

## ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC FACTORS, HEALTHY LIFESTYLE FACTORS, AND INFECTION PREVENTION BEHAVIOR AMONG UNIVERSITY STUDENTS: A CROSS-SECTIONAL STUDY

### ZWIĄZEK POMIĘDZY CZYNNIKAMI SPOŁECZNO-DEMOGRAFICZNYMI, CZYNNIKAMI ZDROWEGO STYLU ŻYCIA I ZACHOWANIAMIZAPOBIEGAJĄCYMI ZAKAŻENIOM WŚRÓD STUDENTÓW UNIWERSYTETU: BADANIE PRZEKROJOWE

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#### Authors' contribution

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- A. Study design/planning  
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- B. Data collection/entry  
zebranie danych
- C. Data analysis/statistics  
dane – analiza i statystyki
- D. Data interpretation  
interpretacja danych
- E. Preparation of manuscript  
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- F. Literature analysis/search  
wyszukiwanie i analiza literatury
- G. Funds collection  
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#### Summary

**Background.** This study investigated the association between infection prevention behavior and socio-demographic and other lifestyle factors among the Lithuanian public and private university students.

**Material and methods.** The cross-sectional survey took place from 15 January to 28 February 2021, and a total of 234 students responded to the survey. Survey questions included socio-demographic factors, compliance to hand hygiene, attitude towards vaccination, safe sexual behavior and risky sexual behavior, self-rated health, eating habits, physical activity, and compliance with COVID-19 preventative measures. Independent sample t-test, one-way ANOVA, correlation bivariate, and multiple regression tests were used to analyze the association between different factors.

**Results.** Students with better health showed higher compliance to hand hygiene, but reported lower safe sex practices ( $p < 0.05$ ). Likewise, students with chronic disorders were more skeptical of vaccines ( $p < 0.05$ ). Students reporting healthy eating habits displayed a higher compliance to hand hygiene ( $p < 0.05$ ) and safe sex ( $p < 0.05$ ), while students who were more physically active showed lower confidence in vaccines ( $p < 0.05$ ).

**Conclusions.** This study indicates that significant correlations exist between numerous variables related to socio-demographic and lifestyle factors with infection prevention behavior. Moreover, there is a need to increase the compliance of infection prevention behavior among youth. Hence, more health promotion programs should be implemented focusing on infection prevention behavior in young individuals.

**Keywords:** infection transmission, community medicine, prevention and control, pandemics, disease outbreaks, epidemiology

#### Streszczenie

**Wprowadzenie.** W niniejszym opracowaniu zbadano związek między zachowaniami zapobiegającymi zakażeniom a czynnikami społeczno-demograficznymi i innymi czynnikami związanymi ze stylem życia wśród litewskich studentów uczelni publicznych i prywatnych.

**Materiał i metody.** Badanie przekrojowe odbywało się od 15 stycznia 2021 do 28 lutego 2021, a na ankietę odpowiedziało łącznie 234 studentów. Pytania ankietowe obejmowały czynniki społeczno-demograficzne, przestrzeganie higieny rąk, stosunek do szczepień, bezpieczne zachowania seksualne i ryzykowne zachowania seksualne, samoocenę stanu zdrowia, nawyki żywieniowe, aktywność fizyczną oraz przestrzeganie zasad profilaktyki COVID-19. W celu analizy związku pomiędzy poszczególnymi czynnikami przeprowadzono t-test dla prób niezależnych, jednoczynnikową analizę wariancji ANOVA, korelację dwuwartościową oraz testy regresji wielorakiej.

**Wyniki.** Studenci o dobrym stanie zdrowia częściej przestrzegali zasad higieny rąk, natomiast rzadziej uprawiali bezpieczny seks ( $p < 0,05$ ). Studenci z zaburzeniami przewlekłymi byli bardziej sceptyczni wobec szczepionek ( $p < 0,05$ ). Studenci mający zdrowe nawyki żywieniowe częściej przestrzegali zasad higieny rąk ( $p < 0,05$ ) i bezpiecznego seksu ( $p < 0,05$ ), natomiast studenci regularnie aktywni fizycznie wykazywali mniejsze zaufanie do szczepionek ( $p < 0,05$ ).

