

HOW DO MIGRAINES AFFECT THE BRAIN AND OUR COGNITIVE SKILLS?



Presented by Bolat Leila

Aim

The research aims to get a clear picture of the association between migraine and cognitive impairment in our brains.

Compare Episodic and Chronic Migraines. And tackle the psychological aspects of dealing with migraines.

Hypothesis

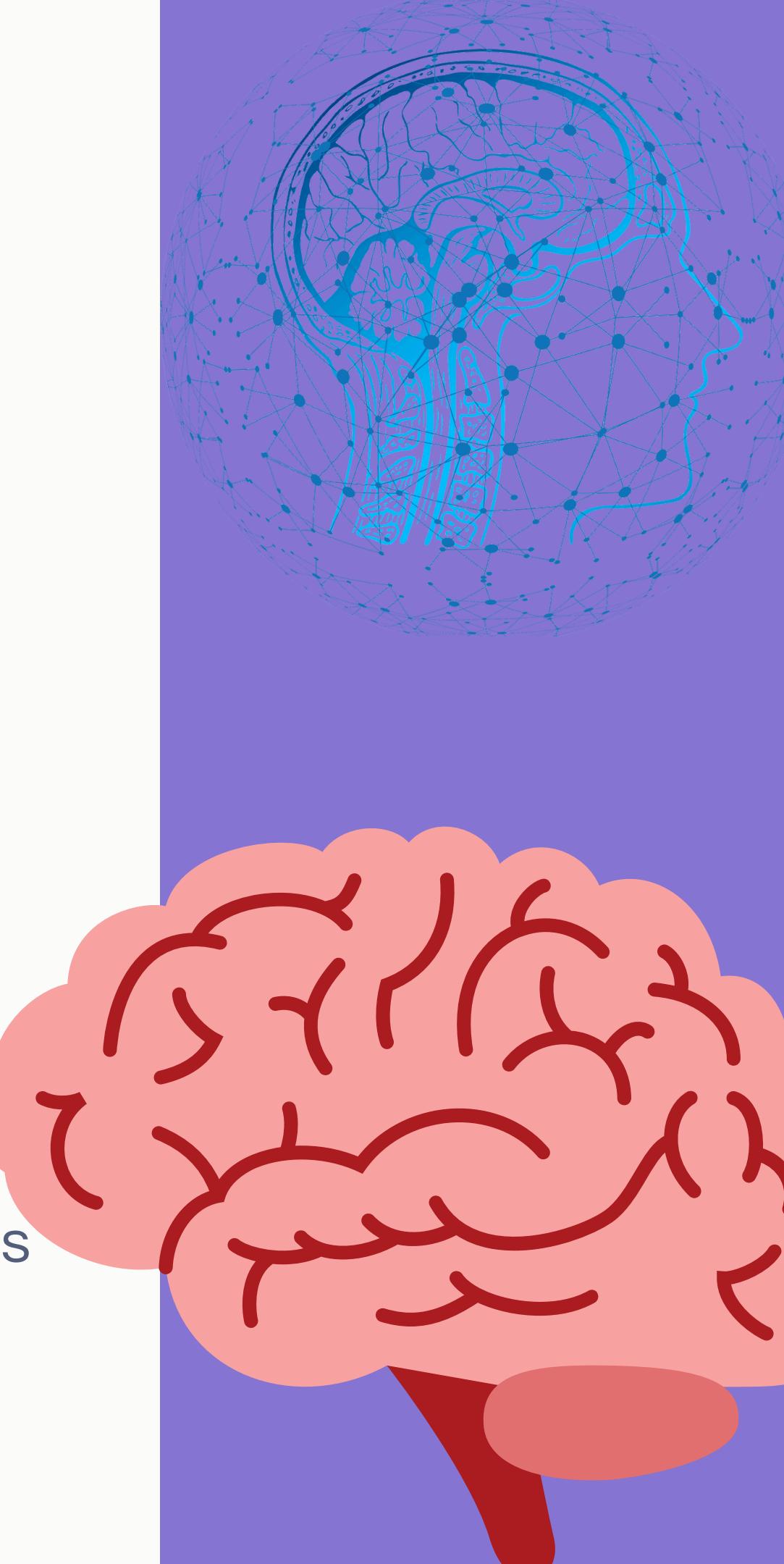
People with migraines suffer from more significant cognitive impairment than those who are healthy or have them rarely.

Objectives

The research analyzes and summarizes the pathophysiology of migraines and their relation to specific functions in the brain.

