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**Health status and healthcare-seeking behaviour of medical  
students in the view of acculturation in Hungary**

Summary of PhD Thesis

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## INTRODUCTION

Physical and mental well-being significantly influence the lives of medical doctors, impacting their professional activity and, consequently, the health and lives of patients. Globally, there's a growing emphasis on addressing the stress doctors face to maintain the overall efficacy of healthcare services. Female doctors experience higher prevalence of health issues, including burnout and fertility problems. These challenges often start during medical education, with stress and burnout being prevalent among medical students, especially those studying abroad due to academic stress and new living challenges.

Understanding the physical and mental health issues of medical students is crucial for guiding healthcare-seeking behaviour. Despite higher distress levels, limited information exists on their physical health, behaviour in seeking assistance, and the role of general practitioners in supporting their well-being. Medical students face a higher prevalence of health issues compared to students in other academic disciplines. This susceptibility is linked to the inherent risk factors in pursuing medical education and later practicing as a doctor.

Simultaneously, the globalization of education has made studying abroad common. There were 1.3 million students from abroad who were undertaking tertiary level studies across the European Union (EU) in 2018. Hungary, being an EU member, is a significant destination for international students, with a large number enrolled in medical universities.

In the context of the international academic landscape, acculturation emerges as a multifaceted and dynamic process, manifesting uniquely among international students. Acculturation encompasses the adaptation and adjustment to a new cultural environment and is recognized for its far-reaching impact on various aspects of international students' lives. The impact of acculturation affects several aspects of an individual migrant's life, influencing behaviours, access to healthcare, social support networks, self-esteem, and stress levels. However, the relationship between acculturation and health is complex and varies based on individual differences, cultural variations, and contextual influences.

## **AIMS**

The main aim of this study was to investigate medical students' health status, health behaviour, healthcare-seeking behaviour, and additionally, acculturation among international medical students in Hungary.

The detailed objectives of this study were the followings:

- to describe student's health status and health behaviour;
- to explore students' healthcare-seeking behaviour particularly the visits to general practitioners (GPs) and psychologists by
  - examining patterns of healthcare-seeking behaviour among medical students;
  - identifying factors associated with visiting both GPs and psychologists;
- to explore students' health status, health behaviours and visiting the health professionals by gender;
- to explore students' health status, health behaviours and visiting the health professionals before and during university;
- to measure acculturation and the associated factors;
- to explore the impact of acculturation on health within the unique context of international medical students in Hungary;
- to analyse the association between acculturation and self-rated health among international students.

## **MATERIAL AND METHODS**

A cross-sectional study was conducted among medical students at the University of Szeged, Hungary, from April to October 2021. A total of 688 students, including 326 international and 362 Hungarian medical students from the first to sixth years, participated voluntarily and anonymously.

Online questionnaires, available in English and Hungarian, were used. Students completed the survey via a link on the teaching platform before or after lectures. Only fully completed questionnaires were considered, ensuring all questions were answered.

The study received ethical approval from the Human Institutional and Regional Biomedical Research Ethics Committee, University of Szeged, Hungary (license number: 4936). Informed consent was obtained from participants, and data were collected and stored securely.

### *Variables and measurements*

Socio-demographic factors: Variables included age, sex, years of study, relationship status, family's financial situation, country of origin, and ethnic minority status.

Health status: Chronic diseases (Yes/No), body mass index (BMI) categorized as  $\leq 24.9 \text{ kg/m}^2$  and  $\geq 25.0 \text{ kg/m}^2$ , self-rated general health (SRH) categorized as good and poor, self-rated mental health (SRMH) categorized as good and poor.

Health behaviours: Smoking (Yes, occasionally/Yes, regularly/No), alcohol consumption (Yes, occasionally/Yes, regularly/No), sexual intercourse (Yes/No).

Healthcare-seeking behaviour: Visited the health professionals (GP, dentist, specialist, psychologist) (Yes/No).

Perceived stress: Assessed using the 10-item perceived stress scale (PSS-10), categorized as lower stress and higher stress.

