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Self-Perception of changes in lifestyle and wellbeing associated with social distancing during COVID-19 pandemic among medical students (the study in Lviv, Ukraine)

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Social distancing related to the coronavirus disease (COVID-19) pandemic caused by SARS COV2 is an important precautionary measure, implemented by WHO approximately 1 year ago. At the same time, it is a large-scale stressor that has led to multiple changes in the lifestyle around the world. In this crisis, the well-being and health of medical students who belong to the individuals with a high risk of distress in the population are very important for society.

The purpose of this research is to study the impact of COVID-19-related stay-at-home policy, social isolation, online academic learning, and working on the medical students' lifestyle and well-being focusing on their self-perception of telecommunication technologies, social media, as well as on the psychophysiological state, and eating behavior of medical students of Danylo Halytsky Lviv National Medical University (LNMU).

Methods. A prospective, cohort study was carried out on 273 medical students of the LNMU via an anonymous online survey using Google Forms. 273 people of different ethnicities answered the original questionnaire, which includes: 1) general questions (age, gender, ethnicity, family, education, work, and economic status); 2) issues related to the use of social media; 3) questions about the impact of social distancing on lifestyle; 4) the scale of stress perception.

Results: The cohort for the study consisted of 166 women and 107 men in the following age groups: from 17 to 24 — 92%, 25–31 — 4%, 35–44 — 2%, and over 45 years — 2%. Ethnic groups included Asian — 47%, Caucasian — 41%, African — 7%, Hispanic — 3%, and multiracial people — 2%. Social exclusion during COVID-19 was found to be caused by a change in the use of social media, more time spent on using them by all respondents. Among these, 88% acknowledge that social media have a great impact and 71% of responders learn basic information about the pandemic via social media. However, 52% doubt the reliability of the information. The feeling of anxiety, panic, which characterized the perception of stress caused by information on social media, was reported by 56% of respondents. Almost all respondents changed their lifestyle, which was characterized by physical inactivity and changed eating behavior. About 60% of respondents reported overeating in the evening and at night (19:00 — 5:00) and almost half of all respondents reported weight gain in the last year. All respondents know about the benefits of physical activity to overcome signs of psycho-emotional stress, but only about 10% of respondents exercise regularly. There were no differences in the responses from students belonging to the Caucasian group or other ethnicities.

Conclusions. The lifestyle of student youth, their eating behavior, and psycho-emotional state are being modified during COVID-19. Social media is an important informative factor in the context of social exclusion and the fight against chronic stress.

Keywords: young adult, medical students, COVID-19, pandemic, social distance, lifestyle.

Самосприйняття змін способу життя та благополуччя, пов'язаних із соціальними дистанціюванням під час COVID-19 серед студентів-медиків (дослідження у Львові, Україна)

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Вступ. Соціальне дистанціювання, пов'язане з пандемією коронавірусу (COVID-19), спричиненою SARS COV2, є важливим запобіжним заходом, який ВОЗ запровадила майже рік тому. Водночас це чималий стрес, який створив багато змін у способі життя людей в усьому світі. У цей кризовий період добре самопочуття та здоров'я студентів-медиків, які належать до осіб з високим ризиком професійного стресу, є дуже важливими для суспільства.

Мета дослідження — вивчити вплив застосування протиепідеміологічних обмежень під час COVID-19, соціальної ізоляції та дистанційного навчання на стиль життя та самопочуття студентів-медиків Львівського національного медичного університету імені Данила Галицького (ЛНМУ), зосереджуючи увагу на їхньому самосприйнятті психофізіологічного стану, характеристики харчової поведінки, використання комунікаційних технологій та соціальних медіа.

Методи. Проспективне когортне дослідження було проведено за допомогою анонімного інтернет-опитування 273-х студентів-медиків ЛНМУ різних етнічних груп через гуглформи з оригінальною анкетною, яка включала такі запитання: 1) анкетна інформація (вік, стать, етнічна приналежність, сім'я, освіта, працевлаштованість, економічний стан); 2) стосовно використання соціальних медіа; 3) про вплив соціального дистанціювання на спосіб життя; 4) щодо перцепції стресу.

