Knowledge about Covid-19: Sample From Iraqi People

Sahar Abdul-Hassan Al- Shatari[1],Hassan HadiBaker Al kazza[2]

Al Zahra university for women, medical and health technology collage(MOH),
E-mail: [1]saharissa2020@yahoo.com, [2]bhd_r@yahoo.com

Abstract: Good knowledge about Covid-19 transmission and nature prevents transmission of microorganisms and reduces the incidence of Covid-19 in the community. To assess knowledge of Iraqi people about covid-19&to find the source of information about covid-19. Method: Cross-sectional study was done from 1stJune-1stJuly 2020, by electronic version of questionnaire through Google-form. Any Iraqi adult can read Arabic and use the internet media (e-mails, telegram, viber, whatsapp, Facebook) or by hand to hand as hard-copy, and accepted to answer the questionnaire through friend, friend of friend, relatives, work colleagues with A Brief message.Analysed by SPSS ver. 23, frequencies and percentages calculated. The study revealed enrolling of 700 Iraqi people from difference part of Iraq and difference were participant in it, the main age of them 230(32.9%) aged 20-29 years old, females 416(59.4%), complete secondary school388(55.4%), near 60% of them working in non-medical field, and governmental employee 364(52.0%), and there-residency in Baghdad city 457(65%), followed by holly-Karbala 8%, and bible 4%, good knowledgein prevention of Covid-19 transmission, Strength the immunity against covid-19 infection and its complication, and the Overall knowledge appear as good 691(99%) the Internet is the major source of the information about the covid-19; 568(81.1%). Conclusion: most of participants had good knowledge in prevention and strength the immunity and vaccination of covid 19, and the main source of information is the internet then TV & radio.
Keyword: COVID-19, knowledge, attitudes, practices, KAP, Iraq, Google-form questionnaire.

1. INTRODUCTION:

The recent outbreak of coronavirus disease 2019 (COVID-19) is the worst global crisis after the Second World War. Since no trustable treatment and vaccine have been reported, efforts to improve the knowledge, attitudes, and practice of the public, especially the high-risk groups, are critical to manage COVID-19 pandemic.[1]

Covid-19 infection impacted every part of theworld and routine life. Recent report from the Officeof national statistics in UK reported disproportionate death among Black Asian and minority ethnic(BAME) population.[2]

It is necessary to understand public knowledge and behaviors if we are to effectively understand the pandemic. [3]People's approach to control measures is affected by their knowledge, attitudes, and practices (KAP) towards COVID-19.[4]

The behavior of the general public will probably have an important effect on the course of COVID-19 epidemic. Human behavior is influenced by people's knowledge and perceptions.[5]

The world is affected by COVID-19 Because of their direct contact with patients, health staff, especially nurses, play critical roles in the prevention of the COVID-19 outbreak through proper care and preventive measures. [6]

The first COVID-19 cases were detected using genomic sequencing, but many RT-PCR commercial and non-commercial assays have since been developed. As the international case load increases, there is an urgent need to rapidly scale up diagnostic capacity to discover and confirm cases of COVID-19. [7]

Hand hygiene reduces cross-transmission of microorganisms and decreases the incidence of health care associated infections. [8]To prevent the spread of COVID-19 in all healthcare settings, hand hygiene must be routinely practiced. Appropriate hand hygiene techniques can go a long way in reducing nosocomial infections, cross-transmission of microorganisms and the risk of occupational exposure to infectious diseases. [9]COVID-19 pandemic has caused a huge demand for alcohol-based hand rubs, medical gloves, face masks, and gowns in healthcare and from the public. More and more health facilities face a serious shortage of these articles. [10]

COVID-19 cases and deaths related to the virus have been reported all over the world. Pharmacists play an influential role in conveying accurate information about COVID-19 to the community. [11]

In Iraq,Basic health infrastructure has been destroyed, health structures have collapsed, primary healthcare has been disrupted, health professionals have been killed or forced to flee, and resources have been diverted from public investment to belligerent purposes: all of these conditions are contributing both to an increased number of casualties and to the long-term health instability and frailty. [12]So it must depend on the prevention as much as possible especially in COVID-19 epidemic.

Public adherence to preventive measures is influenced by community knowledge and attitude toward COVID-19 [13].

Objectives:To assess knowledge of Iraqi people about covid-19

2. METHOD:

Setting and study design:

Cross-sectional study was conducted 1st June-1st July 2020, by electronic version of questionnaire through Google-form.

