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Risk Factors and Individual Protection Measures for COVID-19 in Federal Police Officers

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Abstract: The coronavirus of severe acute respiratory syndrome 2 (SARS-CoV-2), known as COVID-19, has spread rapidly around the world, leading to social detachment and the home office replacing face-to-face work. The performance of police officers faces limitations to the new requirements while recognizing the need to ensure health and quality of life. Thus, the present study aimed to verify the panorama of the spread of COVID-19 among federal police officers by analyzing the presence of symptoms, individual protection measures (IPM), and suspect screening measures (SSM). For this, data were collected through a questionnaire customized for this situation and measurements of clinical data from 56 federal police officers in the municipality of Marília (São Paulo, Brazil) were performed. The mean value of the body mass index (27.2 $\pm$ 5.4 kg/m^2) suggests overweight and obesity, in addition to the presence of hypertension at 16.1%, diabetes at 3.6%, asthma at 3.6%, and obesity at 25%, which represents an important risk of complications for COVID-19. The use of a mask is the most frequent IPM (96.4%) and most of the sample has used a cloth or home mask (90.9%). However, 47.3% have not performed the correct cleaning of the masks and 5.5% have not taken any care with mask hygiene. In conclusion, although the IPM was adopted by most of the research participants, some did not adopt important measures such as wearing a mask, which can increase the risk of contamination and contagion due to the work environment and routine. The highest risk factors observed were obesity and hypertension, but even in these conditions, the absence of important IPMs was still verified.

Keywords: COVID-19; public health; coronavirus; police officer; obesity; hypertension; SARS-CoV-2

Citation: Dias, J.A.; Chagas, E.F.B.; Detregiachi, C.R.P.; Serva, F.M.; Biteli, P.; Mendes, C.G.; Xavier, E.F.d.S.; Jorge, C.F.B.; Zutin, T.L.M.; Santos, M.C.d.; et al. Risk Factors and Individual Protection Measures for COVID-19 in Federal Police Officers. *Hygiene* **2022**, *2*, 187–199. https://doi.org/10.3390/hygiene2040017

Academic Editor: Daniela Haluza

Received: 30 August 2022
Accepted: 25 October 2022
Published: 31 October 2022

1. Introduction

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), known as COVID-19, had its first case reported in November 2019 [1] and has among its main characteristics that of causing an acute infection that can result, in particular, in extremely severe respiratory infections, accompanied by secretions [2].

Its rapid spread around the world resulted in the pandemic state being declared by the World Health Organization on 11 March 2020 [3], following up this declaration, Brazil enacted Law no. 13,979/2020 [4], which allowed the legal introduction of quarantine, isolation and social distance institutes in this country. In addition, Federal Decree no. 10,282/2020 [5], by regulating the referred law, established the activities considered essential, among which included "public and private security activities, including surveillance, custody and custody of prisoners" (art 3, § 1, subsection III).

One of the consequences of the referred law and of the decrees that regulated it was the imposition of telework, home office, or online work, at all levels and in all spheres of government as well as in the private sector in substitution of face-to-face work. This imposition of teleworking affected the activities performed by some agencies, among which the state's police activities can be included. Even with teleworking, there are still damages that can include isolation, risk of irritability, and musculoskeletal problems due to lack of proper equipment [6].

Thus, on the one hand, there is the importance of activities developed within the scope of public security and, on the other, the need to guarantee the health and safety of police officers is imperative. The working conditions and environment can positively or negatively affect well-being and health, affecting the quality and productivity of work, mainly due to stressors in the place and type of work [7–9].

In order to ensure that essential services are not paralyzed, measures were taken to test the professionals involved in such services. This practice, however, was limited to professionals who had direct contact with carriers or potential carriers of the new coronavirus [10]. Such conduct, however, ends up eliminating from the eligible to be tested all the possibly contaminated police officers who are asymptomatic, imposing a limitation on their activity that would be unnecessary if it were demonstrated that they already had the production of antibodies.

