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Author(s): B. Lindström and B. Eriksson

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Quality of life among children in the Nordic countries

B. Lindström* and B. Eriksson

Nordic School of Public Health, Box 12133, S-402 42 Göteborg, Sweden.
Tel: +46-(0)31-69-39-00; Fax: +46-(0)31-69-17-77.

Quality of life (QOL) is a concept with no generally accepted definition. Most clinical studies have had an individual approach where demographic and socio-economic population aspects have not been considered. QOL has hardly ever been used in studies of children. In this study QOL is defined as the essential resources of a child population, expressed in external, inter-personal and personal conditions. Both objective conditions and the corresponding subjective perceptions are included. A model for an empirical application is demonstrated on a random sample of 15,000 children in the five Nordic countries. The data were collected in a questionnaire mailed to the families of the children. The QOL was analysed in a normative way, where a base value was defined for each variable and the conditions of the children were compared to a Nordic standard for children's QOL. The results showed that children in the Nordic countries have a high QOL. The differences between the countries were rather small. Children in Sweden had the highest QOL, closely followed by children in Denmark and Norway, while children in Finland were in an intermediate position and the Icelandic children had the lowest QOL, mainly due to a lower level of satisfaction. This study can be considered as a base line study which later can be used in studies of time trends or in comparisons of groups of children such as children with special needs.

Key words: Children, Nordic countries, QOL.

Introduction

To compare living conditions and standards between countries, indicators such as life expectancy, infant mortality or gross national product are usually employed. More elaborate indices or combinations of indicators are sometimes used to offer a broader basis for comparison, such as measures of standards of living,¹ the World Bank Physical Quality of Life Index (PQLI),² or the

Human Development Index (HDI) used by the United Nations.³

It is generally the life and well-being of the adult population that is studied. Although children are one of the most vulnerable groups in society they are seldom directly involved in these kind of measurements, and the few yardsticks that exist are designed for use in developing countries, such as UNICEF's annual report *State of the World's Children*, which is based mainly on vital statistics⁴ and the Children's Quality of Life Index (NICQL), which includes infant mortality, life expectancy at the age of 1 year, the general literacy rate and female literacy rate plus child labour as indicators.⁵ Issues of quality of life (QOL) have been raised in many studies and disciplines ranging from philosophy, sociology, psychology to medicine and economics,^{2,5-10} but even here children are seldom considered. In spite of the increasing interest in QOL research there exists no globally accepted definition. The framework definition of QOL used in this study is the total existence of an individual, a group or a population. This definition has been operationalized elsewhere.¹¹

Aims

This paper aims to describe how a QOL instrument developed especially for children¹² can be applied in a comparative study of children's QOL in the five Nordic countries (Denmark, Finland, Iceland, Norway and Sweden). The essential QOL resources of the population are operationalized in terms of external, inter-personal and personal conditions. The study is based on a questionnaire mailed to a representative sample of families with children of 2–18 years of age. The results will serve as a baseline of QOL for children in subsequent comparisons of children with special needs or other groups.

* To whom correspondence should be addressed.

Models and methods

The Quality of Life (QOL) model

The main difference of childhood as compared to other periods of life is the rapid development in a physical, mental and social perspective. Therefore any study of groups or individual children requires an understanding of the various dimensions of the development of the child.¹²

A QOL model with the objective to measure the mental dimensions of QOL, originally developed in social psychology by Naess⁸ has been used as the basic framework. This model was later broadened by Kajandi¹³ to include social and economic dimensions. The theoretical model has been further developed adding a global sphere¹¹ and described in the context of children.¹⁴ A detailed description of the model has been presented earlier.¹¹ Thus four life spheres are used (Table 1). Objective conditions and perceived subjective satisfaction are included in all dimensions.

This structure can be used in studies of populations as well as individuals: for comparative studies between populations with great similarities, parts of the model could be excluded.⁷ In any empirical study, specific variables need to be defined as indicators for the spheres and dimensions.

