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Differences in lifestyle between students of medical and biological fields of study in Poland

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Abstract: Students are a specific social group characterized by different lifestyle behaviours.

The aim of the study was to determine whether there are lifestyle differences between students of medical and biological fields from three different universities in Poland.

The research material consisted of answers from 1163 students (781 women and 382 men), aged 17.5–26.0 from the medical faculty of the Wroclaw Medical University, biological faculties of the Cardinal Stefan Wyszynski University in Warsaw and the University of Lodz. The survey included questions regarding gender, socio-demographic situation, lifestyle and eating habits. Students also provided height and weight data, which was used for BMI calculation. Chi-square test and one-way ANOVA were used to indicate differences in BMI between students and to estimate differences in lifestyle between students from three different university centres.

Medical students exhibited significantly lower BMI values compared to students from other academic centres. They also more often reported doing additional sports and assessed their overall level of physical activity significantly higher compared to students from other academic centres. Biology students reported to sleep longer and being more exhausted compared to medical students. Biology students tended to drink sugar-sweetened beverages and eat fast-food significantly more often than medical students. Students from the medical faculty in Wroclaw reported to smoke cigarettes less often compared to students from non-medical study. There were no significant differences in other studied factors, such as the use of alcohol, snacking between the meals and consumption of energy drinks.

Overall, students of medical fields reported a healthier lifestyle compared to their peers from biological faculties, although this was not consistent for all examined factors.

Key words: university students, alcohol, lifestyle, habits.

Original article
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Introduction

Students are a specific group of young adults. Depending on the country and the chosen field of study, the age of students typically ranges from 18 to 28 years old. In Poland, most of students are aged 19–24. During the time of study, some young people, especially those who live in smaller towns or villages, leave their native home place and move to a different city (Little and Tang 2008).

Upon moving to a new city, students often face changes in their lifestyles and often exhibit a greater self-support, more independence in terms of making important decisions, adaptation to a new social environment often expressed by a willingness to be accepted (Wamamili et al. 2019). The changes in lifestyle include, for instance, the consumption of cheap and caloric food, lack of sleep, alcohol and cigarette abuse, and mediocre physical activity. Students are often exposed to a relatively high level of stress, resulting from changes of the environment and attempts to adapt to new social circles, as well as the need to take up a paid work in order to stay at the university (Caso et al. 2020). Many studies have shown that students tend to spend less time sleeping compared to the rest of the adult population, and has a fairly larger consumption of energy drinks (Sogari et al. 2018).

It has also been reported that students, compared to the rest of population, tend to consume a relatively large amount of alcohol. For instance, some studies show that 90% of young men and 80% of young women attending college have been drunk, and approximately 90% of college students drink alcohol intermittently. It has been argued that a high consumption of alcohol by students might indicate a desire to establish social relations in the academic community (Griffin et al. 2018). Around 30% of students have been reported smoking cigarettes, of which around 3% admitted to smoke every day (Nasser and Zhang 2019; Wamamili et al. 2019).

Although people studying at the university form a community with specific socio-demographic characteristics, it could be argued that pro-health behaviour should be more often represented by medical students.

On one hand, future doctors are expected to present a health-promoting behaviour, such as an increased physical activity, a healthy lifestyle and diet. On the other hand, many researchers have shown that medical students tend to deal with stress by abusing alcohol, smoking frequently, consuming energy drinks and eating unhealthy, high-calorie or sugar-rich meals (Cecil et al. 2014; Nasui et al. 2021). Due to the specificity of medical studies, future doctors are have been argued to be exposed to a much greater stress related to an intense, high-pressure study programme which is characteristic to this field of study (Almesned et al. 2018).

The current study aimed to determine differences in lifestyle between students studying at Wroclaw Medical University and other universities (University of Lodz and Cardinal Stefan Wyszynski University in Warsaw with biological faculties). We hypothesize that that medical students from Wroclaw should exhibit both a higher level of nutritional awareness and healthier lifestyle compared to biology students from the universities in Lodz and Warsaw.