This is a problem because, initial data from the Ministry of Justice and Public Security of Brazil, as well as from the State Public Security Secretariats, indicate an increase in crime during the pandemic [11]. In many cases, post-Covid has generated sequels that interfere in people's lives such as breathing difficulties, forgetfulness, loss of taste and smell, physical fatigue, and other disorders. In view of this, the correct measures in relation to individual protection, social distancing, vaccination and other important attitudes to avoid infection by the virus become essential in the prevention of health problems that interfere with everyone's personal and professional lives [12].

The administrative region of Marília is one of the sixteen administrative regions of the Brazilian state of São Paulo. It is formed by the union of 51 municipalities distributed in four regions of the government, Marília being one of those regions [13,14]. The municipality of Marília has a total area of 1,170,515 km^2 and in 2019 it had a population of 238,882 inhabitants [15]. It has an extensive industrial park in the area of food that led it to be known as the National Food Capital. This fact arouses interest to assess the conduct of public agents related to the risk of contagion and population spread of SARS-CoV-2 [16].

The Federal Police Station of Marília covers 67 municipalities, serving an estimated population of 1,188,267 inhabitants. Instituted by law as a permanent body, organized and maintained by the union, and structured in a career, it has competencies in the fight against crime, highlighting investigating various criminal offenses, preventing and suppressing illicit trafficking in narcotics and related drugs, preventing and suppressing contraband and the misuse, to exercise the functions of maritime police, airport, borders and the judicial police functions of the union. Therefore, due to the coverage area, it presents expressive interpersonal contact and performance in the field [17].

In addition, the Federal Police Station in Marília has other duties related to immigration, private security, issuing passports, controlling chemicals, arms control, and issuing a criminal record certificate. These assignments generate a high turnover in their service stations, increasing the risk of contagion and the spread of diseases [18]. On 30 August 2022, the official organs of Brazil pointed to 34.4 million confirmed cases of COVID-19 in Brazil, with 684 thousand confirmed deaths. In the state of São Paulo, there were 6.02 million confirmed cases and 174 thousand deaths. The municipality of Marília (SP), on the same date, had 60,234 cases and 1120 confirmed deaths [19]. This fact, associated with the risks of professional police activity due to the risks of contagion within the Brazilian state with the largest number of confirmed cases and deaths in Brazil, generates interest in establishing its correlations [8,20,21].

From the above, thinking about the quality of life, the present research aimed to analyze the presence of symptoms, individual protection measures (IPM), and suspect screening measures (SSM) in federal police officers, as well as the analysis of quantitative data of body mass index (BMI), blood pressure (BP), O_2 saturation, temperature, and heart rate (HR).

2. Materials and Methods

2.1. Study Design and Ethical Approval

The present is a cross-sectional, quantitative, and analytical study in which 56 federal police officers participated, who work at the Federal Police Station in the municipality of Marília (São Paulo, Brazil). The present study was approved by the Research Ethics Committee of the University of Marília (CEP-UNIMAR) under opinion no. 4,126,024. An invitation was sent to the participants with an explanation of the objectives of the study, as well as the procedures to be performed. All research participants signed the Free and Informed Consent Term, written in the form of an invitation, specifying that participation was voluntary, which meant that they could withdraw at any time, withdrawing their consent, without causing any harm or penalty.

2.2. Study Participants and Research Development

The procedures used in the present research followed the Ethics Criteria in Research with Humans as per resolution No. 466/12 of the National Health Council (Brazil). The study did not include people who did not accept to answer the research questions in the proposed questionnaire. Data collection was authorized by the Chief Delegate of the Federal Police.

As inclusion criteria, the federal police and other employees who work at the Federal Police Station in Marília participated in the present study, as long as they expressed their acceptance to participate in the study by signing the informed consent form. Exclusion criteria were those who were absent from work on the day of data collection because they were on vacation, outside work, or on sick leave due to health problems.

From this invitation, those who agreed to take part in the survey were instructed to access the Google Forms link to complete the Informed Consent Form (ICF) and complete a questionnaire. This questionnaire consisted of questions about gender and age, in addition to weight and height, from which the body mass index (BMI) was calculated to check for the existence of overweight or obesity, factors that constitute risk factors for COVID-19 [22]. BMI was calculated according to the Quetelet formula, in which the individual's weight (Kg) is divided by his height (m) squared [23]. These data were evaluated based on the cutoff points recommended by the World Health Organization (WHO) [24].

