

Življenjski slog študentov medicine

Lifestyle of medical students

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Izvleček

Namen: Izhajajoč iz opredelitve Svetovne zdravstvene organizacije (SZO), da je zdrav življenjski slog način za zmanjšanje resne obolenosti in zgodnje umrljivosti, smo se namenili preveriti, kako se življenjski slog študentov medicine spreminja z leti študija. Izhajali smo iz predpostavke, da na zdrav življenjski slog vplivajo številni dejavniki, ki so ključni pri ohranjanju in varovanju zdravja.

Metode: V raziskavo, ki je potekala v študijskem letu 2017/18, smo vključili 165 študentov medicine, in sicer 57 moških in 108 žensk iz 1., 3. in 5. letnika Medicinske fakultete Univerze v Mariboru. Podatke smo pridobili s pomočjo v slovenščino prevedenega standardiziranega vprašalnika samoocenjevalnega tipa: The FANTASTIC Lifestyle Assessment Instrument, ki vključuje glavne dimenzije življenjskega sloga (telesna aktivnost, prehrana, kajenje in uživanje substanc, alkoholne navade, spalne navade). Sami smo dodali še dimenzije psihičnega stanja, socialne vključenosti in altruizma ter študijskih dejavnosti.

Rezultati: V izbranem vzorcu študentov medicine so opazni neželeni odkloni v življenjskih navadah, v začetnem entuziazmu nad izbiro študija ter v zname njih slabše obvladane stresne situacije,

Abstract

Purpose: Using the World Health Organization definition that a healthy lifestyle is a way of living that lowers the risk of serious illness or early death, our goal was to examine the lifestyle changes made by medical students over the years of study. A healthy lifestyle, which is crucial to maintain and protect health, is determined by many variables, both positive and negative.

Methods: A total of first, third and fifth year medical students at the Faculty of Medicine of the University of Maribor (165 students, 57 males and 108 females) were enrolled in the study during the academic year 2017/18. Lifestyle data, including physical activity, nutrition, sleep hygiene, and drug, tobacco and alcohol use, were collected using a standardized self-assessment questionnaire, the FANTASTIC Lifestyle Assessment Instrument, which had been translated into Slovenian. The questionnaire was supplemented with further questions to explore psychological aspects of lifestyle, such as mental well-being, social inclusion, altruism and student activities.

Results: Our sample of first, third and fifth year medical students revealed unhealthy changes in life habits, which were closely associated with the length of training. For the third year students,

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ki jo očitno predstavlja prehod iz predkliničnega v klinični del študija. Z dolžino študija medicine se med zajetimi študenti povečuje obseg nezdravih življenjskih navad, pri čemer je situacija med študenti tretjega letnika videti kot krizna situacija (najvišji obseg uživanja nedovoljenih substanc in zdravil brez/z receptom ($p = 0,003$), pomanjkanje življenjskih ciljev, smisla, manjša povezanost s fakulteto ($p = 0,000$) ter upad altruizma ($p = 0,007$)).

Zaključek: Rezultati raziskave kažejo, da se z dolžino študija medicine začnejo pojavljati nezdravi vzorci življenjskega sloga. Predvsem v tretjem letu začne naraščati stresna (psihofizična) obremenjenost v obliki krizne situacije. Iz teh razlogov je v primeru študija medicine priporočljivo izvajanje skupinsko organiziranih oblik podpore po načelih samopomoči.

the situation had reached a crisis point, probably because the initial enthusiasm over choice of study had worn off, and stress had become less manageable in the transition period between preclinical and clinical training. During their third year, the students consumed the largest amount of controlled substances and prescription and OTC drugs ($p=0.003$), lacked goals and purpose in life, were less connected with the faculty ($p=0.000$) and showed a decline in altruism ($p=0.007$).

Conclusion: Our results show that the psychophysical stress burden among medical students increases with duration of training, reaching crisis point during the third year. We recommend that medical students should arrange self-help and support groups to maintain a healthier lifestyle during this challenging period.

INTRODUCTION

A healthy lifestyle is a way of living that lowers the risk of serious illness or premature death. According to the World Health Organization, as many as 60% of lifestyle factors are associated with human health (1). In a large-scale cohort study, the Alameda County Study, scientists at the Human Population Laboratory in California studied possible associations between lifestyle habits and personal health in a sample of 6928 people over 26 years. The main findings of this study were that people who regularly slept 7–8 hours per day, ate regular meals, were physically active, didn't smoke and limited alcohol consumption had fewer health complications and were less frequently ill (2).

