

Short Communication

Relationship Between Lifestyle and Sense of Coherence (SOC) in Medical Students During the First Two Years and Passing the National Examination for Medical Practitioners

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INTRODUCTION

To become a medical doctor after admission to medical school, all students, with faculty support, make every effort to pass the National Examination for Medical Practitioners (NEMP). The best and shortest route to becoming a medical doctor in Japan is to complete coursework in six years, graduate from medical school, and then pass the NEMP. Unfortunately, some students end up spending more than six years in school, take a leave of absence, or are unable to pass the NEMP even after graduating.

We have investigated the appropriate behaviors, sense of coherence (SOC), and lifestyles of “med students”¹⁻⁴. Thus far, we have found a relationship between SOC and skipping breakfast² as well as changes in SOC scores within three months after admission to medical school⁴. In addition, students with low SOC have reported lower levels of subjective well-being than those with high SOC three months after admission⁴.

Therefore, in the present study, we examined SOC

and lifestyle factors in first- and second-year medical students in relation to the final hurdle of passing the NEMP.

METHODS

In April 2010, 114 new medical students at Dokkyo Medical University School of Medicine were asked to participate in a cohort study in medical education research. Among these, 112 (98.2%) submitted their written informed consent to participate. In July, they completed three questionnaires¹: (1) a self-evaluation questionnaire on behavior and practice consisting of 26 items rated from 1 (*not practicing*) to 7 (*practicing very well*); (2) the Japanese version of the 29 SOC scale developed by Yamazaki⁵; and (3) a questionnaire on lifestyle and subjective well-being that was based on a Japanese national health and nutrition survey. Only data from the latter two questionnaires was analyzed for this study.

In August 2011, as participants began their second year of medical school, we again informed them of the study's purpose and asked them to complete the exact same three questionnaires. Among 112 freshmen who participated in 2010, 92 (82.1%) participated as second-year students in 2011.

Approval from the Ethics Committee at Dokkyo Medical University was obtained for following school

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Table 1 NEMP Outcomes and SOC Scores ($N=112$)

SOC Subscales (max.)	Pass ($N=88$) Mean (S.D.)	Fail ($N=24$) Mean (S.D.)	t -test	p -value
Meaningfulness (56)				
First year	39.3 (7.8)	37.2 (7.4)	1.17	<i>N.S.</i>
Second year	38.3 (8.1)	37.4 (6.3)	0.70	<i>N.S.</i>
Comprehensibility (77)				
First year	42.1 (8.4)	40.1 (9.9)	0.98	<i>N.S.</i>
Second year	43.3 (9.5)	38.2 (9.9)	2.06	0.042*
Manageability (70)				
First year	45.8 (7.5)	44.7 (7.2)	0.61	<i>N.S.</i>
Second year	46.3 (7.4)	43.9 (6.3)	1.61	<i>N.S.</i>
SOC Total Score (203)				
First year	127.1 (20.4)	122.0 (15.9)	1.14	<i>N.S.</i>
Second year	126.1 (20.2)	115.5 (14.4)	1.95	0.05

N.S. = Not significant.

* $p < 0.05$.

achievement in relation to the questionnaires for this study.

RESULTS

Among 112 first-year participants, 88 (78.6%) completed the six-year curriculum and passed the NEMP. Among 92 participants who voluntarily answered the questionnaires as second-year students, 76 of them (82.6%) passed the NEMP.

Table 1 shows a significantly lower second-year comprehensibility score of SOC in failing students than in passing students. In addition, failing students tended to have lower meaningfulness, manageability, and total SOC scores than passing students.

Among failed candidates in the first year, 47.8% had skipped breakfast four or more times per week compared to 21.8% of the successful candidates, and this difference was statistically significant (Table 2). Similarly, failing students tended to report less mental stress than did passing students in the first year ($p < 0.1$, Table 3).

DISCUSSION

This study indicates that skipping breakfast as freshmen and low comprehensibility score of SOC in the second year are related to pass/fail outcomes of the NEMP. Because previous research has reported

that skipping breakfast in the first year might be responsible for lowering comprehensibility scores a year later²⁾, our findings might reflect a different aspect of the same result. In addition, our sample size might not have been large enough for a one-year follow-up study. We will continue to investigate this in future studies.

Nevertheless, our results revealed an interesting association: The more breakfast the freshmen skipped, the lower their exam outcome²⁾. According to López-Sobaler et al. (2003), 9- to 13-year-old children who ate an adequate breakfast (more than 20% of daily energy needs) achieved better scores on logical reasoning than those who did not eat an adequate breakfast⁶⁾. Moreover, Gajre et al. (2008) reported that a no-breakfast group had lower scores on Science and English tests as well as lower immediate memory than a regular breakfast group among 11- to 13-year-old school children⁷⁾. Another study found that eating breakfast was related to circadian preferences, such as being morning oriented or evening oriented. Evening-oriented students reported experiencing sleepiness during the daytime⁸⁾. Skipping breakfast is associated with poorer logical reasoning, lower test scores, and worsened immediate memory. Thus, if breakfast-skipping leads to daytime sleepiness, then it might further affect academic perfor-

Table 2 Comparison between demographics, health status, and lifestyle in the first and second years