All variables are dichotomized. For each variable a base value is defined at a level considered satisfactory as a prerequisite for children's QOL, thus quantifying the resources available. This method of using base or floor values is suggested by Allardt.⁷ It has the advantage of avoiding extreme values and creating a practical, uniform method of handling the variables. The disadvan-

tage is a certain loss of information; on the other hand, the validity in a sense increases, since the number of misclassifications, i.e. observations deviating from 'true values' decrease. The cut-off points were set at levels that can serve as basic prerequisites for children's QOL in terms of external, inter-personal and personal resources. These resources are factors that support the general conditions of life, such as general resistance resources (such as economy, social structure, knowledge)¹⁵ or protective factors for children that increase resilience (such as social functioning, self-esteem, basic mood).^{16,17} Such factors have been found to correlate positively with QOL.¹⁸

The combined set of base values for all variables in this study form a standard of QOL for a population. Developed and developing societies would probably have different sets of base values, but the same general structure could be used universally in any society. In this study each country defined what economic resources were considered acceptable for the specific country using an inter-disciplinary group and the national statistics as reference when the results were analysed. The families indicated what economic resources they had including possible subsidiaries and how satisfied they were.

To study and compare populations with respect to QOL, the percentages of the population with values above the base values are calculated. The mean for each dimension and sphere is thereafter estimated. Ultimately a general mean will represent the total QOL in a single number.

A Study of QOL among Nordic Children

Research instrument

A cross-sectional study of about 15,000 children was launched in the five Nordic countries as part of a major study on children's health and well-being.¹⁹ A postal questionnaire was used for data collection and the results were analysed according to the described QOL model. The external sphere represented the socioeconomic conditions for the child's family, the inter-personal sphere, the structure and function of the child's social networks and the personal sphere, the psychological well-being of the child as described in Table 2. The global sphere was excluded since the study was undertaken in the Nordic countries, which have great similarities in this respect.

Table 1. General QOL model

Spheres	Dimensions	Examples
Global	1. Macro environment	Clean environment
	2. Human rights	Democratic rights
	3. Policies	Culture
External	1. Work	Employment
	2. Economy	Income
	3. Housing	Type of housing
Inter-personal	1. Family	Structure and function
	2. Intimate	
	3. Extended	of social relationships
Personal	1. Physical	Growth, development,
	2. Mental	activity, self-esteem,
	3. Spiritual	meaning of existence

Table 2. Study instrument

External sphere:	Work	Economy	Housing
	Education Profession Satisfaction	Income level Income distribution Satisfaction	Type Space Private room for the child
Inter-personal sphere:	Family	Intimate relationships	Social support
	Siblings Available time Satisfaction	Number of parents Life events Household size	Relatives Society Satisfaction overall
Personal sphere:	Activity	Self-esteem	Basic mood
	Child activity Parent-child activity Satisfaction	Six opposite pairs (such as happy-depressed)	Psychosomatics Peer acceptance Satisfaction

The complete questionnaire and the corresponding base levels can be obtained from the Nordic School of Public Health.

Sampling

Five random samples of children aged 2–18 years were drawn from the population registers of the National Bureau of Statistics in each country. The number of children per sample was intended to be 3000. Since a pseudo-systematic approach was used, the numbers differ between the countries. Certain fractions of all children in the age span born on the 4th of each month were selected. The population and sample sizes together with the response rates are given in Table 3.

Standard approaches were used in sending reminders. The response rates in the different countries varied between 56% and 83%. A selected sample of non-responders were contacted by telephone, and the material was weighted using conventional statistical methods.²⁰ It was concluded that a valid analysis of the data could be undertaken.

All selected children or rather their families, received a questionnaire of 75 questions. From these, 264 variables were defined and 32 were used in this study corresponding to the spheres and dimensions of the model. The families were instructed to fill in the questionnaire together with the children: 10% of the youngest (2–6 years), 42% of children aged 7–12 years and 58.6% of teenagers participated when the forms were completed. Parts of the material have been analysed in a previous report.¹⁹

Statistical analyses

All variables were reduced to have only the values one or zero, the value of one corresponding to being above the base level and zero to being below.

All the proportions presented in this paper were standardized with respect to the age of the children. The direct method was used with the joint Nordic population as a standard. To study relationships, ordinary Pearson correlation coefficients were used. The interpretation of significance

Table 3. Size of population, sample size and response rate (age span 2–18 years)

Country	Child population (total)	Sample	Responding	Response rate (%)
Denmark	1,158,851	3,031	2,218	73
Finland	1,078,264	3,253	2,705	83
Iceland	69,722	2,647	1,577	60
Norway	984,844	3,323	1,856	56
Sweden	1,771,159	3,100	1,934	62
Total	5,062,840	15,354	10,290	67

tests is relevant even for dichotomous variables since the samples are large.²¹

The influence of random variation was assessed by means of standard errors. The differences between the proportions of participants from any two countries vary slightly due to the different sample sizes but they are 1.5 on the average. To conclude that such a difference is statistically significant at the 5% level they should exceed approximately 3.

