

Original Research Article

The effects of education level on the rate of compliance with hygiene rules during the Covid-19 Pandemic in the TRNC

Comment [EWD1]: Thank you for this interesting topic. It has good potential.

Abstract

Background

It is important to comply hygiene rules to reduce the spread of the disease and mortality rates in the Covid-19 Pandemic. The education level and socioeconomic characteristics of the people in the society may affect the rate of compliance with the hygiene rules in the Covid-19 pandemic.

Comment [EWD2]: I agree with you. This is a general rule of infection prevention and control.

Aim

The aim of this study is to investigate the effects of sociodemographic characteristics and education level of people living in TRNC on the rate of compliance with hygiene rules during the Covid-19 Pandemic.

Comment [EWD3]: Why did you consider it for TRNC? What is the importance for you? Please write out TRNC the first time.

Comment [EWD4]: Please provide the acronym explanation.

Materials and methods

In our study, an online survey was conducted on 308 people voluntarily selected from TRNC citizens, the results were compared and evaluated with the SPSS program.

Comment [EWD5]: You may want to consider shorter sentences: ..TRNC with regards to hygiene compliance as an intervention during the COVID-19 pandemic.

Comment [EWD6]: How did these volunteers get to know about the survey and what is the percentage of this sample compared to the total population of TRNC? Which variables did you use? The materials and method section needs a bit more details.

Results

According to the results we obtained in our study, a statistically significant relationship was found between some sociodemographic characteristics and the rates of compliance with the hygiene rules on the Pandemic in the TRNC, and no statistically significant relationship was found between the education level and the rates of compliance with the hygiene rules.

Comment [EWD7]: Here I would expect to have concrete mentioning of the findings. Which socioeconomic factors did significantly contribute to the hygiene compliance?

Comment [EWD8]: How so?

Conclusion

We think that in order to increase the rate of complying of the citizens living in the TRNC with the hygiene rules in the Pandemic, it will be effective to include men and citizens living in detached houses without social security in special education programs.

Comment [EWD9]: How did you get to this conclusion? There is no mentioning of gender or alike in the abstract. Please consider short, precise sentences.

Comment [EWD10]: Suggest a few more key words.

Keywords: Covid-19 pandemic, hygiene rules, education levels.

Comment [EWD11]: Please put a reference to support this statement.

Comment [EWD12]: Same applies to Ebola and other infectious diseases.

Introduction

Covid-19 pandemic (P) has been one of the most common causes of death in the world for the last 2 years. For this reason, scientists in the world are working hard to reduce the spread of the disease and death rates.

Comment [EWD13]: Any general statement having a reference is to your advantage.

It has been revealed that complying some hygiene rules, such as wearing a mask and social distancing from the first days of P, can reduce the rate of spread of P and death rates.

In P, there may be some factors that affect the complying of these hygiene rules. In our study, the effects of some sociodemographic characteristics such as education level and age, gender and occupation on the rate of compliance with hygiene rules were investigated in TRNC. In the fight against the P, the level of compliance with the hygiene rules of individuals and the factors affecting the level have gained importance. In this process, many promotional posters showing the hygiene rules and practices within the scope of combating the P were published on the website of the Ministry of Health[1].

Comment [EWD14]: compliance of hygiene interventions. What are these rules? Please explain.

Despite the level of development of science and technology, the unavoidable situation of the virus in the current situation has led the measures taken to be aimed at the behavior of the people. The extent to which the society has implemented the protective measures published by the state in order to prevent the further spread of the 2019 preventing the spread of the virus. Although every country takes similar measures against the virus, the diversity of health systems, the number of personnel, their technological infrastructure, even their socio-cultural characteristics and demographic structures cause differences in responding to the measures[2].

Comment [EWD15]: Who had access to these posters? Was there some sort of promotion to raise awareness on the practices?

Comment [EWD16]: What do you mean by this?

The most successful countries in the fight against the P we are in are listed as follows in a study; Japan, Israel, New Zealand. When we observe these countries, we see that they are economically and socially developed countries. In P, there may be some factors that affect the applying of these hygiene rules.

Comment [EWD17]: Which society, which state. Please be concise in the statements. Now there is the jump from socio-economics to technological infrastructure without connection the dots on how they link together in your opinion.

When we look at the common point of these countries, we can say that they have lower social development and lower economic development than other countries[3]. It has been observed that the death rate decreases as the income of the country increases.

Comment [EWD18]: I would start from global to regional to local. Here we are moving from local to global without concrete referencing. From my working experience in / with these countries, they are so different in every aspect. I have become cautious about comparison respectively.

Low- and low-middle-income countries provide a suitable environment for the spread of the P, which is caused by many factors such as poor socioeconomic conditions, poor hygiene, low level of education. In

Comment [EWD19]: Please put a reference.

low-income countries, the Philippines, Morocco, Egypt and Bangladesh showed higher case fatality rates compared to other countries in the region. In the study of Sreedharan et al., it was stated that the reason for the low number of positive cases reported in low and low middle-income countries may be underreporting of Covid-19 (C-19) positive cases and insufficient number of tests[4].

Comment [EWD20]: Please put a reference. How come the pandemic is also prevalent in high-income countries?

Comment [EWD21]: You are using different indicators? At the beginning mortality rate, now case fatality rate. Any reason for that?

The results of many studies show that following the hygiene rules in the P has a significant impact on the spread of the disease and the decrease in death rates. However, studies on the effect of education level and sociodemographic characteristics of the society on compliance with hygiene rules are few and the results are not clear.

Comment [EWD22]: How does this study fit your purpose?

For this reason, in our study, the effects of the education level and sociodemographic characteristics of the society on the rate of compliance with hygiene rules were investigated in the TRNC.

Comment [EWD23]: Please indicate some studies and what essence you are drawing from in this context.

