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A study of the sensory profile of children in Central Kazakhstan

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Abstract

The aim: To identify the sensory characteristics of children living in Karaganda and rural areas, considering the influence of urban and rural environments on their development.
Methods. A quantitative online study of parents was conducted using an adapted version of the "Sensory Profile" questionnaire to assess children's sensory processing across the main sensory domains. Descriptive statistics and linear regression analysis were used to analyze the data to identify sociodemographic and environmental factors associated with sensory profile.
Results. Sensory profile analysis revealed a high proportion of severe sensory impairments, particularly in the tactile, auditory, and hyporeactive areas; linear regression analysis revealed a significant association between tactile sensitivity and the number of children in the family and the parents' level of professional education.
Conclusion. The data confirm that sensory differences in children are individual and context-dependent, not forming a uniform clinical pattern. This underscores the need for a differentiated approach when interpreting sensory profiles, taking sensory characteristics into account when organizing the educational environment.

Keywords: children, sensory profile, cities, Kazakhstan, sensory differences.

1. Introduction

A child's sensory development is a vital component of his or her overall development, providing the basic mechanisms for understanding the world, emotional response, and motor coordination [1]. The basic sensory systems such as visual, auditory, tactile, vestibular, and systems that generate powerful internal impulses, lay a solid foundation on which further cognitive, social, and motor activity is built [2].

The visual system responds to colors, contrasts, the movement of objects, and lighting effects, while the auditory system responds to voices, music, natural sounds, and rhythmic or sharp sounds. Tactile sensations are formed through contact with various surfaces and textures, vestibular sensations are formed through body movements, rocking, and balancing, and proprioceptive sensations are formed through muscle activity during

climbing, carrying objects, and other activities. Furthermore, olfactory and gustatory stimuli, such as the scents of fresh grass, food, or flowers, also actively influence a child's sensory development [3]. Moreover, the environment in which a child grows up has a particular influence on his future character and the density of sensory stimulation, determining which aspects of perception will be most actively developed [4].

The city is a dynamic space, inherently filled with the energy of sounds, movements, and visual stimuli, creating increased sensory overload. Long-term residence in such an environment can ultimately lead to nervous system overload, leading to difficulty concentrating and decreased emotional stability in children [5]. In addition, a heavily built-up landscape limits the opportunity for motor exploration, as a child cannot reach all places on a bicycle, and their contact with natural textures such as soil, grass, or wood is reduced due to the large number of buildings around [6].

At the same time, green spaces such as parks, alleys, and squares in urban environments have a positive impact on children. Contact with nature promotes emotional stability, promotes self-regulation, and facilitates cognitive recovery. Systematic reviews show that regular exposure to nature helps children become less hyperactive after a walk at home, improving their mood and reducing behavioral problems, highlighting the potential impact of green spaces in schoolyards [7]. Attention Restoration Theory (ART) explains that being in a natural environment can restore cognitive resources through the gentle "attention-grabbing" of natural stimuli, which is especially important for children whose sensory systems may be overloaded in urban environments [8].

It has also been noted that the amount of green space around a place of residence is associated with cognitive indicators: children living in areas with a higher density of vegetation have a higher average level of intelligence, and the level of aggressive or problematic behavior is reduced [9].

Rural areas, by contrast, are characterized by low population density but a significantly predominantly natural landscape and minimal built-up areas. At the same time, these areas tend to experience relatively low levels of sensory stimulation at home, which can ultimately slow a child's development. Therefore, failing to provide additional opportunities for play can impair physical growth and psychomotor development [10]. It follows that the context of residence directly influences psychomotor development, even when taking into account the socio-economic status of the family [11].

Furthermore, motor development is also closely linked to the natural environment. Specifically, the presence of open natural spaces has a positive effect on the gross and fine motor skills of preschoolers [12]. In addition, a child's reactions are also influenced by biological characteristics: children raised in different environments, urban or rural, may react differently to emotional situations, which is explained by a combination of environmental factors and individual genetic characteristics [13].

Thus, all these data point to a complex and multidimensional relationship between the living environment and sensory perceptions in children. Differences in sensory stimulation, access to nature, and spatial organization create different types of sensory experiences that can influence a child's development, both positively and negatively.

The aim of our study is to identify the sensory characteristics of children living in Karaganda and rural areas, considering the influence of urban and rural environments on their development.

