

ASSOCIATION OF DEPRESSIVE SYMPTOMS AND SOCIAL DETERMINANTS OF HEALTH IN MEDICAL STUDENTS OF FOUR COUNTRIES – CZECHIA, IRAN, KENYA, AND VENEZUELA

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SELF-ADMINISTERED QUESTIONNAIRE – DESCRIPTION

Social Determinants of Health (SDOH)

Self-perception of socioeconomic status (SES) was assessed using the validated MacArthur Scale of Subjective Social Status, where participants ranked themselves on a 10-rung ladder. Rung 1 represented the lowest perceived status, considering income, education, and occupation, while rung 10 indicated the highest. Personal funds assessed students' subjective perception of their economic resources and financial security. Housing was assessed with a question on accommodation during medical school, offering options: living alone, with family, with a partner, or with roommates. Parental education measured the highest education of one parent as an indicator related to socioeconomic background and resource access. The study resources question assessed ac-

cess to educational resources and technologies, a factor related to a student's work and performance. Social life engagement evaluated students' participation in family, friends, and societal activities.

Mental Health

The validated DASS 21 questionnaire assessed levels of depression, anxiety, and stress symptoms. The questionnaire consisted of 21 questions (seven per domain), and four answers scored on a scale from 0 (never) to 3 (almost always). The presence of each factor (depression, anxiety, and stress) was determined by the sum of the corresponding answers in the questionnaire and cut-off scores defined by the questionnaire's author. Depression score was categorized based on the questionnaire authors' instruction as "normal" (0–4 points), "mild-to-moderate" (5–10 points), and "severe-to extremely severe" (11–21 points).

S Table 1. Association of depressive symptoms and social determinants^a

	Sex at birth + age		Sex at birth + age + academic year + extra year	
	m-m	s-e	m-m	s-e
Total				
Socioeconomic status				
High	1	1	1	1
Middle	1.4 (1.1–1.8)	1.9 (1.4–2.5)	1.4 (1.1–1.8)	1.9 (1.4–2.4)
Low	2.5 (1.7–3.8)	4.4 (2.9–6.6)	2.4 (1.6–3.7)	4.2 (2.8–6.4)
Personal funds				
Sufficient	1	1	1	1
Neutral	1.3 (1.0–1.6)	1.1 (0.9–1.5)	1.3 (1.0–1.6)	1.1 (0.9–1.5)
Insufficient	2.0 (1.6–2.7)	2.9 (2.2–3.8)	2.1 (1.6–2.7)	2.9 (2.2–3.9)
Housing				
Living with roommates	1	1	1	1
Living with partner	0.8 (0.6–1.1)	1.1 (0.8–1.5)	0.8 (0.6–1.1)	1.1 (0.8–1.5)
Living with family	1.1 (0.8–1.4)	1.0 (0.7–1.2)	1.1 (0.9–1.4)	1.0 (0.8–1.3)
Living alone	1.2 (0.8–1.6)	1.5 (1.0–2.0)	1.1 (0.8–1.6)	1.4 (1.0–2.0)
Parental education				
University	1	1	1	1
Secondary/high school	0.9 (0.7–1.2)	1.2 (0.9–1.6)	0.8 (0.6–1.1)	1.2 (0.9–1.6)
Primary school or less	0.9 (0.5–1.6)	0.5 (0.2–1.0)	0.8 (0.4–1.4)	0.4 (0.2–0.9)
Study resources				
Sufficient	1	1	1	1
Neutral	1.6 (1.2–2.3)	1.6 (1.1–2.2)	1.6 (1.2–2.3)	1.6 (1.1–2.3)
Insufficient	1.3 (0.9–1.9)	1.8 (1.3–2.6)	1.3 (0.9–1.9)	1.8 (1.3–2.7)
Social life engagement				
Sufficient	1	1	1	1
Neutral	1.4 (1.0–1.8)	2.6 (1.9–3.7)	1.3 (1.0–1.8)	2.6 (1.9–3.7)
Insufficient	2.9 (2.3–3.7)	8.4 (6.2–11.3)	2.8 (2.2–3.6)	8.3 (6.1–11.2)
Czechia				
Socioeconomic status				
High	1	1	1	1
Middle	1.6 (1.2–2.2)	2.0 (1.5–2.9)	1.6 (1.2–2.2)	2.0 (1.4–2.8)
Low	3.4 (1.7–6.9)	6.2 (3.1–12.6)	3.2 (1.6–6.6)	5.9 (2.9–11.9)
Personal funds				
Sufficient	1	1	1	1
Neutral	1.5 (1.1–2.0)	1.5 (1.1–2.1)	1.4 (1.0–2.0)	1.5 (1.0–2.1)
Insufficient	1.8 (1.2–2.8)	3.1 (2.1–4.8)	1.7 (1.1–2.7)	3.0 (2.0–4.7)
Housing				
Living with roommates	1	1	1	1
Living with partner	0.8 (0.6–1.2)	1.1 (0.7–1.6)	0.8 (0.6–1.2)	1.1 (0.8–1.7)
Living with family	1.2 (0.8–1.7)	0.9 (0.6–1.4)	1.2 (0.8–1.7)	0.9 (0.6–1.4)
Living alone	1.2 (0.7–1.9)	2.0 (1.2–3.1)	1.1 (0.7–1.7)	1.7 (1.1–2.7)
Parental education				
University	1	1	1	1
Secondary/high school	1.0 (0.7–1.5)	1.6 (1.1–2.4)	1 (0.7–1.5)	1.6 (1.1–2.3)
Primary school or less	1.0 (0.1–16.9)	0 (0–0)	1.2 (0.1–19.0)	0 (0–0)

