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SOCIO-DEMOGRAPHIC AND MEDICO-BIOLOGICAL FACTORS AS PROGNOSTIC INDICATORS OF QUALITY OF LIFE IN EARLY CHILDHOOD

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Patient's quality of life (QL) measures are endowed with independent predictive value and these factors are considered to be more distinct than patient's general somatic condition for predicting patient's health condition. However, the number of researches devoted to QL prediction in the field of medical science is low. The aim of research is evaluation of predictive measure of QL of early aged children. Prospective observational study was carried out. The objects of the research were 2362 early age children (3months-3years old) from pediatric polyclinics of Yerevan. QL of children was evaluated with the international questionnaire "QUALIN". Wald's analytical method has been applied for predictive evaluation of QL criteria and formation of risk group. For the analysis and evaluation of the statistical material used SPSS Statistics software package. In social-hygienic factors more important were: family type, conflicts in family, disabled child and frequent morbidity families, presence of artificial nutrition since birthday. Among medico-biological factors the presence of two or more diseases in neonatal period, low and high levels of physical development, weight deficit and obesity, child's health group and respiratory, nervous and digestive system diseases were more significant. In terms of predictive evaluation of QL, it can be stated that a number of medico-biological and socio-hygienic factors affect the overall formation of QL. By means of predictive evaluation of QL one can originally set apart targeted risk groups and if the score of predictive evaluation is +13 and higher, implement health measures, which may provide with improvements of QL criteria.

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Introduction. Importantly, the effect of social determinants is not limited to infectious diseases; it extends to chronic diseases as well, including cardiovascular disease, Type 2 diabetes, stroke, cancers, pulmonary diseases, kidney disease, and many other ailments [1, 2]. Several studies have found that the social context of a person's life determines the risk of exposure, degree of susceptibility, and the course and outcome of a disease – regardless of whether it is infectious, genetic, metabolic, malignant, or degenerative [3, 4].

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According to a number of scientists, quality of life (QL) evaluation is an integral characteristic of health, which means that the methodology of QL evaluation has great prospects in the study of health and nosologies of certain groups of population [5].

The other applicable field of QL criteria is the study of impact of chronic diseases. The studies show that all the QL criteria of patients with chronic diseases are lower than that of healthy peers [6, 7].

Being aware of the impact peculiarities of disease on QL, one can give advice on the optimization of therapeutic and rehabilitation measures, concrete nosology and individual approach to a concrete patient [8, 9]. What concerns the evaluation of treatment productivity, practically, in all the multicenter randomized researches of the recent years that are devoted to the productivity evaluation of different therapeutic programs, QL evaluation is to be added next to the traditional clinical measures and clinical measures of treatment productivity research. Depending on the research results, QL is viewed as an additional or basic measure during the treatment scheme decision making [10–12].

The practice of pediatrics is unique among medical specialties in many ways, among which is the nearly certain presence of a parent when health care services are provided for the patient. Regardless of whether parents or other family members are physically present, their influence is pervasive. Families are the most central and enduring influence in children's lives. Parents are also central in pediatric care. The health and well-being of children are inextricably linked to their parents' physical, emotional and social health, social circumstances, and child-rearing practices. The rising incidence of behavior problems among children attests to some families' inability to cope with the increasing stresses they are experiencing and their need for assistance. When a family's distress finds its voice in a child's symptoms, pediatricians are often parents' first source for help [13].

QL also has a predictive value for medical care. This direction has particularly been observed during oncological diseases. It has been proved that those patients suffering from cancer, who have had high QL, live longer [14, 15].

However, the number of researches devoted to QL prediction in the field of medical science is low.

Material and Methods.

Sample. The objects of the research were early age children (from 3 months to 3 years old). The research was carried out at the two biggest pediatric polyclinics of Yerevan, namely No. 9 and "Arabkir" pediatric polyclinics. 2362 children were included in the study, 1180 of them being up to one-year old and 1182 being 1–3 years old. The parents of all participating children were asked to complete a questionnaire, which included questions about socio-demographic (19) and medico-biological factors (21).

Written informed consent was sought from all participants. The study project was discussed and approved by the Ethics Committee of Yerevan State Medical University.

Measurement of QL and Risk Factors. QUALIN (qualite´ de vie du Nourisson) [16] consists of 4 subscales (34 questions), which describe the main basic aspects of child's life activity: behavior and communication (14 questions), ability

to stay alone (5 questions), family environment (4 questions), neuropsychological development and physical health (11 questions).

