

## Epidemiological Profile Of Headache In Children And Adolescents

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### **Abstract:**

**Background:** Headache is one of the most common complaints in children and adolescents, causing a significant impact on the quality of life of this age group.

**Objective:** To carry out the epidemiological profile of headaches in a population of children and adolescents.

**Method:** Cross-sectional, observational, descriptive epidemiological study carried out in three public and four private schools in several cities in the state of Paraná, Brazil, using a standardized questionnaire filled up to children and adolescents regularly enrolled in the participating schools. The questionnaire was developed by the researchers and adapted from the work of Regina Celia Ajeje Pires de Albuquerque, 2008, correlating the results with the variables: sex and age.

**Results:** Four hundred questionnaires were administered; of these, 51 (12.75%) were excluded due to incorrect completion. A total of 349 questionnaires were analyzed, 166 (47.6%) females and 183 (52.4%) males. Age ranged from 5 to 17 years (average: 10.2 years). There was a relationship between headache frequency and sex ( $p$  0.022) and between headache frequency and age ( $p$  0.028). There was also an association between age and headache in the last 12 months ( $p$  0.002) and between sex and complaints of weekly or daily headache ( $p$  0.018). The older the age, the greater the number of symptoms associated with headache ( $p$  0.022) and the greater the frequency of medication use ( $p$  0.005).

**Conclusion:** Headache was most common in girls, and her incidence increased after puberty. Older children and adolescents experienced more headache-related symptoms and used analgesics more frequently.

**Keywords:** headache, children, adolescent, questionnaire, epidemiology.

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### **I. Introduction**

Headache is one of the most frequent complaints among children and adolescents, affecting about 60% of this group worldwide<sup>1,2</sup>. This condition represents the fourth leading cause of years lived with disability in this age group and has a significant impact on quality of life, physical and psychological health, causing limitations in social activities, school absenteeism, and learning difficulties<sup>1, 3, 4, 5</sup>. In addition to the consequences in childhood itself, up to 75% of children and adolescents will continue to experience headaches during adulthood<sup>2</sup>.

The use of questionnaires, usually completed by parents or guardians or even by the child – when schooling and cognitive abilities allow – is a useful and widely used method in the screening, follow-up, and reassessment after treatment of headaches in children and adolescents<sup>1</sup>. Questionnaires such as the Child and Adolescent Headache Questionnaire (HARDSHIP), the Pediatric Migraine Disability Assessment Scale (PedMIDAS), and the Psychosocial Assessment Tool (PAT) are important tools in the identification and follow-up of patients with headaches<sup>6, 7, 8</sup>.

Despite the high prevalence of headaches in childhood, recent Brazilian studies are still scarce, especially in school populations from different cities in the south of the country, justifying the present study.

Based on the lack of research on headaches in childhood, the objective of this study was to conduct an epidemiological profile of headaches in a population of children and adolescents.

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**II. Method**

This was a cross-sectional, observational, descriptive epidemiological study carried out in seven schools - three public and four private - in the cities of Apucarana, Campo Mourão, Cascavel, Toledo, and Umuarama, all in the state of Paraná, Brazil, from November 2024 to September 2025. Participating schools were selected using non-probabilistic convenience sampling and participated voluntarily, considering feasibility and formal acceptance by the school administration. The sample size was determined based on the total number of questionnaires filled up and considered valid at the end of the data collection period; no prior sample size calculation was performed.

After the signature of the Informed Consent Form by parents or guardians, and the Informed Assent Form by adolescents over 12 years of age, parents or adolescents voluntarily answered an online questionnaire developed by the researchers, adapted of the research of Regina Celia Ajeje Pires de Albuquerque<sup>9</sup>. Students of both sexes, regularly enrolled in elementary or high school at the participating schools were included, in addition to the variables age (5 to 17 years old) and analysis of the applied questionnaire. The questionnaire considered only the symptom of headache and not the diagnosis of diseases that present with this symptom.

