

Ophthalmological Perspectives Of COVID-19 Infection: A Local Study



Ossama M. Zakaria^{1,2}, Rahmah H. Alabdullah³, Ruqaiyah N. Alhakeem³,
Mohammed S. Alanazi⁴, Mohamed Yasser Ibrahim Daoud¹, Walaa A. Aldairi⁵, Fahad A. Alwadani⁵.

¹Department of Surgery, college of Medicine, King Faisal University, Al Ahsa, KSA.

²Department of Surgery, Faculty of Medicine, Suez Canal University. Egypt.

³Clinical Phase, college of Medicine, King Faisal University, Al Ahsa, KSA.

⁴Clinical phase, college of medicine, Northern Border University, Arar, KSA.

⁵Department of ophthalmology, college of Medicine, King Faisal University, Al Ahsa, KSA.

Abstract— Despitethegreatvestofpublishedresearchaboutcovid19viralinfection,manyissuesarestillnotfully explored. Ophthalmic effect of COVID-19 still pose a challenge and controversy to health care providers. The current study aimed to investigate the Gulf Cooperation Council (GCC) nations perception of COVID-19 ophthalmological manifestations, during the pandemic era. This is a cross sectional study. It was self-reported, electronically distributed to people from GCC with special emphasis on Saudi Arabia. Data were collected from 3500 participants. Among them; (14.1%) have chronicgeneral,and(33.5%)haveophthalmologicdiseases. Themajorityofthestudyparticipantswere knowledgeable about the different clinical manifestations of covid19 on different body systems. However, only (11.3%) of them were aware that eye symptoms could be the first clinical manifestation of covid19 infection. In addition, half of the participants are unaware that covid19 could be transmitted through eyes. In conclusion, the GCC inhabitation have a lesser perception and knowledge about covid19 ophthalmological affection and it is way of transmission. This may necessitate an effort of implementing extra comprehensiveguidelines.

Keywords— COVID-19, ophthalmologic disease, awareness, conjunctivitis

1. Introduction

Modification of the Sever acute respiratory syndrome coronavirus (SARS-CoV) has led to the appearance of corona virus disease 2019 (COVID-19). Initially the disease has started in China in the form of an unknown pneumonia outbreak. Consequently, the disease has started to distribute globally. [1] As of 26 September 2020, there are a total of 32,429,965 confirmed cases with 985,823 confirmed deaths worldwide.[2] Humanto human transmission of SARS-CoV-2 occurs during close contact via respiratory droplets produced by an infected person while coughing, sneezing, and talking as the initially method of transmission. Viral contraction occurs when viral particles from respiratory droplets contact the mucus membranes of the host through nose, mouth and eyes.[3]This viral infection was thought to affect only the respiratory tract; However, the disease has shown a wide scope of clinical presentations. These include; fever as the most common symptom, cough, rhinorrhea, pharyngalgia and other manifestations suchasgastrointestinaltractmanifestationsincludingvomiting,diarrheaandabdominalpain. Yet,many haveshownthediseasetoinitiallypresentwithintheeyesasthesoleclinicalmanifestations. Thesemay include red, itchy, tearing, foreign body sensation and dry eye. [4-5]As ophthalmological manifestations could be the only clinical feature of COVID-19, ophthalmologist may be the first physician to evaluate patientswiththisviralinfection. Thisnotionwas raisedbyaChinesephthalmologistwhoreportedthe first concern

of COVID-19 outbreak.[6] The current study was designed to evaluate the population knowledge and perception toward ophthalmological effect of COVID-19 infection.

2. Methodology

This cross-sectional anonymous questionnaire-based survey was carried out in Saudi Arabia, Bahrain, Kuwait, Oman, United Arab Emirates and Qatar (GCC countries). Authors developed an online semi structured questionnaire based on literature review and subject expert's opinion. It was piloted for validity testing. An ethical approval was obtained from our institutional review board (IRB) after reviewing the research ethically related issues. The Electronic Questionnaire was distributed in Arabic language through google sheet and other internet appliances.