Definition of cases, inclusion and exclusion criteria:

Any Iraqi adultscan read Arabic and use the internet media (e-mails, telegram, viber, whatsapp, Facebook) .

Ethical consideration:

A consent message send to the all recipient of the Questionnaire, mention in it the importance of the study and freedom to share their information with the researcher and keeping his privacy.

Sampling technique:

Convenientsample from friends, friendsconnections, relatives, work colleagues. Also, in many public Facebook groups (30 groups) randomly.Through Internet media (e-mails, telegram, viber, whatsapp, Facebook) or by hand to hand as hard-copy to friends connections.

Questionnaire:

Questionnaire formed based on Iraqi ministry of health instructions and world health organization guidelines [14]and UK National Institutes of Health guideline [15]and reviewing many articles and researches. Also,fourexperts (two community physicians and two epidemiologists) had been consulted. Pilot study was done for 15 people and excluded from this study.

The questionnaire consistsoffive parts: the first demographic features 7 Q (age, gender, and educational level, marital status, working in Medical field, their Job and residency). Thesecond part consists of12Q(knowledge about prevention of Covid-19 transmission). Third part consists of six Q (knowledge about Strength the immunity against covid-19 infection and its complication). The fourthpart consists of seven Q (knowledge about vaccination, treatment, and post-infection immunity and re-infection with covid-19 infection). The last question was about his/her information source.

Coding

The answers for the knowledge parts were (no, I don't know, yes) and consider each correct answer =3, each 'I don't know' =2 and each no' =1, and for that 24 Qthe overall knowledge was:

Pooroverall knowledge ……..… (24-48)
Acceptedoverall knowledge…... (49-60)
Goodoverall knowledge ………. (60-72)

Data collection procedure:

Electronic version of questionnaire through Google-form site on: https://forms.gle/tEhgjfyFoDgbm1BB9. The researcher had sent the questionnaire to all internet media (e-mails, telegram, viber, whatsapp, Facebook, hand by hand) and we ask anyone to resend it to their contact list (family, relatives, friends, and work colleagues).

Statistical analysisOutcomes and procedures:

The answers downloaded from the electronic-form of Questionnaire (Google-form) to computer as excel file and imported to SPSS ver. 23 to be analyzed. Frequencies and percentages had calculated.

3. RESULT:

A total of 700 study participants were enrolled in this study. The main age of the of the study participants was 230(32.9%) aged 20-29 years, females 416(59.4%),secondary school388(55.4%), near 60% of them working in non-medical field and governmental employee 364(52.0%).Most of the study participants residency wast in Baghdad city 457(65%), followed by holly-Karbala 8%, and Bible 4%, As shown in table (1) and figure (1).

Most of the participants know the correct name of COVID-19 disease 680(97.1%), its viral infection 685(97.9%), It'sTransmission by hands so they must wear cloves 567(81.0%) and transmitted by droplets 692(98.9%). Most 640 (91.4%) of the study participants reported

thatabout (N95 and medical mask is better but if not available; any other mask is O.K).No eye touch without handwashing 695(99.3%), Washing foods and equipments 649(92.7%), Prevention of covid-19 infection is the solution689(98.4%), about Physical distance 694(99.1%), Consider all is diseased even you 661(94.4%), and Lift curfews not mean end of disease664(94.9%).(table 2).
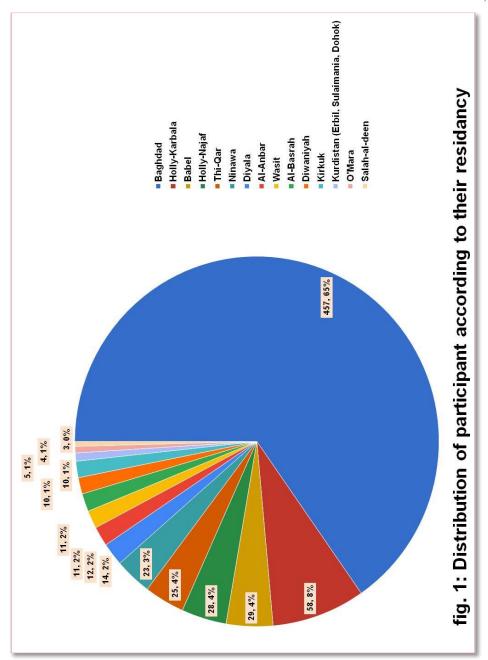
Also as assessing the participants knowledge about Strengthen the immunity against covid-19 infection and its complication, most of the participants had good knowledge about that 692(98.9%).A good knowledge about the importance of Vit D 660(94.3%), Zinc and selenium 636(90.9%), Vit C670(95.7%), Healthy food 675(96.4%), and Correct sunlight exposure 626(89.4%).(table 3).

