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Parental and health visitor assessment of children development and factors affecting children development assessment in Hungary

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Abstract
Unlike the international practice, knowledge of parents about child development has not been studied in Hungary and researches have not been aimed at examining the sources of parental knowledge. Therefore, the aim of our research was to measure parental knowledge about their children's level of development according to development areas and to gather information about the sources of parental knowledge. There was an opportunity to examine the adequacy of parental assessment by comparing parent and health visitor (professional) opinions about the development level of children. The cross-sectional, descriptive study was realized in Budapest and in five further counties.

The research showed that parents acquire information primarily through health visitors in connection with the children's development, and in the case of the perception of certain developmental problems parents ask health visitors first. It also seemed to verify that the frequency of delay in development in the field of speech and cognitive development increases with the age of children, and these two development areas showed the greatest discrepancy between the parental assessment and the developmental standards represented by health visitors.

Keywords: Cognitive development; Early childhood; Health visitor; Parent; Physical development; Speech development

Introduction

Needs and problems of child development monitoring

Parents and primary care[1] professionals are responsible for the reduction of the ratio of children who are ready for school according to age, but have certain delays in some areas of their development, and as a consequence start school education with disadvantages. During the first years of life, the health visitor[2] and – depending on the care areas – the paediatrician frequently meets the child and follows his or her development. The communication between the parent, the health visitor and the physician, understanding, acceptance, and consideration of their opinion is therefore very important.

Numerous studies and follow-up examinations have been implemented about the development progress of a healthy, average, typical child. To assess not clearly pathologic cases, the diversion from these kind of "standards" serves as the basis for the expert judgment. However, little literature reports about the adequacy of the perception by parents about the development of their child, and how consistent it is with the opinion of the professionals (physicians, nurses). The question arises in which areas of the development the parent is able to assess properly (at least in line with the opinion of the expert) the development of their children compared to peers.

The areas of child development, and the professional standards of their examination/follow-up

The knowledge of parents regarding their child's development, education and problem solving are often proved to be false, which impedes the detection of developmental delay, intermitting the chances of early intervention. For professionals, the assessment of various development fields – physical, mental, psychological, social, and sensory development – are supported by benchmarks, growth charts and guidelines describing the examination of each development stage.

Height and weight gain are good indicators of the physical health in the case of a developing child. The BMI (Body Mass Index) informs about the relationship of body weight and body height, and it is suitable for assessing the nutritional status and obesity. The BMI percentiles can be used in the 3–18 years old population (Ágfalvy, 2005; Joubert et al., 2009; Pintér, 2004).

The idea of developmental disorder occurs when a child shows delayed or abnormal development in one or more developmental areas during the examination period. When

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monitoring the infant and toddler movement development, examination of large movements, fine motoric, hand-eye coordination gives the foundation, while in evaluating the closely related mental, psychological and social development the main aspects are crying, sleeping, attention, interest, speech, behaviour, mother-child interactions, drawing, playing and self-service monitoring. In preschool-age, neurological and special education tests are primary to the assessment of executive function delay (Büki et al., 2004).

During the examination of the functioning and development of sensory organs, the follow-up of sight and hearing is essential. Therefore, primary paediatric care professionals are responsible for examining the development of vision, visual acuity, colour vision, since a significant portion of in time recognition of disorders can be improved or corrected during childhood. The most determinative period from the aspect of auditory and speech development is the period of 0–2 years. This means that medical and rehabilitation treatment begins after the early detection within the first half a year, and the child has a positive impact both in speech and language development, and quality of life (Mester, 2005; Ministry of Health of Hungary, 2009, 2012; Tamás, 2005).

Following the described development areas and elimination of developmental disorders and delays in time is important, or even crucial, because it creates an opportunity for early intervention, thereby improving the enrolment possibilities of the affected children, and quality of life for themselves and their families (Czeizel, 2009). Therefore, parents need simple, easily understandable standardized tools or methods that draw attention to developmental delays according to age sections and different segments.

Factors affecting child development, the competence of parents in evaluating child development

During the assessment of child development, several factors must be taken into account. Literature finds gender, constitution, genetics, environmental impacts in different ages, and socio-cultural factors equally decisive (Colson and Dworkin, 1988; Danis and Kalmár, 2011; Danis et al., 2011; Gallai and Vetier, 2011; Sturner and Howard, 1998).