This stage lasted for five days, enough time for the participants to have the opportunity to access the online form and complete the instruments. Next, a date was scheduled, according to the availability of the participants, in which measurements of body temperature, blood pressure, and O_2 saturation were performed. To measure body temperature, a digital thermometer with an infrared sensor (Aicare® Corp, San Jose, CA, USA) was used. This was positioned five centimeters from the participant's forehead, keeping the start

button pressed. When the tracking light was activated and the temperature measured, a sound signal was emitted and heard by those responsible for the measurement. Then, the start button was released, and the temperature expressed in the display of the device was registered [25].

Blood pressure was assessed according to the recommendations of the 7th Brazilian Guideline for Hypertension [26]. An oscillometric technique was used by means of a digital semiautomatic device with a validated and calibrated arm [27] (Omron Brazil®, São Paulo, Brazil). The measurement was performed with the participant at rest for at least five minutes, with an empty bladder, without having practiced physical exercises for at least 60 min, and without drinking alcohol, coffee, food, or tobacco in the previous 30 min. The participant was also instructed not to talk and move their arm during the measurement.

Participants were seated, legs uncrossed, feet flat on the floor, back against the chair, and relaxed. The device was placed on the left arm extended and supported at heart level, free of clothes, supported, with the palm of the hand facing up and the elbow slightly flexed. Blood pressure values were recorded in mmHg, as indicated on the device, without rounding. Two measurements were made with an interval of one minute between them, the average of which was considered the real blood pressure.

O_2 saturation, also called oximetry, is a test used to measure the level of oxygen in the blood. This was measured using a pulse oximeter. (JG Moriya®, São Paulo, Brazil). This tool consisted of a clip-like device that was placed on the participant's index finger, sending two wavelengths of light through the finger to measure his pulse rate and how much oxygen is in his vascular system. Once the oximeter finishes its evaluation, the percentage of oxygen in the blood coming from the heart was displayed on the screen, as well as the current pulse rate, values that were recorded [28].

All researchers in the present study involved in the face-to-face data collection made use of PPEs according to the recommendations of the World Health Organization [29].

As risks of the present research, it can be described that during the collection there is a risk of contamination by COVID-19, which was minimized by the use of personal protective equipment (PPE), according to the recommendations of the Ministry of Health [30] and appropriate techniques for carrying out collection of biological material [31]. Participation in the data collection of the present study generated minimal risk for the participant. Completing the questionnaire does not include risk or embarrassment, since it was answered online without the presence of the researcher.

As a benefit, it is understood that the data collected for the research may contribute to the maintenance of epidemiological surveillance actions and awareness about preventive measures of contamination by COVID-19. The benefits are quite important since they make it possible to verify the correctness of the public policy currently adopted in relation to the testing of police officers, allowing the realization of studies relating police activity to COVID-19.

2.3. Primary and Secondary Output

The primary outcome is characterized by clinical parameters of body temperature, blood pressure, and oxygen saturation (SpO_2) [32,33]. The secondary outcome is characterized by obtaining information about gender, age, body mass, height, presence of diseases related to risk groups, work regimen, preventive measures, previous testing for COVID-19, and presence of symptoms. This information was obtained through an electronic questionnaire through Google Forms.

2.4. Data Analysis

Quantitative variables are described by the mean, standard deviation (SD), minimum value (MinV), and maximum value (MaxV). To analyze the effect of gender and obesity on quantitative variables, a two-way ANOVA was performed based on the homogeneity of the variances and was followed by the Holm-Sidak post-hoc test for comparisons [34]. Qualitative variables are described by the distribution of absolute (n) and relative (%) frequency.

To analyze the differences in the frequency distribution between the response categories, the chi-square test for proportion was performed considering the null hypothesis of proportional distribution between the categories. The relationship between qualitative variables was analyzed using the chi-square association test. The level of significance adopted was 5% ($p \leq 0.05$) and the data were analyzed using the SPSS software (version 24.0) [35].