Material and method

The study participants consisted of: medical students from the Wroclaw Medical University (WMU, Faculty of

Medicine), biology students from the Cardinal Stefan Wyszynski University in Warsaw (CSWU, Faculty of Biology and Environmental Science) and biology students from the University of Lodz (UL, Faculty of Biology and Environmental Protection). In the following text we use only the abbreviations of the universities' names.

According to the latest rankings, the medical faculty of WMU is rated at the top five of medical schools in Poland, the biology faculty of UL takes a similar place, while the faculty of biology at CSWU was classified in the 15th place (Ranking Perspektywy 2021a, b) within their respective categories. All three cities, whose students took part in the study, are recognised as traditional academic centres in Poland and have gained a significant recognition as such. Lodz, Wroclaw and Warsaw are the cities with population of over 500000, which places them in the group of largest cities in Poland (GUS 2021).

Approval to conduct the study was obtained from the Ethics and Bioethics Committee of CSWU. The questionnaires were made available online in 2016–2020 and 1,163 students took part in the study, including 781 (67%) women and 382 (33%) men. Healthy men and women, without chronic diseases, aged 17.5–26.0 were included in the study. The youngest participant in the study was 17.9-year-old and the oldest was 25.64-year-old.

The survey included questions about gender, demographic situation (living with or without parents), mother and father education level (elementary and trade school/ college/ university), additional sports (yes / no), self-assessment of physical activity (bad/ sufficient/ good/ very good), duration of sleep (less than 6 hours/ 7–8 hours/ 9 hours and more), exhaustion (yes / no), smoking (yes / no), drinking alcohol (yes / no), use of energy drinks (yes / no), snacking between meals (yes / no), eating fast-food (yes / no), and drinking sugar-sweetened beverages (yes / no).

Students were also asked to report their height and weight, on the basis of which the BMI was calculated: weigh (kg) / height (m^2).

In order to determine whether the studied variables differed among the students from three universities, the Chi-squared test was used. The one-way Anova test with Tukey post-hoc were used to determine whether there were significant differences in BMI between students from different academic centres. P values <0.05 were considered statistically significant.

As men and women answers did not differ, they were merged. Answers of biology students from CSWU and UL differed significantly, so these groups were not combined for statistical analyses.

Results

There were statistically significant differences in the lifestyle between medical and biology students (Table 1). Differences were also noted regarding additional sports activities: 56.40% of biology students of UL, 60.32% of biology students of CSWU and 75.72% of those studying medicine attended additional sports classes. Differences were also noted in self-assessment of physical activity. Medical students reported their physical fitness, as average – 26.17%, good – 51.64% and very good - 17.45%, while biology students rated their activity lower.

Medical students slept significantly shorter than their peers in biological fields

of study (Table 1). Biology students from UL reported that 77.55% of them felt tired while the corresponding figures for the CSWU biology and medical students was 66.67%, and 40.07% respectively.

Although relatively many students eat fast-food, statistically significant differences were noted (Table 1). On average, about 80% of biology students and over 73% of medical students admitted to eating fast-food. In addition, over 41% of biology students from CSWU and over 29% of biology student from UL reported drinking sugar-sweetened beverages. Among medical students, about 29% of respondents declared that they consumed this type of product. Biology students significantly more often smoke cigarettes than their peers from the medical field (Table 1).

The consumption of energy drinks, snacking and drinking alcohol did not differ among the three groups of students (Table 1).