The majority of the participants had goodknowledgeabout nonexistence of vaccine againstcovid-19 in the present time629(89.9%), and only Experimental-vaccines is undertrial 586(83.7%), there is no specific treatment till now 637(91.0%), Drug usage without counseling doctors is danger on health676(96.6%), Recovered patient plasma is one treatment for COVID-19 587(83.9%), and to less extend Re-infection can be occur448(64.0%), while the highest percentage328(46.9%) did not know about the post-infectionself-immunity(table 4).

Overall knowledge appear as good 691(99%), accepted Overall knowledge 7(1%) (fig 2).

Internet is the major source 568(81.1%) of the information about the covid-19, the second source were TV and radio254(36.3%), Iraqi governmental sites only 165(23.6%), less extend the instruction at work site 101(14.4%), the primary health doctors &nurse only give information to 98(14%) of participants, and same for the privet doctors 97(13.9%). (fig 3).

Table (1): distribution of participants according to their age, gender, educational level, marital status, working in Medical field, and their Job:

		Frequency	Percent
age	less 20	34	4.9
	20- 29	230	32.9
	30- 39	182	26.0
	40- 49	123	17.6
	50-59	90	12.9
	60 and	41	5.9
Gender	male	284	40.6
	female	416	59.4
Educational level	not complete primary school	23	3.2
	complete primary school	140	20.0
	complete secondary school	388	55.4
	complete college and above	149	21.3
Marital status	married	397	56.7
	single	281	40.1
	widow	9	1.3
	divorce	13	1.9
Medical field	no	414	59.1

fig. 1: Distribution of participant according to their residancy

	yes	286	40.9
Job	governmental employee	364	52.0
	non-governmental employee	33	4.7
	private work	41	5.9
	un-employee	50	7.1
	retired	37	5.3
	housewife	46	6.6
	student	129	18.4
Total		700	100

Table (2): distribution of participants according to their knowledge about prevention of Covid-19transmission:

N=700		Frequency	%
Correct name is Covid-19	No	5	0.7
	I don't know	15	2.1
	Yes	680	97.1
Is it viral infection?	No	4	0.6
	I don't know	11	1.6
	Yes	685	97.9
Its Transmitted by hands so we must wear cloves	No	118	16.9
	I don't know	15	2.1
	Yes	567	81.0
Covid-19 transmuted by infected droplet so we must wear mask	No	3	0.4
	I don't know	5	0.7
	Yes	692	98.9
N95 and medical mask is better but if not available; any other mask is O.K	No	21	3.0
	I don't know	54	7.7
	Yes	625	89.3
Correct handwashing must 20 second in by water and soup	No	31	4.4
	I don't know	29	4.1
	Yes	640	91.4
No eye touch without handwashing	No	1	0.1
	I don't know	4	0.6
	Yes	695	99.3
We must Washing buying foods and equipments	No	20	2.9
	I don't know	31	4.4
	Yes	649	92.7
Prevention of covid-19 infection is the solution	No	2	0.3
	I don't know	9	1.3
	Yes	689	98.4
Physical distance	No	2	0.3
	I don't know	4	0.6
	Yes	694	99.1
Consider all is diseased even you	No	19	2.7
	I don't know	20	2.9
	Yes	661	94.4
Lift curfews not mean end of disease	No	22	3.1
	I don't know	14	2.0
	Yes	664	94.9

Table (3): distribution of participants according to their knowledge about Strength the immunity against covid-19 infection and its complication