The data were analyzed using Microsoft Excel Stata/SE v.14.1 software (StataCopr LP®, USA, 2021). The age variable was described using average, minimum and maximum values, and standard deviation statistics. The results of qualitative variables were described using frequencies and percentages. The Chi-square test was used to assess the association between sex and questionnaire responses. The Analysis of Variance model with one source of variation and the Student's t-test for independent samples were used to assess the association between questionnaire responses and the child's age. When using the Analysis of Variance model, rejecting the hypothesis of equal means in all classifications of the question, these classifications were compared pairwise using the LSD test. A p-value < 0.05 indicated statistical significance.

This research was approved by the Institutional Review Board from Western Paraná State University, Cascavel campus, under opinion number 7.055.393 of September/2024.

**III. Results**

Four hundred questionnaires were administered, of which 51 (12.75%) were excluded due to incorrect completion or because the participants were under 5 years of age. A total of 349 questionnaires were analyzed; 166 (47.6%) were females and 183 (52.4%) males. Age ranged from 5 to 17 years (average: 10.2 years), and the majority of participants were in elementary school (grades 1 to 5). Table 1 shows the percentage of characteristics found for headache complaints. Tables 2 and 3 show the relationship between gender and headache symptoms and between age and headache symptoms, respectively.

**Table 1:** Percentage of responses to each question about the characteristics of headaches.

*Q1 - Frequency of headache	n	%	Q2 - Last time the symptom occurred	n	%	Q3 - Complaint frequency	n	%
1. Never	27	7.7%	1. Never	24	6.90%	1. Almost every day	17	4.90%
2. Very few	113	32.4%	2. > 1 year	27	7.70%	2. Almost every week	54	15.50%
3. Some	132	37.8%	3. < 1 year	266	76.20%	3. A few times a month	81	23.20%
4. Many	75	21.5%	4. I don't remember	32	9.20%	4. Sometimes	145	41.50%
5. I don't remember	2	0.6%				5. Doesn't complain	45	12.90%
						6. I don't remember	7	2.00%
<b>Total</b>	<b>349</b>	<b>100.0%</b>	<b>Total</b>	<b>349</b>	<b>100.0%</b>	<b>Total</b>	<b>349</b>	<b>100.0%</b>
Q4 - Medical care	n	%	Q5 - Number of symptoms	n	%	Q6 - School absenteeism	n	%
1. Never	243	69.6%	1. Three symptoms or less	236	67.60%	1. Never	227	65.00%
2. Once	42	12.00%	2. More than three symptoms	28	8.00%	2. Once	39	11.20%
3. Twice	25	7.20%	3. No symptoms	85	24.40%	3. Twice	31	8.90%
4. Three times	17	4.90%				4. Three times	7	2.00%
5. Four or more times	9	2.60%				5. Four or more times	20	5.70%
6. I don't remember	13	3.70%				6. I don't remember	25	7.20%
<b>Total</b>	<b>349</b>	<b>100.0%</b>	<b>Total</b>	<b>349</b>	<b>100.0%</b>	<b>Total</b>	<b>349</b>	<b>100.0%</b>
Q7 - Medication use	n	%	Q8 - Other diseases associated	n	%	Q9 - Family history of headache	n	%

1. Never	87	24.90%	1. Atopias	55	15.80%	1. No	98	28.20%
2. Rarely	118	33.80%	2. ADHD**	13	3.70%	2. Parents	207	59.50%
3. Sometimes	93	26.60%	3. ASD***	8	2.30%	3. Siblings	12	3.40%
4. Generally	32	9.20%	4. Other	29	8.30%	4. Other family members	32	8.90%
5. Always	19	5.40%	5. No	238	68.20%			
<b>Total</b>	<b>349</b>	<b>100.0%</b>	<b>Total</b>	<b>349</b>	<b>100.0%</b>	<b>Total</b>	<b>349</b>	<b>100.0%</b>

\*Q1: question 1, Q2: question 2, Q3, Q4...; \*\*ADHD: Attention Deficit-Hyperactivity Disorder; \*\*\*ASD: Autism Spectrum Disorder.