Introduction

- Migraine is a brain and nervous system disorder whose symptoms almost always include intense headaches. A disabling neurological disorder characterized by multiple phases: premonitory, aura, headache, postdrome, and interictal. You get these headaches repeatedly, in episodes that can last anywhere from 4 to 72 hours. Along with head pain, they include other symptoms like nausea and sensitivity to light.
- Chronic migraine is a disabling neurological disorder that imposes a considerable burden on individual and socioeconomic outcomes. Chronic migraine is defined as headaches occurring on at least 15 days per month with at least eight of these fulfilling the criteria for migraine. Chronic migraine typically evolves from episodic migraine as a result of increasing attack frequency and/or several other risk factors that have been implicated with migraine chronification.



Methodology

Quantitative research methods were chosen to observe the problem more accurately.

By using a quantitative approach, it is possible to collect statistical data and analyze them from a mathematical point of view. It will provide us with the exact data that is crucial to the research because it will help us understand how many people suffer from the effects of chronic migraines, while also encouraging us to get better treatment for this issue. The collection of data can be done by using previous research papers, questionnaires, etc. For this paper, we used two clinical studies that have explored both Chronic migraine, Episodic migraine, and Subjective Cognitive Decline and had over 300 patients to gather the information and data from.

Mini-Mental State Examination (MMSE)

Stroop Test

Rey-Osterrieth Complex Figure Assessment Test (ROCF)

Hospital Anxiety and Depression Scale (HADS)

Visual Analogue Scale (VAS)

PDQ-20 Headache Impact Test (HIT-6)

Migraine Disability Assessment (MIDAS)

Rey Auditory Verbal Learning Test(RAVLT)

Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder-7 (GAD-7)

Montreal Cognitive Assessment (MoCA)

Trail Making Test (TMT)

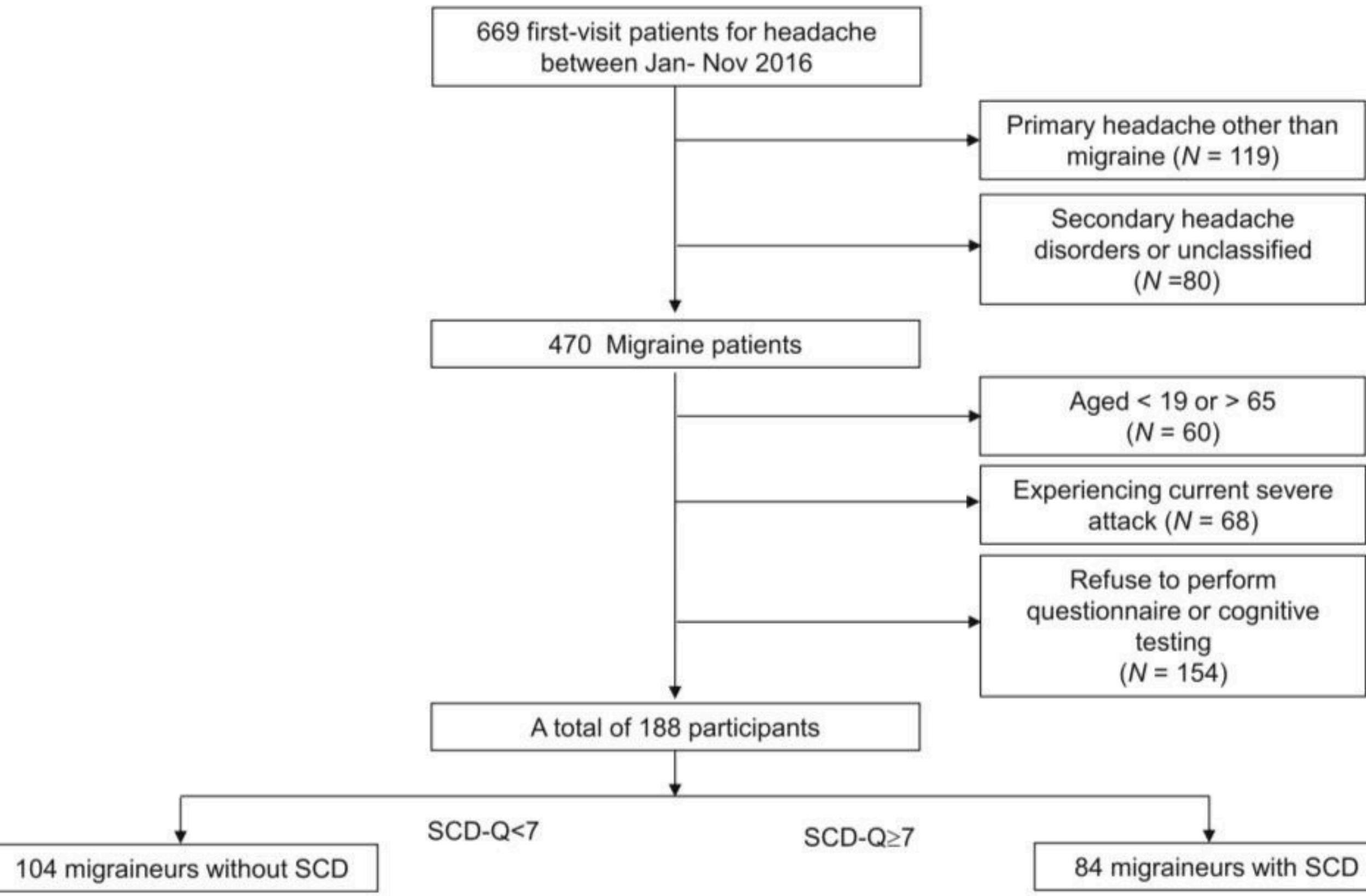
Digit symbol substitution test (DSST)