The questionnaire included thirty-five questions. The first section has eight items related to the sociodemographic data such as gender, age, marital status, residence, province in Saudi Arabia, socioeconomic status, home personal, education. The rest of the questions contained the extra six sections related to management of chronic eye diseases during the pandemic, the practice of eye care, makeup application and beauty products selection. They targeted the female participants. The rest of sections were related to the management of systemic chronic disease that could affect the eyes. They also gauged the perception of COVID-19 manifestations on the eye and whole body. Attitude and practice of self-protection methods during the era of covid19 was also included within the questioner. The data analyses for this project were performed using Statistical Packages for Software Sciences (SPSS) version 26 Armonk, New York, IBM Corporation. Descriptive statistics were presented using numbers and percentage.

3. Results

Data were collected from 3500 participants. As seen in (table1) Fifty eight percent of the respondents were in the age group of 18-30 years old. However, minute number of them (0.8%) were elderly. Among the participants (14.1%) had chronic general diseases, and (33.5%) suffered ophthalmological disorders. Consequently, seventy percent were compliant to their medications as before the lockdown. Moreover, thirty-nine percent had expressed their hesitancy to visit the healthcare centers during that time. This was attributed to their fear of having the COVID-19 infection (Table2). In addition, (52.5%) of diabetic patients had never check their blood glucose level and (69.7%) had never visited their ophthalmologist during the era of lockdown (Graph1,2). Similarly, (55.5%) of chronic hypertensive patients had never reported their blood pressure reading during that time (Graph 3). Most of the participants are aware of the common symptoms of COVID-19 infection. However, (65.3%) and (92.1%) of them excluded diarrhea and skin rash respectively from COVID-19 symptoms. We farther observed that only (10.3%) of the participants are aware that eye symptoms could be the first clinical manifestation of covid19. Additionally, (97.1%) of the participants are unaware that COVID-19 could lead to blindness. When asked about the transmission of COVID-19, most of the participants (86.9%) are aware that it could be transmuted through mouth, (56.4%) mentioned of nose and only (50.0%) mentioned of eyes (Table 3). More than half (53.9%) of the participants would call health care professionals if they suffered ophthalmological manifestations during the pandemic. When asked about self-protection methods, (60.6%) of the participants wear medical mask when going outside and (21.2%) wear Niqab alone. When asked about the most important procedure that could protect eyes and reduce the chance of transmission, most of the participants are aware of the most important procedures (Table 4). Among the participants, (41.3%) used to wear medical eye glass and (n=660) of them wore contact lenses. Majority of the female participants (80.9%) used beauty and cosmetic products. More than half (53.9%) of them wash hands regularly before applying the makeup. Moreover, (65.5%) used the eye cosmetics

themselves without going to salons. In contrast, (50.2%) of them sometimes share these products with others and (69.6%) don't clean their makeup applicators regularly (Table 5).

4. Discussion

Despite the great vast of published research about COVID-19 viral infection, many issues are still not fully explored. Ophthalmic effect of COVID-19 still pose a challenge and controversy to health care providers. The current study aimed to investigate the gulf countries national perception of covid19 ophthalmological manifestations.

Although the questionnaire was randomly distributed, more than half of this study participants (75%) were young adults of less than 30 years of age. This could be explained by the notion that this age group are the regular costumes of the internet and social media worldwide. On the other hand, very limited percentage (0.8%) of the study respondents were above 60 years of age, which could be attributed to their limited access to social media. [7] These data support the necessity for familiarizing the general population with the internet as an educational tool. Yet, due to some logistic obstacles in some areas, the radio and television podcast may replace the internet.

A clear holistic view about the different clinical manifestations of COVID-19 on different body systems were well perceived by our study sample simulating another local report. [8] However, the knowledge of skin rashes and diarrhea in relation to COVID-19 infection were not well perceived by our study respondents. These data coincide with those of another local study. [9]

Conjunctivitis, red eye and excessive lacrimation could be the first clinical manifestation of COVID-19 infection. [5/10/11] This information was also not well-perceived among the participants as the perception rate was (10.3%). Nevertheless, such symptoms might mimic the clinical manifestations of other form of eye diseases. [12] In addition, they were lagging the information about the ophthalmological complications of COVID-19 that may end up with complete visual loss. [13]