Comment [EWD24]: Why did you do your study in the first place? What was your observation or concern? And then work around it.

Material Methods

The study universe of the research is consists of TRNC citizens. A sample group of 308 people was determined from this research universe and 308 people who agreed to participate in the study voluntarily in the survey questionnaire. The adequacy of this sample obtained was evaluated in the context of the statistical analysis method to be used in the study.

Comment [EWD25]: Wording. The shorter, clearer and more precise, the better.

An online survey tool was used to collect the data needed in the research. The questionnaire form was prepared to measure how the participants affected the P hygiene.

Comment [EWD26]: Please rewrite. What is the percentage of 308 persons from xx population of TRNC.

Comment [EWD27]: Which online tool?

Comment [EWD28]: Perhaps you can place it in the annex

IBM SPSS Package Program was used for the reliability and validity studies of the 5-point Likert type questionnaire developed for the purpose of the research, and the Cronbach Alpha coefficient of the scale developed with this tool was calculated, thus the reliability and validity degrees of the scale were determined.

Comment [EWD29]: Please rewrite - unfortunately I don't understand the meaning. Which indicators, variables, characteristics did you use? Why 308 persons and not 300?

The analyzes in the study were made using the SPSS package program.

Comment [EWD30]: Using the active voice i.e. "We used the SPSS package for study analyzes."

The compatibility of the data with normal distribution was examined with the Kolmogorov-Smirnov and ShapiroWilk test.

For independent group comparisons of continuous variables, Mann Whitney U test was used when there were two independent groups and Kruskal Wallis test was used when there were more than two independent groups. For the reliability analysis of the scales used in the research, the internal consistency coefficient 'Cronbach's Alpha' was calculated. While analyzing the relationship between continuous variables for the scales used in the research, Spearman rank correlation coefficient was used.

Comment [EWD31]: What are your continuous variables?

First level confirmatory factor analysis was performed to test the construct validity of the P hygiene scale. While testing the factor structure with confirmatory factor analysis, coefficients of fit and factor loads were evaluated.

Kolmogorov-Smirnov and Shapiro-Wilk tests were performed to determine whether the P hygiene scale and sub-dimensions scores were normally distributed, and it was concluded that the distribution of the scale score was not normal. According to these results,

Comment [EWD32]: A variety of tests were used and described, while there is no description about the variables and why you included them. Who is your target reader audience?

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non-parametric tests Mann-Whitney U and Kruskal Wallis were used in difference analysis ($p < 0.05$).

Social media platforms and digital communication applications were used to deliver the questionnaires to the determined sample.

The survey form was tried to be delivered to the participants who formed the sample through social media and digital communication applications that were transferred to the digital environment with the survey management system called Google Forms. The online questionnaire form was used so that the participants could easily answer it. When the participants completed the survey and clicked on the finished option, the survey form was automatically recorded in the database in excel format.

The prepared questionnaire consists of two parts.

In the first part of the study, the questionnaire consisting of gender, age, place of residence, social security, marital status, education level, home, residence, living environment, job, income level, alcohol use, smoking, chronic diseases and walking aids. There are 15 sociodemographic questions.

In the second part of the study, a 5-point Likert scale type question containing 18 statements to measure the relationship between the pandemic and hygiene was prepared to ask the participants about their thoughts on the hygiene of the P. In the P hygiene scale, a total of 18 statements were included in 4 sub-dimensions (mask, social distance and hand hygiene behaviors dimension 8, home hygiene dimension 4, hygiene behaviors changed with the pandemic 4 and shopping hygiene behaviors dimension 2). This section consists of 18 statements and a 5-point Likert scale was used (1=Never, 2=Sometimes, 3=Sometimes, 4=Often, 5=Always).

Comment [EWD33]: Here the jump to the questionnaire. It is suggested to group the information together as per questionnaire and as per analyzes methodology.

Comment [EWD34]: Suggest to place anything related to the questionnaire together, and then describe the analyzes methodology to ensure the flow.

Comment [EWD35]: This is part of the questionnaire and should come at the beginning of the related description.

Comment [EWD36]: This goes to the analyzes methodology.

Results

The sociodemographic characteristics of the volunteers participating in our study are shown in (Table 1) and (Figure 1).

Table 1. Sociodemographic characteristics of the participants.

Sociodemographic Characteristics (n=308)	Number (n)	Percent (%)

Sex	Female	170	55,2
	Male	138	44,8
Age	20-30	105	34,1
	31-40	76	24,7
	41-50	59	19,2
	51-60	41	13,3
	61-65	15	4,9
	65+	12	3,9
Living Place	Metropolis	167	54,2
	City	83	26,9
	Country	49	15,9
	Village	9	2,9
Social Security	Nope	46	14,9
	Special Insurance	44	14,3
	Social Security Institution	218	70,8
Marital Status	Married	177	57,5
	Single Wife/Husband	106	34,4
	Decased Divorced	5	1,6
		20	6,5
Level of Education	Primary school and below	16	5,2
	Middle school student	6	1,9
	High school graduate	78	25,3
	Graduated from a University	208	67,5
The house she/he lived in	Apartment Private	223	72,4
	Guesthouse- hotel	80	26,0
		5	1,6
House of Stay	His own	140	45,5
	familial	81	26,3
	Rent	87	28,2
Living Environment	Alone with his wife	116	37,7
	With his wife and children	62	20,1
	with the caregiver	125	40,6
		5	1,6
Work	Not working	72	23,4
	Retired desk job	54	17,5
	physical work	129	41,9
		53	17,2
Monthly income	Below Minimum Wage	40	13,0
	Minimum wage	99	32,1
	Twice the Minimum Wage > 3 Times Minimum Wage	112	36,4

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Comment [EWD37]: This age group implies that using online tools might be easier.