Результати. До когорти включено 166 жінок і 107 чоловіків у таких вікових групах: від 18-ти до 24-х років — 92 %, 25–31 роки — 4 %, 35–44 роки — 2 % та старші 45-ти років — 2 %. За етнічними групами відсоткові співвідношення були такими: азійці — 47 %, європейці — 41 %, африканці — 7 %, латиноамериканці — 3 % та змішаної раси — 2 %. Було встановлено, що соціальна ізоляція під час COVID-19 зумовила зміни в користуванні соціальними медіа, зокрема збільшення часу користування серед усіх

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респондентів і 88 % визнають їхній значний вплив, 71 % респондентів отримують основну інформацію про пандемію через соціальні мережі. Однак 52 % відповіли, що сумніваються в надійності інформації. Відчуття тривоги та паніки, які характеризувало підвищення перцепції стресу, що спричиняла інформація в соціальних мережах, засвідчили 56 % респондентів. Майже всі респонденти вказали про зміни у способі життя, характерним стала фізична інактивність і зміни харчової поведінки. Близько 60 % респондентів повідомили про надмірне споживання їжі ввечері та вночі (19:00–5:00), майже половина когорти констатувала збільшення маси тіла за останній рік. Усі респонденти знають про користь фізичної активності для подолання ознак психоемоційного стресу, але регулярно це роблять 10 % респондентів.

Висновки. Стиль життя студентської молоді ЛНМУ, їхня харчова поведінка та психоемоційний стан змінилися під час COVID-19. Соціальні мережі є важливим інформативним чинником за умов соціальної ізоляції та боротьби з хронічним стресом під час пандемії.

Ключові слова: молоді дорослі, студенти-медики, COVID-19, пандемія, соціальне дистанціювання, спосіб життя.

Social distancing during lockdown is an important precautionary measure, implemented by WHO on March 13, 2020, for the prevention of high transmission rate and mortality associated with the coronavirus pandemic disease (COVID-19) caused by SARS COV2. At the same time, it is a large-scale stressor that has led to multiple changes in the lifestyle around the world [1, 2]. Recently, numerous studies have shown that except for genetic factors, epigenetic, ones related to an unhealthy lifestyle in youth, contribute to the risk of numerous metabolic disorders related to obesity, type 2 diabetes, premature cardiometabolic morbidity, and mortality in adulthood [3, 4]. In the global COVID-19-related crisis, the well-being and health of young adults who belong to medical students are the priority for society. Moreover, it has been widely proposed that during their highly demanding and intensive education in medical schools, these individuals are part of the population segment with a high risk of distress [5-7]. Our previous study indicated that medical students who were exposed to chronic stress and a sedentary lifestyle due to demanding academic learning had eating behavior disorders [8]. COVID-19 pandemic creates an unusual learning environment for future physicians due to the closure of medical facility departments, clinics, laboratories, university libraries, public places and limited access to other resources for education and clinical practice [9] with a shift of academic and social communication to online technological resources and social media platforms including Facebook, Instagram, and

Twitter [10, 11]. COVID-19-related lockdown can pose additional stress for the lifestyle and wellbeing of individuals apart from the stress of contracting COVID-19 infection [12, 13]. This global situation may adversely affect the individuals' lifestyle which in turn impacts their well-being. In such a situation, modern online social media resources started having an exceptional role in providing information via modern communication technologies [14]. At the same time, in COVID-19 times, social media could promote misinformation or incorrect interpretation of medical information, which causes panic, anxiety, depression in society [15, 16]. However, despite it being a global issue, their impact on medical students' lifestyle and well-being, online academic learning, and working during the stay-at-home policy is still significant. The strategy of our study was to search the latest information by surfing scientific literature in multiple databases including PubMed, Scopus and Web of Science to identify relevant studies (Fig. 1)

To contribute to this global problem, our research aimed to study medical students' lifestyle and well-being during online academic learning and working at Danylo Halytsky Lviv National Medical University in Lviv, Ukraine (LNMU), the impact of telecommunication technologies of social media on the psychophysiological state and eating behavior of students of different ethnicities under conditions of social distancing due to COVID-19.

