage also in middle adult and in acrodermatitis enteropathica highest percentage also in middle adult. The following results also showed that there was a negative relationship between the two variables, that is, there is no correlation at spearman correlation (-0.117) and the results show non-statistical significance in p. value ($P \leq 0.05$) as shown in table (1).

Table 1: Skin manifestation according to biography among all COVID-19

Age group		Skin manifestation						Total	F.E
		No	Urticarial	Pruritus	chicken pox like	Acrodermatitis enteropathica	P value		
child	No.	1	2	0	0	0	3	17.808 0.217	
	%	33.3%	66.7%	0.0%	0.0%	0.0%	100.0%		
Young adult	No.	7	4	1	1	1	14	Spearman correlation= -0.117	
	%	50.0%	28.6%	7.1%	7.1%	7.1%	100.0%		
Middle adult	No.	53	10	11	1	5	80	5.264 0.224	
	%	66.3%	12.5%	13.8%	1.3%	6.3%	100.0%		
Old adult	No.	12	1	1	1	0	15	100.0%	
	%	80.0%	6.7%	6.7%	6.7%	0.0%	100.0%		
elderly	No.	2	1	0	0	1	4	100.0%	
	%	50.0%	25.0%	0.0%	0.0%	25.0%	100.0%		
Female	No.	22	1	3	1	2	29	100.0%	
	%	75.9%	3.4%	10.3%	3.4%	6.9%	100.0%		
Male	No.	53	17	10	2	5	87	100.0%	
	%	60.9%	19.5%	11.5%	2.3%	5.7%	100.0%		
Total	No.	75	18	13	3	7	116	100.0%	
	%	64.7%	15.5%	11.2%	2.6%	6.0%	100.0%		

The table below shows the skin manifestation according to system involvement among all COVID-19 where the highest percentage Flue like in Urticarial was 10(27.0%), while the lower percentage in renal and cardiac. The result show in pruritus highest percentage in no any other system invol. 7(10.0 %), while in chicken pox like highest percentage also in Flue like 2(5.4%) and in acrodermatitis enteropathica highest percentage

also in Flue like 3(8.1%), also showed pearson correlation(0.327). The following results also showed that there was a complete negative linear relationship between the two variables,there is no correlation in skin manifestation according to system involvement among COVID-19 showed pearson correlation(0.327) and at p. value ($P \leq 0.05$) as shown in table (2).

Table 2: Skin manifestation according to system involvement among COVID-19

Other system	skin					Total	F.E
	No	Urticarial	Pruritus	chicken pox like	Acrodermatitis enteropathica		P value
No any other system invol.	54	7	7	1	1	70	32.291, 0.001 Pearson Correlation= 0.327
	77.1%	10.0%	10.0%	1.4%	1.4%	100.0%	
Flue like	17	10	5	2	3	37	
	45.9%	27.0%	13.5%	5.4%	8.1%	100.0%	
Respiratory	3	1	1	0	2	7	
	42.9%	14.3%	14.3%	0.0%	28.6%	100.0%	
Renal	0	0	0	0	1	1	
	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	
Cardiac	1	0	0	0	0	1	
	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
Total	75	18	13	3	7	116	
	64.7%	15.5%	11.2%	2.6%	6.0%	100.0%	

The following figure shows results according to contact count of COVID-19 where the highest percentage 67, while in urticaria14, pruritis 12, acrodermatitis enteropathica 5and chickenpox like 3as shown in Fig (3).

Figure 3: shows results according to contact count of COVID-19

The outcome of the study also shows the skin manifestation according to biography among only who had dermatological lesions where the highest percentage in middle adult Urticarial was 10(37.0%) ,also in high percentage in male 17(50.0%). The result show in pruritus highest percentage in middle adult 11 (40.7 %), while in chicken pox like highest percentage also in young adult 1(14.3%) and in acrodermatitis enteropathica highest percentage also in middle adult 5 (18.5%). The results show non-statistical significance in skin manifestation according to biography among only who had dermatological lesions at p. value ($P \leq 0.05$).

The following results also showed a weak association between the two variables spearman correlation (0.194).

The table below shows source of infection according to skin manifestation where the highest percentage by travel urticarial was 4(57.1 %).The result show in pruritus highest percentage by contact 12 (35.5 %), while in chicken pox like highest percentage also by contact 3(8.8%) and in acrodermatitis enteropathica highest percentage also by contact 5 (14.7 %). The results show non-statistical significant in source of infection according to skin manifestation at p. value ($P \leq 0.05$) as shown in table (3).

