REGARDING THE COMPREHENSIVE ASSESSMENT OF THE CONDITION OF SCHOOLCHILDREN WITH HEALTH LIMITATIONS

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In the context of demographic changes, the preservation of the health of all children, including those with health limitations, acquires particular importance. Children with health limitations are a special group that needs special conditions for effective education and upbringing. The comprehensive assessment of the health of such children lacks methodological uniformity because of poor communication between the bodies and agencies involved in assisting them, as well as insufficient harmonization of the applicable regulations. This study aimed to optimize the respective assessment process. The materials were medical records of students (n = 104), used as the sources of data. We revealed that children with health limitations tend to be ill often; the proportion of those developing normally in physical terms is low (57%); most of the children with abnormal physical development (20%) are short. The recommendation is to use two methods for assessing children's physical development: regression coefficients, which describe growth disorders, and body mass index (BMI), which reports the degree of excess body weight. We identified faults in the results of the comprehensive health assessment: 68 children belonging to the 5th health group were qualified for the preparatory physical education group, which creates a high risk of a severe clinical situation in a physical education lesson. From the perspective of optimization of the comprehensive assessment of the condition of children with health limitations, the recommendation is to make the wording of the Order of the Ministry of Health of the Russian Federation more clear and to harmonize it with the conceptual framework of the Orders of the Ministry of Labour and Social Affairs of the Russian Federation.

Keywords: children with health limitations, comprehensive health assessment, health group, physical education groups, physical development, regulations, harmonization

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Compliance with ethical standards: the study was approved by the Ethics Committee of the Omsk State Medical University (Minutes No. 10 of September 19, 2023). Parents (guardians) of the participants submitted written informed consent forms.

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К ВОПРОСУ КОМПЛЕКСНОЙ ОЦЕНКИ ЗДОРОВЬЯ ШКОЛЬНИКОВ С ОГРАНИЧЕННЫМИ ВОЗМОЖНОСТЯМИ ЗДОРОВЬЯ

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В условиях демографических изменений особое значение приобретает сохранение здоровья всех детей, включая детей-инвалидов и детей с ограниченными возможностями здоровья (ОВЗ). Дети-инвалиды представляют собой особую группу, требующую создания специальных условий для эффективного обучения и воспитания. Методические трудности комплексной оценки здоровья детей-инвалидов обусловлены ведомственным разобщением и недостаточной гармонизацией нормативных документов. Целью исследования было оптимизировать комплексную оценку здоровья детей с ОВЗ. Для проведения исследования были использованы данные медицинских карт обучающихся (n = 104). В ходе исследования установлены высокий уровень заболеваемости детей, низкий удельный вес детей с нормальным физическим развитием (57%), преобладание детей с низким ростом в структуре детей с нарушениями физического развития (20%). Рекомендовано использование двух методик оценки физического развития детей: шкалы регрессии информативны в отношении нарушений роста детей, индекс массы тела (ИМТ) — в отношении степени избытка массы тела. Выявлены противоречия результатов комплексной оценки здоровья: 68 детей 5-й группы здоровья отнесены к подготовительной группе физического воспитания, что предполагает высокий риск развития тяжелой клинической ситуации на уроке физкультуры. В целях оптимизации комплексной оценки здоровья детей-инвалидов рекомендованы более четкие формулировки в приказе Министерства здравоохранения Российской Федерации (МЗ РФ), их гармонизация с понятийным аппаратом приказов Министерства труда и социальной защиты РФ (Минтруд России).

Ключевые слова: дети с ограниченными возможностями здоровья, комплексная оценка здоровья, группа здоровья, группы физического воспитания, физическое развитие, нормативные акты, гармонизация

Вклад авторов: Ж. В. Гудинова — научное руководство, концепция исследования; развитие методологии, анализ и систематизация данных, критический пересмотр и редактирование текста рукописи; формулировка выводов; А. А. Рыбкин — сбор, анализ и обобщение данных литературы, сбор данных, применение статистических и математических методов для анализа данных; интерпретация результатов исследования, написание текста рукописи, работа с графическим материалом; Л. В. Демакова — сбор, анализ и обобщение данных литературы.