Comment [EWD38]: Also the majority comes from the Metropolitan area, which implies easier access to infrastructure - is that so?

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Comment [EWD39]: 218 participants having social security institution support - what does this exactly mean?

Comment [EWD40]: Almost 60% of participants were married - is this the same age group of 20-30 and what are the correlations?

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Comment [EWD41]: This implies that mainly university graduates were included in the study. This might be considered a limitation of the study because the results reflect higher education level, potentially higher socio-economic status and easier access to infrastructure given the metropolitan area. Is that so? And what does it mean for the area?

		57	18,5
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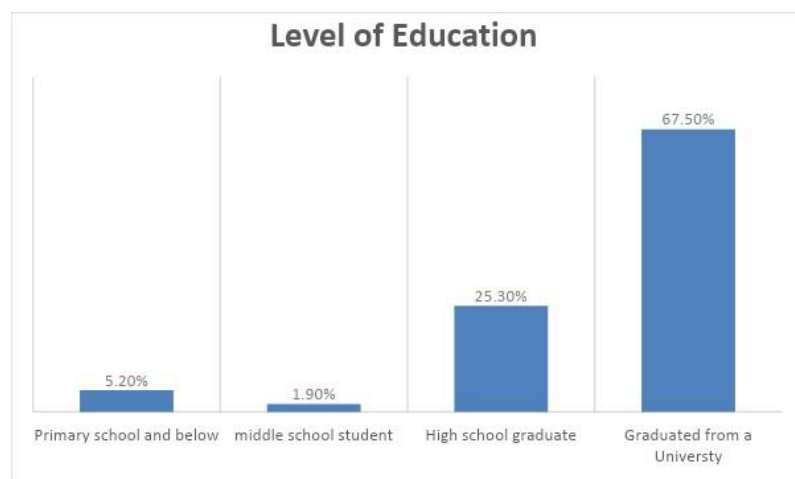


Figure 1. Educational status of the participants.

The health-related characteristics of the volunteers participating in our study are shown in (Table 2) and (Figure 2).

Table 2. Health-related characteristics of the participants.

Health-related features (n=308)		Number (n)	Percent (%)
Alcohol Use	Nope	146	47,4
	Rarely	98	31,8
	1 glass per week	45	14,6
	1 glass per day	19	6,2
Smoking	Nope	144	46,8
	forwent	17	5,5
	here and there	30	9,7
	1 pack per week	30	9,7
	1 pack per day	87	28,2
Chronic Diseases	Nope	260	84,4
	Hypertension	24	7,8
	Diabetes	19	6,2
	hyperlipidemia	5	1,6

Aid to Walk	Nope	303	98,4
Vehicle	Wheelchair	5	1,6

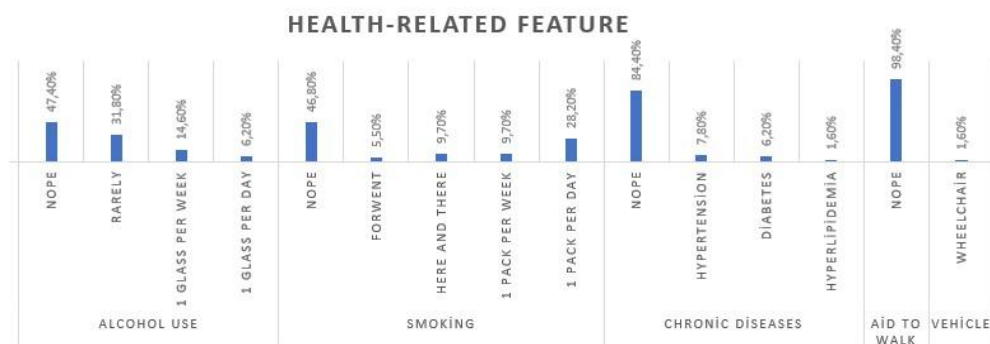


Figure 2. Health –related status of the participants.

The rates of using masks, hand hygiene and social distancing were higher in volunteers with social security than those without ($p=0.039$). (Table 3).

Comment [EWD42]: How did you get to this conclusion?

Table 3. Estimates of the Kruskal test according to how the participants' Covid-19 pandemic world sub-dimensions were evaluated social security.

	Social Security	n	Medyan (min-max)	Ki kare	p	Dual comparisons
Mask, social distancing and hand hygiene behaviors	a.Nope	46	4,25 (1,38-5,00)	6,498	0,039	a-b $p=0,104$ b-c $p=0,012$ a-c $p=0,572$
	b.Special Insurance	44	4,50 (3,13-5,00)			
	c.Social Security Institution	218	4,63 (1,00-5,00)			
Household hygiene behaviors	a.Nope	46	4,00 (1,00-5,00)	0,985	0,611	
	b.Special Insurance	44	4,00 (1,75-5,00)			
	c.Social Security Institution	218	4,25 (1,00-5,00)			
Changing hygiene behaviors with the	a.Nope	46	3,88 (1,25-5,00)	5,416	0,067	
	b.Special Insurance	44	4,00 (2,00-5,00)			
	c.Social Security Institution	218	4,00 (1,00-5,00)			

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	c.Social Security İnstituon					
Shopping hygiene behaviors	a.Nope	46	4,00 (1,00-5,00)	0,212	0,900	
	b.Special Insurance	44	3,50 (1,00-5,00)			
	c.Social Security İnstituon	218	4,00 (1,00-5,00)			

According to the marital status variable, shopping hygiene behaviors were found to be higher in married participants than in single, widowed and divorced participants ($P=0.028$)(Table 4).

Table 4. Findings regarding the Kruskal Wallis test results according to the marital status variable of the Covid-19 pandemic hygiene sub-dimensions of the participants.