Results

The results are presented separately for each sphere and then summarized in an overall QOL presentation.

External sphere

This sphere includes indicators of three dimensions: work, economy and housing. The work dimension includes self-reported education and profession and perceived satisfaction with work. The economy dimension comprises self-reported income, family income per capita (distribution) and perceived satisfaction with economy. The housing dimension includes type of dwelling, room per family member (space) and the child having its own room.

There were marked differences in the general education level between the countries, ranging from the lowest level in Denmark to the highest in Iceland. Efforts have been made to ensure that the definitions of education were the same in the

countries. The concept of profession did not show very large differences between the countries. The correlation between high education and professional status within the countries was positive, though not extremely high ($r = 0.44$). Satisfaction was much at the same level except for Iceland where the satisfactory rating was lower. Satisfaction was not correlated to the other two variables.

The levels of income were about the same in all countries except for Iceland, which had a higher level. The economic distribution, i.e. income per capita in the family, followed the same pattern. Satisfaction was highest in Finland and Norway and remarkably low in Iceland. Generally, satisfaction with economy was lower than with work.

Finland and Norway differed most markedly from the other countries in terms of housing. In Norway there was a larger proportion of families in one-family houses. Finland had less space for the family and a smaller proportion of children had a room of their own. The tendency was the same for Iceland (Table 5).

The age of the child does to a certain extent describe the age of the parents. Probably the very clear child age-related tendencies for housing, the increasing proportion of families in one-family houses and the increasing space are reflections of the age of the parents. The increasing rate of children with a room of their own is linked to the age of the child. Family education drops with an increasing age of the child reflecting that the general level of education in the Nordic countries has increased during the last decades. Professions are not related to the age of the children meaning that the better educated parents of young children also hold better jobs. Satisfaction is increasing with age both for the dimension work and economy.

Table 4. The external sphere of children's QOL. Comparison of countries (percentage exceeding base level)

	Denmark	Finland	Iceland	Norway	Sweden	Nordic countries
Work						
Education	22.4	42.3	57.2	39.3	44.3	37.8
Profession	64.5	57.7	52.5	68.7	64.1	63.5
Satisfaction	72.8	74.9	59.5	73.1	76.8	74.4
Economy						
Income	59.0	46.9	73.6	54.4	46.5	51.7
Distribution	75.0	74.2	84.9	71.8	72.8	73.6
Satisfaction	57.3	68.6	26.5	61.6	52.9	58.7
Housing						
Type	82.7	71.3	69.7	90.8	76.8	79.7
Space	86.3	59.5	79.6	85.1	84.0	79.3
Room for child	83.6	48.5	72.6	76.7	79.0	73.1
Total	67.1	60.5	64.0	69.1	66.3	65.7

Table 5. The external sphere of children's QOL. Comparison of age groups (percentage exceeding base level). All Nordic countries

	Age (years)		
	2-6	7-12	13-18
Work			
Education	47	40	32
Profession	61	63	59
Satisfaction	68	73	76
Economy			
Income	54	58	53
Distribution	74	75	77
Satisfaction	51	57	59
Housing			
Type	73	79	81
Space	69	77	86
Room for child	54	75	86

Inter-personal sphere

The inter-personal sphere is a combination of factors related to the networks within the family nucleus and factors related to the extended support structures. The structure and function of the child's social networks is described using three dimensions. The family dimension describes how many siblings the child has living in the family, how much time parents have available for the child (full-time employment, inconvenient working hours and time-consuming trips to and from work were considered negative). Finally the satisfaction with family life was included. The intimate dimension describes the ties between the child and parents: the number of parents, fewer separations, divorces or deaths in the child's life time and the

size of the household were included as variables. The extended networks reflect the family's extended support from relatives, friends, society and the satisfaction with this support in general (Table 6).