This is in accordance with the examination of the correlation between cognitive development and environmental factors after the 1990s, which became the centre of social and psychological scientific interest (Sameroff, 2005; Sameroff et al., 1993; Seifer, 2001). This also relies on the interest of the Hungarian psychologists and educators (György, 1984; Kalmár, 2007; Ribiczey, 2010).

One of the external factors that influence child development is the effect of the family. During the Rochester Longitudinal Research, Sameroff and others determined the 10 risk factors that potentially affect the development of the child in a negative way (Sameroff, 2005; Sameroff et al., 1993).

The recognition of the developmental differences is supported by a multi-point test method associated with Harold Ireton, the Child Development Review (CDR), which provides information about the state of health, the rate of development and the parental education methods. Ireton gives details about the 'expected' developmental rate in five areas: social development, self-support, great movement, fine motor movement and language (Ireton, 1997).

The aim of the research related to Glascoe (2003) was to determine which of the parental anxieties mainly relate to major behavioural/emotional problems in relation to the development of a child, and the reality of these fears considering the real mental health of the children. Doig et al. (1999) also analysed the anxiety of parents regarding their child's development with the help of the Child Development Inventory (CDI) questionnaire. During the investigation, the CDI results of parents were compared with the results of psychometric tests in children. Both studies found that parents play a relevant role in the signalling system – regardless of the per capita monthly income of the family and the educational level of parents. The socio-cultural environment of children has a significant role in the conformation of differences in development (Ferenczi et al., 2015). The family in which the child is raised is a multi-functional, caring system, resulting from mutual dependence. However, parents are only able to provide a normal rate of development for their child if they are in the possession of appropriate skills and resources. Therefore, the knowledge of parents about the normal rate of development and financial background are important test criteria.

A study in Romania in 2005 examined parenting skills, abilities, and educational practices in a complex way (Anghelescu and Iliescu, 2007). The aim of this study was to determine the extent of parental awareness of the child development, and caring tasks related to the life stages such as feeding, hygiene, child care attitude, playing activity, problem solving and solution strategy, and socialization.

Another dimension analysis was undertaken by Alan E. Simon, who aimed to identify those sociodemographic factors that will "unlikely", "probably" or "possibly" influence child development. Gender, ethnicity and age were confirmed as influencing factors (Simon et al., 2013). The studies also showed that knowledge and care practices of parents with lower social status suggest that in numerous cases they are not aware of the care needs of children.

Aims and research questions

The literature also supports the lifestyle aspect that parents have to be considered as a primary warning system in connection with the development of their children. The objectives of the parent and health visitor questionnaire survey were:

- Recognition of parental (or caregiver) assessment of child development, on different areas of development.
- Recognition of parental activities when development problems in connection with the child emerge.
- Obtainment of valid data on the basis of health visitor reviews about child development on various areas of development.
- Creation of a picture about parental knowledge on child development and its reliability based indirectly on the comparison of parental and health visitor opinion.
- To reveal the source of the parental knowledge of healthy child development.

The research questions were as follows:

- How do parents consider the development of their child with respect to the examined development areas?
- Which kinds of factors influence the perception of parents regarding the development of their child?
- What criteria characterise families raising children who belong to the risk group in terms of developmental delay?
- Are there any parental groups who special assistance during the follow-up of child development?

Materials and methods

Our research is an explorative, cross-sectional, descriptive study, in which both qualitative methods (focus group interview) and quantitative (questionnaire survey) are applied.

The target population of the parental attitudes and satisfaction survey within the SROP 6.1.4/12/1-2012-0001 "Early childhood (0–7 years) program" priority project consisted of parents with children between 0–7 years old and living in Hungary (Bánfai et al., 2014). The selected areas as nationwide coverage in this research were: Budapest, Baranya, Borsod-Abaúj-Zemplén, Csongrád, Szabolcs-Szatmár-Bereg and Vas counties. The distribution of questionnaires was carried out by those health visitors who were enrolled in the representative sample of counties and settlement type. The sampling of health visitors was a two-stage sampling, within the framework of a random proportional method. 380 health visitors were selected, and each health visitor selected three children randomly from the children population between 0–7 years of age belonging to the area from July to August, 2013. Among the 1140 distributed questionnaires, parents sent back 998 to the research group anonymously in a sealed envelope. After recording and cleaning the data in the SPSS program, 980 questionnaires remained. In order to examine the development of children according to objective criteria, the opinion of the health visitor – a professional controlling child development on the basis of professional standards – was considered as a benchmark. The 980 parental questionnaire data could be compared with the 908 returned questionnaires from health visitors.