In general, the study participants were fully aware that the viral infection could be transmitted via the oral or nasal cavity. Although lesser percentage were convinced that the eye could be a source of viral entry to the body. In agreement with this study, other local study showed similar knowledge and perception about COVID-19 way of transmission. [9] These data express the need for a comprehensive public awareness campaign. About fourteen percent of the participants have chronic general diseases, and (33.5%) have ophthalmologic diseases. While the current pandemic is placing a huge burden in health system worldwide and the precautionary measures including social distancing and lockdown could affect patients with chronic diseases who are unable to access health care facilities for routine visits and medication requirement, our study show a positive attitude toward their medication adherence during the curfew. [14] These data concur with another local study from the same institute. [15] However, the majority of chronic hypertensive patients had never reported their blood pressure reading during the era of lockdown. Additionally, diabetic patients did not show the enthusiasm to neither regularly check their blood glucose level nor visit their ophthalmologists at that time due to their fear of contracting the COVID-19 infection. This finding coincided with another report that denoted the avoidance of patients with medical emergencies to visit hospitals for fear of contracting COVID-19 infection which might have negatively affected their chronic diseases. [16]

More than half (53.9%) of the participants would call health care professionals if they suffered

ophthalmological manifestations during the pandemic. This is the recommended action to do as reported by American Academy of Ophthalmology (AAO). [17] In the other hand, (20.1%) of them would treat it at home without ophthalmological consultation which may put the patient and his surroundings at a risk, as it could be the earliest signs of COVID-19 infection as previously reported. [5]

(61%) of the participants showed a high Commitment to the personal protective equipment (PPE) during the pandemic. This coincides with the World health organization (WHO) and Center for disease control (CDC) recommendations of PPE application. [18/19] This was supported by the Saudi Arabian Ministry of Interior (MOI) guidelines which obligate the usage of a face mask in public places. [20] Niqab is a cultural habit that is practiced by most Saudi ladies; however, it is not recommended to be wear alone as its effectiveness is unknown at this time. [21] Our study reported low percentage of responders (21.2 %) wearing Niqab without a mask. A respectable percentage of the current study sample had sufficient information and positively perceived the previously mentioned WHO, CDC guidelines. Yet, they were lacking extra information and knowledge of how to protect their eyes during the pandemic. Hence, many recent guidelines for eye care during COVID-19 pandemic have been issued aiming at the limitation of ophthalmological spread and assisting a comprehensive safe care during the ophthalmological services. [22/23]

Among the participants, (41.3%) used to wear medical eye glass. They are considered protective tools against COVID-19 infection as previously reported. [24] However, six hundred and sixty of them wore contact lenses. AAO recommend contact lens wearers to switch to eyeglass during the pandemic as those attempts to touch their eyes more often. [17]

Majority of the female participants (80.9%) used beauty and cosmetic products. Most of them were trusting the sources and contents of their products. They also, expressed a positive attitude when practicing the makeup application. More than half of them wash hands regularly before applying makeup. AAO recommended washing hands with soap and water for at least 20 seconds before and after touching the eyes. [17] Moreover, our participants used the eye cosmetics themselves without going to salons. This may decrease the risk of COVID-19 transmission. This could be explained by the fact that salons have been closed since the lockdown. Cessation of work or online working and home isolation can also contribute to the significant reduction in salons visit. In contrast, fifty percent of them sometimes share these products with others and (69.6%) don't clean their makeup applicators regularly. This is not recommended as the viral particles can survive in surfaces days which could increase the chance of viral transmission. [25/26]

5. Conclusion

The GCC inhabitants have a good general level of awareness toward COVID-19 viral infection. However, there is lesser perception and knowledge regarding COVID-19 ophthalmological affection and its way of transmission. This may necessitate an effort of implementing extra comprehensive guidelines to improve the awareness as it is the major way to prevent further transmission. The current study limitation including low sample size from other GCC countries as the majority of the respondents were in Saudi Arabia. Therefore, it is recommended to start future similar studies with higher sample size to assure more reliability.

5. Acknowledgments

The authors acknowledge the technical supports and logistic aids offered by Mustafa Samir Smaïsem, Ahmad Yousef Alqarni, Raghad Abdulhai Ghazzawi, Mazen Abdullah Mohammed, Mohammed Ibrahim Alayed, Bahshayer Mohammed Alansari, Abdullah Khalid Alghutayghit.