Table 1. Differences in the lifestyle of medical and biology students

Factors		Fields of study N [%]			p level
		Biology students from CSWU	Biology student from UL	Medical students	
Additional sport activities	yes	380 [60.32]	141 [56.40]	209 [75.72]	<0.001
	no	250 [39.68]	109 [43.60]	67 [24.28]	
Self-assessment of physical fitness	low	34 [5.40]	32 [12.80]	13 [4.73]	<0.001
	average	228 [36.19]	110 [44.00]	72 [26.18]	
	good	266 [42.22]	96 [38.40]	142 [51.64]	
	very good	102 [16.19]	12 [4.80]	48 [17.45]	
Sleep duration	6h or less	202 [32.17]	58 [23.11]	123 [47.48]	<0.001
	7–9 h	395 [62.90]	179 [71.31]	142 [51.08]	
	9 h or more	31 [4.94]	14 [5.58]	4 [1.44]	
Self-assessment exhaustion	yes	414 [66.67]	190 [77.55]	111 [40.07]	<0.001
	no	207 [33.33]	55 [22.45]	166 [59.93]	
Consumption of fast- food	yes	521 [83.23]	199 [79.28]	205 [73.21]	<0.01
	no	105 [16.77]	52 [20.72]	75 [26.79]	
Consumptions of sugar-sweetened beverages	yes	263 [41.95]	75 [29.88]	81 [29.03]	<0.001
	no	364 [58.05]	176 [70.12]	198 [70.97]	
Consumption of energy drinks	yes	229 [38.23]	118 [47.01]	110 [39.29]	0.053
	no	370 [61.77]	133 [52.99]	170 [60.71]	
Snacking	yes	513 [81.82]	188 [76.11]	224 [80.29]	0.162
	no	114 [18.18]	59 [23.89]	55 [19.71]	
Consumption of alcohol	yes	531 [84.55]	202 [80.80]	240 [86.33]	0.204
	no	97 [15.45]	48 [19.20]	38 [13.67]	
Smoking	yes	129 [20.48]	43 [17.13]	35 [12.46]	<0.05
	no	501 [79.52]	208 [82.87]	246 [87.54]	

Table 2. Differences in socio-demographic factors of medical and biology students

Socio-demographic factors		Fields of study N[%]			p level
		Biology students from CSWU	Biology student from UL	Medical students	
Mother's level of education	elementary / trade school	111 [17.70]	49 [19.60]	16 [5.67]	<0.001
	college	194 [30.94]	73 [29.20]	43 [15.25]	
	university	322 [51.36]	128 [51.20]	223 [79.08]	
Father's level of education	elementary / trade school	210 [33.98]	96 [38.55]	47 [16.73]	<0.001
	college	187 [30.26]	78 [31.33]	42 [14.95]	
	university	221 [35.76]	75 [30.12]	192 [68.33]	
Living with parents	yes	326 [51.83]	164 [65.60]	74 [26.33]	<0.001
	no	303 [48.17]	86 [34.40]	207 [73.67]	

The BMI of the analysed students ranged from 14.52 to 37.64. Over 12% of them were underweight. The correct body massiveness was noted in 72%, whereas overweight and obesity in 15% and 3% respectively. The one-way ANOVA test showed that there were significant differences in the body massiveness defined as BMI between students from different fields of study ($p=0.003$). A post-hoc test showed that there were differences between BMI of biology students from CSWU (average BMI 22.27) and medical student (average BMI 21.43).

Table 2 presents differences in socio-demographic data, including parental education level and living with parents. These data significantly differ among medical and non-medical students. Mothers of medical students were reported to have the highest level of education (79.08% of mothers). In contrast, ~ 51% of mothers of biology students were reported to have higher education level. Moreover, fathers of medical students were reported to have higher education compared to fathers of students from biological fields of study.

Approximately 26.33% students from the medical faculty, and average over 58% of students from the biological faculty declared living with their parents. These socio-economic differences were statistically significant (Table 2).

Discussion

This study showed significant differences between students from medical and biological fields regarding lifestyle, BMI and socio-demographic data. Medical students exhibited significantly lower BMI values, practiced additional sports more often and assessed their level of physical activity higher compared to biology students. Moreover, medical students slept significantly shorter than their peers from other fields of study. Compared to medical students, students of biology faculties reported to feel more tired, consumed more fast-food and drink more sugar-sweetened beverages and smoke more.

There were no significant differences in other studied factors, such as consumption of energy drinks or alcohol and snacking between meals.