In the course of the literature analysis we could not find a questionnaire that could have been adapted entirely or partially to our own investigation. The main reason was that researches with a more complex approach – responding to several developmental sub-areas and parental attitudes – explored parental knowledge dividedly for certain age groups by relevant and different series of questions. Each of these questionnaires was quite extensive. We have developed a research tool that indirectly informs about parental knowledge concerning child development. The completion of the questionnaire was supported by experiences gained from focus group interviews (10 focus group interviews involving 93 parents).

In the questionnaire, parents and health visitors were asked to identify the level of the development of children by different developmental areas. Ultimately, by comparing parental and health visitor opinion, results were achieved that enabled the assessment of the adequacy of parenting skills.

23 questions referred to the assessment of child development and orientation for development.

The question groups were as follows:

- orientation about child development;
- weeks of gestation, chronic illness, delayed development, disability;
- opinion of parents about child development on certain development areas: physical, movement, speech, cognitive, social development, operation of senses.

The health visitor questionnaire evaluated the development of children in six areas of development, using the available objective measurement tool methods.

Results

Parental assessment of child development

The majority of parents are informed about the development of their child. 97.1% of the respondents (952 people) obtain knowledge from the health visitor (as well), and 4.2% of the respondents (40 people) are informed only by the health visitor. Those who are informed by the physician did not occur in the sample. Significantly less parents, 70.4% (690 people), received information on the healthy development of infants and young children from the physician. The rate of those who were informed by family members, friends, and/or a book/magazine was above 50%, while from other sources this rate was even less.

Parents were asked to compare their child's development to the development of other children in five different areas (physical, movement, speech, cognitive, social development), and give an opinion on whether their child was more developed, on the same level of development or slightly behind the others. The parents could mark the "do not know" response. Our results showed that more parents see their children as developed than delayed compared to their peers. Parents with children over 1 year of age were asked about the complex assessment of child development (physical, movement, speech, cognitive, social), since the previous evaluation of social development could be less expected. 97.6% of parents with children over 1 year of age (735 people) responded to questions relating to the development of certain areas. It was important information that parents feel themselves to be able to assess the development of their children. Among the respondents, 96.7% evaluated all developmental areas (711 people), one area was not assessed by 2.7% (20 people), and 4 parents gave "I cannot assess" answers for 2–4 areas.

Examining the above data in relation to the answerable physical, movement, speech and cognitive development areas of the total sample – all four questions were answered by 963 persons (98.3%). Among them, "I cannot assess" could not be found for any of the questions answered by 925 people (96.1%). Based on our results, we can conclude that the majority of the involved parents feel competent to assess child development.

Detection of problems related to child development and related parenting activity

The questionnaire also examined whether parents experience problems/discrepancies or delayed development in comparison to the average in relation to their child. 923 people responded to this question (94.8%), of which 119 answered yes (12.9%). The problem was first noticed by parents in 57.0% of the cases, in 20.2% of the cases the health visitor detected the problem, physicians in 13.2%, the paediatrician/general practitioner in 7.9%, and in 1.8% it was the nurse/teacher who detected the problem. Deviation by age group in point of developmental problem detection are shown in Table 1.

Detected child development problems occurred in almost the same proportion in different age groups. In 4 cases, parents revealed that in such circumstances they "did nothing". Respondents visit the health visitor in the highest rate (59.0%, 69 persons), paediatrician/GP in 44.4% of cases (52 people), and 9.4% (11 persons) visit a family member or a friend. It should be noted that several possible answers were offered, and more than one answer was allowed to be marked by the respondents. These responses also confirm that the protective role of health visitors is crucial.

