

Insomnia among patients with chronic pain: A retrospective study

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INTRODUCTION:

Many patients who present at hospitals with frequently undertreated chronic pain often have a sleep problem. However, insomnia in patients with chronic pain has not been fully evaluated. The present study therefore aimed to determine factors involved in insomnia among such patients.

METHODS: This retrospective study included 301 patients (109 males, 192 females; mean age, 61.7 years) with chronic pain. The patients were assigned to groups based on whether they have insomnia according to scores on the Athene Insomnia Scale (AIS; Table 1). Age, sex, body mass index (BMI), and scores on the Numerical Rating (NRS), Pain Catastrophizing scale (PCS), Hospital Anxiety and Depression (HADS), Pain Disability Assessment (PDAS), EuroQol 5 Dimension (EQ5D) and Pain Self-Efficacy Questionnaire (PSEQ) were then compared between the two groups using univariate analyses. Factors predicting insomnia were identified by multivariate analysis. Values with $p < 0.05$ were considered significant.

RESULTS:

Of all 301 patients, 219 (72.8%) of the patients met the AIS criteria for insomnia. Table 2 shows the results of univariate analyses of demographic data between the two groups. Patients with and without insomnia significantly differed in terms of BMI, and NRS, PCS, HADS, PDAS, EQ5D, and PSEQ scores ($p < 0.05$). Multiple regression analysis positively correlated AIS scores (y) with scores for NRS (x_1), HADS anxiety (x_2), HADS depression (x_3), and EQ5D (x_4) (Table 3). The following predictive formula was derived from these results: $y = 5.12 + 0.432x_1 + 0.266x_2 + 0.219x_3 - 5.23x_4$. The adjusted coefficient of determination was 0.630 and $p < 0.05$ for all, indicating that the explanatory power of the selected analyzed variables was sufficient.

DISCUSSION AND CONCLUSION: Insomnia appeared to develop in patients who had severe pain, anxiety, depression, and impaired quality of life.

Table 1: Athens Insomnia Scale.

1. Sleep induction
2. Awakenings during the night
3. Final awakening
4. Total sleep duration
5. Sleep quality
6. Well-being during the day
7. Functioning capacity during the day
8. Sleepiness during the day
Each of the items scored from 0 (no problem) to 3 (very serious problem).

Table 2: Comparison of pain-related parameters with and without insomnia.

Variables	Insomnia		p-value
	(-) (n = 82)	(+) (n = 219)	
AIS (pts)	3.4 ± 1.3	11.0 ± 4.1	<0.001*
Age (years)	63.8 ± 13.1	60.9 ± 13.1	0.0818
Sex (male/ female)	30 / 52	79 / 140	0.9344
BMI (kg/m ²)	23.5 ± 4.5	22.3 ± 3.7	0.0296*
NRS (pts)	4.8 ± 2.2	6.4 ± 2.0	<0.001*
PCS (pts)	28.8 ± 12.7	37.7 ± 9.1	<0.001*
HADS anxiety (pts)	4.7 ± 2.8	9.0 ± 4.3	<0.001*
HADS depression (pts)	5.5 ± 3.6	10.2 ± 4.7	<0.001*
PDAS (pts)	21.3 ± 13.1	28.2 ± 13.4	<0.001*
EQ5D (pts)	0.6 ± 0.2	0.5 ± 0.2	<0.001*
PSEQ (pts)	1.7 ± 1.3	34.6 ± 14.6	<0.001*

Data are expressed as mean ± standard deviation. AIS: Athens Insomnia Scale. AIS < 6 was defined as Insomnia (-), AIS ≥ 6 was defined as Insomnia (+). BMI: Body Mass index, NRS: Numeric Rating Scale, PCS: Pain Catastrophizing Scale, HADS: Hospital Anxiety and Depression Scale, PDAS: Pain Disability Assessment Scale, EQ5D: EuroQol 5 Dimension, PSEQ: Pain Self-Efficacy Questionnaire. Sex is compared with a Chi-square test and other parameters are compared with Student's t-tests. *p<0.05.

Table 3: Correlation between factors and insomnia.

Variables	Partial regression coefficient	Standard error	95% CI		p-value
			Lower	Upper	
NRS	0.4323	0.1194	0.1972	0.6674	<0.001*
HADS anxiety	0.2660	0.0760	0.1164	0.4156	<0.001*
HADS depression	0.2192	0.0704	0.0806	0.3578	0.0020*
EQ5D	-5.2264	1.6689	-8.5113	-1.9415	0.0019*
Constant term	5.1240	1.5571	2.0590	8.1889	0.0011*

CI: confidence interval, NRS: Numeric Rating Scale, HADS: Hospital Anxiety and Depression Scale, EQ5D: EuroQol 5 Dimension. *p<0.05.