**Wnioski.** Badanie to wskazuje, że istnieją istotne korelacje pomiędzy różnymi zmiennymi wiążącymi się z czynnikami społeczno-demograficznymi oraz czynnikami związanymi ze stylem życia a zachowaniami zapobiegającymi zakażeniom. Istnieje ponadto potrzeba zwiększenia stopnia przestrzegania zachowań zapobiegających zakażeniom wśród młodzieży. Dlatego też należy wprowadzić więcej programów promocji zdrowia koncentrujących się na zachowaniach zapobiegających zakażeniom u młodych osób.

**Słowa kluczowe:** transmisja choroby, medycyna społeczna, profilaktyka i kontrola, pandemia, ogniska choroby, epidemiologia

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## Introduction

After the global COVID-19 outbreak, human behavioral responses towards the prevention of human-to-human transmission of infectious diseases has gained significant attention [1]. Direct or indirect person-to-person contact impacts the spread of infectious diseases; for example, shared spaces such as schools, offices, and public transport [2], as well as risky sexual behavior [3]. Despite the different modes of infection transmission, the incubation period of infectious diseases also plays a concerning role since, in the absence of the symptoms, an individual can infect other healthy people. This includes life-threatening infections like COVID-19 [4] and HIV [5]. Person-to-person infectious ailments such as Influenza, SARS, COVID-19, MERS, and HIV not only affect an individual's health, but also pose a threat to the family and the society, which can place further burden on the healthcare system. However, implementing and practicing prevention strategies like proper handwash protocols [6], vaccination [7], and safe sex [8] can decrease or eliminate infection transmissions from the population. Thus, it is essential to focus on these infection prevention strategies as the human race is constantly under the threat of emerging or re-emerging infection outbreaks. Awareness about infection preventive measures is essential, especially in adolescents and young adults, because there is a high probability of young adults engaging in risky behavior [9]. There is a need for multiple health education programs to spread awareness of infection prevention among young adults. However, before designing and delivering such programs, behavioral evaluations should be conducted. Multiple studies have been performed to explore compliance of hand hygiene, vaccine hesitancy, and sexual behavior among the different populations; however, there are no studies that measure the association of socio-demographic factors and lifestyle factors with hand hygiene compliance, attitude toward vaccines, and sexual behavior together among young adults. Therefore, this study aims to evaluate the association between infection prevention behavior with socio-demographic factors and lifestyle factors among university students.

The main objectives of this study are to explore the following questions:

1. What is the relationship between demographic factors (sex and locality) and infection prevention behavior?
2. What is the association between the presence of chronic conditions and infection prevention behavior?
3. What is the relationship between self-rated health and infection prevention behavior?
4. What is the association between healthy eating and infection prevention behavior?
5. What is the relationship between physical activity practice and infection prevention behavior?

## Material and methods

### *Nature of the research*

This research was a cross-sectional study and follows the cross-sectional study STROBE guidelines [10].

### *Research sampling and method*

The research sample was the students currently enrolled in public and private Lithuanian universities at different levels of education (undergraduate, graduate, and PhD). The survey was conducted from 15 January 2021 to 28 February 2021. This survey was open to all enrolled students in different Lithuanian universities. The survey was conducted online by sending the online questionnaire to different universities' student emails. This approach was the only appropriate way to collect the data due to the COVID-19 lockdown. An electronic consent form with objectives, along with the purpose of the research was mentioned at the beginning of the questionnaire. There was also an option to refuse participation. Additionally, the anonymity of participants was ensured as no participant was asked to provide any kind of personal information. After 28 February 2021, the data gained through the online survey was collected.