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Currently, children's health becomes an increasingly critical matter for the state because of the demographic problems: against the background of dropping birth rate, it is progressively important to preserve health and give education to every child as a potential economically active citizen, and that applies to children with health limitations, too [1–5]. It is generally accepted that children with disabilities are those with abnormalities in physical and/or psychological development, as confirmed by the psychological, medical and pedagogical commission; the said abnormalities prevent them from receiving education following regular patterns, and necessitate special conditions for the purpose, including, as prescribed for educational institutions, adapted curricula and teaching methods, textbooks and technical teaching aids, assistant services, facilitated access to the buildings, etc.) [6]. Some children with health limitations may be qualified as disabled individuals [7].

In the previous studies, we highlighted the methodological problems with a comprehensive assessment of the health of the disabled children; in particular, there are difficulties with determining which health group and physical education group such children should belong to [8–12]. There are several mandatory medical examinations and tests for disabled children (done by the expert board) that are designed to support development of an individual rehabilitation program for each such child [6, 13–15], but they do not devalue the comprehensive health assessment, which is an additional rehabilitation tool, an element of special conditions created in comprehensive schools and extracurricular education system's sports organizations.

One of the factors that complicate comprehensive health assessment is a certain misalignment of activities and positions of the agencies under the Ministry of Labour and Social Affairs and those under the Ministry of Health of the Russian Federation: inter alia, they disagree on the number of disabled children in the country; another such factor is insufficient harmonization of the conceptual frameworks supporting the documents and regulations issued by the said ministries and their agencies [9].

There are no works devoted to this problem in the available literature, which is why this study was conducted.

PATIENTS AND METHODS

At the first stage, we analyzed the regulations issued by the Ministry of Health of the Russian Federation, the Ministry of Labour, and the Ministry of Science and Higher Education that cover rehabilitation and comprehensive assessment of the health of disabled children, their general and physical education [6, 13–20].

At the second stage, we assessed the health of schoolchildren attending Ishim boarding school (city of Ishim, Tyumen Region) for children with disabilities. The assessment was based on the information from schoolchildren's medical records (form 026/u-2000), as well as the individual rehabilitation or habilitation programs kept in the school's medical office. The study was conducted in May 2024 and included all the children studying at the educational institution at that time (n = 104).

We investigated the morbidity of children, including disabling pathologies (the first of several diagnoses of the child). Earlier, based on the results of a medical examination, a pediatrician assigned the participants to health groups and physical education groups.

The assessment of physical development (PD) was based on the anthropometric measurements taken by the school's medical officer; we used two methods: 1) regression coefficients applied against the values standard for the Tyumen Region [21]; 2) the index method, including calculation of body mass index (BMI) and using the tables by the World Health Organization (WHO) [22].

Statistical processing of the results was carried out in Microsoft Excel (Microsoft; USA) and Statistica 6.0 (StatSoft; USA). For null hypotheses testing, the critical statistical significance level was accepted at $p < 0.05$; at values $0.05 \le p < 0.1$, we registered a significant trend.

RESULTS

One hundred and four schoolchildren aged from 8 to 18 years studied at the Ishim boarding school: 44 girls and 60 boys, all of them in primary and middle classes (69 and 35 children, respectively). Despite the age of the children, there are no senior classes in the school.

Morbidity among disabled children

All children have several diseases: the average number of diagnosed conditions in a participant is 3, the range is from 2 to 8. Fig. 1 shows the prevalence of the established diagnoses (ICD-10 groups).

As Fig. 1 shows, the most common are the diseases of the nervous system (G): 99.0 cases per 100 children. Mental disorders and behavioral disorders (F) are the next most