2. Materials and Methods

The primary method for collecting empirical data during the study was a quantitative survey conducted online using the Google Forms platform and was conducted between November 2025 and January 2026. Study design of this research – cross-sectional.

A standardized electronic questionnaire was distributed through social media such as Telegram, Instagram, and through thematic communities, ensuring access to the primary target audience—parents of typically developing children—by providing them with convenient survey participation and a rapid assessment of sensory characteristics within the context of normality.

To determine the minimum required sample size, the classic Cochrans formula for calculating sample sizes in proportion studies was used: $n = z2*p*(1-p)/d2$, where n is the required sample size, z is the standardized distribution value (for 95% confidence, $z = 1.96$), p is the expected prevalence of the characteristic, and d is the permissible error [14].

The Sensory Profile is a standardized questionnaire for assessing sensory processing in children, originally developed by Winnie Dunn in the late 1990s [15]. It is a parental instrument that includes behavioral descriptions of a child's reactions to everyday

sensory events, grouped by sensory system. In the original instrument, parents complete items, rating the frequency of occurrences on a 5-step Leukert scale, which allows for characterization of the child across various sensory modalities and distinguishing levels of sensory processing from typical to markedly different [16].

The current study utilized an adapted questionnaire structure comparable in principle to the original Sensory Profile. The survey was administered in Russian. To ensure the accuracy of the original standardized questionnaire, two-way (forward and backward) translation was used. The translation was performed by qualified specialists, after which the results and terminology were verified for consistency with the methodology.

At the beginning of the survey, parents received informed consent, which stated the purpose of the study, guaranteed complete anonymity, and clarified that all results would be used solely for assessing the children's sensory characteristics for scientific research purposes.

The questionnaire included socio-demographic questions and 7 main blocks, each of which was aimed at a specific sensory modality:

1. The socio-demographic section collected basic information about the child and their family, including age, gender, place of residence, number of children, parents' education level, availability of their own home and play space, access to public spaces, and use of additional developmental or therapeutic services.

2. Tactile sensitivity included 8 questions aimed at assessing the child's response to touch, texture, and contact with various surfaces.

3. Taste/Smell sensitivity included 5 questions exploring odor perception, preferences, and responses to various aromatic stimuli.

4. Motor sensory sensitivity included 6 questions related to body movement perception, coordination, and activity.

5. Sensory seeking included 7 questions assessing the child's desire to actively explore the environment through sensory stimuli.

6. Auditory filtering included 6 questions aimed at responding to noise, music, and vocal stimuli.

7. Low Energy and Weakness: 6 questions assessing the child's tendency to fatigue and low activity.

8. Visual and Auditory Sensitivity: 9 questions assessing the child's perception of visual and auditory stimuli.

In addition, a frequency scale was used for each item, which was recorded in the questionnaire header: "always" (100% of the time), "often" (75%), "occasionally" (50%), "rarely" (25%), and "never" (0%).

During the study of sensory processing in children, a separate data analysis was also conducted on 107 children—54 girls and 53 boys—based on a questionnaire covering seven key domains.

Responses were converted into points on a five-point scale, with lower values corresponding to more frequent occurrences of the trait.

For each of the six sections—tactile and taste-olfactory sensitivity, motor sensitivity, hyporeactivity and sensation seeking, auditory filtering, low energy and weakness, and visual-auditory sensitivity—raw scores were calculated and converted into points using text-based answer options.:

Always – 1 point
Often – 2 points
Occasionally – 3 points
Rarely – 4 points
Always – 5 points

The scores were then normalized according to diagnostic ranges and assigned to a category:

"Typical Functioning," "Probable Deviations," or "Clear Deviations." The distribution by gender and category is presented in the summary.

Based on this scale, parents indicated how often their child exhibited the described behavior, allowing for an individual sensory profile assessment for each child. After receiving the results, the scores were calculated.

The methodology for calculating the questionnaire results included determining absolute values and percentages of the total group for each item, and then processing them into three main blocks (Table 2):

1. Typical Performance - typical sensory activity indicators

2. Probable Difference - probable deviations from the norm

3. Defined Difference - pronounced sensory deviations

Descriptive and analytical statistics were used for statistical processing of the data. Categorical and quantitative indicators were presented as absolute numbers and percentages. To assess the factors associated with the sensory profile assessment results, a linear regression model was constructed, allowing us to determine the direction and magnitude of the influence of independent variables on the outcomes under study.

This study was approved by the Local Bioethics Commission at Karaganda Medical University, protocol No. 18 dated October 21, 2025.