**Table 2:** relationship between gender and symptoms of headache.

*Q1 – Frequency of headache	Gender				p value:
	Female		Male		
	n	%	n	%	
Never	16	9.60%	11	6.10%	
Very few	53	31.90%	60	33.10%	
Some	52	31.30%	80	44.20%	0.022
Many	45	27.10%	30	16.60%	
<b>Total</b>	<b>166</b>	<b>100.0%</b>	<b>181</b>	<b>100.0%</b>	
Q2 – Last time the symptom occurred	Gender				p value:
	Female		Male		
	n	%	n	%	
Never	13	8.40%	11	6.80%	
> 1 year	14	9.00%	13	8.00%	0.808
< 1 year	128	82.60%	138	85.20%	
<b>Total</b>	<b>155</b>	<b>100.0%</b>	<b>162</b>	<b>100.0%</b>	
Q3 – Complaint frequency	Gender				p value:
	Female		Male		
	n	%	n	%	
Almost every day	13	8.00%	4	2.20%	
Almost every week	32	19.80%	22	12.20%	
A few times a month	39	24.10%	42	23.30%	0.018
Sometimes	59	36.40%	86	47.80%	
Doesn't complain	19	11.70%	26	14.40%	
<b>Total</b>	<b>162</b>	<b>100.0%</b>	<b>180</b>	<b>100.0%</b>	
Q4 – Medical care	Gender				p value:
	Female		Male		
	n	%	n	%	
Never	106	66.70%	137	77.40%	
Once	22	13.80%	20	11.30%	
Twice	17	10.70%	8	4.50%	0.164
Three times	9	5.70%	8	4.50%	
Four or more times	5	3.10%	4	2.30%	
<b>Total</b>	<b>159</b>	<b>100.0%</b>	<b>177</b>	<b>100.0%</b>	
Q5 – Number of symptoms	Gender				p value:
	Female		Male		
	n	%	n	%	
No symptoms	39	23.50%	46	25.10%	
Three symptoms or less	112	67.50%	124	67.80%	0.778
More than three symptoms	15	9.00%	13	7.10%	
<b>Total</b>	<b>166</b>	<b>100.0%</b>	<b>183</b>	<b>100.0%</b>	
Q6 – School absenteeism	Gender				p value:
	Female		Male		
	n	%	n	%	
Never	106	67.90%	121	72.00%	
Once	21	13.50%	18	10.70%	
Twice	15	9.60%	16	9.50%	0.917
Three times	4	2.60%	3	1.80%	
Four or more times	10	6.40%	10	6.00%	
<b>Total</b>	<b>156</b>	<b>100.0%</b>	<b>168</b>	<b>100.0%</b>	
Q7 – Medication use	Gender				p value:
	Female		Male		
	n	%	n	%	
Never	45	27.10%	42	23.00%	

Rarely	47	28.30%	71	38.80%	
Sometimes	48	28.90%	45	24.60%	0.152
Generally	19	11.40%	13	7.10%	
Always	7	4.20%	12	6.60%	
<b>Total</b>	166	100.0%	183	100.0%	
<b>Q8 – Other diseases</b>	<b>Gender</b>				
	<b>Female</b>		<b>Male</b>		<b>p value:</b>
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
No	119	71.70%	119	65.00%	0.182
Yes	47	28.30%	64	35.00%	
<b>Total</b>	166	100.0%	183	100.0%	
<b>Q9 –Family history of headache</b>	<b>Gender</b>				
	<b>Female</b>		<b>Male</b>		<b>p value:</b>
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
No	45	27.30%	53	29.00%	0.726
Yes	120	72.70%	130	71.00%	
<b>Total</b>	165	100.0%	183	100.0%	

\*Q1: question 1, Q2: question 2, Q3, Q4...

