Experience of Using KID and RCDI Screening Scales for the Complex Evaluation of an Early-Aged Child Development in Conditions of Digitalization

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ABSTRACT

This article provides experience of electronic technologies approbation in execution of diagnostics of the possible developmental delays or risks of their appearance in early aged children of the Kyrgyz Republic. For this purpose, KID and RCDI Screening Scales, which contain check lists for the parents and programs of received data computer processing, have been used. Two target groups of early aged children have been chosen for this study: the children from the group of biological risk, who have diagnosed disability or other developmental delays, and the children from the group of social risk, which, officially, don't have any signs of delay, but have grown in the Specialized Infant Orphanage of Bishkek. The digital technologies of KID and RCDI Screening Scales allowed to evaluate quickly and objectively the existent risks and delays from the standard indexes of the children from Bishkek's Infant Orphanage. On the basis of the Perinatal Period Pathology Department of the National Center of Maternity and Infancy Protection (NCMIP) the study has been overextended in relation to the time of registration sheet filling, because the respondents suffered difficulties in understanding of the questions' content, some of them were lowly motivated, didn't think it was necessary, were lazy. The procedure of scale data application required execution of the considerate explanatory work with the parents (legal representatives) in relation to the procedure of registration sheet filling and contents of questions. It was interesting, that according to the screening results of some children with determined diagnoses from the Perinatal Period Pathology Department the level of development in many areas was close to the standard indexes. Certainly, this fact requires further studying with the participance of correspondent specialists.

Keywords: early intervention, screening scales, questionnaires, digitalization

1. INTRODUCTION

1.1. Nowadays, the models of early intervention, which become a part of the new type vocational education system and the primary step of inclusive education, are actively implemented in the world [5,6,7,8]. The contemporary forecasting of possible consequences of economic and social troubles of the society determines the necessity of the vocational education system reformation, aimed to transferring it to the essentially different stage of development, which presupposes as follows:

• the utmost early revelation and diagnostics of the special educational needs of a child and his family [1,3,9,10];

• the utmost reduction of the period between the time of determination of the child's primary development delay and the start of the purposeful corrective assistance [4];

• the building of individual complex programs of accompaniment on the basis of revelation of the child's development potential [12,15];

• the mandatory inclusion of the parents into the corrective process on the basis of revelation of special need and availabilities of the family [18].

One more distinctive feature of the contemporary society is the strengthening of digitalization tendencies in different areas of the society's life activities, including the one of the education system. This, in its turn, emerges the problem of using electronic resources for diagnostics of delays in early aged children development.

In many countries, up-to-date informational technologies, aimed to the education quality improvement, help to achieve this objective and allow to combine different types of receiving knowledges, such as studying, execution of researches, experiments. The usage of KID and RCDI Screening Scales with the digital processing of data in traditional diagnostical process of revelation of

developmental delays and risks of their appearance in early aged children, serves as an example of it [13].

1.2. Unfortunately, in Kyrgyzstan it is noticed the stable tendency of growth of disability, including the children's one. In last decade, the number of persons with limited capabilities of health has grown by more than 4 times. In average, the annual increase of disability in the "children's" category amounts to 10%. In percentage terms, 3.4% of the adult population and 1.2% of the child population are acknowledged to be the people with limited capabilities of health. By the end of 2014, the number of people with limited capabilities of health in Kyrgyzstan has amounted to 162450 people, and 27450 of them are the children of the category "disabled child". This situation required immediate decision-making.

The Government of Kyrgyz Republic recognized the early development of children as its high-priority task within the frames of Sustainable Development Goals for the next 15 years. Nowadays, under the financial support of UNICEF Children's Fund, at the level of three Ministries (Ministry of Healthcare, Ministry of Education and Science, Ministry of Labour and Social Development), the elaboration of strategies on implementation of the programs of early intervention into the activities of corrective and educational organizations, is executed.

1.3. KID and RCDI Screening Scales contain large number of items, and that is why they allow not only to reveal the fact of delay, but also to receive sufficiently precise evaluation of development. The advantage of engaging parents for filling of the questionnaire is, that they continuously keep watch over child in all kinds of situations, while a specialist has to evaluate him/her within short period of time, often in the environment, unusual for a child. Besides, answering the items of questionnaire, the parents get to know their child better, get more interested in his/her development, so the filling of questionnaire, itself, is one of the procedures of early intervention. The child's development is evaluated through the comparison of the scored points (number of questionnaire items, which a child performs) to the statistically processed and standardized evaluation of a large selection of typically developing children. The main principles of both scales are analogous, but the age range of their application differs. KID scale is designated for the evaluation of level of development of the children in the age from 2 to 16 months old or older children, whose age of development doesn't exceed 16 months. KID<R> scale is the Russian version of the Kent Infant Development Scale (KID Scale) [2].

The KID Scale has been elaborated by the group of employees of the Kent University (USA) under the guidance of Professor Reiter, J. By the present moment, the KID Scale is a widespread methodology of evaluation of children's development in a number of countries of the West and East Europe (Spain, Netherlands, Hungary, Czech Republic, etc.) [2].