N=700		Frequency	Percent
Strength the immunity is the correct solution for fighting covid-19 infection and its complication	No	1	0.1
	I don't know	7	1.0
	Yes	692	98.9
Vit D is strength the immunity against covid-19 infection and its complication	No	15	2.1
	I don't know	25	3.6
	Yes	660	94.3
Zinc and selenium are strengthen the immunity against covid-19 infection and its complication	No	22	3.1
	I don't know	42	6.0
	Yes	636	90.9
Vit C is strength the immunity against covid-19 infection and its complication	No	12	1.7
	I don't know	18	2.6
	Yes	670	95.7
Healthy food is strength the immunity against covid-19 infection and its complication	No	13	1.9
	I don't know	12	1.7
	Yes	675	96.4
Correct sunlight exposure is strength the immunity against covid-19 infection and its complication	No	25	3.6
	I don't know	49	7.0
	Yes	626	89.4

fig. 2: Distribution of participant according to thier overall knowledge about covid-19
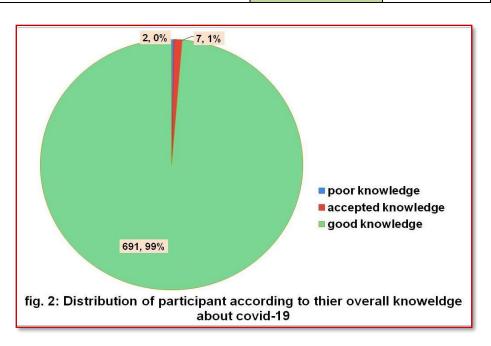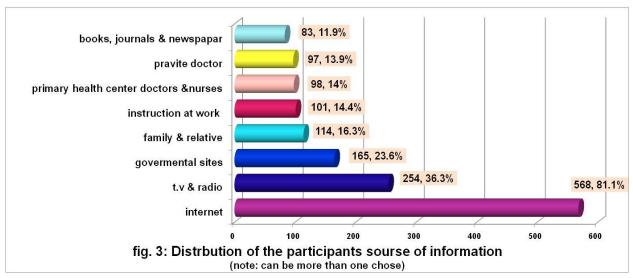
Table (4): distribution of participants according to their knowledge about vaccination, treatment, and post-infection immunity and re-infection with covid-19 infection:

		Frequency N=700	Percent
No vaccination till now for public use	No	17	2.4
	I don't know	54	7.7
	Yes	629	89.9
Experimental-vaccines till now experiment	No	22	3.1
	I don't know	92	13.1
	Yes	586	83.7
No specific treatment till now	No	14	2.0
	I don't know	49	7.0
	Yes	637	91.0
Drug usage without counseling doctors is danger on health	No	12	1.7
	I don't know	12	1.7
	Yes	676	96.6
Two - Three months immunity post-infection	No	79	11.3
	I don't know	328	46.9
	Yes	293	41.9
Recovered patient plasma is one of treatment	No	35	5.0
	I don't know	78	11.1
	Yes	587	83.9
Re-infectioncan be occur	No	41	5.9
	I don't know	211	30.1
	Yes	448	64.0

fig. 3: Distrbution of the participants sourse of information
(note: can be more than one chose)

4. DISCUSSION:

In regard to knowing the name of Covid-19 and its kind(viral) and Its Transmission by hands, almost all of the participants(98%) stated that they knew the name of Covid-19 and it is viral and 81%stated that it is transmitted by hands. On the other hand, Turkish Journal of

Pharmaceutical Sciences [11] shows contrast results which was70.6% for corona virus are zoonotic viruses and (91.3% under age of 40 and 77.5% over age 40) for washing hands to avoid covid-19 respectively.

Physical distance knowledge in this study shows that 99.1% agree with it which was in consistence with Al-Hanawi study [13] which was practicing social distance (87.57%).

In study done in Northwest Ethiopia;the prevalence of poor knowledge was 33.9% (95% CI (29.3–38.5%). Only 151 (37.4%) study participants had good knowledge while the remaining 116 (28.7%) had poor knowledge. The prevalence of poor knowledge and poor practice was high. [8].In regard to overall distribution of knowledge about Covid-19. Current study shows that99 %was goodknowledge,1 % was moderate,and zero % was poor.This difference might be due to a difference in socioeconomic and ritual status.

In regard to source of information in current study 81.1% take their information from internet; which is higher than Turkish study which analysis of 237 questionnaires (72.6% completed by women) showed that the media (television, newspaper), internet (nonscientific resources), internet (scientific resources), and social media were the most popular sources of information (60.3%, 53.6%, 53.2%, and 41.4%, respectively) [11].