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Study resources				
Sufficient	1	1	1	1
Neutral	3.2 (1.6–6.6)	3.8 (1.8–7.8)	3.2 (1.6–6.6)	3.7 (1.8–7.7)
Insufficient	1.3 (0.5–3.5)	2.9 (1.2–7.0)	1.2 (0.4–3.3)	2.7 (1.1–6.4)
Social life engagement				
Sufficient	1	1	1	1
Neutral	1.8 (1.2–2.5)	3.7 (2.3–6.0)	1.7 (1.2–2.4)	3.5 (2.1–5.6)
Insufficient	3.9 (2.7–5.5)	17.3 (11.0–27.1)	3.7 (2.6–5.2)	16.5 (10.5–25.9)
Iran				
Socioeconomic status				
High	1	1	1	1
Middle	1.6 (0.9–3.1)	2.9 (1.5–5.6)	1.7 (0.9–3.2)	2.9 (1.5–5.7)
Low	2.4 (0.9–6.6)	6.4 (2.4–16.7)	2.5 (0.9–6.8)	6.4 (2.5–16.9)
Personal funds				
Sufficient	1	1	1	1
Neutral	1.6 (0.4–5.7)	3.9 (1.3–11.7)	1.6 (0.4–5.8)	3.9 (1.3–11.9)
Insufficient	3.4 (1.8–6.4)	4.1 (2.2–7.5)	3.6 (1.9–6.8)	4.4 (2.4–8.1)
Housing				
Living with roommates	1	1	1	1
Living with partner	0.2 (0–0.9)	1.2 (0.4–3.6)	0.2 (0–0.9)	1.3 (0.4–3.8)
Living with family	1.1 (0.6–2.0)	1.2 (0.7–2.2)	1.1 (0.6–2.0)	1.3 (0.7–2.3)
Living alone	1.1 (0.4–3.1)	2.2 (0.9–5.7)	1.1 (0.4–3.1)	2.2 (0.9–5.8)
Parental education				
University	1	1	1	1
Secondary/high school	0.9 (0.4–2.1)	0.9 (0.4–2.0)	0.9 (0.4–2.2)	0.9 (0.4–2.0)
Primary school or less	0.7 (0.2–2.5)	0 (0–0)	0.7 (0.2–2.5)	0 (0–0)
Study resources				
Sufficient	1	1	1	1
Neutral	2.1 (0.7–6.5)	1.7 (0.5–5.2)	2.0 (0.7–6.3)	1.6 (0.5–5.0)
Insufficient	0.8 (0.3–2.1)	1.5 (0.7–3.4)	0.9 (0.4–2.2)	1.6 (0.7–3.5)
Social life engagement				
Sufficient	1	1	1	1
Neutral	0.7 (0.3–1.5)	2.4 (1.2–4.8)	0.7 (0.3–1.4)	2.5 (1.2–4.9)
Insufficient	1.4 (0.7–2.6)	3.9 (2.1–7.3)	1.4 (0.7–2.7)	4.0 (2.1–7.5)
Kenya				
Socioeconomic status				
High	1	1	1	1
Middle	0.7 (0.3–2.0)	1.2 (0.3–4.3)	0.8 (0.3–2.3)	1.2 (0.3–4.3)
Low	1.3 (0.4–4.4)	5.2 (1.2–22.2)	1.5 (0.4–5.1)	5.3 (1.2–22.7)
Personal funds				
Sufficient	1	1	1	1
Neutral	0.9 (0.4–2.0)	0.9 (0.4–2.4)	0.9 (0.4–2.1)	1.0 (0.4–2.4)
Insufficient	1.8 (0.7–4.7)	6.0 (2.2–16.9)	2 (0.7–5.2)	6.3 (2.2–17.7)
Housing				
Living with roommates	1	1	1	1
Living with partner	0 (0–0)	0 (0–0)	0 (0–0)	0 (0–0)