A healthy lifestyle in childhood and adolescence is associated with better health outcomes in old age (3). Lifestyle habits that are established in childhood are modified throughout life, with the biggest changes occurring during adolescence. The most important changes during adolescence are eating habits, physical activity, sleep patterns, and use of alcohol, tobacco and drugs (4).

Major lifestyle changes are commonly observed among university students. Academic, social and financial pressures can lead to both physical and mental health problems, which have a negative effect on educational success (5). Insomnia, poor sleep quality and a high

depression rate prevail among university students (6–8). In three out of four people with mental disorders, symptoms of mental illness begin before the age of 24 (9–11).

In 2018, Ribeiro et al. carried out a systematic review of scientific papers published in the last five years that examined stress and quality of life in students (5). Symptoms of depression and poorer physical health emerged early among medical students, and lifestyle quality declined severely as a consequence of burnout syndrome, sleep disorders and depression (5). Medical studies are undoubtedly psychologically challenging and can become stressful for students. A study of 545 medical students conducted in Minnesota found that almost half of medical students (45%) were under constant stress, resulting in burnout syndrome. The main causes of stress were academic pressure, perfectionism and emotionally charged clinical environments (12). Amongst the wider population of students, medical students are considered to better understand the importance of physical activity and balanced eating habits; most medical students have been found to be physically active, although female students were less likely to be physically active than male students (13–15). Inactivity has been attributed to lack of time, laziness and exhaustion. Students with

higher body-mass index (BMI) were found to be more physically active, indicating greater health concerns in this group (13). Unhealthy eating habits begin to emerge in medical school and obesity reflects stress and lack of physical activity (16). Regular and excessive alcohol consumption among medical students can alter perceptions of safe drinking habits and could mean that patients are misinformed about acceptable daily alcohol consumption (17). As well as excessive alcohol consumption, illicit drug use (18) and abuse of new cognitive stimulants (19) are emerging problems in medical students. Older students, on average, consume more cognitive stimulants and have a more positive attitude towards them. Abuse of over-the-counter (OTC) medicines, which is an internationally recognised but, as yet, poorly understood problem, is also a cause of increasing concern (20). OTC medications, obtained by patients without a prescription from a physician, are used to treat a wide range of conditions including, but not limited to, headaches, common cold, musculoskeletal pain, allergies, tobacco dependence and heartburn. Abuse of OTC medications differs from misuse of OTC medications, which is inappropriate use for the wrong indication, incorrect dosage or incorrect duration (21). A literature review by Cooper found that the most commonly abused OTC drugs in many countries fall into five key categories: codeine-based drugs (especially compound analgesics), cough products (particularly those containing dextromethorphan), sedative antihistamines, decongestants and laxatives (22).

Medical students have a lower quality of sleep compared with the rest of the population and the consequence of this may be reduced empathy towards patients in their subsequent careers as doctors (23). Since medical students should set an example and promote a healthy lifestyle, opportunities should be taken to educate first and second year students about the importance of a healthy lifestyle. Students should be encouraged to assess and, where necessary, improve their own lifestyle habits, with or without the help of professionals.

The purpose of this research was to study the lifestyle

habits of medical students at the Faculty of Medicine, University of Maribor.

METHODS

Study setting

A cross-sectional study was conducted among medical students at the Faculty of Medicine in the academic year 2017/18. The study protocol was approved by the Medical Ethics Committee of UKC Maribor. Written informed consent was obtained from all participating individuals. The study was approved by the University Medical Center Ethics Board, registration number UKC-MB-KME-12/18.

First, third and fifth year undergraduates were invited to participate in the research. A total of 165 undergraduates, of whom 57 (34.5%) were male and 108 (65.5%) were female, enrolled in the study. The students were asked to complete the FANTASTIC Lifestyle Assessment Instrument, a questionnaire developed in 1984 by the Canadian academics, Douglas, Nielsen and Ciliske to evaluate lifestyle habits (24). This questionnaire was chosen because it is brief, uses a five-point scale and is easy to complete. The questionnaire was translated into Slovenian, using the forward-backward principle, and the translated questionnaire was tested on six subjects before the main study in order to identify any incomprehensible words.