For treatment of people who become infected with COVID-19, higher vitamin D_3 doses might be useful. [16] In regard to the effect of Vit D in strengthen the immunity against covid-19 infection and its complication,almost all of the participants 94.3% in this study believe in the effect of Vit D in strengthen the immunity.

Vitamin C has beneficial immuno-modulating properties in patients with viral infections, predominantly by increasing the production of α/β interferons and downregulating the production of pro-inflammatory cytokines [11, 17].In current study almost all of the participants (95.7%) statedthat Vit C is strengthening the immunity against covid-19 infection and its complication.

Despite intense research there is currently no effective vaccine available against the new severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) emerged in the later 2019 and responsible for the COVID-19 pandemic. The study revealed no vaccinationand no specific treatment till now for public usein regard to COVID-19[18], similar to current study; the results was89.9%

Currently, there is no definite treatment for COVID-19 although some drugs are under investigation [19, 20]. In current study 91% mentioned that no specific treatment till now.

Proper nutrition and hydration are vital. People who eat a well-balanced diet tend to be healthier with stronger immune systems and lower risk of chronic illnessesand infectious diseases [21,22];current study revealed that almost all of the participants (96.4%) stated that thehealthy food is strength the immunity against covid-19 infection and its complication.

The knowledge of participants about Strengthen the immunity against covid-19 infection and its complication was good and inconsistence with the above study.

There are numerous examples in which convalescent plasma has been used successfully as post-exposure prophylaxis and/or treatment of infectious diseases, including other outbreaks of coronaviruses (e.g., SARS-1, Middle East respiratory syndrome [MERS][23]. In our study the participants had good knowledge 83.9% about theinformation thatrecovered patient plasma is one of treatment methods.

COVID-19 severity is associated with increased IgG response, and an immune response phenotyping based on the late IgG response and neutrophil lymphocyte rat (NL R) could act as a simple complementary tool to discriminate between severe and non-severe COVID-19 patients, and further predict their clinical outcome [24].In our study the participants (41.9%) statedthat it takes Two-Three months immunity post-infection.

Remdesivir is an RNA polymerase inhibitor with potent antiviral activity in vitro and efficacy in animal models of coronavirus disease 2019 (Covid-19) [25, 26].No specific treatment till now, 91% of the participants agreed with it.

5. CONCLUSION:

➢ Most of the participants complete secondary school and above, because they are more familiar with electronic technology

➢ Most of the participants were female, from Baghdad, working in non-medical field and governmental employees followed by students.

➢ Most of the participants had good overall knowledge about covid-19, and specifically in mood of transmission, Strength the immunity against, vaccination, treatment, post-infection immunity and re-infection with covid-19 infection.

➢ Internet was the most source of their information.

6. RECOMMENDATION:

❑ creatingCovid 19 prevention programs to the general public to promote knowledge, attitude and practice.

❑ Further studies evaluating the knowledge and attitudes of otherIraqi categories.

7. REFERENCES:

[1] Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, Li Y. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *Int J Biol. Sci* 2020; 16(10):1745-1752.   doi:10.7150/ijbs.45221.   Available   from http://www.ijbs.com/v16p1745.htm

[2] Clements JM. Knowledge and Behaviors toward COVID-19 among US Residents During the Early Days of the Pandemic: Cross-Sectional Online Questionnaire. *JMIR Public Health Surveill*. 2020;6(2):e19161. Published 2020 May 8. doi:10.2196/19161. Accessed on 2020-08-06 on web site :https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7212816/

[3] Moorthy A, Sankar TK. Emerging public health challenge in UK: perception and belief on increased COVID19 death among BAME healthcare workers [published online ahead of print, 2020 Jul 3]. *J Public Health (Oxf.)*. 2020;fdaa096. Accessed on 2020-08-06 on web site :https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7337745/

[4] World Health Organization. Novel coronavirus (2019-nCoV) Situation report. Accessed on   2020-03-24   :https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200121-sitrep-1-2019-ncov.pdf?sfvrsn=20a99c10_4

[5] Modi PD, Kumar P, Solanki R, Modi J, Chandramani S, Gill N. Hand Hygiene Practices Among Indian Medical Undergraduates: A Questionnaire-Based Survey. *Cureus*. 2017; 9 (7):e1463. Published 2017 Jul 12. doi:10.7759/cureus.1463. Accessed on 2020-05-20 on web site :https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5595270/