Table3: Source of infection according to skin manifestation

Crosstab						
source	skin				Total	F.E
	Urticarial	Pruritus	chicken pox like	Acrodermatitis enteropathica		P Value
contact	14	12	3	5	34	2.150
	41.2%	35.3%	8.8%	14.7%	100.0%	.622b
travel	4	1	0	2	7	
	57.1%	14.3%	0.0%	28.6%	100.0%	
Total	18	13	3	7	41	
	43.9%	31.7%	7.3%	17.1%	100.0%	

This can be observed that the skin manifestation according to other system involvement, where the highest percentage in flue like urticarial was 10(50.0%). The result show in pruritus highest percentage in no system involvement 7 (43.8 %), while in chicken pox like highest percentage also in flue like 2(10.0%) and in acrodermatitis enteropathica highest percentage 3(15.0%) flue like. The results show non-statistical significant at p. value ($P \leq 0.05$). The following results also showed that there was a complete negative linear relationship between the two variables, there is no

correlation in skin manifestation according to other system involvement showed pearson's (0.331).

The table below shows the skin manifestation according to death, where the highest percentage in urticarial was 17(44.7%). The result show in pruritus highest percentage in 12(31.6%), while in chicken pox like highest percentage 2(7.9%) and in acrodermatitis enteropathica highest percentage 6(15.8 %), the results show non-statistical significant in Skin manifestation according to death .The results show non-statistical significant in skin manifestation according to death at p. value ($P \leq 0.05$) as shown in table (4).

Table 4: Skin manifestation according to death

Death		skin				Total	F.E
		Urticaria	Pruritis	chicken pox like	Acrodermatitis enteropathica		P
No		17	12	3	6	38	1.519
		44.7%	31.6%	7.9%	15.8%	100.0%	0.808
Yes		1	1	0	1	3	
		33.3%	33.3%	0.0%	33.3%	100.0%	
Total		18	13	3	7	41	
		43.9%	31.7%	7.3%	17.1%	100.0%	

Another striking point is that the skin manifestation according to death among all COVID-19 patients, where the highest percentage in no skin manifestation was 72(65.5%). also the highest percentage in urticarial no death was 17(15.5. %). The result show in pruritus highest percentage in 12(10.9 %), while in chicken pox like highest percentage 3(2.7 %) and in acrodermatitis enteropathica highest percentage 6(5.5%), the results show non-statistical significant in Skin manifestation according to death among all COVID-19 patients. The results show non-statistical significant in skin manifestation according to death among all COVID-19 patients at p. value ($P \leq 0.05$).

Discussion

After the spread of Corona virus around the world and caused anxiety in countries and cities, this led to the many studies and coronavirus correlation with others diseases cases¹³. Since the first case of coronavirus was confirmed in Iraq on February 25, the Iraqi government immediately launched a quarantine procedure on February 28¹⁴. The global epidemic has become more than a million people infected by the severe acute respiratory syndrome coronavirus 2 SARS-CoV-2, It led to an increase in the death rate due to the absence of a specific treatment for the disease¹⁵. In a previous study conducted by Surveillances, (2020) in China, Where

they found the high rate of repeated infections with Corona virus in the age group ≥ 80 years and this percentage agree to the current study. Older people may be more susceptible to infection due to coronavirus due to their weak immune response, this study also confirmed that the incidence of coronavirus in males (51.4%) is higher than that of females (48.6%), and this percentage corresponds to the current study (87.75%) in males while in females (29.25%). The current study also corresponds to a previous study done by Jebiril, (2020) in Iraq, They found the age structure of the population correlated with higher mortality rates with COVID-19 in older ages. There is a study conducted by Shi *et al.*, (2020), where they found the infection rate of coronavirus in the age group over 50 years and this is consistent with the current study and also they found the infection rate of coronavirus in males (52%) higher than females (48%) and this is consistent with the current study in males. It is believed, according to previous studies, that aging and male sex, as well as diseases associated with people suspected of being infected with Coronavirus, may be risk factors for poor diagnosis in patients¹⁶. A previous study showed by Hellewell *et al.*, (2020), that the percentage of infection with COVID-19 through direct contact is more than infection by movement and this study corresponds to the current study. As there is a previous study that showed that the transmission of the virus from one person to another through direct contact is considered more dangerous and also the results of the previous study indicated that people carrying symptoms or without symptoms will transfer the virus from one person to another through direct contact¹⁸. In this current study, no high incidence of pathological conditions associated with corona virus, such as flu, heart disease, kidney failure and other pathological cases, appeared, and this study is agree with the previous study conducted by S. Shi *et al.*, (2020), they found the relationship between cardiac infections and death in patients with COVID-19 (19.7%). The risk of death may be greater in people with heart disease and coronavirus because they suffer from more severe disease and high creatinine level and lead to weak immune response, and therefore the risk rate may be greater than those without cardiac diseases¹⁹. Where the current study by Elston, (2020) showed the extent of the impact of skin infections and its correlation with corona virus, where a previous study was conducted by, they found it difficult to wear