**Table 3:** relationship between age and symptoms of headache.

<b>*Q1 - Frequency of headache</b>	<b>n</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>	<b>S-D**</b>	<b>p value</b>
Never	27	9	5	15	3.6	
Very few	113	9.7	5	17	3.3	0.028
Some	132	10.5	5	17	3.1	
Many	75	10.7	5	17	3.1	
<b>Q2 - Last time the symptom occurred</b>	<b>n</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>	<b>S-D**</b>	<b>p value</b>
Never	24	8	5	14	3.1	
> 1 year	27	11	6	16	3.3	0.002
< 1 year	266	10.3	5	17	3.2	
<b>Q3 - Complaint frequency</b>	<b>n</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>	<b>S-D**</b>	<b>p value</b>
Almost every day	17	10.9	5	17	3.6	
Almost every week	54	10.3	5	17	3.1	0.227
A few times a month	81	10.5	5	17	3.2	
Sometimes	145	10.2	5	17	3.1	
Doesn't complain	45	9.2	5	17	3.7	
<b>Q4 - Medical care</b>	<b>n</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>	<b>S-D**</b>	<b>p value</b>
Never	243	10	5	17	3.2	
Once	42	10.8	5	17	3.3	0.395
Twice	25	10.7	5	17	3.4	
Three times	17	9.4	5	16	3.2	
Four or more times	9	10.8	6	17	4.4	
<b>Q5 - Number of symptoms</b>	<b>n</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>	<b>S-D**</b>	<b>p value</b>
No symptoms	85	9.7	5	17	3.5	
Three symptoms or less	236	10.2	5	17	3.1	0.022
More than three symptoms	28	11.6	6	17	3.2	
<b>Q6 – School absenteeism</b>	<b>n</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>	<b>S-D**</b>	<b>p value</b>
Never	227	9.9	5	17	3.2	
Once	39	9.5	5	16	2.9	0.183
Twice	31	10.7	5	16	3.3	
Three times	7	11	8	14	2.6	
Four or more times	20	11.3	5	17	3.7	
<b>Q7 - Medication use</b>	<b>n</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>	<b>S-D**</b>	<b>p value</b>
Never	87	9.2	5	17	3.4	
Once	118	10.1	5	16	3	0.005
Twice	93	10.7	5	17	3	
Three times	32	11.1	5	17	3.6	
Four or more times	19	10.9	7	17	2.9	
<b>Q8 - Other diseases</b>	<b>n</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>	<b>S-D**</b>	<b>p value</b>
No	238	10.3	5	17	3.3	0.412
Yes	111	10	5	17	3.1	
<b>Q9 - Family history of headache</b>	<b>n</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>	<b>S-D**</b>	<b>p value</b>
No	98	10.1	5	17	3.3	0.715
Yes	250	10.2	5	17	3.2	

\*Q1: question 1, Q2: question 2, Q3, Q4... \*\*SD: Standard-Deviation.

#### IV. Discussion

During the period from 1990 to 2021, the global age-standardized incidence of headache increased significantly, particularly in regions of Latin America. It is estimated that the number of children and adolescents living with headache worldwide in 2021 was 811.7 million, reflecting a 13.7% increase since 1990<sup>10</sup>. Thus, chronic headache represents one of the major causes of disability in childhood and has a significant impact on the physical and emotional health of children and adolescents, as well as their adult life. This fact reinforces the need to understand the risk factors associated with this condition to promote early diagnosis and intervention.

In this study, most participants complained of headaches at least once in the past year. A meta-analysis that reviewed studies published worldwide between 1988 and 2022 found an average prevalence of 62% of children and adolescents with headaches.<sup>1</sup> However, Brazilian studies from various regions of the country found higher rates, from 70 to 90% of reported headaches in the past year, data similar to those found in this research<sup>11, 12, 13</sup>.

It was noted in this research an association between headache frequency and sex, with a predominance in girls. The literature shows that the incidence of headache is similar in both sexes in early childhood and that, with increasing age, it becomes more frequent in females<sup>1</sup>. This is mainly due to the hormonal influence of estrogen from puberty onwards, but there are also other related factors, such as the possibly greater central sensitivity to pain in females and the higher prevalence of comorbidities such as anxiety and depression<sup>1, 14, 15</sup>.

This study found a correlation between age and headache frequency, as well as headache complaints in the last 12 months. Older children and adolescents tend to complain more regularly. A 2023 meta-analysis identified similar data, with a peak in headache occurrence around 13 years of age, and a study carried out in Recife, Pernambuco, Brazil, observed that 80% of adolescent students in public schools presented frequent headaches<sup>1, 16</sup>.