The questionnaire comprises 15 closed questions that explore different aspects of lifestyle: physical activity, diet, tobacco and substance abuse, drinking, and sleeping patterns. The FANTASTIC questionnaire was supplemented with 28 additional questions, designed by the present authors, covering four aspects of lifestyle, mental well-being, life purpose, social inclusion and student activities. The questions about mental well-being were designed to evaluate the students' self-esteem, ability to set and focus on career goals, cope with daily stress, relax, express feelings, believe in the future and enjoy new challenges. The questions about life purpose were intended to gather information about the students' belief in the purpose of life, ability to help people in need, achieve goals with lasting value, enjoy various free-time activities,

be an equal member of the community and desire to positively change other people in the community, and surpass themselves. The questions on social inclusion were designed to gather information about the students' ability to share and respect feelings, to socialize with others in the community and to offer help when needed, to defend themselves against exploitation, to have good relationships with parents and to seek help. The questions about social activities were designed to gather information about the students' level of connection with the medical faculty, competence to solve problems with other members of the faculty, satisfaction with study achievements and the usefulness of their acquired medical knowledge. The questionnaire was anonymous and the level of agreement / disagreement with each statement was expressed using a five point Likert scale for the FANTASTIC questionnaire and a four point scale for our additional questions. The alternatives were presented in columns to simplify coding, with the left-hand column always least associated with a healthy lifestyle. The scores from all questions were added

together to give a global score, which ranged from 0 to 187 points. The sum of Likert scores for each aspect of lifestyle was used for statistical analyses, with lower scores representing lower levels of physical activity and poorer diet, higher levels of drug, alcohol and tobacco use, poorer sleep hygiene and mental health, lower life purpose, lower social inclusion in the community and poorer connection with the medical faculty. The lower the overall score, the greater the need for change.

Statistical analysis

The data were analysed using the SPSS statistical program for Windows version 24 (SPSS Inc., Chicago, IL, USA) and plotted with descriptive statistical calculations (f%, M, SD) and inferential statistics (Hi-square test, p-values, ANOVA test, Levene Test) (25).

RESULTS

Descriptive statistical results for each aspect of lifestyle, according to the study year, are presented in Table 1.

Table 1. Descriptive statistics of lifestyle habits and results from the supplemented dimensions according to the year of study

Study year	LIFESTYLE HABITS				SUPPLEMENTED DIMENSIONS				
	Balanced diet	Physical activity	Drug abuse	OTC drug abuse	Drinking habits	Sleeping habits	Goal setting and self love	Altruism	Study activity
1st year (Mean, SD)	10.2 (2.6)	7.000 (1.9)	16,8 (3,2)	4.7 (0.7)	12.9 (1.9)	10.0 (1.7)	6.8 (1.0)	3.4 (0.7)	12.2 (2.2)
3rd year (Mean, SD)	10.5 (2.1)	6.5 (2.0)	14,4 (3,6)	3.5 (1.6)	11.1 (2.8)	10.1 (2.0)	6.0 (1.8)	3.1 (1.4)	12.2 (2.4)
5th year (Mean, SD)	10.0 (2.4)	6.6 (2.0)	15,0 (3,5)	3.2 (1.4)	10.8 (2.6)	10.5 (2.0)	6.5 (1.2)	3.2 (0.76)	11.2 (1.9)

SD - standard deviation, OTC- over-the-counter

Means and standard deviations (SD) are included for each dimension in the FANTASTIC questionnaire. Statistical findings of the medical students' lifestyle habits between the years of study are presented in Table 2. We found statistically significant correlations between study year and the following parameters: balanced diet, abuse of illicit substances, abuse of OTC medicines, and drinking habits. There was an increasing trend in unhealthy lifestyle habits through the years of study in all of these parameters. Specifically, third year medical students were significantly (p=0.003) more likely to abuse illicit

substances compared with first and fifth year students. The highest statistically significant trend of consuming alcoholic beverages was measured from third to fifth year of study (p=0.000). When we analysed the second part of the FANTASTIC questionnaire together with our own supplementary questions, we found that, throughout the years of study, medical students lost their ability to set clear goals and showed less self-esteem. Third year students were significantly less likely (p=0.007) to be altruistic than first year students and were also significantly more likely (p=0.000) to have weak connections with the faculty.