### *Research instruments*

1. Demographic factors: Demographic factors such as age, gender, educational level, residence place, employment status, relationship status, and spiritual beliefs were included.
2. Physical health: One subset from the Gothenburg quality of life instrument was used. This subset included questions related to health complications including high blood pressure, diabetes, chronic body pain, gastrointestinal problems, respiratory problems, allergies, and musculoskeletal problems. This instrument has been validated in a Swedish sample [11].

3. Self-rated health: Two questions assessing self-rated health were added where participants rated their overall health and compared their overall health with other people of the same age.
4. Hand hygiene: Twelve questions were developed according to the guidelines for hand hygiene in social and community settings from the Centers for Disease Control and Prevention (CDC), USA, released in 2021 [12].
5. Vaccination: The perception toward vaccination was measured by a questionnaire, which was prepared based on guidelines from WHO's Strategic Advisory Group of Experts (SAGE) on immunization functions. This instrument has been validated in Polish sample population [13].
6. Sexual health: A safe sex behavior questionnaire (BSBQ) was used to measure the frequency of safe sex practice to prevent sexually transmitted diseases (STDs), especially AIDS. In May and June of 1988, U.S. households received a pamphlet named "Understanding AIDS" from the Surgeon General's office [14]. This pamphlet relayed guidelines for safe sex classified into four categories: 1. Protection during intercourse; 2. Avoiding risky behaviors; 3. Avoiding body fluids; 4. Interpersonal skills. This safe sex behavior questionnaire (BSBQ) is designed based on those categories.
7. Lifestyle factors: FANTASTIC Questionnaire (FANTASTIC: F – family and friends, A – physical activity/affiliation, N – nutrition, T – tobacco, A – alcohol and other drugs, S – sleep/stress, T – work/type of personality, I – insight, and C – health and sexual behaviors) was used to measure the lifestyle factors among participants. This instrument has been validated in a Brazilian sample group [15].
8. COVID-19 prevention behavior: The questionnaire was created according to the guidelines given by the European Center for Disease Prevention and Control towards good practice to prevent the spread of COVID-19 within the community [16].
9. Geographical distribution: Any area with more than 100000 inhabitants was considered as a city, while any area with less than 1000 inhabitants was considered as a village. An area with a population between 1000-100000 was considered a small town.

### *Research organization*

Survey was conducted from 15 January 2021 to 28 February 2021. An electronic consent form was used to obtain consent. Additionally, the anonymity of participants was ensured as no participant was asked to provide any kind of personal information.

### *Statistical analyses*

SPSS 26.0.0.0 was used for statistical analyses. First, the descriptive statistics were calculated for socio-demographic factors of the participants. Subsequently, an independent sample t-test and one-way ANOVA test was carried out to compare the differences between socio-demographic factors and infection prevention behavior. Next, a correlate-bivariate test was conducted to analyze the correlation between the infection prevention behavior variables and other lifestyle factors. Lastly, a multiple regression analysis was executed to check the collinearity between predictor variables (hand hygiene, attitude toward vaccination, safe sexual behavior, risky sexual behavior, and COVID-19 prevention). The results were considered significant if  $p < 0.05$ .

### *Ethical considerations*

The Lithuanian Sports University's Ethics Committee granted approval to conduct the research with the approved protocol no. SMTEK-5 on 11<sup>th</sup> January 2021.