3. Results

Socio-demographic characteristics of the sample

A total of 107 parents participated in the study and provided informed consent. The sample included parents of boys and girls of various age groups, primarily preschool and younger ages. The proportion of children living in urban areas was 71.96%, while in rural areas it was 28.04%. Among them, the children's ages covered a wide range from early childhood to adolescence: the largest proportion were children under 3 years old (31.6%), followed by the age groups 3-5 years old - 19.4% and 6-8 years old (23.5%). Part of the sample was represented by children falling into the 9-11 age category - 17.3% and younger, and teenagers 12-14 years old - 8.2%. An interesting point was that the distribution by gender was even: girls - 50%, boys - 50%. The family structure according to the results showed significant differences. Almost half of respondents (43.93%) have 1-2 children, 42.06% of families have 3-4 children, and 14.02% of families are raising 5 or more children.

Parents' education levels were also assessed based on the survey results. Results showed that parents' education levels ranged from secondary to higher education, with 60.75% having higher education, 30.84% having secondary vocational education, and 8.41% having secondary education. This demonstrates a high level of information among respondents, allowing their responses to be considered fairly objective. Monthly family income was assessed solely based on the parents' subjective opinions, without comparison to objective economic indicators. According to this subjective assessment, 3.1% of parents rated their income as below average, 50% as average, 43.9% as above average, and 3.1% of parents were unsure. The distribution of whether parents had their own home or a separate play area for their children was also included in the list of questions and showed that 87.85% of parents have the opportunity to provide their children with a separate play area, while 12.15% of families do not have this opportunity.

Therefore, all these obtained data on the socio-demographic status of families characterize the sample as socially diverse and representative for the analysis of the sensory characteristics of children living in different types of environments.

The complete demographic characteristics of the sample are presented in Table 1, where the indicators are additionally broken down by child gender, allowing for separate and comparative analysis of the sensory characteristics of the results obtained from parents who responded for boys and girls.

Most respondents live in urban areas, while a smaller proportion live in rural areas. Most of the sample consisted of small families (with 1-2 children). Regarding socio-economic characteristics, it was found that most parents have a secondary vocational or higher education and estimate their family income level to be average or above average.

Most respondents also noted the presence of satisfactory housing conditions, including their own home and a space suitable for their child's play and developmental activities. Furthermore, parents indicated varying degrees of access to a safe environment for their children, as well as the use of additional developmental services on a regular and irregular basis. Detailed general characteristics of the sample are presented in Table 1.

Table 1 – Socio-demographic characteristics of the sample

Variable	Boys (n=53)		Girls (n=54)	
	N	%	N	%
Child’s age				
Younger 3 year	19	35.85%	12	22.22%
3–5 year	8	15.09%	11	20.37%
6–8year	12	22.64%	11	20.37%
9–11year	7	13.21%	10	18.52%
12–14 year	3	5.66%	5	9.26%
15–17 year	4	7.55%	5	9.26%
Area of living				
Urban area	38	71.69%	39	72.22%
Rural area	15	28.30%	15	27.78%
Number of children in family				
1–2	29	54.72%	18	33.33%

3–4	21	39.62%	24	44.44%
5 and more	3	5.66%	12	12.22%
Parent's education				
Secondaryspecial	14	26.42%	19	35.19%
Higher	34	61,15%	31	57.41%
Secondary	5	9.43%	4	7.41%
Approximatemonthlyfamilyincome				
Average	24	45.28%	25	46.29%
Aboveaverage	21	39.62%	23	42.59%
Belowaverage	3	5.66%	0	0
Difficulttoanswer	1	1.89%	1	1.85%
Owning a house or apartment with its own play area				
Yes	45	84.91%	49	90.74%
No	8	15.09%	5	9.26%
Access topublicspaces				
Easy, comfortable	29	54.72%	24	44,44%
Partially	16	30.19%	16	29.63%
Difficult/Inaccessible	8	15.09%	14	25.93%
Use of additional development services				
Yes, regularly	23	43.39%	17	31,48%
Irregularly	15	28.30%	18	33.33%
No	15	28.30%	19	35.19%

Sensory Profile

Table 2 shows the distribution of children by sensory sensitivity type depending on the severity of impairment: typical functioning, probable differences, and pronounced (definite) differences. Foreach sensory modality, the absolute number of children and the percentage aregiven, along with a separate gender distribution (boys/girls).