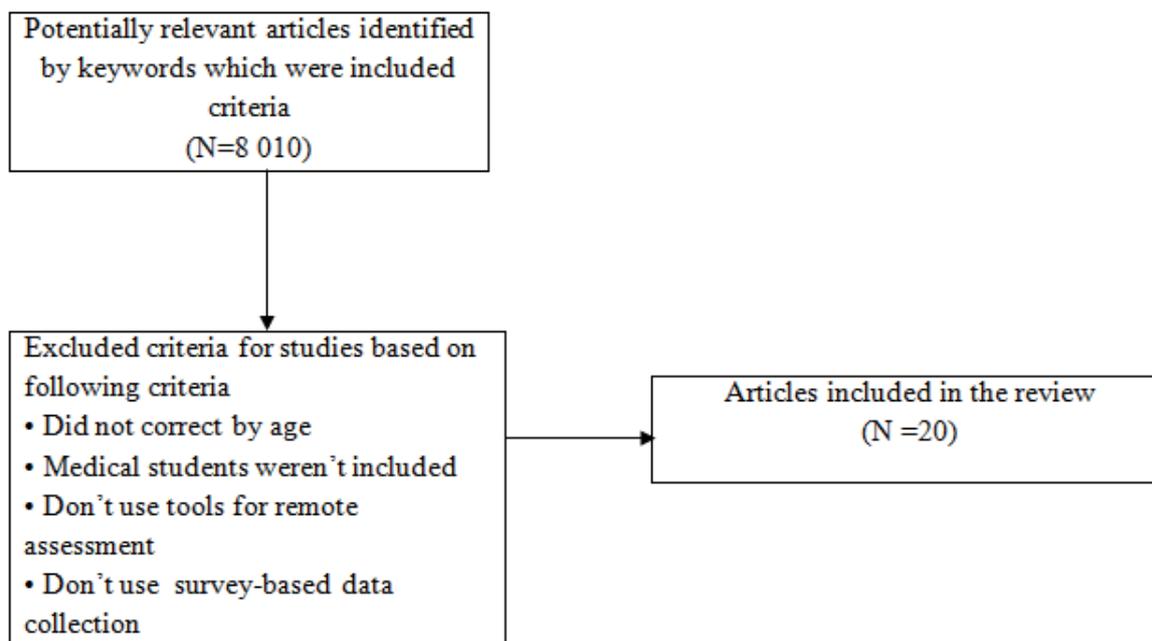


Fig. 1. Flowchart illustrating the number of reviewed studies associated with COVID-19 pandemic social distancing based on inclusion and exclusion criteria.

Methods

A prospective, cohort study was carried out at Danylo Halytsky Lviv National Medical University (LNMU), Lviv, Ukraine, one of the top Ukrainian medical universities, which was established in 1784. The study was conducted according to eligibility criteria where participants were current medical students of LNMU, aged 18 years or above, fluent in English. Exclusion criteria were dietary-related health conditions (e.g., diabetes; food allergy) or a prescribed diet (e.g., gluten-free) of the participants.

The students were recruited through LNMU and social media advertisements. The research methodology was based on web-survey data collection which allowed long-term participation and enrolment of a diverse cohort in the time of COVID-19 pandemic with lockdown or social distancing [17]. Responses of the cohort of 273 participants were recorded online using Google Forms (Google LLC, CA, United States); responses were being obtained from November 2020 through February 2021.