## **Results**

### *General characteristics of the participants*

A total of 234 university students responded and completed the questionnaire. The descriptive demographic characteristics of participants are represented in Table 1. The average age ( $m \pm SD$ ) of the participants was  $23.8 \pm 6.4$ , and 34.2% (80) were males while 65.8% (154) were females. 58.5% (137) of respondents were living in cities, 23.9% (56) belonged to small towns, and 17.5% (41) were living in rural areas. Most of the students (80.3%, 188) were undergraduates, while master and PhD students made up only 16.2% (38) and 3.4% (8), respectively. Employment status varied among the students as 50% (117) of students were not working either

part-time or full-time, whereas 29.9% (70) of students were working part-time, and 20.1% (47) of students were working full-time. Moreover, 48.7% (114) of the respondents were single, 44.0% (103) were in a relationship, and 7.3% (17) were married. 31.6% (74) of students classified themselves as religious, 45.7% (107) as agnostics, 15.4% (36) as not religious, and 7.3% (17) did not say.

**Table 1.** Descriptive characteristics of the participants

Characteristics	%(n)	
<b>Gender</b>	Male	34.2 (80)
	Female	65.8 (154)
<b>Age, years, m±SD</b>		23.8±6.4
<b>Locality</b>	City	58.54 (137)
	Small Town	23.93 (56)
	Village	17.52 (41)
<b>Student status</b>	Undergraduate	80.3 (188)
	Graduate	16.2 (38)
	Ph.D.	3.4 (8)
<b>Study area</b>	Biomedicine and health	59.0 (138)
	Others	41.0 (96)
<b>Employment status</b>	No-Work	50.0 (117)
	Part-time	29.9 (70)
	Full-time	20.1 (47)
<b>Relationship status</b>	Single	48.7 (114)
	In-relationship	44.0 (103)
	Married	7.3 (17)
<b>Religious beliefs</b>	Religious	31.6 (74)
	Agnostic	45.7 (107)
	Not religious	15.4 (36)
	Did not say	7.3 (17)

Notes: %=percentage, n=number, m=mean, SD=standard deviation.

#### *Sociodemographic factors and infection prevention behavior*

Table 2 depicts the relationship between gender and study background with infection prevention behavior. When comparing gender categories with hand hygiene, safe sexual behavior, and compliance to COVID-19 prevention measures, compliance was slightly higher among female students compared to male students with p-values of  $p=0.006$ ,  $p=0.028$  and  $p=0.001$ , respectively. However, there were no major differences between male and female university students when observing their attitudes toward vaccination or risky sexual behavior. Table 3 illustrates the association between other socio-demographic factors and infection prevention behavior among university students. When comparing different places of residence, the safe sex behavior was higher among students who belonged to small towns than in students living in the cities and students living in rural areas ( $p=0.039$ ). Compliance with COVID-19 prevention measures was higher among students living in rural areas compared to students living in small towns and cities ( $p=0.001$ ). Finally, there were no substantial differences between different places of residence regarding hand hygiene, attitude toward vaccination, and risky sexual behavior.

**Table 2.** Comparison between gender of study group and infection prevention behavior

Gender						
Variables	Male		Female		T	p
	(m±SD)	SE	(m±SD)	SE		
Hand hygiene	3.0±0.6	0.067	3.2±0.4	0.037	-2.80	0.006
Attitude toward vaccination	3.4±0.7	0.079	3.4±0.7	0.057	0.36	0.715
Safe sexual behavior	2.6±0.6	0.071	2.8±0.6	0.049	-2.21	0.028
Risky sexual behavior	1.8±0.3	0.039	1.7±0.3	0.025	1.94	0.053
COVID-19 prevention	2.9±0.6	0.074	3.2±0.4	0.039	3.55	0.001
Study area						
Variables	Biomedical/health science students		Other study background		T	p
	(m±SD)	SE	(m±SD)	SE		
Hand hygiene	3.32±0.45	0.038	3.08±0.58	0.059	3.43	0.001
Attitude toward vaccination	3.32±0.74	0.063	3.58±0.64	0.065	-2.74	0.007
Safe sexual behavior	2.82±0.60	0.051	2.81±0.66	0.068	0.15	0.881
Risky sexual behavior	1.79±0.31	0.026	1.84±0.35	0.036	-1.11	0.265
COVID-19 prevention	3.13±0.55	0.047	3.08±0.59	0.060	0.75	0.451

Notes: m=mean, SD=standard deviation, SE=standard error, p=level of significance.