For tactile sensitivity, only a small proportion of children—30, or approximately 28% of the sample—demonstrated typical functioning. Approximately 16% showed probable differences, while the majority of children (more than half, 56%) demonstrated pronounced impairments in tactile sensitivity. Girls predominate in this group, which may indicate a higher prevalence of pronounced tactile difficulties among them.

For taste and olfactory sensitivity, the distribution appears more even. About a third of children demonstrated typical functioning, slightly less than a third showed probable differences, and approximately 38% demonstrated pronounced impairments. Gender differences in this sensory domain are subtle: the proportions of boys and girls in all categories are virtually comparable.

Motor sensitivity remains within the normal range in most cases. Almost two-thirds of children demonstrate typical functioning, while severe impairments are observed in approximately one in five. Probable differences are relatively rare. In the group with typical functioning and severe impairments, the proportions of boys and girls are similar, but boys are more often represented among children with probable differences.

On the "hyporeactivity/sensory seeking" scale, most children fall into the category of severe differences—more than 67% of the sample. Typical functioning and probable differences are significantly less common. In this sensory modality, a relatively even distribution by gender is observed, with no clear dominance of one group.

Auditory information filtering is also characterized by a high level of severe impairments. More than 70% of children have some difficulties in this area, while typical functioning was noted in only a quarter of the sample. Probable differences are extremely rare. The group with severe impairments has slightly more girls, which may indicate certain gender-specific characteristics of auditory processing.

The "low energy/weakness" score is more evenly distributed. About 37% of children demonstrate typical functioning, a fifth have probable differences, and 42% have severe impairments. Girls are more often represented in the severe difficulties group, while boys predominate in the probable differences group.

Finally, in the visual-auditory sensitivity area, approximately 38% of children demonstrate typical

functioning, 17% have probable differences, and almost 45% have severe impairments. Girls are slightly more common in the severe difficulties category, although the gender differences remain moderate.

Table 2 – Summary of sensory sections

Sensitivity type	Typical perfromance		Probable Difference		Definite difference	
	n	%	n	%	n	%
Tactille Sensitivity(male/female)	30 (18/12)	28.04 (16.82/11.21)	17 (9/8)	15.89 (8.41/7.48)	60 (26/34)	56.07 (24.29/31.78)
Taste/Smell (male/female)	36 (19/17)	33.64 (17.76/15.89)	30 (15/15)	28.04 (14.02/14.02)	41 (19/22)	38.32 (17.76/20.56)
Movement Sensetivity (male/female)	70 (33/37)	65.42 (30.84/34.58)	13 (9/4)	12.15 (8.41/3.74)	24 (11/13)	22.43 (10.28/12.15)
Uderresponsive/ Seeks sensation (male/female)	21 (10/11)	19.63 (9.35/10.28)	14 (6/8)	13.08 (5.61/7.48)	72 (37/35)	67.29 (34.58/32.71)
Auditory Filtering (male/female)	27 (16/11)	25.23 (14.95/10.28)	5 (1/4)	4.67 (0.93/3.74)	75 (36/39)	70.09 (33.64/36.45)
Low Energy/Weak (male/female)	40 (21/19)	37.38 (19.63/17.76)	22 (13/9)	20.56 (12.15/8.41)	45 (19/26)	42.06 (17.76/24.29)
Visual/Auditory Sensitivity (male/female)	41 (20/21)	38.32 (18.69/19.63)	18 (11/7)	16.82 (10.28/6.54)	48 (22/26)	44.86 (20.56/24.29)

Overall, the table shows that most sensory domains are characterized by a high proportion of children with significant sensory differences, particularly in areas such as tactile sensitivity, auditory filtering, and sensory hyporeactivity or seeking. Gender differences are generally moderate and not striking, but in certain sensory domains, there is a tendency for girls to be overrepresented among children with significant impairments.