The anonymous survey questions included:

1) demographic and general questions (age, sex, ethnicity, marital, educational, working, and economic status) (Q1–Q8),

2) changes in the eating behavior and lifestyle (Q9–Q20), namely, the participants were asked: *Do you think your eating pattern (quality) changed during social distancing (quarantine) time?; How often do you eat during night time (19:00–5:00)?; Do you have regular meals during night time (7 times per week)?; Do you have regular meals during day time (6:00–19:00) (7 times per week)?; Do you eat breakfast alone?; Do you tend to overeat during quarantine?*

3) social media influence on lifestyle (Q21–Q32) was assessed using the following questions: *How often do you check your social media accounts?; Do you use social media as a source of information about the COVID-19 pandemic?; How often do you trust the information you obtain through social media?; Does social media cause you to feel anxiety?; Do you trust healthy nutrition-related information you see on social media? Do you act accordingly with health-related information you see on social media?*

4) perceived stress testing (Q33–Q42) [18].

5) perceived lifestyle (Q43–Q54) was estimated by the following questions: *How frequently do you moderately exercise?; How often do you get a full,*

restful night of sleep?; To what extent is your energy sufficient for your work and daily activities? To what extent do you eat a nutritious diet?; What describes your use of tobacco?; Which of the following best describes your use of alcohol?; How confident are you of being able to control your emotions in stressful situations?; When things are not going well, how likely are you to view the situation as being temporary rather than permanent?; When confronted with a stressful situation, how likely are you to wait passively for events to develop rather than to take charge?; When an unexpected, negative event happens to you, how likely are you to actively seek information about the event and how to cope with it?; To what extent do you believe that events in your

life are merely the result of luck, fate, or chance?

The self-assessment-based answers were graded on the 1–5-point scale (1– never, 2– rarely, 3– sometimes, 4– often, 5– always). All questions of the online survey were required; therefore, there are no missing data in our study. The collected data were coded, cleaned, and analyzed by researchers confidentially.

Statistical analysis

Obtained data were imported into an Excel sheet. The descriptive analysis of quantitative variables which represented the central tendency and qualitative variables were formatted in percentages. Statistical analysis was conducted using Wald’s test and Chi-squared test using Excel sheets.

Table 1

Characteristics of participants

	Women 60,8% n=166		Men 39,2% n=107		Total 100% n=273	
Age category						
<25	89.2*	148	95.4*	102	9.6*	250
25-34	3.6*	6	3.8*	4	3.7*	10
35-44	3.0*	5	0.8*	1	2.2*	6
>45	4.2*	7	0*	0	2.6*	7
Marital status						
Single	90.4*	150	98.1*	105	93.4*	255
Married	9.0*	15	1.9*	2	6.2*	17
Divorced	0.6*	1	0*	0	0.4*	1
Widowed	0*		0*		0*	
Ethnicity						
African	10.2*	17	3.8*	4	7.3*	20
Asian	35.0*	58	64.5*	69	46.9*	128
Caucasian	50.6*	84	26.2*	28	41*	112
Hispanic	1.2*	2	4.7*	5	2.6*	7
Multiracial people	3*	5	0.8*	1	2.2*	6
Education						
LNMU	100*		100*		100*	
Working status						
Employed	16.3*	27	7.5*	8	12.8*	35
Unemployed	83.7*	139	92.5*	99	87.2*	238
Economic status						
High	7.8*	13	7.5*	8	7.7*	21
Fair	81.9*	136	83.2*	89	82.4*	225
Low	10.2*	17	9.3*	10	9.9*	27

Results

The study group included 166 female and 107 male participants. The general information about them is presented in Tab.1. Dominant age groups of participants were: <25 (91.6%); other participants were aged 25–31 (3.7%), 35–44 (2.2%), >45 (2.6%). Ethnic groups involved in the study were: Asian — 46.9% (128 persons), African 7.3% (20 persons), Caucasian — 41% (112 persons), Hispanic — 2.6% (7 persons), and multiracial people — 2.2% (6 persons). Concerning marital status, 93.4% (255 persons) were single and 6.2% (17 persons) were married. Educational status: 98.2% (268 persons) reported current education in LNMU, others — graduated from LNMU in 2020. Most of the participants were unemployed — 87.2% (238 persons) and employed 12.8% (35 persons). Moreover, 82.4% (225 persons) reported their economic status as fair, 9.9% (27 persons) as low, and 7.7% (21 persons) as high. All participants stayed at home (due to the COVID-19-related stay-at-home policy) during their current studies.