Medical students showed a significantly lower BMI indices, although the results were not consistent. Research from Greece showed that students living away from home developed more unfavourable eating habits than their peers staying in family homes, which was, however, not reflected in this study (Papadaki et al. 2007). One study showed that among Indian medical students, 18% were overweight, and another 8% were obese, which clearly differs from the results obtained in our research (Vibhute et al. 2018). Our findings may result from parents' higher level of education, eating habits passed on at home, or the choice of healthier food by young adults from medical fields of study (Ganasegeran et al. 2012). On the other hand, there were no significant differences in snacking between main meals (Mattson et al. 2014). Eating between meals was characteristic of about 76-81% of students from all three studied groups. Eating extra, often caloric snacks can lead to excessive caloric intake, leading to metabolic syndrome and cardiovascular risk factors (Vergetaki et al. 2011). Both medical and biology students reported to eat fast-food products often, although the latter were significantly more likely to do so. Warsaw citizens tend to be wealthier, so perhaps, that is why students from the capital city can afford this type of product (fast-food products are relatively expensive in Poland). It has been also shown that in Poland children eat fast food more often when their parents have a lower level of education but high incomes (Łoś-Rycharska and Niecławska 2010). An alternative to fast-food can be eateries, which are very common on university campuses. However, they do not always play a fundamental role in the nutrition of students, which may be caused by dissatisfaction with the proposed menu and affordability (Murray et al. 2021).

A higher consumption of sugar-sweetened beverages was observed among students of biological sciences in comparison to their counterparts from medical students. Carbonated drinks contain significant amounts of sugar, high fructose corn syrup or sweeteners. These substances are considered unhealthy. Sweeteners are added to many drinks, including fruit and vegetable drinks, sports drinks, energy drinks, sweetened water. It has been found that high consumption of sugar-containing beverages is correlated with less frequent sports activities. In the present study, medical students who reported to consumed significantly less sugary drinks also reported better physical activity. Excessive consumption of sweetened drinks significantly contributes to the development of overweight and obesity. It is worth noting that students of biology from CSWU had a significantly higher BMI than medical students (Harrington 2008; Mandal et al. 2021).

There has not been a great deal of research studies focusing on consequences of consuming large amounts of energy drinks by the university students. In one study conducted among Turkey medical students, almost 30% indicated that these are drinks similar to sports drinks (Hidiroglu et al. 2013). Students that have been reported to consume a high number of energy drinks in order to increase their concentration during exams, although it has been also reported that they tend to mix them with alcohol (Woolsey et al. 2015). Energy drinks contain ingredients that might have both positive and negative health effects. A good example is caffeine, which if consumed in mod-

eration, may contribute to the treatment of obesity diabetes, while applied in excess may lead to dehydration. It has been noted that excessive use of energy drinks may lead to palpitations, agitation and gastrointestinal upset (Kaur et al. 2019). In our study, consumption of energy drinks was observed to be at a similar level among students from different faculties. Currently, the consumption of energy drinks is very popular among children and adolescents, and this habit may extend to the later stages of life (Seifert et al. 2011).

Interestingly, students from all studied groups reported similar behaviours related to alcohol consumption. It appears that the awareness regarding the harmful influence of alcohol on the human organism is common, moreover, people from medical faculties, coming from homes with higher SES, are expected to drink alcoholic beverages less frequently. According to numerous studies, students are a specific group so that entering adulthood is often associated with gaining independence from parental care and the ability to make uninfluenced decisions. In addition, studying time is often regarded as an important period in the life of young adults during which new friendships are made with a strong need for social acceptance coupled with the avoidance of social rejection (Williams and Clark 1998). Therefore, students' social meetings are frequently accompanied by drinking alcohol. There has even been a report of relatively high alcohol consumption among students from Baghdad, where alcohol consumption is considered to be illegal (Al-Ameri et al. 2016). It is also worth mentioning that the percentage of abstainers among young adults in Poland has been reported to steadily fall (Woźniakowski et al. 2017).

There are two critical variables in maintaining a healthy body weight: the right amount of calories consumed and the right dose of physical activity (Castro et al. 2020). In our study, a higher physical activity as well as a higher self-esteem of physical activity was reported among medical students. This is also reflected by lower BMI values of the medical students compared to those exhibited by biology students. These differences can be explained by different habits experienced in family homes as well as differences in family income. It is assumed that parents of medical students, as well-educated people, could promote pro-healthy lifestyle in their children while greater affluence increases the possibility of participating in additional sports activities (Więch et al. 2017; Danaei et al. 2018). However, in terms of instilling proper eating habits and physical activity, parents' awareness may be more important than their wealth, possibly explaining differences in behaviors between medical and biology students from CSWU.