Acculturation: Assessed using the modified Stephenson multigroup acculturation scale (SMAS). It measures two dimensions: ethnic society immersion (ESI), reflecting retention of home country values, and dominant society immersion (DSI), indicating adoption of host country practices. In the analysis, the scores were divided into low and high ESI and DSI categories according to the mean values of ESI (3.19) and DSI (2.05) scores. Further categorizes were based on Berry's acculturation theory: 'separation', 'integration', 'marginalization', and 'assimilation'.

### *Statistical Analysis*

Data were analysed by IBM SPSS 'Statistics 28.0'. Descriptive statistics, Chi-square test, univariable, and multivariable logistic regression were employed to analyse associations between variables. McNemar test assessed changes before and during university.

## RESULTS

The study comprised 688 medical students, including 362 Hungarian and 326 international students. Most students (86.6%) were aged 18–25, with a mean age of  $22.47 \pm 2.75$  years. Among international students, there was an almost equal male-female ratio (46.3% vs. 53.7%), while Hungarian students were predominantly female (67.7% vs. 32.3%). About one-third of international students were in clinical years, whereas Hungarian students were evenly distributed between pre-clinical and clinical years. Regarding relationship status, Hungarian students were evenly split, while only a quarter of international students were in relationships. International students came from non-European countries (60.7%), primarily from the Middle East (34.7%), Asia (19.0%), the Americas (5.2%), and from Africa (1.8%). Conversely, Hungarian students mostly had European origins, except for a few with non-European origins, who were fluent in Hungarian. Ethnic minority experiences were more common among international students (14.7%) than Hungarian students (1.7%).

### *Health status and health behaviour of Hungarian and international students*

In terms of health status and behaviours, the majority of participants (83.6%) reported no chronic diseases, with slightly higher rates among international students (86.2%), although this disparity was not statistically significant. 16.4% of participants reported having chronic diseases, with a slightly higher frequency among Hungarians (18.8%), but this difference was also not statistically significant. Regarding BMI, 77.5% of participants had a  $BMI \leq 24.9$  kg/m<sup>2</sup>, with a significantly higher proportion observed among Hungarians (84.0%) compared to internationals (70.2%). Conversely, 22.5% had a  $BMI \geq 25.0$  kg/m<sup>2</sup>, with more internationals (29.8%) falling into this category compared to Hungarians (16.0%).

In terms of self-rated general health, 66.9% perceived it as good, with no statistically significant difference observed between Hungarians (66.3%) and internationals (67.5%). Mental health analysis revealed that 79.2% reported lower perceived stress, slightly more prevalent among internationals (82.5%) compared to Hungarians

(76.2%). Similarly, for self-rated mental health, 49.1% perceived it as good, with comparable distributions between Hungarian (48.1%) and international (50.3%) participants. Among health-related behaviours explored, 77.5% of participants didn't smoke regularly, and approximately 29.9% were abstainers from alcohol, significantly more common among internationals (38.7%) than Hungarians (22.1%). Additionally, 59.6% of alcohol consumers drank occasionally, with a higher prevalence among Hungarians (71.0%) compared to internationals (46.9%). Finally, 52.9% reported engaging in sexual intercourse, with a notably higher percentage among Hungarians (58.3%) compared to internationals (46.9%), indicating a statistically significant difference.

During medical school, significant changes were observed in health status and behaviours, including an increase in chronic illness and alcohol consumption. However, no significant changes were noted in BMI categories or smoking status. Notably, there was a decrease in visits to various health professionals during medical school. Gender differences were evident in health status and behaviours, with females showing higher rates of chronic diseases, lower BMI, and higher stress levels. Additionally, females were more likely to visit specialists and psychologists compared to males.

#### *Healthcare-seeking behaviour of Hungarian and international students*

The analysis examined healthcare-seeking behaviour among Hungarian and international medical students. In terms of visiting a GP, there was no significant difference between Hungarian and international participants, with around 57% reporting GP visits. However, a higher percentage of Hungarian students visited psychologists compared to international students (19.9% vs. 14.1%,  $p=0.045$ ).