Most children were living with two parents (91.8%), and about every tenth child had experienced a major negative life event in their life time. The majority of children had more than four persons in their household but one in four had no siblings living at home. About 60% of the parents had reduced their working hours which, in principle, would give more time to spend with their children. Satisfaction with family life was high, about 86% indicating that they were pleased with the family. The families were less satisfied with the support they received from friends and relatives, about half being pleased. The perceived societal support only satisfied about one-third of the families. Finnish and Swedish children had the highest ratings, Danish and Norwegian were intermediate, while Icelandic children rated the lowest. In spite of the Finnish children having fewer siblings and family members than the others, they were the ones who generally were most pleased with their extended social support and had faced the fewest major negative life events (separations, divorces and deaths) in their life time. In Sweden negative life events and single parenthood were most common, followed by Denmark. The satisfaction with the extended support was high in Sweden, thus increasing the overall rating.

Norwegian children had the highest number of siblings and single parenthood was here the least common. The Norwegian families were most

Table 6. The inter-personal sphere of children's QOL. Comparison of countries (percentage exceeding base level)

	Denmark	Finland	Iceland	Norway	Sweden	Nordic countries
Family						
Number of siblings	74.0	71.1	77.8	78.8	78.4	75.9
Available time	58.0	57.2	55.1	55.9	55.7	56.6
Satisfaction	84.7	87.2	80.7	88.1	87.8	86.9
Intimate						
Number of parents	91.2	92.4	92.1	93.4	90.1	91.8
Life events	86.6	90.4	88.4	89.9	84.9	87.4
Household size	70.4	67.9	75.5	76.0	74.4	72.4
Extended						
Satisfaction relatives	54.1	62.8	41.1	48.0	59.6	56.5
Satisfaction society	37.0	46.1	23.9	20.6	40.6	36.8
Satisfaction contacts	78.9	82.2	67.3	79.9	81.6	80.6
Total	70.5	73.3	66.9	70.1	72.6	71.6

pleased with family life. However, the degree of satisfaction with the extended networks, especially societal support, was low, therefore Norway only had an intermediate rating. For Norwegian children factors related to the nucleus family were the most favourable in the Nordic comparison, while factors related to the extended support from society, relatives and friends were almost as low as for Iceland which had the lowest overall rating (Table 7).

Children aged 7–12 years had the highest values in the family dimension, having most siblings, parents with the highest time availability and the greatest satisfaction with family life. Major life events increased with age as did the risk of single parenthood, but children aged 7–12 years lived in

the biggest households. Perceived support from relatives and society was the highest in the same age group while the over all satisfaction with social support increased with age.

Personal sphere

This sphere includes three dimensions: activity, self-esteem and basic mood. For activity there are three variables. Two are reflecting the activity of the child, on its own and together with parents. The third measures the family satisfaction with activities. Self-esteem is measured as the parent's perception of the child's capabilities in six opposite pairs. Basic mood is measured using three variables, lack of psychosomatic symptoms, satisfaction with school and peer acceptance (Table 8).

An average of 60% of the children had a high level of activity on their own and activities with parents participating was even higher. More than 90% were satisfied with daycare or school and about 90% of the children were accepted by their peers. About 50% of the parents estimated that their children had a high self-esteem. Psychosomatic symptoms occurred in 17% of the Nordic children. Swedish children had the highest activity level, while Finnish parents were most active with their children. Icelanders were the least satisfied with their leisure time, while Danes were most pleased. Children's self-esteem was rated highest in Sweden, closely followed by Denmark and Norway. In Finland it was about 10% lower than in Sweden and 20% lower in Iceland. Swedes were most pleased with their daily activities while Danish and Norwegian children enjoyed school the most. Being bullied was most common in

Table 7. The inter-personal sphere of children's QOL. Comparison of age groups (percentage exceeding base level). All Nordic countries

	Age (years)		
	2–6	7–12	13–18
Family			
Number of siblings	76	83	65
Available time	55	58	57
Satisfaction	86	87	84
Intimate			
Number of parents	94	92	89
Life events	93	87	84
Household size	74	80	61
Extended			
Satisfaction			
Relatives	25	28	27
Society	33	34	31
Overall	76	79	81

Table 8. The personal sphere of children's QOL. Comparison of countries (percentage exceeding base level)

	Denmark	Finland	Iceland	Norway	Sweden	Nordic countries
Activity						
on its own	61.4	64.1	53.4	55.0	66.7	62.5
with parent	69.1	74.8	52.6	61.9	71.0	69.4
satisfaction	75.3	71.4	45.6	74.0	74.7	73.6
Self-esteem						
overall	53.9	42.9	34.6	52.5	56.7	52.0
Basic mood						
psychosomatics	87.3	79.5	75.1	84.5	89.0	85.5
satisfaction at	95.5	91.1	79.4	94.9	92.7	93.2
school						
peer acceptance	85.9	80.4	92.2	89.0	94.2	88.8
Total	70.8	65.6	55.8	68.5	73.1	69.0

Finland and least common in Sweden and Iceland (Table 9). The increasing activity on its own is quite naturally contrasted to a decreasing activity with the parents and an increasing satisfaction. The frequency of psychosomatic symptoms increases with age. Note the low proportion for peer acceptance among the youngest children.