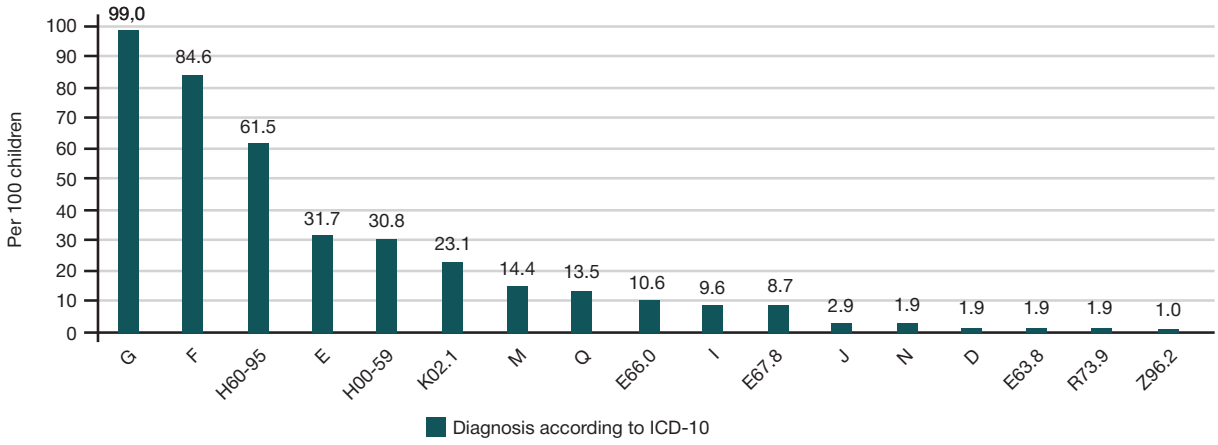

Fig. 1. Prevalence of diseases among boarding school children (ICD-10 groups), per 100 persons. Note: G — diseases of the nervous system; F — mental disorders; H60-95 — ear diseases; E — diseases of the endocrine system; H00-59 — eye diseases; K02.1 — caries; M — diseases of the musculoskeletal system and connective tissue; Q — congenital anomalies; E66.0 — obesity; I — diseases of the circulatory system; E67.8 — excessive nutrition; J — respiratory diseases; N — diseases of the genitourinary system; D — anemia; E63.8 — other specified nutritional deficiencies; R73.9 — unspecified hyperglycemia; Z96.2 — installed implant

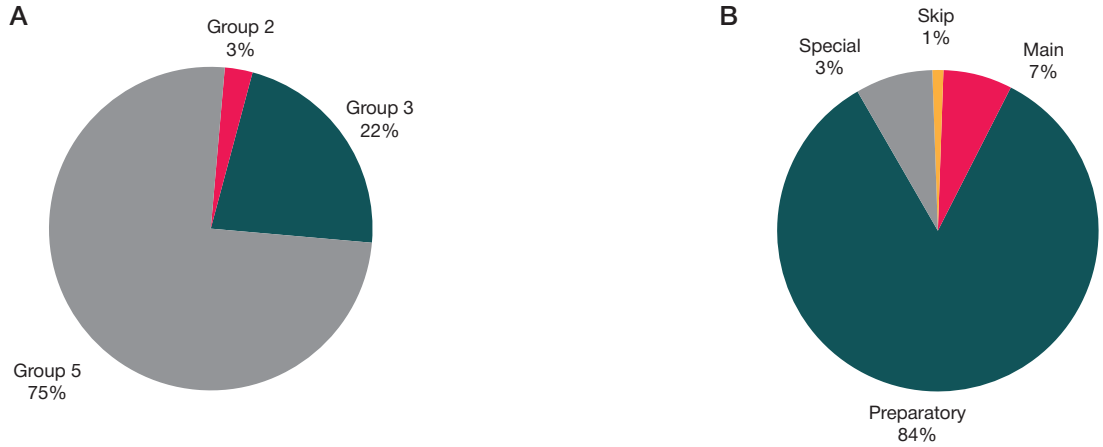

Fig. 2. Distribution of children by health groups and medical physical education groups: **(A)** health groups; **(B)** medical physical education groups

common conditions: 84.6 cases per 100 children. They are mainly ailments caused by damage or dysfunction of the brain, a somatic disease (F06.8), and flawed speech articulation (F80.0). There are also children with mental retardation (MR). The third are ear diseases, registered in 61.5 cases per 100 children; the prevailing diagnosis in this category was "H90.3 Sensorineural hearing loss, bilateral", established in 63 schoolchildren (60.6 cases per 100). All these children are wearing cochlear implants.