3. Results

The mean BMI value of the sample suggests that part of the sample is overweight and obese, which represents an important risk of complications for COVID-19 [36]. The mean O_2 saturation (SpO_2) was 96.8, which represents a normal but low saturation rate. When analyzing the maximum values of BMI, systolic blood pressure (SBP), diastolic blood pressure (DBP), and HR, it was observed that there are elements in the sample with values above normal that suggest hypertension, resting tachycardia and morbid obesity. On the other hand, the minimum values indicate that there are elements in the sample with O_2 saturation below normal and the HR values indicate the presence of bradycardia (Table 1).

Table 1. Sample characteristics in relation to the quantitative variables and correlation with total antibody values for COVID-19.

	n	Mean	SD	MinV	MaxV
Age (years)	56	42.2	9.7	21.0	59.0
Weight (kg)	55	81.7	18.2	49.0	158.0
Height (m)	55	1.73	0.09	1.55	1.90
BMI (kg/m^2)	55	27.2	5.4	18.0	47.2
SBP (mmHg)	56	134.3	20.8	110.0	200.0
DBP (mmHg)	56	86.6	12.3	70.0	140.0
T (°C)	56	36.1	0.5	35.0	37.1
HR (bpm)	56	79.7	14.8	45.0	124.0
SpO_2	56	96.8	1.6	91.0	99.0

Note: standard deviation (SD); sample size (n).

The sample had a higher proportion of men than women. Regarding risk factors for complications, the presence of hypertension was observed in 16.1%, diabetes in 3.6%, asthma in 3.6%, and obesity in 25%. The presence of immunosuppressive diseases, chronic kidney disease (CKD), and chronic obstructive pulmonary disease (COPD) was not observed in the sample. Most of the sample had no changes in the work regime and 32.7% showed a reduction in the workload (Table 2).

Table 2. Distribution of absolute (n) and relative (%) frequency of the sample's characteristics in relation to gender and risk factors for COVID-19 complications.

		n	%	*p* Value
Gender	Male	39	69.6	0.003 *
	Female	17	30.4	
Hypertension	Present	9	16.1	<0.001 *
	Absent	47	83.9	
Diabetes	Present	2	3.6	<0.001 *
	Absent	54	96.4	
Immunosuppression	Present	0	0.0	-
	Absent	56	100.0	
CKD	Present	0	0.0	-
	Absent	56	100.0	

Table 2. *Cont.*

		n	%	*p* Value
Asthma	Present	2	3.6	<0.001 *
	Absent	54	96.4	
COPD	Present	0	0.0	-
	Absent	56	100.0	
Obesity	Present	14	25.0	<0.001 *
	Absent	42	75.0	
Changes in the work regime	Reduced workload	18	32.7	0.001 *
	Working normally	37	67.3	

Note: * indicates a significant difference in the distribution of the response categories by the Chi-square test for proportion to p value ≤ 0.05.

In relation to individual protection measures (IPM), the largest proportion of the sample has adopted distance, use of a mask, hand washing, and use of alcohol gel. The use of the mask is the most frequent IPM and most of the sample has used a cloth or homemade facial mask. However, 47.3% have not performed the correct cleaning of the mask and 5.5% have not taken any care with mask hygiene. Another important factor regarding IPM is that practically half of the sample has not taken off their shoes and clothes when they return from the street (Table 3).

Table 3. Distribution of absolute (n) and relative (%) frequency of adopting individual preventive measures (IPM) and suspect screening measures (SSM) for COVID-19 in the sample.

			n	%	*p* Value
IPM	Keep the distance between people	Yes	48	85.7	<0.001 *
		No	8	14.3	
	Use of protective mask	Yes	54	96.4	<0.001 *
		No	2	3.6	
	Wash hands	Yes	47	83.9	<0.001 *
		No	9	16.1	
	Use of alcohol	Yes	54	96.4	<0.001 *
		No	2	3.6	
	Take off shoes and clothes outside the home	Yes	23	41.1	0.181
		No	33	58.9	
	Mask type	Disposable	5	9.1	<0.001 *
		Homemade/cloth	50	90.9	
	Mask cleaning	Correctly	26	47.3	<0.001 *
		Partially	26	47.3	
		Not performing	3	5.5	
	Temperature control	Present	4	7.1	<0.001 *
		Absent	52	92.9	
	O_2 saturation control	Present	0	0.0	-
		Absent	56	100.0	
	Blood pressure control	Present	0	0.0	-
		Absent	56	100.0	
	Symptom recording and survey	Present	11	19.6	<0.001 *
		Absent	45	80.4	

Note: * indicates a significant difference in the distribution of the response categories by the Chi-square test for proportion to p value ≤ 0.05.