	Marital Status	n	Medyan (min-max)	Ki kare	p	Dual comparisons
Mask, social distancing and hand hygiene behaviors	a.Married	177	4,63 (2,25-5,00)	5,122	0,163	
	b.Single	106	4,50 (1,00-5,00)			
	c.Wife/Husband	5	4,88 (4,38-5,00)			
	Decased		4,56 (3,13-5,00)			
	d.Divorced	20				
Household hygiene behaviors	a.Married	177	4,25 (1,25-5,00)	5,296	0,151	
	b.Single	106	4,00 (1,00-5,00)			
	c.Wife/Husband	5	4,75 (3,75-5,00)			
	Decased		4,13 (1,75-5,00)			
	d.Divorced	20				
Changing hygiene behaviors with the pandemic	a.Married	177	4,00 (1,25-5,00)	4,732	0,192	
	b.Single	106	4,00 (1,00-5,00)			
	c.Wife/Husband	5	4,25 (2,75-5,00)			
	Decased		4,25 (2,00-5,00)			
	d.Divorced	20				
Shopping hygiene behaviors	a.Married	177	4,00 (1,00-5,00)	9,119	0,028	a-b $p=0,260$ b-c $p=0,018$
	b.Single	106	3,50 (1,00-5,00)			a-c $p=0,041$ b-d $p=0,198$
		5	5,00 (4,00-5,00)			a-d $p=0,058$ c-d $p=0,012$

	c.Wife/Husband Decased d.Divorced	20	3,00 (1,00-5,00)			
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The findings obtained in our study were found to be statistically more significant than the individuals who work at desk jobs, their home hygiene, shopping hygiene, and hygiene behaviors that changed with the pandemic ($p=0.010$), ($p=0.037$) ($p=0.037$)(Table 5).

Comment [EWD43]: How did you get to this conclusion?

Table 5. Findings regarding the Kruskal Wallis test results of the participants' Covid-19 pandemic hygiene sub-dimensions according to the job variable.

	Work	n	Medyan (min-max)	Ki kare	p	Dual comparisons
Mask, social distancing and hand hygiene behaviors	a.Not working	72	4,50 (1,38-5,00)	5,073	0,167	
	b.Retired	54	4,75 (3,13-5,00)			
	c.desk job	129	4,50 (1,00-5,00)			
	d.physical work	53	4,63 (2,50-5,00)			
Household hygiene behaviors	a.Not working	72	4,13 (1,00-5,00)	11,265	0,010	a-b $p=0,537$ b-c $p=0,009$
	b.Retired	54	4,25 (2,75-5,00)			a-c $p=0,049$ b-d $p=0,644$
	c.desk job	129	4,00 (1,00-5,00)			a-d $p=0,344$ c-d $p=0,009$
	d.physical work	53	4,50 (2,00-5,00)			
Changing hygiene behaviors with the pandemic	a.Not working	72	4,00 (1,25-5,00)	8,220	0,042	a-b $p=0,111$ b-c $p=0,007$
	b.Retired	54	4,25 (2,00-5,00)			a-c $p=0,482$ b-d $p=0,506$
	c.desk job	129	3,75 (1,00-5,00)			a-d $p=0,366$ c-d $p=0,064$
	d.physical work	53	4,00 (1,25-5,00)			

Shopping hygiene behaviors	a.Not working	72	4,00 (1,00-5,00)	8,504	0,037	a-b p=0,186 b-c p=0,008
	b.Retired	54	4,00 (1,00-5,00)			a-c p=0,154 b-d p=0,463
	c.desk job	129	3,00 (1,00-5,00)			a-d p=0,655 c-d p=0,066
	d.physical work	53	4,00 (1,00-5,00)			

Although no significant results were found in our study regarding hand hygiene, social distance, mask use, shopping hygiene and home hygiene of individuals working for minimum wage, statistically significant results were obtained in the sub-dimension of hygiene behaviors that changed with the pandemic (p=0.007)(Table 6)

Table 6. Estimates of the Kruskal Wallis test according to the income level of the participants' Covid-19 pandemic hygiene sub-dimensions.

	Monthly income	n	Medyan (min-max)	Ki kare	p	Dual comparisons
Mask, social distancing and hand hygiene behaviors	a.Below Minimum	40	4,56 (1,38-5,00)	6,162	0,104	
	b.WageMinimum wage Twice	99	4,50 (1,88-5,00)			
	c.The Minimum Wage>3 Times	112	4,50 (1,00-5,00)			
	d.Minimum Wage	57	4,63 (2,25-5,00)			
Household hygiene behaviors	a.Below Minimum	40	4,00 (1,00-5,00)	5,943	0,114	
	b.WageMinimum wage Twice	99	4,25 (1,75-5,00)			
	c.The Minimum Wage>3 Times	112	4,00 (1,00-5,00)			
	d.Minimum Wage	57	4,25 (2,25-5,00)			
Changing hygiene behaviors with the pandemic	a.Below Minimum	40	3,50 (1,25-5,00)	11,971	0,007	a-b p=0,009 b-c p=0,004
	b.WageMinimum wage Twice	99	4,25 (1,25-5,00)			a-c p=0,367 b-d p=0,166
	c.The Minimum Wage>3 Times	112	3,75 (1,00-5,00)			a-d p=0,068 c-d p=0,232
	d.Minimum Wage	57	3,75 (1,25-5,00)			
Shopping hygiene behaviors	a.Below Minimum	40	3,75 (1,00-5,00)	2,292	0,514	
	b.WageMinimum wage Twice	99	4,00 (1,00-5,00)			
	c.The Minimum Wage>3 Times	112	4,00 (1,00-5,00)			
	d.Minimum Wage	57	3,00 (1,00-5,00)			

In our study, no statistically significant relationship was found between the place of residence and mask use, social distance and hand hygiene behaviors dimension, home hygiene dimension, behaviors changed with the pandemic, and shopping hygiene dimension($p=0.459$),($p=0.711$),($p=0.982$).