4. References

- [1] Lu, R., Zhao, X., Li, J., Niu, P., Yang, B., Wu, H., ... & Bi, Y. (2020). Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. *The Lancet*, 395(10224), 565-574.
- [2] Covid19.who.int. 2020. *WHO Coronavirus Disease (COVID-19) Dashboard*. [online] Available at: <https://covid19.who.int>
- [3] Apps.who.int.2020.[online] Available at: https://apps.who.int/iris/bitstream/handle/10665/331601/WHO-2019-nCoV-Sci_Brief-Transmission_modes-2020.1-eng.pdf?sequence=1&isAllowed=y
- [4] Wu, P., Duan, F., Luo, C., Liu, Q., Qu, X., Liang, L., & Wu, K. (2020). Characteristics of ocular findings of patients with coronavirus disease 2019 (COVID-19) in Hubei Province, China. *JAMA ophthalmology*, 138(5), 575-578.
- [5] Scalinci, S.Z., & Battagliola, E.T. (2020). Conjunctivitis can be the only presenting sign and symptom of COVID-19. *IDCases*, e00774.
- [6] South China Morning Post. 2020. *After Chaos, Dr Li Wenliang, Coronavirus Whistle-Blower, Confirmed Dead*. At 34. [online] Available at: <https://www.scmp.com/news/china/society/article/3049411/coronavirus-li-wenliang-doctor-who-alerted-authorities-outbreak>
- [7] Statista. 2020. *Internet Users By Age Worldwide* | Statista. [online] Available at: <https://www.statista.com/statistics/272365/age-distribution-of-internet-users-worldwide/>
- [8] Al-Hanawi, M. K., Angawi, K., Alshareef, N., Qattan, A. M., Helmy, H. Z., Abudawood, Y., ... & 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.
- [9] Alahdal, H., Basingab, F., & Alotaibi, R. (2020). An analytical study on the awareness, attitude and practice during the COVID-19 pandemic in Riyadh, Saudi Arabia. *Journal of infection and public health*.
- [10] Daruich, A., Martin, D., & Bremond-Gignac, D. (2020). Ocular manifestation as first sign of Coronavirus Disease 2019 (COVID-19): interest of telemedicine during the pandemic context. *Journal Français d'Ophtalmologie*.
- [11] Li, J.P.O., Lam, D.S.C., Chen, Y., & Ting, D.S.W. (2020). Novel Coronavirus disease 2019 (COVID-19): The importance of recognising possible early ocular manifestation and using protective eyewear.

[12] Bastian, A. M., Hermanns, S. R. (2020). Ocular manifestations of COVID-19 disease. *Med Crave*, 10(3):51–52

[13] Selvaraj, V., Sacchetti, D., Finn, A., & Dapaah-Afryie, K. (2020). ACUTE VISION LOSS IN A PATIENT WITH COVID-19. *medRxiv*.

[14] Legido-Quigley, H., Asgari, N., Teo, Y. Y., Leung, G. M., Oshitani, H., Fukuda, K., ... & Heymann, D. (2020). Are high-performing health systems resilient against the COVID-19 epidemic?. *The Lancet*, 395(10227), 848-850.

[15] Zakaria, O. M., Albshr, F. A., Aljarrash, K. M., Alkhalaf, G. I., Alsheef, N. J., & Daoud, M. Y. I. Does COVID-19 Pandemic Affect Medication Compliance Among Chronic Patients?.

[16] Catalyst.nejm.org. 2020. *Where Are All The Patients? Addressing Covid-19 Fear To Encourage Sick Patients To Seek Emergency Care | Catalyst Non-Issue Content*. [online] Available at: <https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0193>

[17] Eye Care During the Coronavirus Pandemic (COVID-19) [Internet]. American Academy of Ophthalmology. 2020. Available from: <https://www.aao.org/eye-health/tips-prevention/coronavirus-covid19-eye-infection-pinkeye>

[18] Q&A on coronaviruses (COVID-19) [Internet]. Who.int. 2020. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-%20detail/q-a-coronaviruses>