In relation to the suspect screening measures (SSM) that should be adopted in the routine of workplaces, it was observed that most of the sample had not carried out any of these suspect-screening measures. Considering that the test has been performed only in

the case of symptoms, it would be necessary for the recording of symptoms and clinical parameters such as temperature, blood pressure and O_2 saturation to be monitored more frequently (Table 3).

The most frequent symptoms in the sample were sore throat and headache. Symptoms of fever, loss of speech or movement, and rashes were not observed. The other symptoms occurred, but at a low frequency, most frequently there were no symptoms at all in the sample (Table 4).

Table 4. Distribution of absolute (n) and relative (%) symptoms for COVID-19 in the sample.

		n	%	*p* Value
Fever	Present	0	0.0	-
	Absent	56	100.0	
Dry cough	Present	4	7.1	<0.001 *
	Absent	52	92.9	
Tiredness	Present	2	3.6	<0.001 *
	Absent	54	96.4	
Pain and discomfort	Present	2	3.6	<0.001 *
	Absent	54	96.4	
Sore throat	Present	7	12.5	<0.001 *
	Absent	49	87.5	
Diarrhea	Present	2	3.6	<0.001 *
	Absent	54	96.4	
Conjunctivitis	Present	1	1.8	<0.001 *
	Absent	55	98.2	
Headache	Present	13	23.2	<0.001 *
	Absent	43	76.8	
Loss of taste/smell	Present	1	1.8	<0.001 *
	Absent	55	98.2	
Chest pain or pressure	Present	1	1.8	<0.001 *
	Absent	55	98.2	
Difficulty breathing or shortness of breath	Present	1	1.8	<0.001 *
	Absent	55	98.2	
Loss of speech or movement	Present	0	0.0	-
	Absent	56	100.0	
Rash	Present	0	0.0	-
	Absent	56	100.0	

Note: * indicates a significant difference in the distribution of the response categories by the Chi-square test for proportion to p value ≤ 0.05.

When analyzing the effect of gender and the presence of obesity on quantitative variables, a significant interaction was observed for SBP, DBP, and BMI. In the condition without obesity, lower BMI values were observed in females. For male SBP, higher values were observed among obese individuals and obese men had significantly higher SBP values when compared to obese women. Among obese men, men had higher DBP values compared to women, but among females, non-obese women had higher DBP values compared to obese women.

The male gender had a mean age greater than that of the female gender, but women had a body temperature higher than that of men, regardless of the obesity condition. Regarding the HR and SpO_2, there was no significant effect of gender and the presence of obesity (Table 5).

Table 5. Comparison of the mean and standard deviation (SD) of the quantitative variables between gender and obesity.

	Gender								Anova Two-Way		
	Male				Female						
	Obesity										
Obesity	Present (n = 10)		Absent (n = 29)		Present (n = 4)		Absent (n = 13)		Gender	Obesity	Interaction
	Average	SD	Average	SD	Average	SD	Average	SD	*p* Value	*p* Value	*p* Value
Age (years)	45.9	6.3	45.2	7.2	32.7 †	11.0	35.6 †	12.0	<0.001 *	0.704	0.540
BMI (kg/m^2)	33.2	5.3	25.5 ‡	2.3	36.3	3.7	23.2 ‡†	3.9	0.708	<0.001 **	0.026 ***
SBP (mmHg)	151.0	29.2	133.1 ‡	12.8	117.7 †	4.5	129.3	24.6	<0.001 *	0.633	0.030 ***
DBP (mmHg)	90.0	11.5	85.9	9.5	75.0 †	5.8	89.2 ‡	18.0	0.165	0.227	0.031 ***
T (°C)	35.8	0.5	36.0	0.4	36.5 †	0.6	36.4 †	0.4	<0.001 *	0.776	0.226
HR (bpm)	73.9	14.1	77.9	10.4	82.5	9.3	87.3	21.9	0.072	0.373	0.934
SpO_2 (%)	96.1	1.8	96.7	1.5	96.5	2.4	97.6	1.0	0.225	0.104	0.643