Fig. 2 presents information about lifestyle, its relevant factors, eating behavior, and social media use. According to the first section about changes in lifestyle during the COVID pandemic, all responders confirmed such changes.

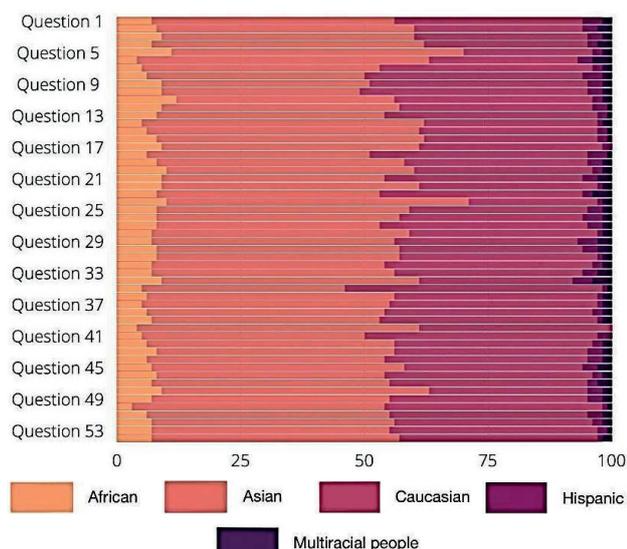


Fig. 2. The prevalent tendencies in lifestyle and its relevant factors, eating behavior, social media use, and perceived stress scale were evaluated using the survey conducted among African, Asian, Caucasian, Hispanic ethnic groups and multiracial people

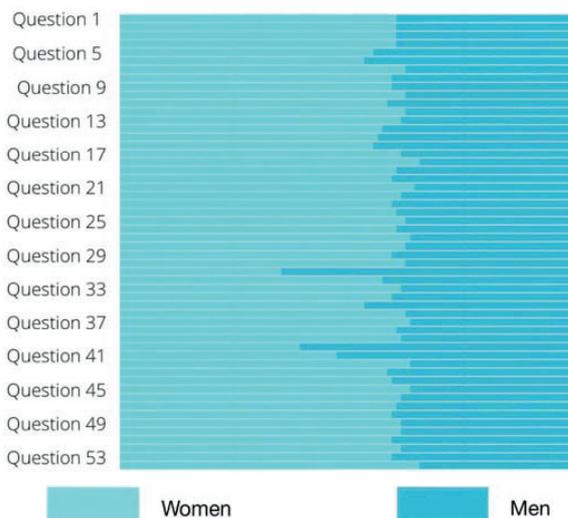


Fig. 3. The prevalent tendencies in lifestyle and its relevant factors, eating behavior, social media use and perceived stress scale were evaluated using the survey conducted among females and males

Unsurprisingly, remote and online education had adverse effects on lifestyle for 65% of responders. As expected, lifestyle changes included poor sleep quality, however, 68% of responders reported full nights of restful sleep.

In the study, moderate physical activity was reported by 51.4% of responders. Moreover, 82.1% of total participants tend to have sufficient energy for work/study/daily activities. Additionally, 18.1% tend to consume tobacco and 28.4% — alcohol.

Eating behavior

Data obtained about self-estimation of participants have shown that 74.1% of total participants reported that their weight approached the ideal level for them, and 69.6% were keeping the nutritious diet.

The eating pattern during the quarantine/social distancing period changed in 64.6% of participants. Eating during night time (19:00–5:00) was reported by 59.7% with 51.1% of all participants admitting that it happened 7 times per week. Simultaneously, they reported having irregular patterns of eating during daytime — 81.3% of all responders. Moreover, participants tend to eat their meals alone: breakfast — 73.4%, lunch — 67.7%, dinner — 56.3%. In addition to changing eating patterns, 55.9% of all respond-

ers confirmed that they tended to overeat. Differences between lifestyle behavior factors by ethnicity were highest in the Asian group of participants.