		Pass (<i>N</i> =88)	Fail (<i>N</i> =24)	χ^2 score	<i>p</i> -value
Gender				0.075	<i>N.S.</i>
	Male	56 (63.6%)	16 (66.7%)		
	Female	32 (36.4%)	8 (33.3%)		
Living with family					
First year	Yes	17 (19.5%)	1 (4.3%)	3.07	0.113
	No	70 (80.5%)	22 (95.7%)		
Second year	Yes	12 (15.8%)	2 (12.5%)	0.11	<i>N.S.</i>
	No	64 (84.2%)	14 (87.5%)		
Smoking experience					
First year	Never	70 (80.5%)	19 (82.5%)	0.054	<i>N.S.</i>
	More than once	17 (19.5%)	4 (17.5%)		
Second year	Never	61 (80.3%)	13 (81.3%)	0.008	<i>N.S.</i>
	More than once	15 (19.7%)	3 (18.8%)		
Subjective well-being					
First year	Good	77 (88.5%)	19 (86.4%)	0.077	<i>N.S.</i>
	Not good	10 (11.5%)	3 (13.6%)		
Second year	Good	65 (85.5%)	14 (87.5%)	0.042	<i>N.S.</i>
	Not good	11 (14.5%)	2 (12.5%)		
Skipping breakfast					
First year	<4 per week	68 (78.2%)	12 (52.2%)	6.19	0.018*
	≥4 per week	19 (21.8%)	11 (47.8%)		
Second year	<4 per week	62 (81.6%)	10 (62.5%)	2.83	0.106
	≥4 per week	14 (18.4%)	6 (37.5%)		
Eating snacks					
First year	Not everyday	68 (78.2%)	17 (73.9%)	0.187	<i>N.S.</i>
	≥1 per day	19 (21.8%)	6 (26.1%)		
Second year	Not everyday	63 (82.9%)	11 (68.8%)	1.680	<i>N.S.</i>
	≥1 per day	13 (17.1%)	5 (31.3%)		
Eating out					
First year	Not everyday	41 (47.1%)	9 (39.1%)	0.469	<i>N.S.</i>
	≥1 per day	46 (52.9%)	14 (60.9%)		
Second year	Not everyday	50 (65.8%)	13 (81.3%)	1.464	<i>N.S.</i>
	≥1 per day	26 (34.2%)	3 (18.8%)		

N.S. = Not significant.

**p*<0.05.

mance.

The SOC (Japanese version) consists of meaningfulness, comprehensibility, and manageability⁵. Most notably among these subscales, a decrement in second-year comprehensibility score was associated with passing the NEMP later. “Comprehensibility” is the ability to expect various events throughout the day and to explain what they are. To enhance comprehensibility, the environment must be improved so that it

facilitates a long-term perspective⁹.

While SOC scores have a negative association with perception of mental stress, our results suggest that failing students tended to report lower mental stress than did passing students in the first year. The previous review showed that pre-clinical medical students experience mental stress as a normal part of medical education¹⁰. This relation indicates that students with some degree of mental stress had better achievement,

Table 3 Comparisons between sleep-related issues, stress level, and lifestyle in the first and second years

		Pass (N=88)	Fail (N=24)	χ^2 score	<i>p</i> -value
Adequate sleep quality					
First year	Yes	45 (51.7%)	15 (65.2%)	1.336	N.S.
	No	42 (48.3%)	8 (34.8%)		
Second year	Yes	56 (73.7%)	12 (75.0%)	0.012	N.S.
	No	20 (26.3%)	4 (25.0%)		
Hours of sleep per night					
First year	≥6 and <8 hrs.	27 (31.0%)	8 (32.0%)	0.118	N.S.
	<6 or ≥8 hrs.	60 (69.0%)	15 (68.0%)		
Second year	≥6 and <8 hrs.	36 (47.4%)	6 (37.5%)	0.519	N.S.
	<6 or ≥8 hrs.	40 (52.6%)	10 (62.5%)		
Sleeping pill use					
First year	Never	81 (93.1%)	23 (100%)	1.050	N.S.
	Yes	6 (6.9%)	0 (0.0%)		
Second year	Never	65 (85.5%)	15 (93.8%)	0.788	N.S.
	Yes	11 (14.5%)	1 (6.3%)		
Feeling mental stress					
First year	No	24 (27.6%)	11 (47.8%)	3.435	0.080
	Yes	63 (72.4%)	12 (52.2%)		
Second year	No	32 (42.1%)	5 (31.3%)	0.648	N.S.
	Yes	44 (57.9%)	11 (68.8%)		
Drinking habit					
First year	Never, <1 per week	71 (81.6%)	17 (73.9%)	0.673	N.S.
	≥1 per week	16 (18.4%)	6 (26.1%)		
Second year	Never, <1 per week	63 (82.9%)	12 (75.0%)	0.547	N.S.
	≥1 per week	13 (17.1%)	4 (25.0%)		
Exercise habit					
First year	Always, sometimes	73 (83.9%)	19 (82.6%)	0.022	N.S.
	Never	14 (16.1%)	4 (17.4%)		
Second year	Always, sometimes	61 (80.3%)	10 (62.5%)	2.367	0.186
	Never	15 (19.7%)	6 (37.5%)		

N.S. = Not significant.

and were more likely to complete coursework in six years and pass the NEMP.

In conclusion, supporting the habit of eating breakfast and establishing a beneficial environment for medical students by the university would contribute to raising NEMP pass rates.

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