Korean-Mini Mental State Examination (K-MMSE)

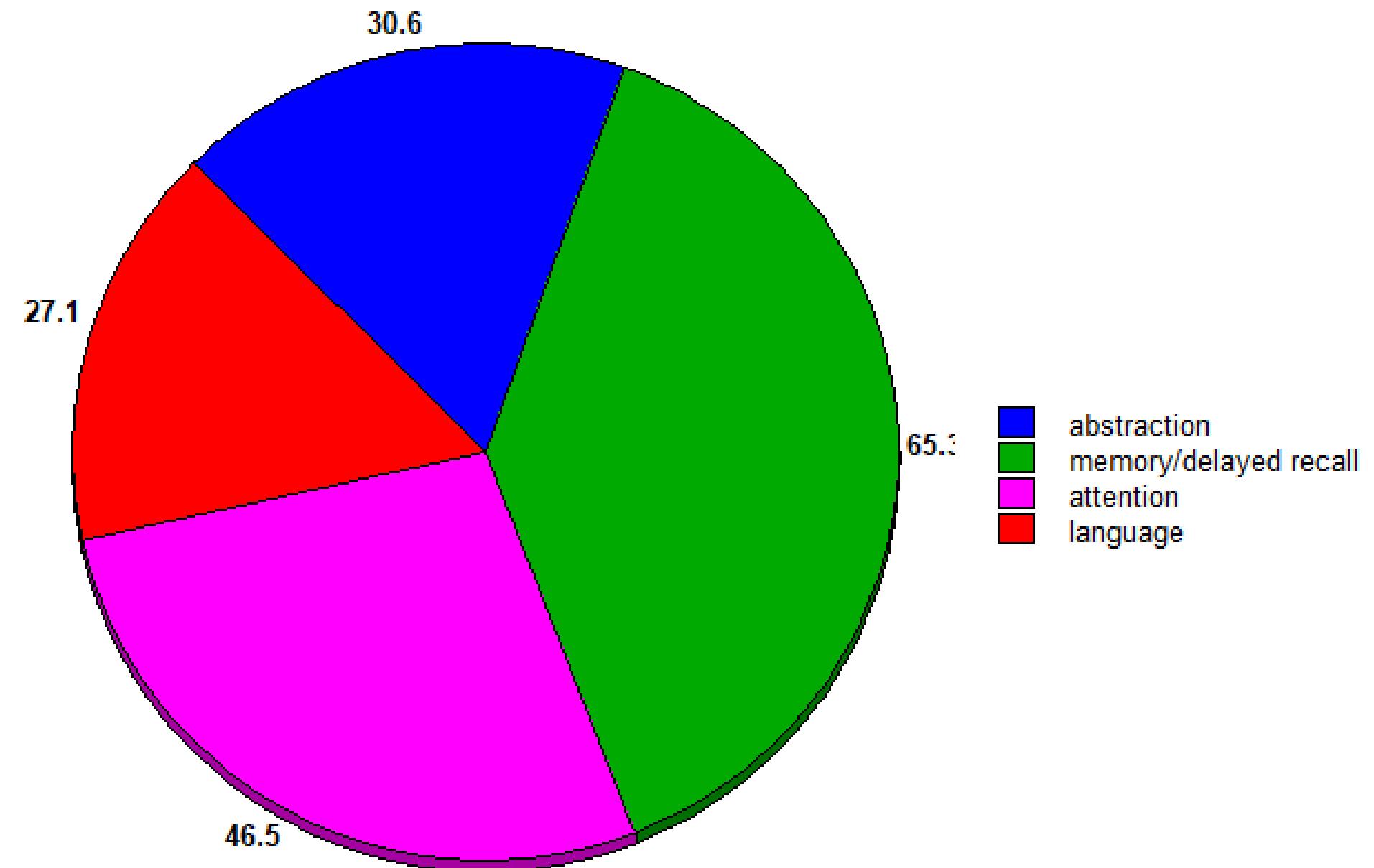
Pittsburgh Sleep Quality Index (PSQI)