Factors influencing GP visits included alcohol consumption and sexual activity, which increased the likelihood of visits, especially among international students. Chronic illness also significantly impacted GP visits across all groups.

For psychologist visits, being female was associated with a higher likelihood of visits across all participant groups. Additionally, higher levels of perceived stress and poor self-rated mental health significantly

increased the odds of visiting a psychologist for both Hungarian and international students.

These findings underscore the importance of considering socio-demographic factors, health behaviours, and mental health status in understanding healthcare-seeking behaviour among medical students.

### *Acculturation of international medical students*

The study investigated acculturation among international medical students, examining their connection to both their home and host countries.

Results revealed that most students preferred using their native language (ESI dimension), while feeling accepted in Hungary but facing challenges with the Hungarian language (DSI dimension). Specifically, the ESI mean score was  $3.19 \pm 0.47$ , indicating a strong connection to ethnic values, while the DSI mean score was  $2.05 \pm 0.57$ , suggesting a moderate adoption of host country practices.

A significant majority of participants (96.9%) demonstrated a high ESI score ( $\geq 3.19$ ), indicating a robust connection to their ethnic society. Conversely, only 3.1% showed a low ESI score ( $< 3.19$ ), suggesting limited engagement with their ethnic community. Regarding DSI, there was a balanced distribution, with 53.7% in the low category (score  $< 2.05$ ) and 46.3% in the high category (score  $\geq 2.05$ ), reflecting diverse attitudes toward assimilation into the dominant society.

The analysis of acculturation categories based on ESI and DSI revealed four distinct groups: 'separation' (50.9%), 'integration' (46.0%), 'marginalization' (2.8%), and 'assimilation' (0.3%). These categories reflected varying degrees of connection to both the dominant and ethnic societies, with individuals showing preferences for separation, integration, marginalization, or assimilation.

Factors influencing acculturation included gender, study years, European origin, and ethnic minority status. For instance, male students, and participants from European countries showed higher DSI scores compared to others. Ethnic minority status was associated with lower immersion levels in ethnic society.

Regarding health outcomes, higher ESI scores were associated with lower risk of poor general health, as evidenced by a statistically significant unadjusted odds ratio (UAOR) of 0.50 (95% CI: 0.31–0.81), even after adjusting for confounding factors (AOR: 0.51, 95% CI: 0.30–0.87). Higher DSI scores were linked to lower risk of poor mental health outcomes, with UAOR of 0.52 (95% CI: 0.34–0.78), and after adjusting with AOR of 0.52 (95% CI: 0.34–0.82). These findings underscored the differential relationship between acculturation and self-rated general and mental health among international medical students.

## DISCUSSION

The discussion delves into several crucial aspects surrounding the health status, health behaviours, healthcare-seeking behaviour of both Hungarian and international students, and acculturation patterns with a specific focus on international students.

A significant finding emerges regarding the prevalence of poor general health and mental health among international medical students, mirroring existing research that indicates elevated rates of mental health issues among university students globally. This revelation underscores the pressing need for targeted interventions and support services within academic institutions to address the multifaceted challenges facing students' well-being.

While smoking behaviour appears similar between Hungarian and international students, notable disparities emerge in alcohol consumption and sexual activity, with Hungarian students exhibiting higher rates. Cultural and socioeconomic factors are posited as potential drivers of these variations, highlighting the importance of considering contextual influences in understanding health behaviours among diverse student populations.

Regarding healthcare-seeking behaviour, the study reveals a prevailing trend of low utilization of medical assistance among both Hungarian and international students, with many preferring informal support networks or delaying seeking professional help due to perceived risks. However, there's a notable exception among students



with chronic illnesses, who demonstrate a greater propensity to seek assistance from GPs, underscoring the importance of tailored healthcare services for students with specific health needs.

The discussion also sheds light on gender differences in help-seeking behaviours, with female students and those experiencing higher levels of stress more inclined to seek psychological help. The academic year also emerges as a significant factor shaping healthcare-seeking behaviours, with students in later years, particularly clinical students, exhibiting higher rates of seeking help for psychological issues. This trend may be attributed to increased stress levels associated with advanced academic coursework and clinical responsibilities.