Table 3 – Linear regression analysis results

Variables	Tactile sensitivity	p-value	VIF
	Coef.		
Child's age			
Younger 3 year	-2.05	>0.05	1.09
3–5 year	-0.11	>0.05	
6–8 year	-0.54	>0.05	
9–11 year	-0.97	>0.05	
12–14 year	Ref.	>0.05	
Child's gender			
male	0.98	>0.05	1.08
female	Ref.	>0.05	
Living area			
Urban	-1.20	>0.05	1.19
Rural	Ref.	>0.05	
Number of children in family			
1–2	Ref.	>0.05	1.12
3–4	-1.78	>0.05	
5 and more	-4.29	<0.05*	
Parents' education			
Middle professional	-4.30	<0.01**	1.09
Higher	Ref.	>0.05	
Middle	-0.76	>0.05	
The house has a play area for children			
Yes	1.67	>0.05	1.03
No	Ref.	>0.05	

Access to playgrounds			
Easy	Ref.	>0.05	1.15
Partly	-0.89	>0.05	
Difficult	0.53	>0.05	
Additional educational activities for children			
Yes, regular	-0.86	>0.05	1.09
Not regular	-2.16	>0.05	
No	Ref.	>0.05	

Table 3 presents the results of a regression analysis assessing the association of various sociodemographic and environmental factors with tactile sensitivity in children. For each variable, the regression coefficients (Coef.), statistical significance levels (p-value), and VIF values reflecting the absence of significant multicollinearity between the predictors are provided (in all cases, VIF≈1–1.2).

Child age did not demonstrate a statistically significant association with tactile sensitivity. Compared to the reference group of children aged 12–14, younger age groups (under 3 years, 3–5 years, 6–8 years, and 9–11 years) had negative coefficients, but all differences were statistically insignificant ($p>0.05$).

Child gender was also not associated with tactile sensitivity: boys had a positive coefficient compared to girls (the reference category), but the differences did not reach statistical significance. Place of residence (urban versus rural) did not show a significant effect on tactile sensitivity, despite the negative direction of the coefficient for the urban environment.

The number of children in the family was a significant factor. Families with five or more children showed a statistically significant decrease in tactile sensitivity compared to families with one to two children (Coef.=-4.29; $p<0.05$). For families with three to four children, the association was negative but not statistically significant.

Parental education demonstrated a significant association. Having a secondary vocational education was associated with a statistically significant decrease in tactile sensitivity compared to having a higher education (Coef.=-4.30; $p<0.01$). Secondary education showed no significant association with the outcome.

The presence of a play area in the home was not statistically significantly associated with tactile sensitivity, although the coefficient was positive when one was present.

Access to children's playgrounds (easy, partial, or difficult) also showed no statistically significant differences compared to the reference category. Finally, children's participation in extracurricular activities (regular or irregular) was not statistically significantly associated with tactile sensitivity compared to no such activities.

Overall, of all the factors examined, statistically significant associations with tactile sensitivity were found only for the number of children in the family (five or more) and the average professional level of parents.

4. Discussion

Interpreting sensory characteristics in children requires considering the relationship between neurological thresholds and behavioral response strategies. According to the model underlying the Sensory Profile, sensory processing represents a continuum of individual adaptations rather than rigidly defined categories. This framework identifies four basic patterns of sensory response: poor stimulus registration, stimulus sensitivity, sensory seeking, and sensory avoidance, which are formed depending on the level of sensory thresholds and their compensation strategies.

These patterns can coexist in a single child and manifest selectively across different sensory modalities, explaining the mosaic nature of the sensory profile and the simultaneous presence of typical functioning and specific sensory difficulties[18]. Correctly distinguishing these patterns is fundamental for the interpretation of empirical results, since sensory responses reflect adaptive self-regulation mechanisms and depend on context and environmental conditions [19]. In this context, the results of the present study are considered in terms of individual variability in sensory processing and its functional significance in children's daily life.

Consistent with this model of sensory processing, the results confirm the marked variability and mosaicism of the sensory profile of children in the study sample. As

shown in Table 2, most children exhibit typical functioning across most sensory domains, particularly evident in measures related to energy level and auditory filtering. This indicates preserved overall endurance and the absence of pronounced generalized sensory maladaptation in most of the sample.

At the same time, selective sensory features were identified, primarily in the visual-auditory and vestibular-proprioceptive domains, where a significant proportion of children exhibited episodic and persistent difficulties. These manifestations are consistent with patterns of sensitivity to stimuli and sensory seeking and may reflect individual self-regulation strategies in a sensory-rich environment. Moreover, the absence of a pronounced decrease in energy in most children suggests that the observed difficulties are functional, rather than debilitating [20].

The results presented in Table 2 indicate a predominance of weak or absent tactile responses, which may indicate elements of hyperreactivity and poor stimulus registration. Combined with more pronounced difficulties in motor sensory sensitivity, this confirms the heterogeneity of the sensory profile and the selective involvement of various sensory modalities.