	EM	CM
n	44	144
Gender, female/male	40/4	132/12
Age, years	37.0 (30, 42)	42.5 (31, 50)
Education, years	14.5 (10, 15)	14.0 (12, 15)
Headache frequency, days/month	3.0 (2, 4)	20.0 (15, 23.5)
Frequency of analgesic intake, days/month	2.0 (2, 4)	17.0 (10, 22)
Headache history, years	17.5 (13, 27)	22.5 (15, 32)
Chronic headache history, years	-	3.0 (1, 5)
Age of CM onset, years	-	36 (25, 46)
MOH, %	-	67.4
Anxiety, HADS points	5.0 (4, 6)	9.0 (6, 12)
Depression, HADS points	4.5 (2, 8)	6.0 (4, 9)

EM: episodic migraine; CM: chronic migraine; HADS: Hospital and Depression Scale; MOH: medication overuse headache. Presented as median (Q1, Q3).



Results 1



The MoCA results were lower in CM subjects when compared to EM ones, but within the normal range in both groups. Nonetheless, 18% of CM subjects and 6.8% of controls scored lower than the cut-off point for mild cognitive impairment even when pain-free or almost pain-free. CM patients demonstrated the most striking impairment in memory/delayed recall (65.3%), attention (46.5%), abstraction (30.6%), and language (27.1%). No differences in cognitive performance were observed between patients with and without Medication Overuse Headache (MOH). Pain intensity at the time of testing did not correlate with cognitive performance. CM patients had a higher level of depression and anxiety when compared to EM patients.