Table 2. Inferential statistical correlations of medical students' lifestyle habits between the years of study

	QOL dimensions	Measured correlations between study years	Statistical significance (p)
LIFESTYLE HABITS	Balanced diet*	First and fifth year	0.014
		Third and fifth year	0.042
	Physical activity**	First, third and fifth year	0.244
	Drug abuse*	Third year	0.003
	OTC-drug abuse*	First and third year	0.000
		Third and fifth year	0.004
	Drinking habits*	Third and fifth year	0.000
Sleeping habits*	First, third and fifth year	0.351	
SUPPLEMENTED DIMENSIONS	Goal setting and self love*	First and third year	0.001
		Third and fifth year	0.045
	Altruism***	First and third year	0.007
	Study activity*	First and third year	0.000

*Games-Howell post hoc test, ** Pearson's chi-squared test, *** Post hoc test (LSD); OTC-over-the-counter

DISCUSSION

Our study shows that medical students adopt poor lifestyle habits throughout their medical education and, alarmingly, the trend towards eating unhealthy and unbalanced food increases throughout the years of study. A statistically significant correlation was also seen between decline in physical activity and increased length of study. Third year medical students consumed more illicit substances than first or fifth year medical students. The statistically significant increase in OTC drug use and more frequent alcohol use in the later years of medical education are matters of concern that requires appropriate intervention.

In comparison with the cross-sectional HELENA study, which investigated dietary and physical activity trends among 3528 European adolescents, our results showed an encouragingly higher level of daily physical activity. In the HELENA study, older adolescents were more sedentary, whereas younger individuals more often participated in daily physical activity (26). Our study showed that first year medical students were the most physically active and third year students were the least physically active. Similar results were seen in a study carried out in Southern Thailand, in which preclinical students were more likely to be physically active than

clinical students. The proposed explanation for this difference is that clinical students spend a lot of time in hospitals and their free time is consumed by study-related activities. The main reason for inactivity was reported to be tiredness (15). Another study proposed that lack of time, laziness and exhaustion were key determinants of lack of physical activity in medical students, although no statistically significant change in levels of daily physical activity was measured in different study years (13). Medical students thus seem to have a good understanding of the importance of physical activity. On average, medical students at our faculty were found to undertake moderate physical activity

for 30 minutes each day. According to the Centers for Disease Control and Prevention and the American College of Sports Medicine, all healthy adults aged 18 to 65 years should participate in moderate-intensity aerobic (endurance) physical activity for a minimum of 30 minutes on five days each week or vigorous-intensity aerobic physical activity for a minimum of 20 minutes on three days each week (27). We should mention here that a longitudinal study, conducted by Brehm et al., showed a trend towards declining cardiovascular fitness in medical students, despite a self-reported increase in physical activity (16). In order to fully assess the level of fitness among medical students at our faculty, clinical parameters should be measured by trained health professionals.

Lifestyle behaviours are one of the main determinants of nutrition-related non-communicable diseases, which start to develop during adolescence (28). In our study, we compared the diets of medical students in different study years. We found a statistically significant trend towards greater consumption of greasy fast food, over-salted food and sweets by third and fifth year students. A Lithuanian study into the nutrition of 349 first and third year medical students found many irregular eating patterns, low consumption of fruit and vegetables (20% of recommended daily intake) and excessive

consumption of animal fats among male students (29). Unhealthy eating patterns and an unbalanced diet among medical students are of great concern but do not necessarily mean that the students, once qualified, will fail to advise their patients about the importance of a healthy lifestyle and a healthy and balanced diet. The longitudinal study conducted by Brehm et al. also uncovered unhealthy trends in eating habits among older medical students, with many students exposed to cardiometabolic risk (16). Phillips et al. proposed intensive education of medical students about the importance of healthy eating habits and lifestyle medicine, which aims to prevent, treat, or modify non-communicable chronic diseases by helping people to make sustainable lifestyle changes (30).