[6] Kamble, V.S., Biradar, S.M., Takpere, A. and Reddy, S., 2016. Knowledge of hand hygiene practices among students of ESIC medical college, Gulbarga, Karnataka, India. *Int J Community Med Public Health*, *3*(1), p.95.https://www.ijcmph.com/index.php/ijcmph/article/view/652

[7] Pascal Geldsetze, Knowledge and Perceptions of COVID-19 Among the General Public in the United States and the United Kingdom: A Cross-sectional Online Survey Accessed on 2020-05-20 on web site: https://www.acpjournals.org/doi/10.7326/M20-0912

[8] Akalu Y, Ayelign B, Molla MD. Knowledge, Attitude and Practice Towards COVID-19 Among Chronic Disease Patients at Addis Zemen Hospital, Northwest Ethiopia. *Infect Drug Resist*. 2020;13:1949 – 1960.accessed at 2020-08-02 on web site :https://www.dovepress.com/knowledge-attitude-and-practice-towards-covid-19-among-chronic-disease-peer-reviewed-article-IDR

[9] Nemati, M., Ebrahimi, B. and Nemati, F., 2020. Assessment of Iranian nurses' knowledge and anxiety toward COVID-19 during the current outbreak in Iran. *Archives of Clinical Infectious Diseases*, *15*(COVID-19).accessed at 2020-08-02 on web site https://www.researchgate.net/publication/340278359_Assessment_of_Iranian_Nurses%27_Knowledge_and_Anxiety_Toward_COVID-19_During_the_Current_Outbreak_in_Iran

[10] Kampf G, Scheithauer S, Lemmen S, Saliou P, Suchomel M. COVID-19-associated shortage of alcohol-based hand rubs, face masks, medical gloves and gowns - proposal for a risk-adapted approach to ensure patient and healthcare worker safety [published online ahead of print, 2020 Apr 29]. *J Hosp Infect*. 2020;105(3):424-427. doi:10.1016/j.jhin.2020.04.041. accessed at 2020-08-01 on web site: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7190502/

[11] Kara E, Demİrkan K, Ünal S. Knowledge and Attitudes among Hospital Pharmacists About COVID-19. *Turk J Pharm Sci*. 2020;17(3):242-248. doi:10.4274/tjps.galenos.2020.72325. accessed at 2020-08-01 on web site: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7336039/

[12] EmbertiGialloreti L, Basa FB, Moramarco S, Salih AO, Alsilefanee HH, Qadir SA, Bezenchek A, Incardona F, Di Giovanni D, Khorany R, Alhanabadi LHH, Salih SO, Akhshirsh GS, Azeez BS, Tofiq BA and Palombi L (2020) Supporting Iraqi Kurdistan Health Authorities in Post-conflict Recovery: The Development of a Health Monitoring System. Front. Public Health 8:7.doi: 10.3389/fpubh.2020.00007accessed at 2020-08-01 on web sitehttps://europepmc.org/article/med/32083050

[13] Al-Hanawi, M.K., Angawi, K., Alshareef, N., Qattan, A.M., Helmy, H.Z., Abudawood, Y., Alqurashi, M., Kattan, W.M., Kadasah, N.A., Chirwa, G.C. and Alsharqi, O., 2020. Knowledge, Attitude and Practice Toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study. *Frontiers in Public Health*, *8*.Accessed at

July   12,   2020   Available   at:
https://www.frontiersin.org/articles/10.3389/fpubh.2020.00217/full

[14] world health first report and guideline, accessed 2020.2.17 on site
https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200121-
sitrep-1-2019-ncov.pdf?sfvrsn=20a99c10_4)

[15] COVID-19 Treatment Guidelines Panel. Coronavirus Disease 2019 (COVID-19)
Treatment Guidelines. National Institutes of Health. Accessed at May 12, 2020
Available at https://www.covid19treatmentguidelines.nih.gov/.