According to the results we obtained, there was no statistically significant difference between the rates of using masks, complying with social distance, complying with the rules of hand hygiene, home hygiene and shopping hygiene according to age variables($p=0.066$).

Comment [EWD44]: Here I wonder whether the education level did not make a difference; and whether even those with low means were able to afford masks, disinfectants, and alike?

According to the results we obtained, according to the gender variables, there was no statistically significant difference between the rates of using masks, complying with social distance, hand hygiene, home hygiene and shopping hygiene rules($p=0.198$),($p=0.059$).

In our research, no statistically significant result was found between the number of individuals in the living environment and the changing hygiene behaviors with mask, social distance, hand hygiene behaviors, shopping hygiene, home hygiene, pandemic($p=0.459$),($p=0.711$),($p=0.982$),($p=0.166$).

In the study we conducted in the TRNC, no statistically significant result was found between the Covid-19 pandemic hygiene scale sub-dimensions regarding smoking, chronic disease and having a walking aid($p=0.236$),($p=0.139$),($p=0.324$),($p=0.087$).

Comment [EWD45]: How did you come to this?

In our research we conducted in the TRNC, no statistically significant relationship was found between education level and mask use, social distance and hand hygiene behaviors, home hygiene dimensions, behaviors changed with the pandemic, and shopping hygiene dimensions($p=0.300$),($p=0.128$),($p=0.202$),($p=0.600$) (Table 7) (Figure 3).

Comment [EWD46]: Same as above. Was the study sample too small?

Table 7. Findings regarding the Kruskal Wallis test results according to the educational status variable of the Covid-19 pandemic hygiene sub-dimensions of the participants

	Level of Education	n	MedyanMedian (min-max)	Ki kare	p

Mask, social distancing and hand hygiene behaviors	a.Primary school and below	16	4,44 (2,38-5,00)	3,663	0,300
	b.Middle school student	6	4,13 (2,75-5,00)		
	c.High school graduate	78	4,63 (1,00-5,00)		
	d.Graduated from a Universty	208	4,50 (1,38-5,00)		
Household hygiene behaviors	a.Primary school and below	16	4,34 (2,00-5,00)	5,687	0,128
	b.Middle school student	6	4,25 (2,75-5,00)		
	c.High school graduate	78	4,25 (1,00-5,00)		
	d.Graduated from a Universty	208	4,00 (1,00-5,00)		
Changing hygiene behaviors with the pandemic	a.Primary school and below	16	4,13 (2,00-5,00)	4,615	0,202
	b.Middle school student	6	3,75 (1,25-4,50)		
	c.High school graduate	78	4,13 (1,00-5,00)		
	d.Graduated from a Universty	208	4,00 (1,25-5,00)		
Shopping hygiene behaviors	a.Primary school and below	16	4,00 (1,00-5,00)	1,868	0,600
	b.Middle school student	6	3,50 (1,00-5,00)		
	c.High school graduate	78	4,00 (1,00-5,00)		
	d.Graduated from a Universty	208	3,50 (1,00-5,00)		

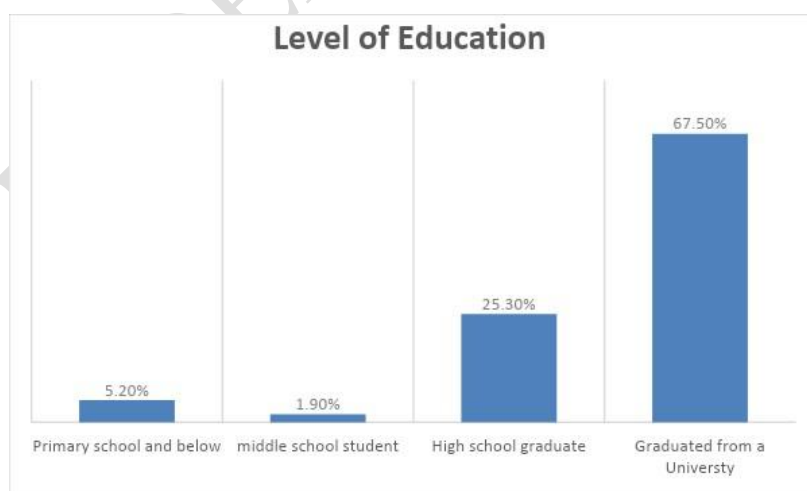


Figure 3. The effects of education levels on the rate of compliance with hygiene rules in the TRNC.

Discussion

According to the results we obtained in our study, the rate of university graduates was found to be quite high (67.5%) among the volunteers who participated in our study in TRNC (Table 7) (Figure 2). However, no significant relationship was found between education level and applying with hygiene rules on P in TRNC (Table 7), (Figure 3). Nevertheless, it was found that there were statistically significant relationships between some sub-variables and the rates of applying with some hygiene rules.

The rate of applying with social distance, mask and hand hygiene rules was found to be higher in volunteers who were affiliated with any social security institution ($p=0.039$) (Table 3). One reason for this may be that health awareness is lower in individuals without social security than in individuals with social security[5]. In line with our results, there are some studies in which health-related expenditures of individuals with health insurance are higher than those without health insurance during the P period. These expenditures include protective equipment, vitamin drugs, hygiene materials. It has been found that individuals with health insurance have a lower level of knowledge and behavior about preventive behaviors against P compared to individuals who do not have health insurance[6,7].

According to the results of our research, according to the marital status variable, shopping hygiene behaviors were found to be higher in married participants than in single, widowed and divorced participants ($P=0.028$) (Table 4).