Many studies have investigated the prevalence of regular illicit drug use among students (31-33). One in particular, a systematic review of the literature carried out by Roncero et al., found that students in the later years of medical school have a higher rate of substance abuse than younger students in the earlier years (33). We also found a statistically significant higher level of drug abuse among third year medical students, compared with first or fifth year students. Although medical students should be very aware of the negative consequences of consuming illicit substances, it seems that students may still rely on illicit drugs in times of stress. Drug abuse is not that common among first year medical students but increases in later years. This is most likely due to a combination of factors: higher awareness of the possible recreational use of common illicit drugs, more sickness in later years, and the need for a coping mechanism because of increased emotional stress. A study of 855 medical students in the USA showed that 91.3% and 26.2%, respectively, had consumed alcohol or used marijuana in the past year, and that consumption was linked with serious suicidal thoughts, cognitive deficits, weak academic performance and driving under the influence of substances (34). Other studies highlight the increasing rate of illicit drug consumption and non-medical use of prescription drugs among medical students across the years of study (35-37). We also found that abuse of OTC drugs increased throughout the years of study. Using a feedback questionnaire covering various aspects of the use of OTC drugs among clinical staff, Parikh et al. found the highest use amongst medical

students and nursing staff (38).

A student enrolling in the first year of medical school enters a highly competitive academic environment and will try to ensure success in many different ways, including the abuse of cognitive enhancers. Competition for coveted residencies increases stress levels throughout the years of study, leading to higher levels of abuse (31, 39).

Our study demonstrated that alcohol was consumed more often, and in larger quantities, with increasing years of study. A study of the drinking patterns of full-time undergraduate students in the UK carried out by Bewick et al. suggested that alcohol consumption declined throughout the course of undergraduate study (40). Another longitudinal study among medical and dental students at the University of Newcastle upon Tyne found that mean alcohol consumption decreased significantly among dental students over the course of study, but increased among medical students from the second year to the final year (41). Another study, conducted in Italy, found that 76.1% of the participants drank alcohol, with 85.5% of medical students, 77.4% of resident physicians and 63% of healthcare-profession students reporting regular alcohol use (42). This study also reported a trend towards decreased alcohol consumption throughout the years of medical study.

It is a cause for concern that third year medical students have less well-established goals and poorer self-esteem than first or fifth year students. It is worth mentioning that altruism initially declines, but then increases in the last year of study. In the middle of the third year of study, when a medical student begins clinical practice, idealistic expectations about future work as a doctor tend to collapse. As a result, third year medical students report not only lower motivation and self-esteem, but also less altruism. Idealistic euphoria about a career as a doctor may be attributable to a belief in one's ability to change the world and benefit the community. Sanjai and Gopichandran assessed altruism in a cross-sectional study of 224 students from the first, third and fourth years of medical school and found, like us, that younger students were more likely to be altruistic (43).

Collectively, the data suggest that the time when third year medical students become involved in clinical practice could be a crisis point. Personal crisis involves a number of factors – students in the third year have less

clearly defined goals in life, cultivate less positive attitudes about themselves and have less altruistic tendencies. A statistically significant discrepancy between the students' goals and their academic activities is also observed in the third year of study. Dunn et al. proposed a conceptual model of medical student well-being, which posits that helping students to cultivate skills that will sustain their well-being throughout their careers has important payoffs for overall medical education and for enhancement of professionalism and patient care (44).

Medical educators at the faculty should begin, or continue, to provide medical students with more theoretical insights into the importance of healthy lifestyle habits so that young undergraduate students are not only well-educated but also physically and psychologically prepared to be future doctors. Greater emphasis should be placed on raising awareness about the issues surrounding abuse of drugs, OTC medications and alcohol. Medical students should also be taught the importance of a balanced diet and the role of diet in the prevention of obesity and chronic diseases. More research is needed to understand the trend towards lower altruism and a weaker connection with the faculty among third year medical students.

Study limitations

Our study has some limitations. Firstly, the results are derived from a self-assessment questionnaire, which allows for the possibility that respondents assess themselves according to their desire for social acceptance – what others expect from them. This means that the data should be interpreted according to their relative,

and not absolute, values. Secondly, the questionnaire did not ask the names of the most commonly abused illegal substances and OTC medications. Finally, the study population was limited to medical students at our own faculty and our results cannot be generalized to all medical students in Slovenia.

CONCLUSIONS

This research, conducted at the Faculty of Medicine, University of Maribor is methodologically comparable with similar studies carried out in other countries and provides an excellent starting point for further research in this field. The increasing trend in abuse of illicit drugs, alcohol and OTC medications among medical students in our faculty is a worrying problem. We should, therefore, make every effort to convince students that medicine is a lifestyle choice and not just a career, a gift and not a burden. Lower levels of altruism and weaker connections with the faculty among third year medical students is a significant concern and measures should be taken to improve relationships between teaching professionals at the faculty and students.

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