Table 9. The personal sphere of children's QOL. Comparison of age groups (percentage exceeding base level). All Nordic countries

	Age (years)		
	2-6	7-12	13-18
Activity			
on its own	29	79	76
with parent	79	75	43
satisfaction	64	71	75
Self-esteem	49	46	50
Basic mood			
psychosomatics	87	83	77
satisfaction at school	92	93	89
peer acceptance	77	85	85

The overall QOL

Table 10 shows the estimates of QOL for children in the Nordic countries expressed as percentages above base values for the three spheres. The table also includes the means of all spheres. In addition two groups of variables, 'subjective' and 'objective' are considered. Objective here means factual conditions such as income, albeit self-reported. Subjective means expressions of experiences, attitudes and values.

The differences in total QOL between the Nordic countries were small. Sweden had the highest value (70.7) closely followed by Denmark and Norway (69.5 and 69.2). Finland came slightly

lower (66.5) and Iceland was the lowest (62.2). The objective and subjective results gave a different ranking order. The objective results put Norway, Sweden and Denmark roughly on the same level (73.2-72.4) while Finland and Iceland were lower (67.4 and 67.3). The most extreme subjective results were found for Iceland (52.9) while the other four countries clustered closely together (71.7-68.1). Norway had the highest value as of external conditions (69.1) closely followed by Denmark and Sweden. Iceland was only slightly lower and Finland was lowest (60.5). The interpersonal sphere ranked Finland and Sweden highest (73.3), Denmark and Norway intermediate and Iceland last (66.9). There were fairly big differences within the personal sphere: Sweden having the highest results of 73.1 followed by Denmark (70.8), Norway and Finland intermediate (68.5 and 65.6), and last Iceland (55.8).

A description of the QOL in the five different countries will conclude the interpretation of the results of this study.

Sweden (total QOL 70.7)

Among the Nordic countries, children in Sweden had the highest overall QOL. Both the objective life conditions and the perceived subjective satisfaction were high. Although Norwegian children had equally high objective conditions and Finnish children equally high subjective conditions Sweden rated high in both aspects. Swedish children had the highest self-esteem, the highest activity level and the best basic mood of all, thus having the best QOL among Nordic children. This is so in spite of not having the highest incomes or the highest educational level of Nordic families nor living in the best houses and not even having the best social networks (in fact, they were the most likely to face a major negative life event).

Table 10. Children's overall QOL. Comparison of countries (percentage exceeding base values)

	Denmark	Finland	Iceland	Norway	Sweden	Nordic countries
External sphere	67.1	60.5	64.0	69.1	66.3	65.7
Inter-personal sphere	70.5	73.3	66.9	70.1	72.6	71.6
Personal sphere	70.8	65.6	55.8	68.5	73.1	69.0
Mean all spheres	69.5	66.5	62.2	69.2	70.7	68.8
Average subjective variables	68.1	71.5	52.9	70.5	71.7	70.6
Average objective variables	72.4	67.4	67.3	73.2	73.2	70.2

Denmark (total QOL 69.5)

Danish parents had the lowest educational level and only intermediate jobs and income levels, but the parents had most time to spend with their children and Danish children were most likely to live in a spacious house and have a room of their own. Major negative life events were almost as common as in Sweden and only Finnish children had fewer siblings. The self-esteem and basic mood was second only to that of Swedish children.

Norway (total QOL 69.2)

Norwegian parents had the better employment and their children were most likely to live in detached houses with a housing standard equaling the Danes. The children were the ones most likely to have two parents and also lived in the biggest households, having most siblings. This was also indicated in the perceived well-being as Norwegian families had the highest level of satisfaction with family life and the best conditions regarding the family networks. However, Norwegian families were least satisfied with societal support. The self-esteem and basic mood of Norwegian children were equal to the Danes, but the activity levels were lower.