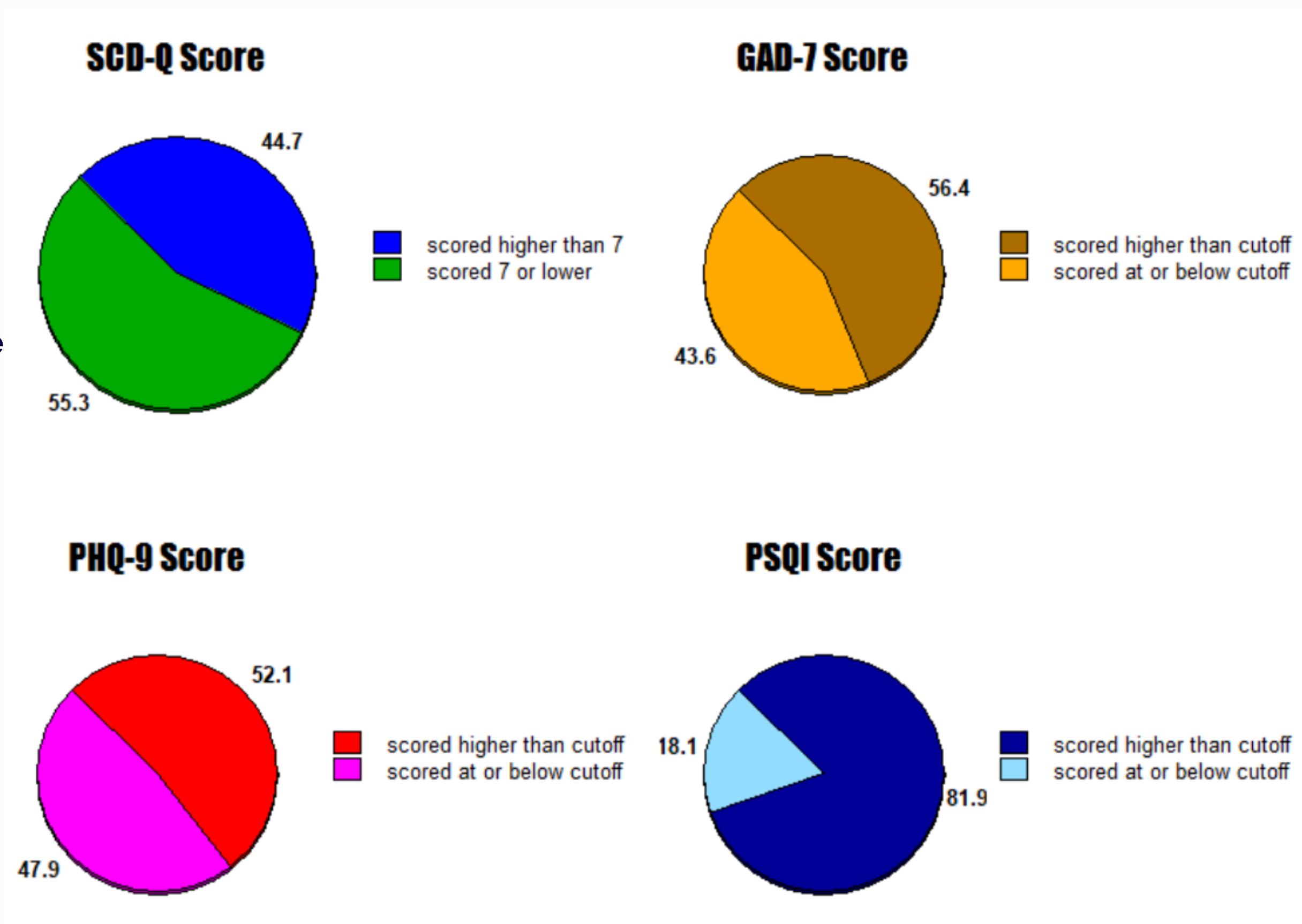
	EM	CM
PDQ-20, points	19.0 (12, 27)	22.0 (16, 34)
PDQ-20, attention/ concentration	8.0 (5, 11)	7.0 (5, 11)
PDQ-20, retrospective memory	4.0 (1, 8)	4.5 (3, 7)
PDQ-20, prospective memory	4.0 (3, 7)	4.5 (2.5, 7)
PDQ-20, planning/ organization	6.0 (3, 9)	6.0 (2.5, 8)
DSST, correct symbols	49.5 (46, 55)	42.0 (36, 49)
RAVLT total learning, words	35.0 (31, 41)	31.0 (26, 37)
RAVLT leaning rate	0.0 (-1, 1)	0.0 (-2, 1)
RAVLT delayed recall	1.0 (0, 1)	1.0 (0, 2)
MoCA, points	28.0±3.0	27.5 (26.5, 29)

EM: episodic migraine; CM: chronic migraine; PDQ-20: Perceive Questionnaire; DSST: Digit Symbol Substitution Test; RAVLT: Rey /erbal Learning Test; MoCA: Montreal Cognitive Assessment. Re presented as median (Q1, Q3).

Results 2

The mean SCD-Q score was 6.5 (SD = 5.5), with 84 patients (44.7%) scoring higher than 7. Thus, 44.7% of participants were diagnosed with SCD in this study. Among the 188 participants, 106 (56.4%) scored higher than the cutoff on the GAD-7, 98 (52.1%) scored higher than the cutoff on the PHQ-9, and 154 (81.9%) scored higher than the cutoff on the PSQI.

Moreover, the proportion of SCD (44.2%) is comparable to common comorbidities of migraine such as poor quality of sleep (81.6%), anxiety (55.8%), and depression (52.1%).



Conclusions

- **Conclusion 1**

According to our research, chronic pain and educational level emerge to become more reliable predictors for predicting cognitive decline in patients with CM than clinical factors or depression, showing that the impact of chronic migraine on cognitive function is grave and complex.

- **Conclusion 2**

It was found that, compared with migraineurs without SCD, patients with SCD had more severe headaches, higher levels of depression and anxiety, and poorer sleep quality.



REFERENCES

1. Latysheva, N., Filatova, E., Osipova, D., & Danilov, A. B. (2020). Cognitive impairment in chronic migraine: a cross-sectional study in a clinic-based sample. Arquivos De Neuro-Psiquiatria, 78(3), 133–138. <https://doi.org/10.1590/0004-282x20190159>
2. Lee, S. H., Kang, Y., & Cho, S. J. (2017). Subjective cognitive decline in patients with migraine and its relationship with depression, anxiety, and sleep quality. The Journal of Headache and Pain, 18(1). <https://doi.org/10.1186/s10194-017-0779-1>

**THANK YOU
FOR YOUR
ATTENTION!**