Note: * significant effect of gender by the ANOVA-two-way test for p value ≤ 0.05; † significant difference in relation to the male gender within the same condition for obesity by the Holm-Sidak Post-hoc test for p value ≤ 0.05; ** significant effect of obesity by the ANOVA-two-way test for p value ≤ 0.05; ‡ significant difference in relation to the presence of obesity within the same condition for sex by the Holm-Sidak post-hoc test for p value ≤ 0.05; *** indicates significant interaction between sex and obesity by the ANOVA-two-way test for p value ≤ 0.05.

To analyze the relationship between gender and individual protection measures and the presence of symptoms, only variables with a minimum frequency of five observations were considered. There were no significant differences in the frequency distribution of behavior in relation to individual protection measures and symptoms of sore throat and headache between genders (Table 6).

Table 6. Analysis of the association of individual protection measures and symptoms with gender.

			Gender		Total	*p* Value
			Male	Female		
Use of protective mask	Yes	n	37	17	54	0.638
		%	94.9%	100.0%	96.4%	
	No	n	2	0	2	
		%	5.1%	0.0%	3.6%	
Wash hands	Yes	n	33	14	47	0.346
		%	84.6%	82.4%	83.9%	
	No	n	6	3	9	
		%	15.4%	17.6%	16.1%	
Use of alcohol	Yes	n	38	16	54	0.542
		%	97.4%	94.1%	96.4%	
	No	n	1	1	2	
		%	2.6%	5.9%	3.6%	
Take off shoes and clothes	Yes	n	16	7	23	0.992
		%	41.0%	41.2%	41.1%	
	No	n	23	10	33	
		%	59.0%	58.8%	58.9%	
Mask type	Disposable	n	4	1	5	0.538
		%	10.5%	5.9%	9.1%	
	Homemade/cloth	n	34	16	50	
		%	89.5%	94.1%	90.9%	

Table 6. *Cont.*

			Gender		Total	*p* Value
			Male	Female		
Mask cleaning	Correctly	n %	17 44.7%	9 52.9%	26 47.3%	0.357
	Partially	n %	18 47.4%	8 47.1%	26 47.3%	
	Does not perform	n %	3 7.9%	0 0.0%	3 5.5%	
Sore throat	Present	n %	4 10.3%	3 17.6%	7 12.5%	0.446
	Absent	n %	35 89.7%	14 82.4%	49 87.5%	
Headache	Present	n %	9 23.1%	4 23.5%	13 23.2%	0.971
	Absent	n %	30 76.9%	13 76.5%	43 76.8%	

Note: *p* value calculated by the chi-square association test.

4. Discussion

It was decided to carry out the present study correlating the professional activity of a federal police officer with the individual profile and work routines in view of the risk of contagion by the new SARS-CoV-2 coronavirus. Among the analyses carried out in the present study, the body mass index (BMI) of federal police officers resulted in 27.2 ± 5.4 Kg/m^2 (mean $\pm$ standard deviation). Considering that the result of the BMI calculation must be analyzed according to the classification defined by the World Health Organization, valid only for adults, overweight ($\geq$25 and <30) can be considered [24].

Overweight and obesity are considered risk factors for worsening clinical conditions in patients with COVID-19 [37]. The maximum values of BMI, SBP, DBP, and HR observed in the present study indicate that there are elements in the sample with values above the normal that suggest hypertension, resting tachycardia, and morbid obesity. Obesity and hypertension alone are already complicating factors for patients with COVID-19. Nine hypertensive participants (16.1%) and 14 obese (25%) were found [38,39].

Additionally, in terms of risk factors for health complications, two police officers had diabetes and two asthma (3.6% each). These two risk factors make us more prone to complications and to die from COVID-19 [40]. Most of the sample had no changes in the work regime and 32.7% showed a reduction in the workload. Several activities have become remote to avoid the contagion and spread of the disease, with reduced working hours and, consequently, reduced wages [41]. In individual protection measures (IPM), most have used detachment, the use of a mask, hand washing, and alcohol gel as prevention rules. The cloth mask is used by 90.9% of the police, but only 43.3% perform the cleaning correctly. The industrial production of disposable triple protection masks, currently prioritized for use by healthcare professionals, had a significant increase in costs and difficulties in purchasing [42]. The physical properties of a cloth mask, its reuse, and the frequency and effectiveness of cleaning can increase the risk of infection [43].