Furthermore, the association between alcohol consumption and seeking help from psychologists underscores the complex relationship between substance use and mental health. Excessive alcohol consumption has been linked to a range of mental health problems, exacerbating existing conditions and potentially leading to the development of new issues such as anxiety and depression.

Additionally, acculturation and associated factors provides insights into the multifaceted dynamics shaping the integration of international medical students into host societies. Multivariable logistic regression analysis underscores gender disparities in acculturation, with male exhibiting a higher tendency for immersion in the dominant society. This finding reflects the influence of gender roles on acculturation processes, as highlighted by previous research indicating how differences in gender role socialization impact individuals' acculturative experiences.

Moreover, acculturation patterns are influenced by various factors, including educational progression. Clinical year students are less likely to maintain ties to their ethnic society, prioritizing the development of their professional identity. In contrast, first-year medical students navigate a myriad of roles, facing challenges such as mental health issues and reliance on family support. These findings underscore the evolving nature of acculturation throughout students' academic journeys and its implications for their well-being.

Ethnic minority status emerges as a significant factor shaping acculturation experiences, with individuals facing barriers such as discrimination and language barriers hindering their integration into the host society. Moreover, health behaviours such as smoking and alcohol consumption are influenced by acculturation, with occasional smokers and moderate alcohol consumers displaying weaker ties to their ethnic societies. These findings highlight the interplay between cultural adaptation and health-related behaviours among international students.

The study further explores the association between acculturation and self-rated health outcomes, distinguishing between dominant society immersion and ethnic society immersion. High ethnic society immersion is linked to better general health status, emphasizing the protective role of cultural heritage in maintaining well-being. In contrast, dominant society immersion shows no significant relationship with general health, suggesting that immersion in the host culture may not inherently improve health outcomes.

Regarding mental health, high levels of dominant society immersion are associated with lower risks of poor mental health among international students. This underscores the importance of social acceptance and integration in mitigating feelings of loneliness and promoting mental well-being in a new environment. However, acculturation's impact on mental health remains complex, with mixed empirical findings indicating both positive and negative associations.

While the discussion provides valuable insights into the health landscape of Hungarian and international medical students, it acknowledges several limitations. The cross-sectional design of the study precludes the establishment of causal relationships, and the reliance on non-probability sampling may introduce biases. Moreover, the impact of the COVID-19 pandemic on health outcomes and behaviours is acknowledged as a potential confounding factor, necessitating cautious interpretation of the findings.

## CONCLUSION

Healthcare-seeking behaviour among medical students is intricately linked to socio-demographic characteristics, health behaviour, and existing health issues. It underscores the need for medical schools to foster an environment that encourages students to seek assistance early and promotes awareness to minimize risky behaviours. A medical student's future career success hinges not only on patient care but also on their ability to comprehend healthcare attitudes, develop solutions to improve health behaviour, and access appropriate healthcare resources.

Furthermore, our study highlights the intricate relationship between acculturation and self-health assessment. Recognizing the impact of acculturation on the general and mental health of these special populations is crucial. Given the rarity of research focusing on the international student population, our results provide valuable insights for improving the health of international students during their university studies. These findings aim to inspire future research on the psychosocial determinants of self-rated health among international students and advocate for culturally sensitive services and enhanced social support to benefit their overall well-being.

Future studies should consider using longitudinal study design, mixed method (qualitative and quantitative), dig deeper into the reasons why students seek medical assistance other than the variables in this study. The reasons why students visit psychology less frequently than to the GP can be explored by in-depth interviews. Future researchers can explore the barriers to seeking help among medical students. Finally, we did not measure acculturation stress in this study, which is an important factor in poor health outcomes.