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Living with family	1.9 (0.6–6.4)	1.1 (0.3–3.9)	1.4 (0.4–5.0)	1 (0.3–3.5)
Living alone	1.7 (0.7–3.6)	0.9 (0.4–2.2)	1.2 (0.5–2.8)	0.8 (0.3–1.9)
Parental education				
University	1	1	1	1
Secondary/high school	0.9 (0.4–2.3)	1.6 (0.6–4.2)	1.1 (0.4–2.9)	1.7 (0.6–4.6)
Primary school or less	1.3 (0.2–6.7)	3.1 (0.5–17.9)	1.6 (0.3–8.9)	3.3 (0.6–19.6)
Study resources				
Sufficient	1	1	1	1
Neutral	1.4 (0.6–3.1)	2.5 (1.1–5.9)	1.4 (0.6–3.2)	2.5 (1.1–5.9)
Insufficient	2.3 (0.8–6.7)	4.6 (1.4–15.3)	3.3 (1.1–10.3)	5.4 (1.6–18.5)
Social life engagement				
Sufficient	1	1	1	1
Neutral	1.7 (0.7–4.4)	7.3 (1.4–37.0)	1.8 (0.7–4.8)	7.4 (1.5–37.9)
Insufficient	3.2 (1.4–7.4)	22.6 (4.9–104.8)	3.2 (1.3–7.6)	22.6 (4.9–105.0)
Venezuela				
Socioeconomic status				
High	1	1	1	1
Middle	1.2 (0.6–2.4)	1.4 (0.6–3.1)	1.1 (0.6–2.3)	1.3 (0.6–2.9)
Low	2.7 (1.2–6.4)	2.5 (0.9–6.6)	2.4 (1.0–5.7)	2.1 (0.8–5.7)
Personal funds				
Sufficient	1	1	1	1
Neutral	1.6 (0.8–3.1)	0.8 (0.4–1.7)	1.5 (0.8–2.9)	0.7 (0.4–1.5)
Insufficient	2.5 (1.3–5.0)	2.0 (1.0–4.0)	2.2 (1.1–4.4)	1.7 (0.9–3.5)
Housing				
Living with roommates	1	1	1	1
Living with partner	1.2 (0.5–3.0)	1.1 (0.4–2.8)	1.2 (0.5–3.0)	1.1 (0.4–2.8)
Living with family	0.9 (0.5–1.7)	0.7 (0.4–1.3)	1.0 (0.5–1.8)	0.8 (0.4–1.5)
Living alone	0.9 (0.4–2.1)	0.5 (0.2–1.4)	1.0 (0.4–2.4)	0.6 (0.2–1.6)
Parental education				
University	1	1	1	1
Secondary/high school	0.5 (0.2–0.9)	0.9 (0.4–1.7)	0.4 (0.2–0.8)	0.7 (0.4–1.4)
Primary school or less	0.9 (0.4–2.0)	0.7 (0.3–1.9)	0.5 (0.2–1.3)	0.4 (0.1–1.2)
Study resources				
Sufficient	1	1	1	1
Neutral	1.7 (1.0–3.0)	1.5 (0.8–2.8)	1.6 (0.9–2.9)	1.4 (0.7–2.7)
Insufficient	1.7 (0.9–3.0)	2.1 (1.1–4.0)	1.4 (0.8–2.7)	1.8 (0.9–3.5)
Social life engagement				
Sufficient	1	1	1	1
Neutral	1.6 (0.8–3.1)	1.7 (0.8–3.8)	1.6 (0.8–3.1)	1.7 (0.8–3.8)
Insufficient	3.4 (1.8–6.5)	3.5 (1.7–7.2)	3.5 (1.8–6.8)	3.5 (1.7–7.5)

^aData are expressed as OR (95% CI). Multinomial logistic regression was performed to evaluate the likelihood of having depressive symptoms (m-m and s-e) in students with different social determinants. Model one is adjusted by sex at birth + age; model two is adjusted by sex at birth + age + academic year + extra year/s; m-m – mild to moderate; s-e – severe to extremely severe