Almost half of the sample does not remove their shoes and clothes when they return from the street. This attitude can increase the chance of transmission to family members in case of contamination [44,45]. The most frequent symptoms in confirmed cases of SARS-CoV-2 contamination were little or not reported by the police, such as fever, loss of smell, cough, and diarrhea. These facts corroborate the low rate of infection after vaccination in Brazil and after the wave of the Omicron variant, in addition to the waves of the virus variants [46–48].

The most frequent symptoms were sore throat and headache, which, either due to the current season in Brazil being winter or the exhausting and unhealthy routine of the profession, can usually be reported [49,50]. Headache alone is a symptom that can be related to multiple factors. However, prolonged use of the protective mask can increase inhaled carbon dioxide, reduce inspired oxygen and increase respiratory work, and this increased resistance to inspiratory and expiratory flow can lead to symptoms such as sweating, visual changes, headache, dyspnea, increased irritability and decreased reasoning, as well as increased HR and blood pressure [51].

In the analysis of the effect of gender and the presence of obesity on quantitative variables, a significant interaction was observed for the SBP, DBP, and BMI. There is also a relationship between obesity, SBP, and DBP [52]. There were no significant differences in the frequency distribution of behavior in relation to individual protection measures and symptoms between genders, in agreement with similar studies [53].

As limitations of the present study, one can consider the new variants that have emerged, the waves of contagion and deaths, vaccination, new treatment therapies [54], and the constant changes in relation to remote, face-to-face, or hybrid work.

5. Conclusions

This study aimed to analyze the presence of symptoms, individual protection measures (IPM), and suspect screening measures (SSM) correlating the professional activity of a federal police officer with the individual profile and work routine in the face of the risk of contagion by the new coronavirus SARS-CoV-2. Although the IPM was adopted by most of the research participants, some did not adopt important measures such as wearing a mask, which can increase the risk of contamination and contagion due to the work environment and routine. We believe that the results of this study demonstrate the importance of adopting a set of protection measures to reduce the risk of contamination and contagion, including the environment and work routine, in addition to the use of IPM.

The highest risk factors observed were obesity and hypertension, but even in these conditions, the absence of important IPMs was still verified, as well as the presence of symptoms showed low frequency. These data point to the need to control such diseases as a protective measure as well. From the results of this study, the greatness of educational actions among employees emerges with a view to adopting protective measures that go beyond the use of IPM, and also investment in worker health.

The data reported in this research may serve as a basis for public policies related to health in events similar to those that occurred during the pandemic caused by the new coronavirus (COVID-19), as we are currently experiencing the overcoming of the moment of the requirement to adopt protective measures. In addition, in the face of a similar need in the future, the data collected in this study raise the importance of thinking about efficient communication strategies for adequate guidance to individuals, so that they are more aware of the commitment to individual and collective care. The importance of planning actions aimed at increasing the adoption of protective measures by the population also emerges, using models from the social sciences and behavior, especially when this adoption is not determined only by individual choices, but depends on other health behaviors, and the context in which individuals live.

Author Contributions: Conceptualization, J.A.D.; methodology, C.R.P.D., E.F.B.C. and T.L.M.Z.; software, C.F.B.J.; formal analysis, E.F.B.C.; data curation, P.B., C.G.M., E.F.d.S.X. and M.C.d.S.; writing—original draft preparation, F.M.S. and D.V.B.; writing—review and editing, R.L.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by UNIMAR/PROINPOS (Postgraduate Incentive Program at the University of Marília) and the UNIMAR Beneficent Hospital (HBU UNIMAR).

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of Research Ethics Committee of the University of Marília (CEP-UNIMAR), under opinion no. 4,126,024, 30 June 2020.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data is contained within the article.

Acknowledgments: The authors would like to thank the federal police officers participating in the research, especially Alexandre Schrank Araújo.

Conflicts of Interest: The authors declare no conflict of interest.

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