*New contributions to academic knowledge:*

1. Females and especially foreign female medical students have the biggest risk mentally, they visit psychologist more often than other subgroups.
2. Drinking alcohol is part of the students' life (70.1%, 482 students), but just 10.5% (72 students) drinks regularly. Alcohol drinking behaviour is more typical among the students who visit a psychologist.
3. Higher perceived stress and poor self-rated mental health are significantly associated with visiting a psychologist in the total student population.
4. The study indicates a decline in overall health and health behaviour among students during their university years. There is an increase in the prevalence of chronic illnesses and a negative shift in perceptions of general and mental health. Seeking professional help decreased, and alcohol consumption rose. Smoking rates remained stable.
5. From the point of acculturation, both types of immersion can affect the students' SRH. If the student could integrate better into their own ethnic group, their general health was better, and if they could strongly integrate into the Hungarian society, their mental health was more favourable.

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## List of Publications

Publications related to the thesis:

1. **Umami, A.**, Paulik, E., Molnár, R. International medical students' acculturation and self-rated health status in Hungary: a cross-sectional study. *BMC Public Health* 22, 1941 (2022). <https://doi.org/10.1186/s12889-022-14334-y>. SJR indicator: Q1, IF: 4.5
2. **Umami, A.**, Zsiros, V., Maróti-Nagy, Á., Máté, Zs., Sudalhar, S., Paulik, E., Molnár, R. Healthcare-seeking of medical students: the effect of socio-demographic factors, health behaviour and health status – a cross-sectional study in Hungary. *BMC Public Health* 23, 2126 (2023). <https://doi.org/10.1186/s12889-023-17041-4>. SJR indicator: Q1, IF: 4.5

Abstracts related to the thesis:

1. **Umami, A.**, Munawaroh, S. M., Paulik, E., Molnár, R. Acculturation among international medical students. NKE Conference XV, Hungary. August 2022. *Népegészségügy*, 99: 233-233. P/6, 1 p. (2022)
2. **Umami, A.**, Zsiros, V., Maróti-Nagy, Á., Máté, Zs., Molnár, R., Paulik, E. How do medical students visit psychologists in Hungary? *European Journal of Public Health* 33: Supplement\_2 pp. 597-597., 1 p. (2023). <https://doi.org/10.1093/eurpub/ckad160.1497>
3. **Umami, A.**, Molnár, R & Paulik, E. Future physicians as health care providers: what happens to the students' health state and health behaviour during university years? In: *The Role of Health Promotion in Well-being-oriented Healthcare* (2023) pp. 52-52.,1 p.

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1. **Umami, A.**, Sudalhar, S., Lufianti, A., Paulik, E., Molnár, R. Factors associated with genital hygiene behaviors in cervical cancer patients in Surakarta, Indonesia. *Nurse Media Journal of Nursing* 11, 1 (2021). <https://doi.org/10.14710/nmjn.v11i1.35829>. SJR indicator: Q4
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3. **Umami, A.**, Sukmana, H., Wikurendra, E.A., Paulik, E. A review on water management issues: potential and challenges in Indonesia. *Sustain. Water Resources Management* 8, 63 (2022).  
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4. Anas, M., Oktaviana, K.D., Prasetya, E.C., **Umami, A.** Relationship between demographic factors, knowledge, and injection contraceptive acceptors' visit compliance. *Open Access Maced J Med Sci.* 10, B (2022). <https://doi.org/10.3889/oamjms.2022.9531>. SJR indicator: Q3
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<https://doi.org/10.1177/1357633X2311633> SJR indicator: Q1, IF: 4.7

Abstracts not related to the thesis:

1. **Umami, A.**, Molnár, R., Paulik, E. Determinants of mental health: do body mass index, perceived stress and acculturation impact the mental health of international medical students? *European Journal of Public Health* 33: Supplement 1 pp. i34-i35. (2023).  
<https://doi.org/10.1093/eurpub/ckad133.086>
2. **Umami, A.**, Németh, É., Molnár, R., Paulik, E. What kind of doctor am I going to be? the perceptions and stereotypes of future female medical professionals. International Association for Health Professions Education (AMEE) Conference. Glasgow, UK, 26-30th August 2023 In: Inclusive Learning Environments to transform the future. Abstract Book In Person 10P12, <https://amee.assetbank-server.com/assetbank-amee/action/viewAsset?id=4074&index=1&total=54&view=viewSearchItem>