The RCDI Scale is designated for the evaluation of development of children in the age from year 2 months to 3.5 years, it consists of 216 questions and allows to evaluate the level of child's development in six areas:

social development, fine motor skills, gross motor skills, independent living skills, speech development and understanding of language [16,17].

The methodology's novelty resides in the fact, that it helps to evaluate the child's development complexly by several areas at the same time, reveal "the sinking" areas, non-formed functions and skills in each area, and also build the corrective program on revealed delay overcoming.

The execution of screenings allows to reveal presence of child's delays, however, more complete and profound specialist evaluation is required for both diagnosis establishment and assistance program elaboration [11, 14].

2. TERMS OF REFERENCE

The increase of the number of children with early infant pathology puts the objective of early revelation and early correction of developmental delays to the forefront and requires complex execution of events, related to the early revelation of this category of children and rendering them qualified assistance.

Traditionally, the implementation of the programs of early intervention starts with the procedure of screening evaluation of the child's development level, followed by the environment factor analysis, making of individual program of child and family accompaniment.

For the foregoing reasons, the following tasks were resolved in the study:

- To analyze diagnostical tools of young child development level evaluation, existing in the international practice.
- To execute approbation of the KID and RCDI Screening Scales in the following groups of children:
- the children from the group of biological risk;
- the children from the group of social risk.

3. STUDY ISSUES

3.1. Will KID and RCDI Screening Scales allow to quickly and objectively evaluate development level of the early aged children with developmental delays or risks of their appearance?

3.2. The recommended Scales need approbation for comparison with the standard performances of the development level of the early aged children in the context of Kyrgyz Republic.

4. STUDY OBJECTIVE

4.1. To execute KID and RCDI Screening Scales approbation for the purposes of evaluation of the development level of the early aged children with developmental delays or risk of their appearance.

4.2. 2 groups of early aged children have taken part in this study:

- The children from the group of biological risk – these are 23 children, who have undergone inpatient treatment at the Perinatal Period Pathology Department of the National Center of Maternity and Infancy Protection (city of Bishkek).
- The children from the group of social risk – these are 50 children, being raised in the Specialized Infant Orphanage (Bishkek).

5. STUDY METHODS

1. Analysis of the literature on this topic.
2. Questionnaire survey (check-list for the parents).
3. Observation.
4. Computer (digital) processing of the questionnaire survey results.
5. Analysis of received data.

6. STUDY RESULTS

6.1. The results of screening of psychomotor development of the children of Perinatal Period Pathology Department by the KID scale (%).
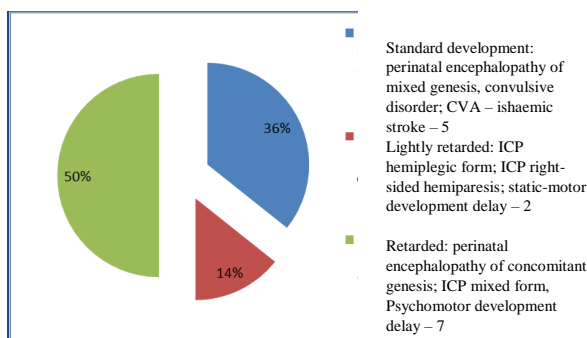

Figure 1 KID Scale approbation

It is seen from the Figure 1, that, notwithstanding the presence of such complicate perinatal pathology, as the perinatal encephalopathy of mixed genesis, convulsive disorder, sequences of acute cerebrovascular disorders, 5 children have shown the level of standard development according to all areas of the Scale, which amounts to 36% of the total number of examined children. The children with such severe disorders, as ICP of different forms with the static-motor development delay have shown light delay, which, respectively, amounts to 14% of the total number of children. And according to the screening results, 7 children are essentially retarded by all areas of development, which is, undoubtedly, related to the main diagnosis – perinatal encephalopathy of concomitant genesis, ICP of mixed form and psychomotor development delay, which amounted to 50% of the total number of children.

It is obvious, that the children with revealed developmental delay need profound evaluation of the

level of cognitive, speech and motor development for the purposes of elaboration of the individual rehabilitation program, and its implementation by the specialists of correspondent specializations.

6.2. The result of the screening of psychomotor development of the children from Perinatal Period Pathology Department of NCMIP by the R-CDI Scale (%).

From the Figure 2 it is seen, that the presence of severe disorders of supporting-motor apparatus in the form of ICP of atactic form, especially, double hemiplegia, in 3 children didn't essentially reflect the level of these children's psychomotor development, which is shown in the screening results, as "standard" by all areas of development, which corresponds to 33% of the total number of examined children. The children with such severe disorders, as ICP of mixed form, residual encephalopathy, psychomotor development delay have shown light delay, which amounts to 22% of the total number of the children. According to the screening results, the remaining 4 children have shown severe delay in all areas of development, which is also connected to the main diagnosis – ICP of different forms, psychomotor development delay, consequences of meningocephalitis, which amounted to 45% of the total number of the children.
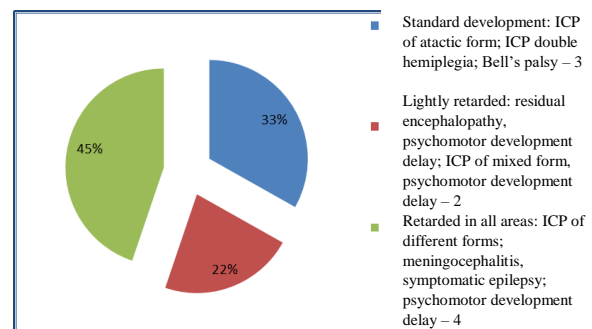

Figure 2 RCDI Scale approbation

Respectively, the children with the revealed development delay shall pass the procedure of profound evaluation of the level of cognitive, speech and motor development for the purposes of elaboration of the individual rehabilitation program, and its implementation by the specialists of correspondent specializations.