Social Media

Participants who are students of LNMU pointed that social media had a significant influence and served as a source of information about the COVID-19 pandemic, while 88.2% admitted they were checking social media frequently. Among all responders, other information sources were confirmed by 68.7% of medical students. But when asked whether social media belonged to trustworthy sources, only 52.4% of responders said that they believed the news reported on social media. Also, 72% of responders reported their interest in local information and were checking local information about their town/country frequently. At the same time, 56.1% tend to feel anxiety when learning the latest pandemic-related information, while still preferring to use social media nonetheless — 71.7%. We find suggestive evidence that 61.2% of responders act according to health-related information on social media, 49.6% of them share information promoting a healthy lifestyle during COVID-19. Our results concerning the impact of ethnicity on the use of social media suggest that the largest ethnic group reflecting the results were Asian participants.

Perceived stress scale

Our results have shown that 71.2% of total participants were upset when something happened unexpectedly, moreover, 66.9% felt unable to control things important to them. It was an interesting fact that 80.1% of responders confirmed frequently feeling nervous and stressed during the pandemic. At the same time, 76.5% of total participants were able to control irritations, and 66.7% felt that they were on top of their workload to some extent.

When it comes to handling stressful situations: 82.7% of responders can control their emotions. What's important, 83.5% of all medical students view obstacles as temporary rather than permanent while exaggerating their importance — 67.8%. Furthermore, 78.7% of responders can change their thinking to calm down, 65.6% of them tend to wait passively

for events to develop rather than take charge, but 86.4% of medical students also look for solutions and coping mechanisms. We have also found that 72.1% of total participants reported having decision-making powers in their families.

Discussion

The outbreak caused by COVID-19 brings the new reality with social distancing, remote studying and working, fear for themselves, their family members and the population health (20–21). Adaptation to such global dramatic changes in lives has been accompanied by changes in the modern population lifestyle and its prevalent factors, such as physical activity, sleep, and eating behavior [22–24]. Moreover, younger people have suffered more than older ones [25–27]. Over the last decade, during the pre-COVID-19 times, the well-being and lifestyle of medical students was identified as an important topic [28–30]. Recently, it had been recognized that, during COVID-19 times, undergraduate students suffered more than non-student young people [31, 32]. During COVID-19 lockdown, domestic and international medical students separated from their friends and university community facing considerable changes in their lifestyle, wellbeing, and education [33–34].

The importance of maintaining physical activity during COVID-19 for well-being was suggested widely [35–37]. Chronic stress and the formation of coping mechanisms to relieve it, without eliminating the cause itself, had an impact on mental health [38–40]. Students of LNMU are the target group to assess the influence of social distancing as a new stress factor, and their behavioral patterns changed in this new COVID-19-related environment. Despite knowing how to cope with the new reality associated with COVID-19, medical students faced increased levels of stress perception. Asian students were found to use social media as an information source and promotion tool to obtain and spread their knowledge about the COVID-19 pandemic. Asian participants also experienced greater changes in their eating behavior in comparison to other ethnic groups

The biggest gender-related differences were demonstrated in methods of coping with irritations.

Positive answers showed that males were more capable of controlling irritations in life (Q31) while being predominant in the consumption of tobacco and alcohol (Q40–41) in comparison to females.

Taking into account the obtained results, we can summarize that COVID-19-related social distancing tends to have a significant influence on medical students' lifestyle and well-being. All medical students of LNMU have an increased perception of stress and ways of coping with it while also experiencing decreased physical activity, sleep changes, and

eating behavior. Students confirm that they had unhealthy stress coping mechanisms that manifested in changed eating behavior. However, in the end, they knew how to overcome them by maintaining their weight and exercising moderately while staying on top of their workload in most cases (66.7 %). Additionally, students tend to find information about the state of the world in times of pandemic via social media, with varying levels of trust in the information they obtain. When faced with an obstacle, they tend to feel overwhelmed at first and wait for the solution to come but then they take charge and look for solutions.

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