Gender analysis shows that, while typical functioning is generally prevalent in both sexes, girls more often fall into the "probable" and "obvious deviations" categories across several sensory domains, primarily tactile, gustatory-olfactory, and visual-auditory. This may indicate higher sensory receptivity and selectivity in girls, while boys in this sample demonstrate a somewhat more stable sensory profile [21].

Research also shows that people with disabilities respond to these questionnaires differently than their peers, suggesting that sensory processing deficits are present in some disorders, including autism, attention deficit hyperactivity disorder, developmental delay, and schizophrenia [22].

5. Conclusion

The data obtained confirm that sensory differences in children are individual and contextually determined and do not form a uniform pattern. This emphasizes the need for a differentiated approach to interpreting sensory profiles and substantiates the advisability of taking sensory differences into account when organizing the educational environment and developing individualized recommendations. Furthermore, the obtained results underscore the need for an individualized approach to each child and the importance of considering sensory differences in the educational and pedagogical environment. Attention should be paid to the development of the vestibular-proprioceptive system, the creation of an adaptive sensory environment, and the development of a predictable structure for daily activities. If significant difficulties in multiple sensory areas are present, it is advisable to recommend consultation with a sensory integration specialist (occupational therapist). Importantly, no statistically significant differences in sensory profiles were identified between children from urban and rural settings, suggesting that the observed sensory characteristics are not substantially influenced by place of residence but are more likely related to individual factors.

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All authors have read, agreed to release version of a manuscript and signed the author's right transfer form.

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Орталық Қазақстандағы балалардың сенсорлық профилін зерттеу

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Түйіндеме

Зерттеудің мақсаты. Қарағандыда және ауылдық жерлерде тұратын балалардың сенсорлық ерекшеліктерін анықтау, олардың дамуына қалалық және ауылдық ортаның әсерін ескеру.

Әдістері. Балалардың негізі сенсорлық салалар бойынша сенсорлық өңдеуін бағалау үшін «Sensory Profile» сауалнамасының бейімделген нұсқасын пайдаланып, ата-аналарды сандық онлайн зерттеу жүргізілді. Сенсорлық профильмен байланысты факторларын анықтау үшін деректерді талдау үшін регрессиялық талдау қолданылды.

Нәтижесі. Сенсорлық профильді талдау ауыр сенсорлық бұзылыстардың жоғары үлесін көрсетті, әсіресе тактильді, есту және гипореактивті аймақтарда. Сызықтық регрессиялық талдау тактильді сезімталдық пен отбасындағы балалар саны, сондай-ақ ата-аналардың кәсіби білім деңгейі арасында маңызды байланыс бар екенін анықтады.

Қорытынды. Деректер балалардағы сенсорлық айырмашылықтардың жеке және контекстке тәуелді екенін, және біркелкі клиникалық үлгі қалыптастырмайтынын растайды. Бұл сенсорлық профильдерді түсіндіруде сараланған тәсілдің қажеттілігін, сондай-ақ білім беру ортасын ұйымдастыру кезінде сенсорлық ерекшеліктерді ескерудің маңыздылығын көрсетеді.

Түйін сөздер: балалар, сенсорлық профиль, қалалар, Қазақстан, сенсорлық айырмашылықтар.

Исследование сенсорного профиля детей в Центральном Казахстане

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Резюме

Цель исследования. Выявить сенсорные характеристики детей, проживающих в Караганде и сельской местности, с учетом влияния городской и сельской среды на их развитие.

Методы. Было проведено количественное онлайн-исследование родителей с использованием адаптированной версии опросника «Sensory Profile» для оценки сенсорной обработки у детей по основным сенсорным модальностям. Для анализа данных применялись описательная статистика и линейный регрессионный анализ с целью выявления социодемографических и средовых факторов, связанных с сенсорным профилеме.

Результаты. Анализ сенсорного профиля выявил высокую долю выраженных сенсорных нарушений, особенно в тактильной, слуховой и гипореактивной областях; линейный регрессионный анализ выявил

значимую связь между тактильной чувствительностью и количеством детей в семье, а также уровнем профессионального образования родителей.

Выводы. Данные подтверждают, что сенсорные различия у детей являются индивидуальными и зависят от контекста, не формируя единого клинического паттерна. Это подчеркивает необходимость дифференцированного подхода при интерпретации сенсорных профилей, учитывающего сенсорные характеристики при организации образовательной среды.

Ключевые слова: дети, сенсорный профиль, города, Казахстан, сенсорные различия.