[16] Grant, W.B., Lahore, H., McDonnell, S.L., Baggerly, C.A., French, C.B., Aliano, J.L.
and Bhattoa, H.P., 2020. Evidence that vitamin D supplementation could reduce risk of
influenza and COVID-19 infections and deaths. *Nutrients*, *12*(4), p.988.Access at 2020-
08-09 on the web site: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7231123/

[17] Market, Marisa & Angka, Leonard & Martel, Andre &Bastin, Donald &Olanubi,
Oladunni& Tennakoon, Gayashan& Boucher, Dominique & Ng, Juliana &Ardolino,
Michele & Auer, Rebecca. (2020). Flattening the COVID-19 Curve With Natural Killer
Cell   Based   Immunotherapies.   Frontiers   in   Immunology.   11.   1512.
10.3389/fimmu.2020.01512.   Access   at   2020-08-09   on   the   web
sitehttps://www.researchgate.net/publication/342382877_Flattening_the_COVID-
19_Curve_With_Natural_Killer_Cell_Based_Immunotherapies

[18] Santos, Wagner. (2020). Natural History of COVID-19 and Current Knowledge on
Treatment Therapeutic Options. Biomedicine & Pharmacotherapy. 129. 110493.
10.1016/j.biopha.2020.110493.   Access   at   2020-08-09   on   the   web   site:
https://www.researchgate.net/publication/342669223_Natural_History_of_COVID-
19_and_Current_Knowledge_on_Treatment_Therapeutic_Options

[19] Sharma A, Tiwari S, Deb MK, Marty JL. Severe acute respiratory syndrome
coronavirus-2 (SARS-CoV-2): a global pandemic and treatment strategies. *Int J
Antimicrob. Agents*. 2020;56(2):106054. doi:10.1016/j.ijantimicag.2020.106054. Access
at   2020-08-09   on   the   web   site:
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7286265/

[20] ColungaBiancatelli, R.M.L., Berrill, M. and Marik, P.E., 2020. The antiviral properties
of   vitamin   C.   Access   at   2020-08-09   on   the   web   site:
https://www.tandfonline.com/doi/pdf/10.1080/14787210.2020.1706483?needAccess=tru
e

[21] deFaria Coelho-Ravagnani, C., Corgosinho, F.C., Sanches, F.L.F.Z., Prado, C.M.M.,
Laviano, A. and Mota, J.F., 2020. Dietary recommendations during the COVID-19
pandemic. *Nutrition Reviews*.Access at 2020-08-09 on the web site:
https://rapidinfo4u.healthcare/question/dietary-recommendations-during-the-covid-19-
pandemic/

[22] World health organization Nutrition | News | In focus | Nutrition advice for adults during
the   COVID-19   outbreak.   accessed   on   2020-08-09   at   online   sit   on
http://www.emro.who.int/nutrition/nutrition-infocus/nutrition-advice-for-adults-during-
the-covid-19-outbreak.html

[23] Wu, Yi-Chi[a]; Chen, Ching-Sung[a]; Chan, Yu-Jiun[a,b,c,*] The outbreak of COVID-19: An overview, Journal of the Chinese Medical Association: March 2020 - Volume 83 - Issue 3 - p 217-220 doi: 10.1097/JCMA.0000000000000270. Access at 2020-08-09 on the web site: https://journals.lww.com/jcma/fulltext/2020/03000/the_outbreak_of_covid_19__an_overview.3.aspx

[24] Bloch, E.M., Shoham, S., Casadevall, A., Sachais, B.S., Shaz, B., Winters, J.L., van Buskirk, C., Grossman, B.J., Joyner, M., Henderson, J.P. and Pekosz, A., 2020. Deployment of convalescent plasma for the prevention and treatment of COVID-19. *The Journal of clinical investigation*, *130*(6), pp.2757-2765. Accessed at 2020-8-9 on web site: https://covid19.elsevierpure.com/zh/publications/deployment-of-convalescent-plasma-for-the-prevention-and-treatmen

[25] Zhang, B., Zhou, X., Zhu, C., Song, Y., Feng, F., Qiu, Y., Feng, J., Jia, Q., Song, Q., Zhu, B. and Wang, J., 2020. Immune Phenotyping Based on the Neutrophil-to-Lymphocyte Ratio and IgG Level Predicts Disease Severity and Outcome for Patients with COVID-19. *Frontiers in Molecular Biosciences*, *7*. Accessed at 2020-8-9 on web site: https://www.frontiersin.org/articles/10.3389/fmolb.2020.00157/full

[26] Goldman JD, Lye DCB, Hui DS, et al. Remdesivir for 5 or 10 Days in Patients with Severe Covid-19 [published online ahead of print, 2020 May 27]. *N Engl. J Med*. 2020; NEJMoa2015301. Doi: 10. 1056/ NEJMoa2015301. Accessed at 2020-8-9 on web site: https://clinicaltrials.gov/ct2/show/NCT04292899