Assessment of the child development by health visitors

The ratio of children with delayed development is significantly different in the examined age groups on the basis of health visitor information (significance level estimated by the bilateral Bonferroni Z-test correction was less than 5%). There were unequal variations in the incidence of delay in certain developmental area (Table 2).

Table 1. Number of detected development problems/deviations and rate among the responding parents/caregivers (*n* = 923)

Age group		Are/were there any problems related to development?		Total
		Yes	No	
<12 months	number of cases	26	197	223
	%	11.7	88.3	100.0
13–36 months	number of cases	47	261	308
	%	15.3	84.7	100.0
36 < months	number of cases	46	346	392
	%	11.7	88.3	100.0
Total	number of cases	119	804	923
	%	12.9	87.1	100.0

Table 2. Number and relative frequency of delays in the areas of development according to the age group of children (*n* = 908)

		Age group					
		<12 months		13–36 months		36 < months	
		Number of cases	%	Number of cases	%	Number of cases	%
Physical development	not delayed development	243	98.0	296	92.5	384	93.2
	slightly delayed development	5	2.0	24	7.5	28	6.8
Movement development	not delayed development	235	94.8	300	93.8	403	97.8
	slightly delayed development	13	5.2	20	6.3	9	2.2
Speech development	not delayed development	244	98.4	282	88.1	357	86.7
	slightly delayed development	4	1.6	38	11.9	55	13.3
Cognitive development	not delayed development	246	99.2	304	95.0	387	93.9
	slightly delayed development	2	0.8	16	5.0	25	6.1
Social development	not delayed development	20	95.2	307	95.9	390	94.7
	slightly delayed development	1	4.8	13	4.1	22	5.3

Based on the study data, it can be presumed that with the passage of time, the "scissors open", namely the proportion of children with delayed development is increasing. It may be particularly conspicuous with respect to the speech and cognitive development.

The risk factors of delayed development

The analysis continued with multivariate analysis – multiple binary logistic regression model, and "Forward LR" method – from the perspective of the risk factors of delayed development. The results of the significance tests (Wald test) were considered significant in all cases if the significance level did not exceed 5%. In our study, we evaluated the results from the point of variables with significant partial "impact" in an attempt to establish some sort of order of severity as well. (It has to be noted that in each case the mother's level of education has been classified into three categories, while in the case of the educational level of fathers a relatively large /41 cases/ amount of data were missing. Furthermore, the level of education of mothers and fathers are very closely related, and so the mother's level of education is included in the multivariate analysis.)

Risk factors of delay in physical development

The gestational time was the most significant risk factor in the regression model. Even with the control of other variables its significance remained. The shorter the gestational time (weeks), the more likely the child was to have development delay in relation to the same age group. The second most important factor was the age group, followed by the information given by the health visitor. The lack of health visitor information was a particularly prevalent risk factor in the 1–3 year age group (preceding the role of gestational in this age group). Besides the "control" of the age group influence, the OR[3] of inadequate information from health visitors OR: 3.5; (95% CI[4] [1.2, 10.2]), is not reducing. In addition, the third most important factor is the control of the mother's level of education. The children's chance of delay in physical development in cases of mothers who finished a maximum eight years of primary education is 2.6 times higher than those with mothers who have completed higher education (95% CI [1.2, 5.8]).

Risk factors of delay in movement development

Regarding movement development, multivariate analysis showed similar results for the risk factors of delay to physical development, except that the weight of the health visitor information declined relatively, while the weight of the inadequate financial situation became significant. Additionally, in the case of a perceived poor financial situation, the chance for delayed movement development is 2.9 times higher (95% CI [1.5, 5.7]) than in the case of satisfactory or non-specifically wrong financial situations.

Risk factors of delay in speech development
The chance of delay in speech development among poor financial conditions increases 2.6 times (95% CI [1.5, 4.6]), for unsatisfactory medical information 2.7 times (95% CI [1.0, 7.2]), and in case of inadequate health visitor information by 3.2 times (95% CI [1.0, 9.4]).

Risk factors of delay in cognitive development
The most important risk factor for the delay in cognitive development was belonging to the Roma ethnic group. In those who called themselves Gypsy/Roma in respect to their first or second nationalities, the chance of children experiencing cognitive development delay was 8.3 times higher than in non-Roma nationalities (95% CI [3.8, 18.1]). As secondary significant factors, gestational time, then age group variables entered into the model.