Diseases of the endocrine system (E) were the fourth most common among the participants: 31.7 cases per 100 children. In this category, the prevailing conditions were obesity (E66.0) and overeating (E67.8), which amounted to 10.6 and 8.7 cases per 100 children, respectively (a total of 20 schoolchildren, that is, 19.2 cases per 100 children). E63.8 Other specified nutritional deficiencies were found in 1.9 cases per 100 children (2%).

Physical development

Regression coefficients [21] revealed that physical development of 57% of the schoolchildren was normal. Twelve percent had a body weight deficit, 9% — excessive body weight; 20% were short, while 2% — tall; under the Minor's Preventive Medical Examination Card (form No. 030-PO/u-17, enshrined by order No. 514h), the child's physical development can be normal or compromised, the latter caused by deficient or excessive body weight, short stature or tall stature).

Considered through the lens of BMI, 61% of the schoolchildren were growing normally, 13% had body weight deficiency (including severe deficiency in 3%), and 26% — excessive body weight (including grade 1 obesity in 6% and grade 2 obesity in 4%).

Health status groups

The school doctor assigned the schoolchildren to three health groups: group 5 (78 cases, or 75% of the total number of children), group 3 (23 cases, 22%), and group 2 (3 cases, 3%), the latter comprised of three junior school boys (Fig. 2).

Physical education groups

The school doctor established three physical education groups: the preparatory group — 88 cases (84%), the special group — 8 cases (8%), the main group — 7 cases (7%). One child was allowed to not attend physical education lessons (Figure 2). The special group was not further divided into subgroup A and subgroup B.

Eight children from health group 5 were assigned to the special physical education group, and 68 to the preparatory group; one child from this cohort joined the main group, and another was allowed to skip physical education.

As for health group 3, the majority of children (20 persons) were assigned to the preparatory physical education group, and the remaining three — to the main group.

Three schoolchildren from health group 2 joined the main physical education group.

DISCUSSION

In the course of the study, we found a high level of morbidity and unsatisfactory physical development among children attending the Ishim boarding school, which can be attributed to the nature of the institution, as it was established for children with disabilities. A prominent particularity is the large number of children of short stature (20% of all the students). The WHO experts consider low child height to be a big problem [23, 24]. The percentage of short children varies throughout the world: in East Asia, they make up 4.5% of the respective population, while in East Asia — up to 34.5% [24, 25]. The deceleration trend is also seen in Russia, i.e., children may be generally shorter than in the previous decades [26], but it is rather weak and does not reach high values.

The comparison of the assessments of physical development yielded by two methods revealed no discrepancies in the tallying of children whose development is normal (57 ± 4.8% and 61 ± 4.8%, p = 0.558) and those with body weight deficiency (12 ± 3.2% and 13 ± 3.3%, $p = 0.827$).

The discrepancy was found in the figures reflecting the percentage of children with excessive body weight: the regression coefficients method gave 9%, and the index method — 26% ($p = 0.002$). Considered from the standpoint of diagnoses, per 100 hundred children, there were 8.7 and 10.6 cases of other specified hyperalimentation (E67.8) and obesity (E66.0), respectively. These cases sum up to almost 19.3%, which makes the BMI-based assessment (26%) more accurate, and the result of the regression coefficients method (9%) can be explained by the known increase of the upper limit of the norm ($M_{av} + 2\delta$). However, BMI disregards stature, which is factored in by the regression coefficients method, and in this study, 23% of the children were either significantly short or significantly tall. Therefore, it is obvious that the most accurate assessment of the physical development of children with disabilities can be obtained by using both methods, as they incorporate different information: regression coefficients — stature, the index method — excessive body weight. Regression coefficients can probably be used first, and if a child has excessive body weight, low or high height, BMI should be calculated.