In assessing the different study levels, safe sex behavior was higher among undergraduate students compared to postgraduate and PhD students ( $p=0.024$ ). Risky sexual behavior was lower among undergraduate students compared to postgraduate and PhD students ( $p=0.008$ ). There was no significant difference between different study levels regarding hand hygiene, attitude toward vaccination, and compliance with COVID-19 prevention guidelines. When evaluating the various educational backgrounds, hand hygiene was better among Biomedical/Health Sciences students compared to students from other educational backgrounds ( $p=0.001$ ). Positive attitude toward vaccination was higher among students from other study backgrounds than Biomedical/Health science students ( $p=0.007$ ). There was no substantial difference between different educational backgrounds in the case of safe sex behavior, risky sexual behavior, or compliance to COVID-19 prevention guidelines.

Our analysis of the relationship between employment and relationship status on hand hygiene, attitude toward vaccination, safe sex behavior, risky sexual behavior, and COVID-19 prevention measure compliance indicated no significant differences. Comparing religious status, hand hygiene was slightly higher among students who identified themselves as religious compared to students who identified as agnostics, not religious, or those who did not respond ( $p=0.05$ ). Risky sexual behavior was higher among students who identified as agnostics compared to students who identified as religious, not religious, or those who did not respond ( $p=0.046$ ).

#### *Infection prevention behavior and lifestyle factors*

Table 4 illustrates the linear correlation between the variables. In the case of self-rated health, there is a positive linear correlation between hand hygiene and self-rated health ( $p<0.01$ ). On the other hand, there is a negative linear correlation between self-rated health and safe sex behavior ( $p<0.05$ ). Furthermore, there was a negative linear correlation between having chronic health conditions and attitude toward vaccination ( $p<0.01$ ). Healthy nutrition significantly positively correlated with hand hygiene ( $p<0.01$ ) and safe sex behavior ( $p<0.01$ ).