This research showed that with increasing age, children and adolescents with headache presented a greater number of associated symptoms compared to younger children. This finding corroborates the literature and can be explained by a combination of neurobiological and developmental factors<sup>1, 17, 18, 19, 20</sup>. The maturation of the central nervous system favors younger children presenting with headaches with shorter episodes and fewer associated symptoms, while older children tend to present with vomiting, photophobia, phonophobia, among other complaints<sup>17, 18, 21</sup>. In addition, older children have a greater capacity to recognize, differentiate, and verbalize sensations, leading to greater recognition of the complaint<sup>16</sup>. Another relevant factor is hormonal influence, mainly during puberty, with more intense symptoms in female adolescents<sup>1, 17</sup>. It is worth noting that these same factors may also explain the more frequent use of analgesic medications in older children and adolescents, as observed in this study. This data can also be explained by the increasing prevalence of headache as age advances<sup>1, 16</sup>.

This article presented some limitations, notably that the sampling was defined by convenience, therefore extrapolating the results to a general population may be risky; the questionnaires were answered by the parents, not reflecting the actual complaint of the younger children and the potential memory bias for the period questioned. Furthermore, being an epidemiological study, it was not possible to classify the headache by its subtypes according to the International Classification of Headache Disorders.

#### V. Conclusion

Headaches were more prevalent in female children and adolescents, especially after puberty. Furthermore, older children and adolescents complained more frequently, presented with more associated symptoms, and used analgesics more often.

The findings reinforce the need for early screening and management strategies for headaches in the pediatric population, especially in adolescent girls.

#### References

- [1]. Onofri A, Pensato U, Rosignoli C, Wells-Gatnik W, Stanyer E, Ornello R, Et Al. Primary Headache Epidemiology In Children And Adolescents: A Systematic Review And Meta-Analysis. *J Headache Pain*. 2023 14;24(1):8. Doi:10.1186/S10194-023-01541-0.
- [2]. Szperka C. Headache In Children And Adolescents. *Continuum (Minneapolis, Minn)*. 2021;27(3):703–731. Doi:10.1212/CON.0000000000000993.
- [3]. Nieswand V, Richter M, Gossrau G. Epidemiology Of Headache In Children And Adolescents—Another Type Of Pandemia. *Curr Pain Headache Rep*. 2020;24(10):62. Doi:10.1007/S11916-020-00892-6.
- [4]. Steiner TJ, Husøy A, Stovner LJ. GBD2021: Headache Disorders And Global Lost Health – A Focus On Children, And A View Forward. *J Headache Pain*. 2024 Jun 3;25(1):91. Doi:10.1186/S10194-024-01795-2.
- [5]. Ombashi S, Tsangaris E, Heeres AG, Van Roey V, Neuteboom RF, Van Veelen-Vincent MLC, Et Al. Quality Of Life In Children Suffering From Headaches: A Systematic Literature Review. *J Headache Pain*. 2023 Sep 18;24(1):127. Doi:10.1186/S10194-023-01595-0.
- [6]. Onofri A, Ornello R, Rosignoli C, Trozzi V, Adipietro MT, Germani B, D'Ambrosio M, Cascione C, Russo ME, Fani S, Ciuffini R, Sacco S. Headache Diagnosis In Children And Adolescents: Validation Of The Italian Version Of The HARSHIP Questionnaire. *J Headache Pain*. 2025;26(1):169. Doi:10.1186/S10194-025-02113-0.