[19] Coronavirus Disease 2019 (COVID-19) [Internet]. Centers for Disease Control and Prevention. 2020. Available from: <https://www.cdc.gov/coronavirus/2019-nCoV/index.html>

[20] Saudi Arabia Introduces New Social Distancing Rules [Internet]. Harper's BAZAAR Arabia. 2020. Available from: <https://www.harperbazaararabia.com/culture/saudi-introduces-fine-for-not-wearing-a-face-mask-in-the-public-covid-19-coronavirus-rules>

[21] Centers for Disease Control and Prevention. 2020. *Coronavirus Disease 2019 (COVID-19)*. [online] Available at: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/about-face-coverings.html>

[22] College of Optometrists - The professional body for optometrists - London, U., 2020. *The College Of Optometrists Primary Eye Care COVID-19 Pandemic Guidance*. [online] College-optometrists.org. Available at: <https://www.college-optometrists.org/guidance/covid-19-coronavirus-guidance-information/covid-19-college-guidance/primary-eye-care-covid-19-pandemic-guidance.html>

[23] Romano, M. R., Montericcio, A., Montalbano, C., Raimondi, R., Allegrini, D., Ricciardelli, G., ... & Romano, V. (2020). Facing COVID-19 in Ophthalmology department. *Current Eye Research*, 45(6), 653-658.

[24] Zeng, W., Wang, X., Li, J., Yang, Y., Qiu, X., Song, P., ... & Wei, Y. (2020). Association of Daily

Wear of Eyeglasses With Susceptibility to Coronavirus Disease 2019 Infection. *JAMA ophthalmology*.

[25] WebMD.2020.*Can COVID-19 Survive On Surfaces?*. [online] Available at:
<https://www.webmd.com/lung/how-long-covid-19-lives-on-surfaces>

[26] MSN.2020.*HowToKeepMakeupAndToolsCleanAmidTheCOVID-19Pandemic*. [online] Available at:
<https://www.msn.com/en-gb/lifestyle/beauty/how-to-keep-makeup-and-tools-clean-amid-the-covid-19-pandemic/ar-BB12kkQi>

Table Legend

Table1: Socio-demographical profile of the participants (n=3500)

Table 2: Management of chronic and eye diseases during covid19 pandemic (n=3500)

Table3: Awareness of covid19 manifestations on the eye and whole body (n=3500)

Table 4: Attitude and practice of self-protection methods during the era of covid19 (n=3500)

Table 5: Practice of eye care, makeup application and beauty products selection (n=3500)

Figures Legend

Figure 1: diabetic patients reporting blood glucose reading during the pandemic.

Figure 2: diabetic patients contacting ophthalmologist during the pandemic.

Figure 3: hypertensive patients reporting blood pressure reading during the pandemic.

Table1: Socio-demographical profile of the participants (n=3500)

	Count	Table N %
Gender		
Male	1719	49.1%
Female	1781	50.9%
Age		
less than 18	588	16.8%
18-30	2037	58.2%
30-40	438	12.5%
40-50	278	7.9%
50-60	132	3.8%
more than 60	27	0.8%
Marital status		
Single	2378	67.9%
Married	1054	30.1%
Divorced	55	1.6%
Widow	13	0.4%
Residence		
Saudi Arabia	3276	93.6%

Bahrain	84	2.4%
Kuwait	63	1.8%
Oman	48	1.4%
Emarat	21	0.6%
Qatar	8	0.2%
<hr/>		
Saudi Arabia, east province		
City	798	66.1%
Village	409	33.9%
Saudi Arabia, west province		
City	504	94.0%
Village	32	6.0%
Saudi Arabia, middle province		
City	919	93.1%
Village	68	6.9%
Saudi Arabia, north province		
City	175	88.8%
Village	22	11.2%
Saudi Arabia, south province		
City	224	64.2%
Village	125	35.8%

Table1: Socio-demographical profile of the participants (cont'd.)