When the literature was searched, it is thought that the practice of shopping hygiene in studies that have a significant relationship with the marital status of the individuals may be due to the fear of being infected with the virus in the closed areas where shopping is done, and the fear of infecting their partners with the awareness of responsibility towards their partners[8,9]. Married individuals may be encouraged to practice shopping hygiene by their spouses.

It was observed that other variables (hand hygiene, mask use, compliance with social distance) were not affected in the TRNC in relation to marital status (Table 4). When the literature is searched, results supporting our study are seen. The recommended hygiene behaviors during the current P period included personal practices to

Comment [EWD47]: Rephrasing suggested - there is 2x our study in the same sentence.

Comment [EWD48]: Why?

Comment [EWD49]: What is the population size of TRNC?

Comment [EWD50]: Which ones?

Comment [EWD51]: Which ones?

Comment [EWD52]: Is it the compliance or application of these interventions?

Comment [EWD53]: Why? Because of higher awareness or other factors?

Comment [EWD54]: Please put concrete references.

Comment [EWD55]: Drugs or supplements?

Comment [EWD56]: How so? Those without health insurance have more knowledge on pandemic prevention?

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Comment [EWD57]: Please ensure these separated variables are shown in the graphs.

Comment [EWD58]: This literature search findings need to be displayed in the introduction.

Comment [EWD59]: Please ensure same font size throughout. Here 14, rest 16.

Comment [EWD60]: Please specify "it was observed..."

Comment [EWD61]: Please again, specify.

protect individuals and marital status variable may not have affected the behaviors[8,9].

The findings obtained in our study were found to be statistically more significant than those who do not work, retire and do physical work ($p=0.010$), ($p=0.037$), ($p=0.037$) 0.042)(Table 5). It is possible that individuals have demonstrated hygiene practices in the home environment, such as ventilation of the office environment, disinfection of frequently used tools such as desks and computers, in order to protect themselves in the desk office environment. There is a study that determined that working individuals show low home hygiene due to the inability to spare time for home hygiene[10].

In our study, although no significant results were found regarding hand hygiene, social distance, mask use, shopping hygiene and home hygiene of individuals working with minimum wage, statistically significant results were obtained in the sub-dimension of hygiene behaviors that changed with the P($p=0.007$). The reason for this result is the finding that the use of contactless payment method negatively affects individuals whose income level is below the minimum wage in the study conducted by Dayı, which supports the significant result found in our study[11]. Individuals working with the minimum wage may have shown contactless payment behavior by adapting better to the contactless payment behavior.

In individuals who use 1 glass of alcohol a day, hand hygiene, mask use and social distance behavior, shopping hygiene, home hygiene and hygiene behaviors that change with the P were found to be statistically higher than individuals who do not use alcohol, rarely use alcohol and use 1 glass of alcohol a week($p=0.003$).

There has been an increase in addiction-related behaviors such as alcohol use and smoking during the P. Despite the warnings of the World Health Organization, a lot of information has spread on social platforms that alcohol and tobacco products are protective against the C-19 virus. In the study conducted by Luk et al., 19% of the individuals participating in the study reported that “they have seen claims that using alcohol from social networking sites can protect against C-19”.

Comment [EWD62]: "There is a study..." Is it the reference you mentioned?

Comment [EWD63]: Here is another new insight did not appear before.

Comment [EWD64]: How accurate do you think is the reporting on alcohol and smoking use? How about any other drug / substance use?

Comment [EWD65]: How does this conclusion come from the data?

Comment [EWD66]: Or is it based on observations? If so, needs to be mentioned.

The reason for this increase was determined to be due to people's belief that alcohol consumption during the P period is protective against C-19.

There may be many reasons for the increase in the use of addictive substances during the P period. In literature studies, the reasons for this situation are associated with having wrong information about alcohol, loneliness, excess free time and depression[13]. No statistically significant results were found regarding smoking and compliance with hygiene rules. Although this result is supported by some studies[14], there are also studies showing that smokers have a higher level of knowledge and practice than non-smokers[15].

According to the results obtained in our study, in studies where the rate of mask use and social distance application of smokers is higher, the participants want to protect themselves from being infected with the virus by keeping a distance from other individuals because they cannot use a mask while smoking in the areas where they smoke. Being aware of being in the risk group for the disease may have increased the need for mask use. In our study in the TRNC; according to the age variable, no significant relationship was found for mask use, social distance and hand hygiene behaviors dimension, home hygiene dimension, behaviors changed with the P and shopping hygiene dimension. When the literature was searched, there were researchers who obtained results similar to our study[16]. In some studies with different results, poor hygiene practice due to low level of knowledge has been detected by limiting access to information about the P, as a result of lack of information in elderly individuals, the increase in age and the emergence of hearing and vision disorders, the low level of knowledge of individuals with advanced age level [17,18,19,20]. There was no significant relationship between the social security of the participants and the factor of home hygiene, the dimensions of behaviors changed with the P, and the dimension of shopping hygiene. In our research we conducted in the TRNC, no statistically significant relationship was found between the place of residence and the use of masks, social distance and hand hygiene behaviors, home hygiene factor, behaviors changing with the P, and shopping hygiene factor.

Comment [EWD67]: You might want to elaborate backed with evidence

Comment [EWD68]: There is a lot of switch between literature studies and your own results. Please structure and order.

When the relevant literature was searched, Özşahin et al. investigated the place of residence and the attitude towards P hygiene rules, and no statistically significant results were found, similar to our study[21]. In another study; In order to measure the applying of individuals with general hygiene rules such as personal hygiene, food hygiene, hand hygiene, questions similar to the questions asked in our study, such as hand washing frequency, home cleaning frequency, behavior of wiping the outer surfaces of vegetables and fruits were asked but not detected[22].

Comment [EWD69]: Please consider putting the literature search in the intro part & what is relevant in the discussion component.