Congruence of parental and health visitor opinion of child development

Based on the following table (Table 3) the difference between parental and health visitor opinion was analysed.

Table 3. Comparison of parental and health visitor opinion about child development (*n* = 816)

Parental and health visitor opinion about child development according to age groups (%)					
Areas of development		0–12 months	13–36 months	36 < months	Total
Physical development	equal	75.0	80.9	81	79.5
	parent more positive	19.0	13.5	13.2	14.7
	parent more negative	6.0	5.7	5.8	5.8
Movement development	equal	77.5	75.7	85.0	80.2
	parent more positive	18.8	20.1	11.1	15.8
	parent more negative	3.8	4.2	3.9	4.0
Speech development	equal	87.5	74.9	72.2	76.7
	parent more positive	11.5	16.5	22.3	17.9
	parent more negative	1.0	8.6	5.5	5.4
Cognitive development	equal	82.0	73.6	73.2	75.4
	parent more positive	16.0	21.5	20.4	19.7
	parent more negative	1.9	4.9	6.4	4.8
Visual	equal	97.3	98.3	93.9	96.2
	parent more positive	1.8	1.4	4.5	2.8
	parent more negative	0.9	0.3	1.6	1.0
Hearing	equal	98.6	98.2	95.5	97.2
	parent more positive	1.4	1.4	3.9	2.5
	parent more negative	0.0	0.4	0.5	0.3

It can be seen that the correspondence between the parent and expert opinions ranged from 75.4% to 97.2%. The highest difference was found in the field of speech and cognitive development, while less difference was shown in the assessment of sensory organs.

Factors affecting parental assessment of child development

Educational level (up to 8 elementary vs. higher) proved to be significant in the assessment of physical (OR = 4.0; 95% CI [1.6, 9.9]), speech (OR = 2.6; 95% CI [1.3, 5.1]) and cognitive development (OR = 4.5; 95% CI [2.1, 9.8]). Poor financial situation was most typical for those parents who could not judge the development of their child.

What criteria characterize parents/caregivers who consider child development more positively than health visitors? Analysis of these factors may help to identify groups of parents who do not / or less notice delay in child development.

In case of physical development, the odds of the above mentioned is four times higher in families where parents have a maximum of 8 elementary classes than among families with higher educated parents (OR = 4.1; 95% CI [1.6, 10.2]). In speech and cognitive development, education also has a significant effect: the possibility is 2.6 higher for incorrect assessment in the case of speech development (OR = 2.6; 95% CI [1.6, 10.2]), while in the case of cognitive development this rate is 4.8 (OR = 4.8; 95% CI [2.2, 10.6]).

In the Gypsy/Roma ethnic groups, significantly more parents overestimate the development of their children, or their children's delay remains less noticed than in cases of non-Gypsy/Roma parents. Except for the movement development, each field is overrated: physical development by 2.7 times (OR = 2.7; 95% CI [1.0, 7.3]); speech development by 4.2 times (OR = 4.2; 95% CI [2.1, 8.4]); and cognitive development is estimated to be 10.7 times higher (OR = 10.7; 95% CI [4.7, 24.4]).

Parents in a poor financial situation considered their child to be less delayed in development in comparison with the opinion of the health visitor in four fields of development. (Physical development OR = 2.7; 95% CI [1.0, 6.9]; movement development OR = 3.2; 95% CI [1.2, 8.5]; speech development OR = 2.8; 95% CI [1.4, 5.5] cognitive development OR = 7.0; 95% CI [2.9, 16.7] the corresponding relative risk values and 95% confidence intervals).

What criteria characterize parents/caregivers who consider child development more negatively than health visitors? Are they 'over-concerned'? Statistical analysis indicated that among

parents who underestimated the child development with respect to the opinion of health visitors, significantly more have degrees (p = 0.025).

Discussion

The aim of our research was to learn about the perception of Hungarian parents of 0–7 year- old children about their child's development. A further objective was to obtain valid data about child development based on the opinion of nurses, and to get a picture of the reliability of parental perception with the comparison of the opinion of parents and nurses.