	Count	Table N %
<hr/>		
Socioeconomic status		
More than average	709	20.3%
Average	2482	70.9%
Less than average	309	8.8%
<hr/>		
Home personal		
1-5	1208	34.5%
6-10	2022	57.8%
11-15	211	6.0%
16 and more	59	1.7%
<hr/>		
Education		
University/Higher studies	2139	61.1%
High school/ Technician/ high institute	1189	34.0%
middle school	151	4.3%
Elementary school	16	0.5%
Uneducated	5	0.1%

Table 2: Management of chronic and eye diseases during covid19 pandemic (n=3500)

	Count	Table N %
Do you have chronic diseases?		
Yes	493	14.1%
No	3007	85.9%
Do you take any medications?		
Yes	381	10.9%
No	3119	89.1%
How compliance are you to medications during quarantine? †		
AS previous	265	69.6%
Less compliant	39	10.3%
More compliant	77	20.1%
Do you have sight problems or eye diseases?		
Yes	1171	33.5%
No	2329	66.5%
If the answer is yes, do you think quarantine could prevent you from visiting your doctor? †		
Yes	652	55.7%
No	519	44.3%
If the answer is yes, how is the effect? †		
Afraid to go to hospital	255	39.1%
Cannot go to hospital	78	11.9%
I prefer not to go	319	49.0%

† Only participants who answered “Yes” from the previous question were included in the analysis.

Table 3: Awareness of covid19 manifestations on the eye and whole body (n=3500)

	Count	Table N %
Do you think you are dealing with people who are positive for covid19?		
Yes	189	5.4%
No	2478	70.8%
I am positive	33	0.9%
I don't know	800	22.9%

Covid19 has a lot of symptoms including?		
Fever	3063	87.5%
Dry cough	2842	81.2%
Malaise	2079	59.4%
Tiredness	1768	50.5%
Sore throat	2097	59.9%
Diarrhea	1215	34.7%
Headache	2342	66.9%
Loss of taste or smell	2464	70.4%
Skin rash	277	7.9%
Shortness of breath or difficulty breathing	3105	88.7%
Do you think eye symptoms could be the only and the first clinical manifestation for covid19?		
Yes	359	10.3%
No	3141	89.7%
If your answer is yes, what are the clinical manifestations of covid19 on eyes? †		
Redeye	247	68.8%
Swelling of the eyelid	71	19.8%
Dryeye	109	30.4%
Itchy eye	147	40.9%
Blurred vision	97	27.0%
Eye pain Tearing	117	32.5%
eye Eye	109	30.4%
discharge	87	24.2%
Foreign body sensation	91	25.3%
Loss of vision	41	11.4%
Do you think people who are covid19 positive could get blinded?		
Yes	102	2.9%
No	1711	48.9%
I don't know	1687	48.2%
Covid19 could be transmitted through?		
Mouth	3042	86.9%
Nose	1975	56.4%
Eyes	1753	50.0%

† Only participants who answered “Yes” from the previous question were included in the analysis.

Table 4: Attitude and practice of self-protection methods during the era of covid19(n=3500)

	Count	Table N%
What would you do if you noticed the above manifestations on your eyes?		
Treat it at home with eye drops	705	20.1%
Call for an ambulance	342	9.8%
Home isolation	477	13.6%
Call health care professionals, it could be something else	1887	53.9%
I have covid19, I will go to hospital immediately	89	2.5%
What kind of mask do you wear when going outside?		
Medical face mask	2120	60.6%
Niqab alone	741	21.2%
Fabric face mask	639	18.3%
What do you think are the most important procedure that could protect eyes and reduce the chance of transmission?		
Wearing eye glass or sun glass	917	26.2%
Avoid touching mouth, nose, eyes	3031	86.6%
Applying artificial tears if you have dry eye	1579	45.1%
Avoid wearing contact lenses for long time	2720	77.7%
Avoid watching screens for long time	1054	30.1%
What do you think are the most important procedure health care professionals should follow to protect eyes and reduce the chance of transmission?		
Keeping 2m Distance or more	3000	85.7%
Consultation after finishing medical procedure	1204	34.4%
Disinfect surfaces and equipment before and after use	2447	69.9%
Wearing face shield	2426	69.3%
Wearing full protective gear	2142	61.2%
Good ventilation of the institution	2030	58.0%
Making patients wait in their cars until the appointment	1404	40.1%

Table 5: Practice of eye care, makeup application and beauty products selection (n=3500)