- [7]. Hershey AD, Powers SW, Vockell AL, Lecates S, Kabbouche MA, Maynard MK. Pedmidas: Development Of A Questionnaire To Assess Disability Of Migraines In Children. *Neurology*. 2001 Dec 11;57(11):2034–2039. Doi:10.1212/WNL.57.11.2034.
- [8]. Law EF, Powers SW, Blume H, Palermo TM. Screening Family And Psychosocial Risk In Pediatric Migraine And Tension-Type Headache: Validation Of The Psychosocial Assessment Tool (PAT). *Headache*. 2019;59(9):1516–1529. Doi:10.1111/Head.13599.
- [9]. Albuquerque RCA. Prevalência De Cefaleia Em Crianças E Adolescentes Da Cidade De São José Do Rio Preto – SP. 2008. 47f. Dissertação (Mestrado Em Ciências Da Saúde) - Faculdade De Medicina De São José Do Rio Preto, São Paulo, 2008.
- [10]. Pei H, Su J, Li J, Liang Y, He X. Global, Regional, And National Burden And Trends Of Headache Disorders Among Children And Adolescents (5–24 Years Old) From 1990 To 2021. *BMC Neurol*. 2025 Aug 27;25(1):357. Doi:10.1186/S12883-025-04367-2.
- [11]. Barea LM, Tannhauser M, Rotta NT. An Epidemiologic Study Of Headache Among Children And Adolescents Of Southern Brazil. *Cephalalgia*. 1996;16(8):545-549. Doi:10.1046/J.1468-2982.1996.1608545.X.
- [12]. Albuquerque RP De, Santos AB, Tognola WA, Arruda MA. An Epidemiologic Study Of Headaches In Brazilian Schoolchildren With A Focus On Pain Frequency. *Arq Neuropsiquiatr*. 2009;67(3B):798-803. Doi:10.1590/S0004-282X2009000500003.
- [13]. Antoniuk S, Kozak MF, Michelon L, Montemór Netto MR. Prevalence Of Headache In Children Of A School From Curitiba, Brazil, Comparing Data Obtained From Children And Parents. *Arq Neuropsiquiatr*. 1998;56(4):726–733. Doi:10.1590/S0004-282X1998000500005.
- [14]. Okamura MN, Goldbaum M, Madeira W, Cesar CLG. Prevalence Of Headache And Associated Factors Among Adolescents: Results Of A Population-Based Study. *Rev Bras Epidemiol*. 2020;23:E200067. Doi:10.1590/1980-549720200067.
- [15]. Genc D, Vaičienė-Magistris N, Zaborskis A, Şaşmaz T, Tunç AY, Uluduz D, Steiner TJ. The Prevalence Of Headache Disorders In Children And Adolescents In Lithuania: A Schools-Based Study. *J Headache Pain*. 2020 Jun 10;21(1):73. Doi: 10.1186/S10194-020-01146-X.
- [16]. Xavier MKA, Pitangui ACR, Silva GRR, Oliveira VMA, Beltrão NB, Araújo RC. Prevalência De Cefaleia Em Adolescentes E Associação Com Uso De Computador E Videogames. *Ciênc Saúde Colet*. 2015;20(11):3477–3486. Doi:10.1590/1413-812320152011.19272014.
- [17]. Zhao C, Zhang Y, Hu B, Li X, Wang Y, Chen X, Et Al. Sleep And Headache Outcomes Among Children And Adolescents: A Cross-Sectional Study. *Brain Sci*. 2023;15(3):280. Doi:10.3390/Brainsci15030280.
- [18]. Karsan N, Prabhakar P, Goadsby PJ. Extended Phenotyping Of Migraine In Children: A Cross-Sectional Study In A Specialist Children’s Headache Clinic. *Pediatr Neurol*. 2024;156:33–40. Doi:10.1016/J.Pediatrneurol.2024.03.026.
- [19]. Papetti L, Tarantino S, Ursitti F, Moavero R, Checchi Proietti M, Sforza G, Et Al. From The New Diagnostic Criteria To COVID-19 Pandemic Passing Through The Placebo Effect: What Have We Learned In The Management Of Pediatric Migraine Over The Past 5 Years? *Front Neurol*. 2022 Jul;13;13:935803. Doi:10.3389/Fneur.2022.935803.
- [20]. Martinez CI, Liktor-Busa E, Largent-Milnes TM. Molecular Mechanisms Of Hormones Implicated In Migraine And The Translational Implication For Transgender Patients. *Front Pain Res*. 2023 Sep 19;4:1117842. Doi:10.3389/Fpain.2023.1117842.
- [21]. Wander A, Meena AK, Choudhary PK, Peer S, Singh R. Pediatric Headache: A Comprehensive Review. *Ann Child Neurol*. 2024;32(4):207-218. Doi:10.26815/Acn.2024.00521.