protection masks for people who always wear them because of the cause of skin allergies and their complications on the skin. The prevalence of skin damage associated with improved prevention measures was 97.0% among care workers Health care for people living with COVID-19, as it included skin lesions that in turn affect the bridge of the nose, forehead, cheek, and hands. Where there is a previous study by Fernandez Nieto *et al.*, (2020) is considered the first study on the skin manifestations associated with corona virus, where specialist dermatologists evaluated a 18 skin infection out of 88 involving widespread urticarial ($n = 3$) and chickenpox-like vesicles ($n=1$) namely erythematous rash ($n=14$), this study agree with the current study where they found in this study that the highest percentage for Urticarial category middle adult is 12.5%. Skin manifestations by type COVID-19 the highest percentage was Male in urticarial 19.5%. A previous study by Zhang *et al.*, (2020) was conducted by the examination procedure was the patients suffering from skin lesions despite the symptoms of skin lesions are fever and symptoms of corona virus fever also were stone infected with skin lesions where through these expectations the Chinese Health Society for Dermatology organized experts to take the necessary and necessary measures to prevent the outbreak of the epidemic. It is a good idea to introduce a new clinical tool that is the appearance of the skin with COVID-19 is an excellent step to deal with the challenge we face against the Corona virus epidemic, and it is better to do many studies on skin manifestations and this epidemic because skin diseases are considered to be wide range²³. In a previous study in Iraq, it showed the number of deaths of people infected with coronavirus 36 in 27 March 2020, and this is contrary to the current study, as it found the number of deaths during the study period and it is certainly a good indicator of the low number of deaths²⁴. In a previous study in Italy, it confirmed the presence of several cases of COVID-19 infection and they had a rash in spite of their peace before they were infected with the virus, as most of the patients were suffering from foot lesions. This corresponds to the current study, that is, corona virus correlation with skin lesions. In the current study, the highest percentage in middle adult urticarial was 53 (66.3%) and chicken pox like, and this contradicts a previous study, as Shinkai found the rash associated with the virus appears more frequently in children. It is

surprising to see many reports of rashes in adult patients with COVID-19 as it is a new study to identify the association between skin infections and COVID-19. As the results of the current study showed a negative relationship, there is no correlation between the two variables, so the extent of the rash with the virus is still not completely clear, as well as a previous study in China confirmed to more than a thousand patients with coronavirus, the proportion of those with skin infections was 0.2%, and this contradicts the current study, which may be the reason in the number Cases of infected patients or it could be a disease completely isolated from the virus. The study also showed that the common source of infection is through direct contact and the lowest percentage is through travel despite the spread of the virus throughout the world and this corresponds to a previous study²⁴. the highest percentage in flue like urticarial was 10 (50.0%) and this result is consistent with many studies that may be due to immunity and response. Also in the description of many patient reports on April 30 in JAMA Dermatology a man has put “freckles” or small red dots on the skin living in Spain. Also patient who developed larger lesions known as a “digitate papulosquamous eruption in France, it is clear that the appearance of symptoms of skin manifestations with COVID-19 varies greatly in cases where the rash appears a few days after the disease or does not appear until late in the course of the infection. Or other conditions that precede the rash, symptoms such as fever. It can be concluded from the current study that there is no close correlation between skin manifestations and COVID-19, a very weak direct relationship because some patients may not show any symptoms on them and these are considered negative signs²⁵. Acrodermatitis enteropathica (AE) is an autosomal recessive disease with rare incidence associated with the error in zinc uptake (deficiency). Its characterized mainly by the skin inflammation (dermatitis) around the body, the tips of fingers and toes, alopecia and diarrhea. The most accurate method for diagnosis of AE is the detection of zinc plasma levels²⁶. The AE is first records in the patients with COVID 19 in this study which may belong to changes in nutritional and immunological states of patients that occur due to Psychiatric disorders.

Conclusions

It can be concluded from the current study that there

is no close correlation between skin manifestations and COVID-19 infection, a very weak direct relationship because some patients may not show any symptoms and these are considered negative signs, meanwhile the unique skin lesion are zinc like deficiency (acrodermatitis enteropathica)not reported in any other areas.

Ethical Clearance: The ethical clearance was obtained from the Ethics Committee of Community Medicine Family and Community Medicine department, College of Medicine, University of Thi-Qar, Iraq.

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Conflict of Interest: the authors declare that there is no conflict of interest.

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