	Count	Table N%
Do you wear eye glass or contact lenses?		
Yes	1445	41.3%
No	2055	58.7%
If you wear contact lenses, what is their type?		
Medical contact lenses	449	68.0%
Cosmetic contact lenses	211	32.0%
If you wear contact lenses, how often do you wear them?		
Always	85	12.8%
sometimes	232	35.2%

When needed	343	52.0%
<hr/>		
Do you use any eye beauty products including (mascara, eye lashes, eyeliner...extra) *		
Yes	1441	80.9%
No	340	19.1%
<hr/>		
Do you trust the contents and the sources of your products? *		
Yes	757	52.5%
No	684	47.5%
<hr/>		
How committed are you to each of the following, when applying beauty products? (Washing hands before applying) *		
Always	778	53.9%
Sometimes	559	38.8%
Never	104	7.2%
<hr/>		
How committed are you to each of the following, when applying beauty products? (sharing these products with others) *		
Always	461	32.0%
Sometimes	723	50.2%
Never	257	17.8%
<hr/>		
How committed are you to each of the following, when applying beauty products? (Applying the products, yourself without going to salons) *		
Always	944	65.5%
Sometimes	460	31.9%
Never	37	2.6%
<hr/>		
How committed are you to each of the following, when applying beauty products? (Washing or disinfect brushes before using them) *		
Always	438	30.4%
Sometimes	804	55.8%
Never	199	13.8%

*Intended to female participants

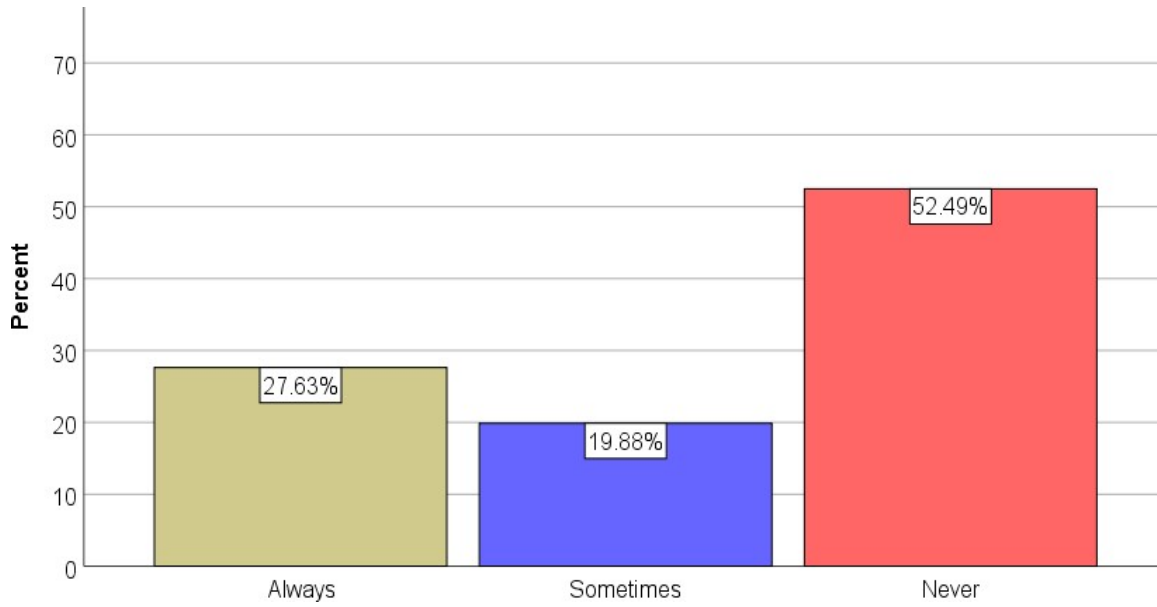
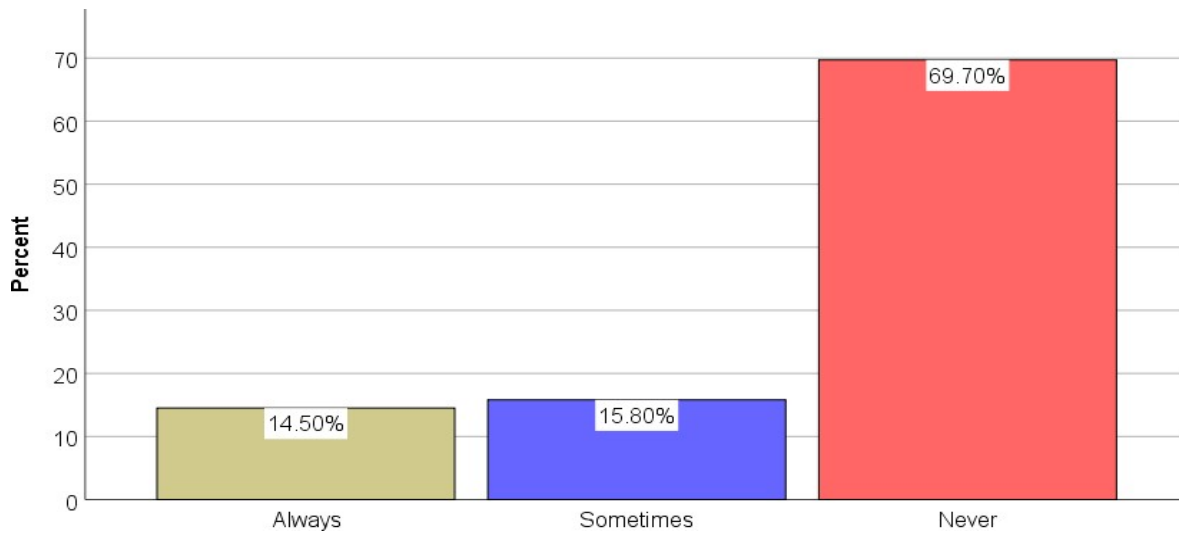