When the literature is searched, it is thought that the reason for the high level of mask use, social distance and hand hygiene behavior in individuals living in urban areas may be the education level of individuals in reaching sufficient information about the P and the advantage of internet access in reaching information. Individuals living in rural areas generally have low education levels, limited internet access and use, and health promotion is rarely performed, so prevention and control efforts in rural areas are considered to need improvement[23].

Comment [EWD70]: This component is important and should be at the beginning.

In the P, the borders between countries were closed within the scope of the measures taken during the P period, more than the general population, compared to the general population, and many people could not reach their jobs and experienced economic difficulties. These difficulties have also affected immigrants. In the study of Blair et al., social distance, mask use and prevalence of hand washing behavior were associated with education level and immigration. This study supports our result [24,25,26]. In the research conducted by Bui, it was determined that more than 90% of immigrants comply with preventive measures. However, when immigrants experience C-19 symptoms, the rate of compliance with health institutions was found

Comment [EWD71]: Movement is important, please restructure of what literature search is in the context of your study.

Comment [EWD72]: "This study supports our results", but there are 3 references?

Comment [EWD73]: How does this reference relate to your study?

to be lower than other participants[27]. It is thought that individuals living in guest-houses or hotels live in public areas, have come to the TRNC to work and are worried about being infected with C-19 because they live far from their country, and difficulties in accessing health may be due to insecurity.

Comment [EWD74]: Please provide evidence for this sentence. Is it an assumption, an observation or a general comment?

Comment [EWD75]: It is thought - please review wording. Did the result of the questionnaire lead to these sentences?

In a study conducted in Ethiopia, they evaluated the relationship between demographic variables and preventive practices such as hand hygiene, mask use, and social distancing behavior. As a result of this evaluation, it was concluded that unemployed individuals showed 3.6 times less handwashing hygiene behavior compared to other occupational groups, and private sector employees and civil servants avoided risky behaviors such as shaking hands more (Table 8) (Figure 4.5)[28] .

In our research, no statistically significant result was found between the number of individuals in the living environment and the changing hygiene behaviors with mask, social distance, hand hygiene behaviors, shopping hygiene, home hygiene and P.

In the study of Nwonwu et al., no significant results were found with applying with the rules of hygiene and the number of individuals living at home[29]. In another study, the number of individuals in the living environment of participants' hand hygiene, mask use, behavior of complying with social distance, home hygiene, shopping hygiene and hygiene behaviors that changed with the P were investigated, and no significant results were found similar to our study[30]. In the study we conducted in the TRNC, no statistically significant results were found between the P hygiene scale sub-dimensions regarding the smoking, chronic disease, and possession of walking aids. In the study of Tang et al., the use of face masks, compliance with social distance rules, hand hygiene, house cleaning and air-conditioning behavior were analyzed with the variable of individuals with chronic diseases, and no significant results were found similar to our research[31].

In the study conducted by Çiçek et al., the hand-washing behavior of individuals with chronic diseases was determined at a high level, and statistically significant results could not be obtained with individuals with chronic diseases regarding home hygiene, shopping hygiene, mask use, and compliance with social distance[9]. In our study conducted in TRNC, no statistically significant relationship was found between education level and mask use, social distance and hand hygiene behaviors, home hygiene, P-changed behaviors, and shopping hygiene (Table 7) (Figure 3). Similar and opposite results were found

Comment [EWD76]: How does this Ethiopian study relate to yours and are the conditions and methods comparable?

Comment [EWD77]: Is this paragraph related to the above Ethiopian study?

Comment [EWD78]: Please be specific in the use of referenced studies.

Comment [EWD79]: Could it be because of the small study sample or other factors?

Comment [EWD80]: What does that mean?

in the literature with the behaviors of hand hygiene, mask use, and compliance with social distance. The reason for these differences may be the fact that the individuals surveyed are from different countries and different cultures. In addition to these factors, the lack of meaningful results with the level of education is due to the fact that practices such as the use of masks and curfews during the P were made compulsory by the health authorities and the public was informed about the C-19 preventive measures with tools such as social media, television, and preventive application posters, may be due to increased awareness in individuals. In an online study, the use of masks by individuals with a low level of education was found to be higher than individuals with a high level of education. Researches have evaluated this result as the behavior of individuals with low education level, "to comply with compelling rules in the image"[9]. The reason why individuals do not practice hand hygiene was determined as forgetting due to not adopting the habit of hand washing during the day, and not knowing the importance of hand washing in the current P situation and not knowing the appropriate hand washing behavior[32]. In online studies conducted in Saudi Arabia and Lebanon, a statistically significant relationship was not found between education level and handwashing behavior, similar to our study in the TRNC[33,34,35].

Comment [EWD81]: How does this relate to your study and what you are trying to convey.

Comment [EWD82]: For the below nationality table, do you have something similar for the study population? Attention for Africa, each country is very different for example Nigeria vs Kenia. USA also varies between its different states.

Table 8. The relationship between education level and compliance with hygiene rules in some countries in the Covid-19 pandemic.