**Table 3.** Comparison between other socio-demographic factors and infection prevention behavior

Place of residence										
Variables	City		Small town		Village		F	p		
	(m±SD)	SE	(m±SD)	SE	(m±SD)	SE				
Hand hygiene	3.16±0.55	0.047	3.26±0.50	0.067	3.35±0.39	0.061	2.330	0.100		
Attitude toward vaccination	3.38±0.76	0.065	3.44±0.63	0.085	3.55±0.62	0.097	0.921	0.400		
Safe sexual behavior	2.73±0.63	0.054	2.97±0.63	0.084	2.88±0.88	0.088	3.295	0.039		
Risky sexual behavior	1.84±0.34	0.029	1.77±0.31	0.041	1.78±0.32	0.051	1.088	0.339		
COVID-19 prevention	3.07±0.56	0.048	3.05±0.60	0.081	3.11±0.49	0.077	3.192	0.043		
Student status										
Variables	Undergraduate		Postgraduate		PhD		F	p		
	(m±SD)	SE	(m±SD)	SE	(m±SD)	SE				
Hand hygiene	3.23±0.50	0.037	3.23±0.55	0.090	2.88±0.58	0.207	1.747	0.177		
Attitude toward vaccination	3.42±0.73	0.053	3.44±0.60	0.097	3.51±0.63	0.225	0.065	0.937		
Safe sexual behavior	2.86±0.62	0.045	2.68±0.66	0.108	2.33±0.34	0.120	3.782	0.024		
Risky sexual behavior	1.79±0.33	0.024	1.84±0.31	0.051	2.16±0.23	0.082	4.980	0.008		
COVID-19 prevention	3.12±0.55	0.040	3.08±0.63	0.103	3.08±0.63	0.235	0.457	0.663		
Employment status										
Variables	Unemployed		Part-time		Full-time		F	p		
	(m±SD)	SE	(m±SD)	SE	(m±SD)	SE				
Hand hygiene	3.20±0.54	0.050	3.25±0.53	0.063	3.23±0.46	0.068	0.200	0.819		
Attitude toward vaccination	3.48±0.75	0.069	3.48±0.73	0.088	3.32±0.55	0.046	0.873	0.419		
Safe sexual behavior	2.86±0.60	0.055	2.86±0.62	0.074	2.64±0.68	0.100	2.313	0.101		
Risky sexual behavior	1.81±0.35	0.032	1.78±0.32	0.039	1.86±0.30	0.044	0.932	0.395		
COVID-19 prevention	3.11±0.57	0.052	3.11±0.58	0.070	3.11±0.56	0.082	0.001	0.999		
Relationship status										
Variables	Single		In-relationship		Married		F	p		
	(m±SD)	SE	(m±SD)	SE	(m±SD)	SE				
Hand hygiene	3.15±0.57	0.538	3.30±0.44	0.044	3.18±0.53	0.130	2.123	0.122		
Attitude toward vaccination	3.41±0.71	0.067	3.47±0.71	0.070	3.29±0.70	0.172	0.493	0.611		
Safe sexual behavior	2.80±0.63	0.059	2.88±0.59	0.585	2.55±0.77	0.187	2.132	0.121		
Risky sexual behavior	1.83±0.31	0.029	1.78±0.34	0.034	1.86±0.38	0.093	0.838	0.434		
COVID-19 prevention	3.09±0.58	0.055	3.12±0.55	0.054	3.17±0.61	0.148	0.130	0.878		
Religious status										
Variables	Religious		Agnostic		Not religious		Did not say		F	p
	(m±SD)	SE	(m±SD)	SE	(m±SD)	SE	(m±SD)	SE		
Hand hygiene	3.35±0.45	0.053	3.17±0.56	0.054	3.11±0.50	0.084	3.19±0.43	0.105	2.648	0.050
Attitude toward vaccination	3.50±0.76	0.088	3.42±0.68	0.066	3.45±0.70	0.117	3.08±0.62	0.152	1.575	0.196
Safe sexual behavior	2.87±0.66	0.077	2.83±0.64	0.062	2.71±0.51	0.085	2.73±0.60	0.147	0.657	0.579
Risky sexual behavior	1.72±0.36	0.042	1.86±0.29	0.028	1.83±0.33	0.055	1.80±0.37	0.091	2.701	0.046
COVID-19 prevention	3.17±0.52	0.061	3.08±0.54	0.052	3.07±0.73	0.122	3.12±0.55	0.133	0.395	0.757

Notes: m=mean, SD=standard deviation, SE=standard error, p=value of significance.

**Table 4.** Association between the self-rated health, illness status, nutrition, physical activity, COVID-19 prevention practice scores and infection prevention behavioral variables

Infection prevention behavior variables				
Variables	Hand hygiene	Attitude toward vaccination	Safe sexual behavior	Risky sexual behavior
Health (self-rated)	0.183**	-0.001	-0.144*	-0.012
Presence of chronic health conditions	-0.119	-0.178**	-0.057	-0.041
Healthy nutrition	0.181**	0.066	0.185**	0.053
Physical activity	0.081	-0.153**	-0.065	-0.057
COVID-19 prevention	0.523**	0.326**	0.340**	0.054

Notes: \* $p < 0.05$ , \*\* $p < 0.01$ .

Physical activity negatively correlated with attitude toward vaccination ( $p < 0.01$ ). In the case of COVID-19 prevention measures compliance, a positive correlation exists with hand hygiene ( $p < 0.01$ ), attitude toward vaccination ( $p < 0.01$ ), and safe sex practices ( $p < 0.01$ ).

#### *Multicollinearity between predictor variables*

The values of VIF to check multicollinearity between predictor variables are shown in Table 5. The value of VIF remained lower than 5 and near 1 or slightly above 1, demonstrating there is no overlapping between the predictor variables in the study.