6.3. The results of the screening of psychomotor development of the children from the Specialized Infant Orphanage by the KID Scale (%).
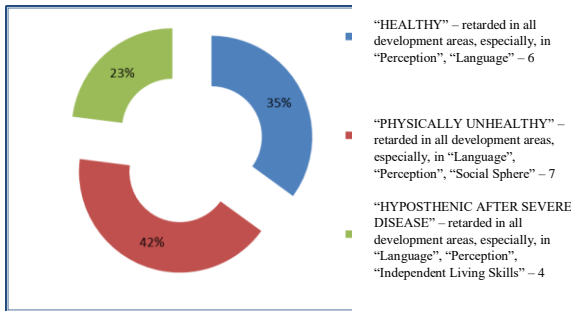
Figure 3 KID Scale approbation

It is seen from the Figure 3, that 6 children, specified by the educators as "the healthy ones" according to the screening results, have delays in development in all Scale's areas, especially, in such, as "Perception" and "Language", which corresponds to 35% of the total number of examined children. The children from the group of "the physically unhealthy ones" have shown light delay in several areas of the Scale, especially, in such, as "Language", "Perception", "Social Sphere", which, respectively, amounts to 42% of the total number of children. According to the screening results, the group of children, specified by the educators as "the hyposthenic after severe disease ones", are essentially retarded in all areas of the Scale, there again, in the areas of "Language", "Perception", "Independent Living Skills", which amounted to 23% of the total number of the children.

According to the results of the executed screening, we have held a discussion with the educators, growing these children, for the purposes of informing them on the necessity of immediate execution of profound evaluation of the level of cognitive, speech and motor development for the elaboration and implementation of the individual development program.

6.4. The results of the screening of psychomotor development of the children from Perinatal Period Pathology Department of NCMIP by the R-CDI Scale.

Figure 4 RCDI Scale approbation

It is seen from the Figure 4, that according to the screening results, only 1 child, specified in the questionnaire, as "the healthy one", has the standard development, which corresponds to 3% from the total number of examined children. The child, characterized as "the hyposthenic after severe disease one" has shown light delay only in the area of "Speech", which also amounted to 3%. According to the screening results, the children, specified by the educators as "the healthy ones" or "the hyposthenic ones", have light delay in 2-3 areas such, as "Social Sphere", "Speech", "Fine Motor Skills", "Perception", which amounted to 15% of the total number of children. 8 children have shown the light delay in over, than 3 Scale areas, which amounts to 24%. The children, specified as "the recovered ones", "the hyposthenic ones", "the physically unhealthy ones", 6 of which are "the healthy children", compose the most numerous group, 18 children, who have shown severe delay in all Scale areas, which amounted to 55% from the total number of children.

According to the results of the executed screening, we have held a discussion with the educators, growing these children, for the purposes of informing them on the necessity of immediate execution of profound evaluation of the level of cognitive, speech and motor development for the elaboration and implementation of the individual development program.

5. CONCLUSION

The construction is one of the most interesting, attractive and comprehensible types of activities for the preschoolers. In the process of constructive activities, the children apply received knowledges and skills in practice. Creating various products from available materials, designing images in the digital medium in dependence of assigned provisions and assumed functions, a child learns to imaginatively divide the model into separate elements (parts), reflect the structure of the objects, transmit their appearance, and expresses his/her at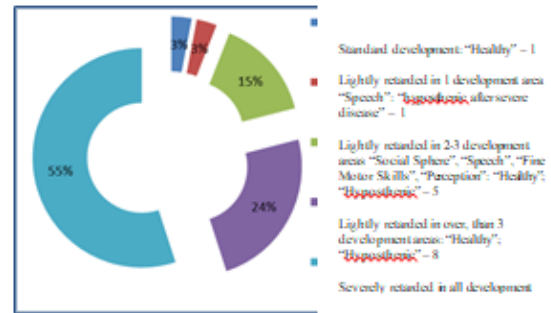titude to them. The child's independent integration of knowledges, construction skills and known means of activities at creation of new conditions for the learnt constructions by the educator, provides the new option of the assigned task solution, and the algorithm helps him/her to make the intended construction item, implement robo-models in the digital medium, create graphical comic-stories, combining the construction and dynamic images on the computer screen. All these skills, undoubtedly, reflect the today's world, full of operational systems, gadgets, "smart homes", virtual reality systems, in which the preschoolers grow.

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