As for the results of a comprehensive assessment of the health of children with disabilities, we established certain contradictions in this school. On the one hand, 75% of its students belong to health group 5, which, according to Order No. 514n, means they are chronically ill and frequently suffer from exacerbations and recurrences. On the other hand, 84% of the school's pupils were assigned to the preparatory physical education group, which, according to the same order, should include children with chronic diseases in stable remission. In absolute numbers, 68 children from health group 5 are in the preparatory physical education group in the Ishim boarding school. This means that either the health groups were defined incorrectly, or the physical education groups received unfitting members, which creates a risk of severe clinical conditions manifesting during physical education lessons [27, 28]. In our opinion, the first assumption is more likely to reflect the reality: the children are incorrectly classified as health group 5, as they attend secondary schools, many of them live at home and commute to and from school on their own every day, some attend sports clubs (Paralympic), and they generally lead a very normal lifestyle for children of their age. In other words, their disabilities hinder the educational process only slightly, so they do not belong with health group 5. On the other hand, assigning most pupils in this school to the preparatory physical education group is also incorrect. The right solution would have been creating a subgroup A, which would be fitting for the majority of schoolchildren, but here, in violation of the order of the Ministry of Health of the Russian Federation [19], subgroups A and B have not been distinguished. Continuing the above thought, one of the main reasons for the incorrect assigning of pupils to physical education groups is the imperfect wording of the order of the Ministry of Health of the Russian Federation [19], the descriptions of the concepts of "hindered education or work capabilities" in particular. In the context of establishing the health group for a person, these concepts allow creating a group 3 (unhindered capabilities), a group 4 (hindered capabilities), and a group 5 (significantly hindered capabilities). The order does not specify how a pediatrician should establish the hindrance and distinguish between its significant and minor variations. In assigning individuals to the physical education groups, the concept of hindered learning capabilities are is not applied, which means the definition of the said groups has not been harmonized (here, harmonization means coordination, unification, ordering, and ensuring mutual compliance) and, in this regard, mismatches even the definition of health groups.

Obviously, resolution of this problem requires use of the regulatory framework of the Ministry of Labour and the Ministry of Education and Science of Russia. Order No. 374n of the Ministry of Labour regulates not only the process of qualification of disabled children but also disability groups that factor in quantitative assessments of the severity of persistent disorders of body functions (in percents), which increases the objectivity and accuracy of diagnostics [17]. There are other orders of the Ministry of Labour that stipulate the degrees of limitation of the ability to learn and conduct other activities [14, 15]. In this regard, it seems advisable to determine the health group and the physical education group of a disabled child with disability group (from I to III) and the degree of activity limitations accounted for. The optimal approach would be to determine the said groups in the context of development of the individual rehabilitation program in a medical and social examination institution. In addition, there is a document by the Ministry of Education that deserves special attention: it regulates physical education of sick schoolchildren and contains recommendations for determining medical health groups, establishes the types of reaction of the cardiorespiratory system to controlled physical activity, describes monitoring of the condition of students during physical education lessons, etc [20].

CONCLUSIONS

All children studying in the Ishim boarding school have several diseases: the average number of the diagnosed conditions in a participant is 3, the range is 2–8. The most common conditions were diseases of the nervous system, mental disorders, and ear diseases.

We established that the physical development of the pupils was unsatisfactory, with only 57% of children considered normal in this regard. The most common (20%) disorder preventing qualification of the physical development as normal was short stature. The comparison of the assessments of physical development based on the regression coefficients and body mass index methods and their subsequent collation with the morbidity indicators suggest use of both methods: regression coefficients are informative in relation to children's growth disorders and body mass deficit, and BMI — in relation to the degree of excess of body weight. Regression coefficients should be used first, and BMI should be calculated if the child has abnormal physical development.

We have identified certain contradictions in the results of the comprehensive health assessment: the validity of assigning 68 children from health group 5 to the preparatory physical education group is questionable, which, in our opinion, implies a high risk of severe clinical situations that may occur during physical education lessons. There is no division of the special physical education group into subgroups A and B, which creates difficulties in organizing the said lessons.

A possible reason why it was difficult for the school's medical staff to assigning children to groups based on the results of a comprehensive health assessment is the imperfect wording of Order No. 514n and its misalignment with the conceptual framework of the Ministry of Labour of Russia. In our opinion, optimization of the comprehensive assessment of health of children with disabilities, requires clarification of the descriptions of health groups 3 and 5, as well as those of the physical education groups. Assigning children to the groups should factor in their disability group (from I to III) and the degree of activity limitations. The optimal approach would be to determine the said groups in the context of development of the individual rehabilitation program in a medical and social examination institution.

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