Finland (total QOL 66.5)

The Finnish families expressed the second highest level of satisfaction and they were the ones who were most pleased with their extended networks and the societal support. Contrary to the Norwegians, Finnish children were living in the smallest households having the fewest siblings and they were the least likely to have a room of their own. Major negative life events were least frequent in Finland but peer acceptance was lowest.

Iceland (total QOL 62.2)

Most strikingly the level of satisfaction was much lower in Iceland, and this influenced all QOL spheres. Icelandic parents had the best education and the highest incomes, but they also expressed the lowest degree of satisfaction with these conditions as with most other QOL aspects considered here. The basic mood of the children equalled the

Finnish, but activity levels and especially the self-esteem was low.

Discussion

The five Nordic countries are affluent societies with fairly high GNPs and high standards of living. They have established so-called 'welfare states', meaning that efforts have been made to decrease inequalities in society and provide support to vulnerable groups such as the elderly, chronically ill and families with dependent children. The welfare state model has often been questioned, although international comparisons often place the Nordic countries among the top ranking in the world, having a high life expectancy, low rates of infant and perinatal mortality, low child accident rates combined with reasonable material resources and individual freedom.³

This study, which is an analysis of the Nordic societies in the perspective of children's QOL, shows that not only the material and objective conditions of life but also the perceived satisfaction is high. The Nordic countries seem to provide the prerequisites required for children to enjoy a high QOL. Overall Swedish children ranked slightly higher than the others. They had the highest means in terms of both objective and subjective variables. In addition the inter-personal and personal life spheres which, according to Naess,⁸ correlate the closest to mental well-being were the highest in Sweden. As expected the differences between the Nordic countries were small but some of the features were surprising, such as the differences in subjective well-being. Swedes, Finns, Danes and Norwegians were closer to each other in this respect than the Icelanders. Overall the level of satisfaction was high.

No previous study of this character has been carried out in the Nordic countries. The conclusion of an earlier study on welfare of the adult population in four of the Nordic countries showed some similarities.⁷ In that study Sweden and Norway ranked first, followed by Denmark and leaving Finland slightly behind in most welfare aspects. Almost the same applies here but Denmark and Norway have changed places and in addition Iceland, which did not participate in that study, is here to be found in a category of its own.

Another study on the level of living, based on 20,000 interviews specifying families with children as a subgroup showed some similarities to this study.²² In that study Norwegians were most

frequently living in detached houses (91.1%) and had the most spacious housing conditions. The level of education was the highest in Iceland, as was shown here.

The longest working days for parents occurred in Iceland, averaging 47.5 h/week, 8–10 hours more than in the other countries, which could reflect the greater dissatisfaction with leisure time. People in Iceland had much fewer friends to confide in which in this study has been exemplified in the low satisfaction with the extended support networks in Iceland.

Questionnaires are practical tools when collecting information from populations but have limitations and cannot be used to explain all qualities of life. The primary target group were the children and the questionnaires have to a large extent been filled in by the parents together with the children. The participation was higher among the older children. Parents as proxy respondents may bias the results, but if small children are to be included in a major questionnaire study proxy respondents are obviously needed. Although the answers cannot be defined to represent fully the children's views, parents are the natural and the closest proxy respondents that could be found normally representing similar priorities.²³

The analysis of the results is normative since the QOL conditions were compared to a standard value for each variable. When these were set the first priority was to consider factors that are important to the children so that QOL is described in a child perspective.²⁴ The study shows that children in the Nordic countries generally live under conditions that can function as prerequisites for a satisfactory QOL. The general QOL resources described here can be mobilized and strengthened when children face hardships such as a disease. In clinical practice these resources are often neglected and too much emphasis put on the problem-oriented professional perspectives, neglecting the patients and their relatives.^{25,26}

The continuation of this project, now that the base level of children's QOL is set, will be to analyse some of the special groups in this material, thus children with specified disabilities (diabetes, Down syndrome, cystic fibrosis, haemophilia, osteogenesis imperfecta, myelomeningocele and vision impairments) will be analysed and compared to these results. The validity and reliability of the instrument will be improved in a follow-up study on a smaller sample using a combined methodology of questionnaire, interviews and observations. This will also give more direct

information from the children. A planned follow-up study describing the conditions of children in a new cohort will describe changes over time.

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