	UNDER HIGH SCHOOL EDUCATION Percent (%)	HIGH SCHOOL EDUCATION Percent (%)
PALESTINE	16,6	63,8
AFRICA	87,1	88,3
LEBAN	77,2	77,6
SERBIA	76,3	96,7
USA	5,0	14,0
SAUDI ARABIA	83,5	84,0

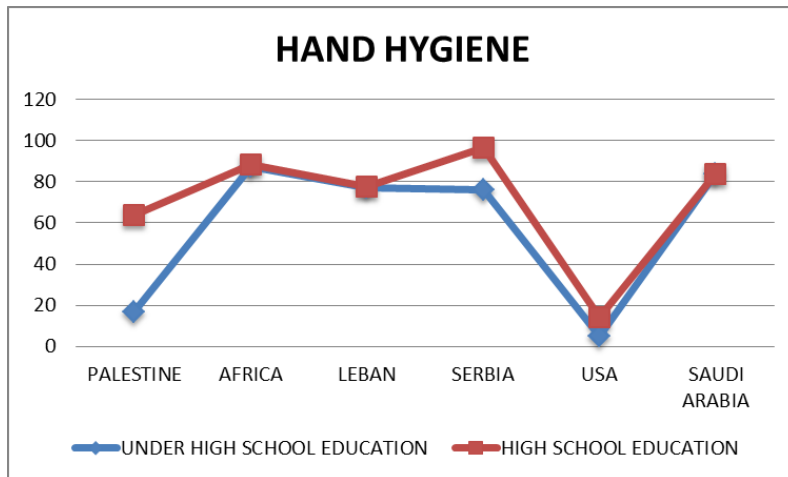


Figure 4. The relationship between education level and hand hygiene in some countries during the Covid-19 pandemic.

Comment [EWD83]: How do these study results relate to your study?

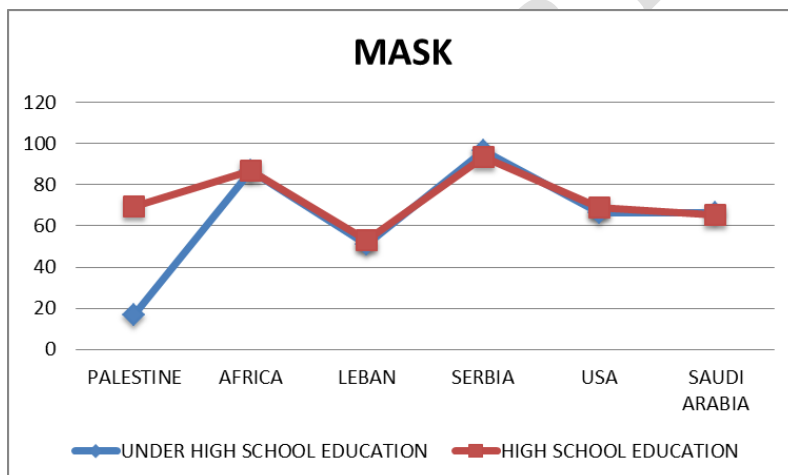


Figure 5. The relationship between education level and mask use in some countries during the Covid-19 pandemic.

The recommendations of the World Health Organization (WHO) and the importance of hygiene have increased the level of knowledge in people through mass media, social media, digital media and classical media, and have led to awareness in the practice of house cleaning in

people who stay in their homes for a long time during the P process[38,39,40,41].

In the study we conducted in the TRNC, no significant results were obtained between home hygiene and education level. The WHO frequently mentioned the importance of hygiene during the P process, and a risk perception was created in almost every segment of the P. In general, people preferred to stay away from socializing and stay at home. In a study, it was concluded that the behavior of keeping products in vinegar water after shopping was 1.5 times higher in participants with low education level compared to participants with high education level [30]. In addition to hand washing, mask use and social distancing, measures such as changing clothes, taking a shower, wiping the surface of food may be less effective in preventing C-19. However, the implementation of these behaviors can be an indicator of awareness in compliance with hygiene rules[42]. Similar to our study, no statistically significant relationship was found between education level and shopping hygiene in studies conducted in the United States, Saudi Arabia and Lebanon[34,36]. The behavior of individuals using contactless payments during the pandemic period is in a significant relationship with the level of education. Individuals with university and higher education tend to use contactless payments more than other education levels during the P period[11]. In the study conducted by Islam et al., participants with high school or higher education level stated that they washed their clothes when they came home from outside[42]. One of the habits that changed during the P period was the use of contactless payments. In our study, they were asked whether they used contactless cards under the hygiene scale dimension of changing hygiene behaviors during the P period. However, there was no significant result related to education level.

In the research we conducted in the TRNC, the education level of the participants, gender, place of residence, smoking, living environment, home, chronic disease, use of walking aid and education status, hand hygiene, mask use and social distance behavior, shopping hygiene, home No statistically significant result was found according to the hygiene behavior and hygiene behaviors that changed with the P. Our

Comment [EWD84]: Might be better placed in the introduction. Is it true that the WHO message increased the level of knowledge? How was this measured and what is the relation to your study?

study was carried out as an online survey, and people who did not have internet access and were illiterate could not be reached. In addition to these factors, the lack of meaningful results with the level of education is due to the fact that practices such as the use of masks and curfews during the P were made compulsory by the health authorities and the public was informed about the C-19 preventive measures with tools such as social media, television, and preventive application posters. may be due to increased awareness in individuals. More comprehensive similar studies are needed in order to give more precise conclusions on this subject.

Conclusion

The level of compliance with hygiene rules is associated with sociodemographic characteristics. In the research we have done in the TRNC, sociodemographic factors have been determined that the level of compliance with the hygiene rules is low in the P.

Education programmes should be planned for the development of hand hygiene, mask use and social distancing behaviors for men, individuals who do not have social security or have private insurance, and individuals who do not live in public areas such as dormitories and hotels in the TRNC and stay in a unique house.

There is a need to inform the workers who do not work in any job, who are retired and who work in a physical job in the TRNC, about the hygiene rules that they should apply at home and while shopping, to reduce the risk of contamination.

Comment [EWD85]: How do current IPC = Infection Prevention and Control practices and programs already contribute to better hygiene practices? And if not, would that be a chance for improvement.

Comment [EWD86]: You had less man in the study population. How did you come to this?

Comment [EWD87]: Please elaborate your results and conclusions.

Ethical approval

The Health Sciences Ethical Committee of Girne American University gave approval to this study.

Approval number: 2020-21/011

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