**Table 5.** Predictors variables for infection prevention

Predictors	Self-rated health (collinearity)			
	B	$\beta$	p	VIF scores
Hand hygiene	0.125	0.153	0.052	1.455
Attitude toward vaccination	-0.042	-0.041	0.556	1.128
Safe sexual behavior	0.106	0.091	0.200	1.197
Risky sexual behavior	0.009	0.004	0.950	1.013
COVID-19 prevention	0.010	0.008	0.923	1.548

Notes: B - regression coefficient,  $\beta$  - standardized regression coefficient.

## Discussion

This study attempted to investigate the association between infection prevention behavior with socio-demographic and other lifestyle factors. It was observed that practicing hand hygiene, safe sexual behavior, and following COVID-19 prevention guidelines was higher among female students compared to male students. Comparable results have been noted in other studies regarding hand hygiene and safe sex behavior among different sexes. Suen et al. 2019 observed that female participants had higher hand hygiene compared to male participants [17], whereas one observational study conducted in Sweden concluded that female university students are gradually increasing their risky sexual behaviors compared to 25 years ago [18]. Another study conducted on university students in nine Asian countries showed safe sex behavior varied among male and female students from country to country. The study illustrated that in some countries, male students were practicing safe sex more than female students, whereas in other countries the opposite was observed [19].

Furthermore, this study found a difference between different geographical locations and infection prevention behavior. Participants from small towns were practicing more safe sex, while students who belonged to rural areas reported they followed COVID-19 prevention measures better than other university students. On the contrary, a recent study from China indicated opposite results. The rural residents in the study demonstrated little preventative behaviors and held negative attitudes toward COVID-19 preventative measures compared to the urban residents [20]. Moreover, it was found that safe sexual behavior was higher among undergraduate students, while risky sexual behavior was higher among PhD students. Hand hygiene was higher among biomedical and health science students, whereas other students from study groups showed a positive attitude toward vaccines. In the case of spiritual beliefs, it was observed that religious university students were practicing better hand hygiene, while risky sexual behavior was higher among agnostics.

Furthermore, the study showed regular hand hygiene was more common among university students who were good in health. At the same time, these students were less likely to be involved in safe sex behaviors. Students who had any chronic condition were more skeptical toward vaccines. This aspect is not explored much in previous studies, but in one recent study, while the majority of people with chronic disorders had a positive attitude toward vaccination, vaccination among those people was lower [21]. Interestingly, this study discovered students consuming healthy food were more inclined to maintain regular hand hygiene and practice safe sex behavior.

Relationship status is somewhat unconventional, and there are not many studies available to compare our results. Nevertheless, one study compared the influence of living a healthy lifestyle on the age of sexual initiation among school children. The study did not find any clear association between eating healthy and practicing safe sex [22]. Furthermore, it was observed that physically active students were less likely to get vaccinated. This link between high physical activity and attitude toward vaccination may be due to underlying socio-demographic factors. To our knowledge, no previous studies have been performed to assess this association, so this aspect needs more scientific exploration in the future.

This study used objectives that have not discussed or explored in previous studies. Therefore, this study generates novel findings that require further exploration. Caution must be used while interpreting the results of this study for a wider population. There are several reasons: 1. the sample size of this study is small, and there is a need for a large sample size to have a full representation of the university students in the country; 2. the study relied on self-reported data, so a chance for bias exists.

## Conclusions

This study highlights the correlation between infection prevention behaviors with socio-demographic factors and other healthy lifestyle factors. There was a significant association between sociodemographic factors with infection prevention behavior and lifestyle factors with different infection prevention behavior. Despite the need for further scientific exploration regarding these correlated aspects, this study emphasizes the need for health promotion programs such as informal and formal activities to promote infection prevention behavior among university students.

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