Figure 2, diabetic patients reporting blood glucose reading during the pandemic



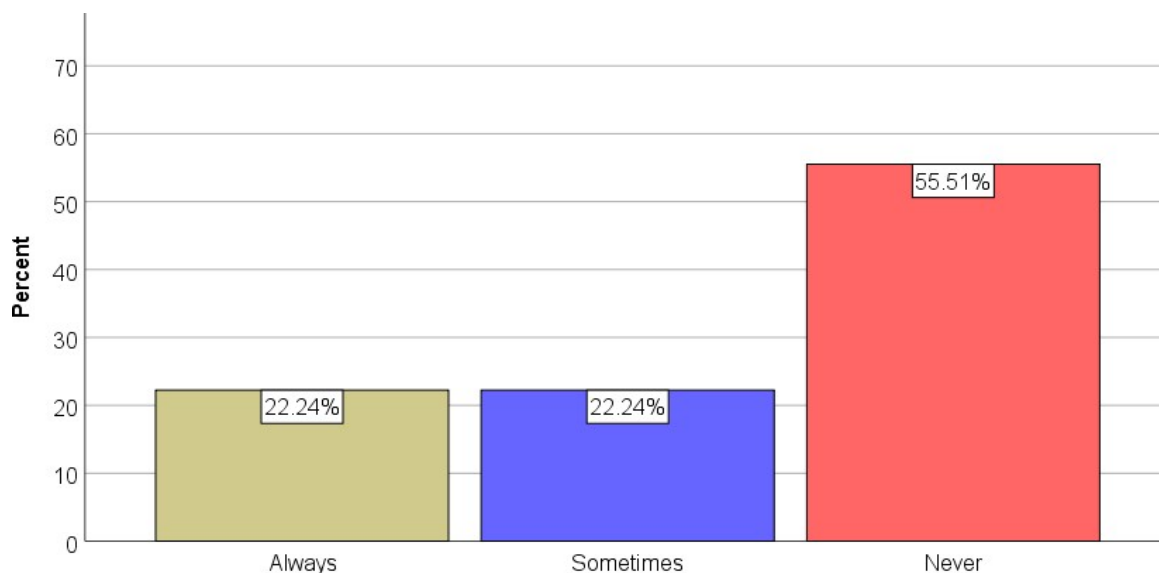


Figure 3, hypertensive patients reporting blood pressure reading during the pandemic



This work is licensed under a Creative Commons Attribution Non-Commercial 4.0 International License.