Apart from a higher alcohol consumption, the age between 19–24 can by also associated with other risky health behaviours, such as smoking. In our study, the percentage of smokers from biology faculties was significantly higher compared to medical students. Perhaps, future doctors are more aware of the adverse effects of cigarette smoking, although not all studies support this claim (Khan and Mahmood 2012).

The results of our study show that medical students, although do not avoid stimulants, more often than biology students reported good health in self-assessment questionnaires. However, they also reported to sleep significantly less compared to their peers from biology faculties. Biology students, on the other hand,

indicated a greater fatigue than medical students. Research indicates that worse well-being, including mental and physical condition, may worsen with more frequent consumption of fast-food (Zahedi et al. 2014). This may be due to the lack of essential nutrients, such as iron, vitamin B12 or poly unsaturated fatty acids in this type of diet, which can lead to neurotransmitter disorders. It could be argued that because biology students consumed, on average, more fast-food and had a lower level of physical activity, they also exhibited lower indices of well-being (Zahedi et al. 2014). Some researchers have reported a worse sleep quality and its shorter duration among medical college students (Lemma et al. 2014), due to either stress (demanding study programme), or a more frequent use of alcohol and cigarettes (De Castro Corrêa et al. 2017). Insufficient sleep reduces resistance to stressful situations, which may result in an increase of the amount of food and alcohol consumed (Perrotte et al. 2018). However, it has been also reported that improving the sleep quality is associated with a higher level of involvement in sport and extracurricular activities. Indeed, medical students reported to practice additional sports more often than their peers, and smoked statistically less frequently, hence their better well-being, despite the reported deficiencies in sleep duration.

It should be noted that the differences in socio-economic factors characterizing the studied groups. Academic centres in Poland are most often located in large cities. In the 2019/2020 academic year, there were over 1,204 million students, including the CSWU – 9332, the WMU – 6324 and the UL – 24829 (GUS 2019). Students in Poland often choose a university in their hometown, while in other countries, such as the United Kingdom, students most often leave the parental home and move to a university residence (Lewis et al. 2014). In this study, the highest percentage of students living with their parents was recorded in UL. This may be related to the economic characteristics of the city – Lodz is one of the cities in Poland with the lowest income per capita, and great number of young people cannot afford to study outside of their home city. On the other hand, the field of biology at UL is highly placed in the university rankings and popular among young people (GUS 2019, Ranking Perspektywy 2021a). In Warsaw, on the other hand, the educational offer is wider, which may convince young people to stay in the hometown. With regards to WMU, the relatively small number of people staying at home may be related to the lack of this type of university in the Lower Silesian Voivodeship. It is also worth noting that the medical faculty in Wroclaw has one of the best ratings in Poland (Ranking Perspektywy 2021b).

Our study shows that students from medical university exhibit a healthier lifestyle than their peers from biological faculties, especially in terms of eating habits or physical activity. A healthier lifestyle reported by students of medical faculty might be related to the study program, during which healthy lifestyle habits are widely discussed. Moreover, healthy habits taken from home accompanied by a high socio-economic status (SES) may also contribute to making pro-healthy choices. Such factors may encourage medicals tudents to keep themselves in a good physical shape and mental condition (Brehm et al. 2016).

The results of our study show that the consumption of alcohol and energy drinks does not differ between the sur-

veyed groups of students. Therefore, there is an ongoing need for health promotion, such as changes in behaviour, specifically related to eating habits, physical activity, sleep hygiene, health effects of alcohol and cigarettes among the population of higher education students.

One of the limitations of this study is that it was conducted in three different cities at universities with different quality rankings and a small number of students. Moreover, a subjective assessment of the family's economic situation was used instead of an objective data such as income. It can be a particularly sensitive question, causing a discontent, which may result in failure to complete the survey (Czarnocińska et al. 2020).

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Conflict of interests

Authors declare that there is no conflict of interest regarding publication of this paper.

Authors' contributions

JN-D was responsible for the statistical analysis, interpretation of the results, and for the accuracy of the presentation of the results and the editing of the text; BB was responsible for proofreading the text; AB approved the final version; JM-D was responsible for statistical analysis and interpretation of the results; PD, B-KD were responsible for the design of the survey, JG were for the statistical analysis, interpretation of the results, and for the accuracy of the presentation of the results and the editing of the text.

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