Our results showed that the highest percentage of parents primarily obtain information from the health visitor about child development. All other sources of information (paediatrician, other professionals, family members, and mass media) are behind this. Based on the assessment of parents and health visitors about the child development, parents considered their children – compared to peers – more developed than the health visitors assessed them on the basis of professional development standards. Parents with the lowest educational level, Roma, or living in a poor financial situation consider their children more advanced – especially in the field of physical, speech, and cognitive development. Our results showed that the results of our study on the Hungarian population do not confirm the results of the previous researches by Doig (1999) and Glascoe (2003) in relation to the question of whether a parental warning system is always relevant, and independent from the per capita income and educational level of the parents.

It seems to have been verified that the frequency of delay in development in the field of speech and cognitive development increases with age, and these two development areas showed the greatest difference between the perception of parents and health visitors. This means that the parents are the least aware of the opinion of the professionals and the developmental standards in these two areas. Further risk factors from the point of view of the child's physical development are gestational time and the lack of information provided by health visitors, and financial situation in relation to speech development. Other risk factors include the subjectively perceived shortcomings of the physician or of the health visitor information, and the Gypsy/Roma ethnic origin (in the field of cognitive development). Roma parents overestimate the intellectual development of their children to a degree that is 10.7 times higher than the assessment of experts. These results are consistent with the conclusion of Alan E. Simon's research that the ethnicity and age of children influences their development.

The more critical assessment or even anxious attitude of parents with higher education may be looked upon on the basis that they underestimated the development of their child compared to the opinion of health visitors in a significantly higher rate than other parents. According to the opinion of health visitors, the rate of children with delayed development in certain areas is nearly 16% in the studied population.

Conclusions

The problems of child development are primarily detected by parents, followed by health visitors, doctors and specialists from institutional care or education. In cases when parents notice the difference, they primarily indicate the problem to the health visitor. Therefore, cooperation of health visitors and educators working in preventive care that covers mutual signalling and contacts as well as development activity has a high priority.

Conflict of interests

The authors declare no conflict of interests regarding this article.

Notes

1 Primary care: long-term, continuous care, based on personal relations, regardless of gender, age and the nature of the disease, can be reached by the population equally, directly, near to the residence, which is a complex preventive, rehabilitation and service care given by health care professionals. Areas in Hungary: general practitioner, general paediatric care; primary dentistry; on-call care related to primary care; health visitor care and school-health care.

2 Health visitor: the health visitor works in primary health care, with higher educational degree, health professional trained for individual preventive activity who works as a territorial health visitor in defined territorial areas, as school health visitor in educational institutions, or as hospital health visitor in city hospitals. The health visitor works in collaboration with the physician, with a high degree of autonomy.

3 OR: Odds Ratio.

4 CI: Confidence Interval.

Hodnocení rodičů a zdravotnických pracovníků týkající se vývoje dětí a faktorů ovlivňujících hodnocení vývoje dětí v Maďarsku

Souhrn

Na rozdíl od mezinárodní praxe nebyly v Maďarsku studovány znalosti rodičů o vývoji dítěte a nebyly zde ani výzkumy týkající se zdrojů, odkud rodiče své znalosti čerpají. Cílem našeho výzkumu tak bylo změřit znalosti rodičů o úrovni rozvoje jejich dětí a shromáždit informace o jejich znalostech. Měli jsme možnost přezkoumat, jak přiměřeně hodnotili úroveň vývoje dítěte rodiče v porovnání s odbornými názory zdravotnických pracovníků.

Výzkum ukázal, že rodiče získávají informace o vývoji dětí především prostřednictvím zdravotnických pracovníků, a v případě, že si povšimnou vývojových problémů, je zdravotnický pracovník první, na koho se obrátí. Zároveň to potvrzuje fakt, že frekvence zpoždění ve vývoji dítěte týkající se řeči a kognitivních schopností se zvyšuje s věkem dětí a náhled na standardní vývoj těchto dvou oblastí vykázal největší rozdíl mezi hodnocením rodičů a hodnocením zdravotnických pracovníků.

Klíčová slova: fyzický vývoj; kognitivní vývoj; rané dětství; vývoj řeči; zdravotnický pracovník

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