Body Mass Index was calculated as weight (*kg*)/height (m^2). Children were also categorized as underweight (<−2SD), healthy weight (between –2SD and 1SD), overweight (from 1SD to 2SD) and obese (>2SD), according to the World Health Organization (WHO). Children's health condition was evaluated according to the three groups of health.

In order to evaluate the level of family's health, we divided families into three groups. The division was based on the frequency of diseases in the families.

1. Families with low morbidity level (each member of the family gets sick once a year on average and there are no cases of chronic diseases).
2. Families with average morbidity level (each member of the family gets sick thrice a year on average and there are no cases of chronic diseases).
3. Families with high morbidity level (each member of the family gets sick more than thrice a year on average and there are cases of chronic diseases.

Predictive Evaluation of the Quality of Life. Wald's analytical method has been applied for predictive evaluation of QL criteria and formation of risk group [17]. This method allows calculating diagnostic index of various socio-hygienic, medical-biological and psychological factors. If the index is 13 or higher, there was is a 95% possibility that the child experiences extremely low or low QL. If the index value is +20 or +30, the level of prediction attains 99 or 99, 9%. The calculation of predictive index: $PI=10\cdot\log(B–A)$, in which A is the QL measure (if present), B is the maximum value of QL criterion.

Statistical Analysis. For the analysis and evaluation of the statistical material the following statistical methods were applied: calculation of average and relative indices, their reliability assessment with the help of SPSS Statistics software package.

Results. In the studied population boys were 48.1% and girls were 51.9% (Tab. 1). 57.2% of studied pupilation had the first group of health, 36.2% – second and 6.6% – third.

The result of the evaluation of parents' educational status revealed that more than 50% mother and/or father had higher education.

The results of the research showed that 64.0% of the families had one child, 24% – two children and only 12% – three children. Nuclear families (four members and less) formed 35.0%, families consisting of 4 or 5 members formed 55.6% and extended families (6 and more members) formed only 9.4%. According to family type, 96.0% of families were two-parent and 4.0% were single-parent families.

According to data on sociological inquiry it turned out that 89.9% of mothers and 95.5% of fathers had evaluated their health as satisfactory, only 10.1% of mothers and 4.5% of fathers had stated the presence of a chronic disease.

The 75.5% of the families stated that one of the parents or both of them had bad habits: 44.7% mentioned smoking and 30.8% – use of alcohol. To the question "how do you evaluate the relationship between the family members?" 90.8% answered "Good" and 9.2% answered "Unsatisfactory" (not harmonious relationship, frequent conflicts). In 82.9% of cases both parents were involved in child-rearing, however, in 17.1% of cases father did not participate in child-rearing.

The factors that affect child's QL have been divided into two groups: medico-biological and socio-demographic.

At first let's discuss the impact of medico-biological factors. The diagnostic coefficient for I, II and III groups was made –1; +2,4 and +3,0 respectively. The diagnostic coefficient for healthy weight status was –1 and for underweight and overweight/obese – +3. According to Apgar intellectual factor we came to the following result: 7–10 points – diagnostic coefficient was –1; 4–6 points – +2; 1–3 points – +4 (Tab. 2). If child's health index > 100%, DC is –1, if <100% – DC is +1.4.

In terms of low level of QL prediction, the socio-demographic factors were analyzed as well (Tab. 3). If there are conflicts in the family, the DC equals to +3. The DI is +3 for children living in families with frequent morbidity but for those with rare morbidity – DI is –1. Parents' role in child-rearing is of major importance as well.

Table 1

Socio-demographic characteristics of early aged Armenian children

Characteristic		Sample
N (%)		2362
Male. *n* (%)		1136 (48.1)
Female. *n* (%)		1226 (51.9)
Up to 1 year old		1180 (50.0)
From 1–3 years old		1182 (50.0)
Pregnancy number	First *n* (%)	1949 (82.5)
	Second *n* (%)	373 (15.8)
	Thirth + *n* (%)	40 (1.7)
Health Groups n (%)	I Group n (%)	1350 (57.2)
	II Group n (%)	855 (36.2)
	III Group n (%)	157 (6.6)
Maternal education	Higher	1382 (58.8)
	Incomplete higher	189 (8.0)
	Secondary	543 (23.0)
	Vocational	248 (10.5)
Paternal education	Higher	1193 (50.5)
	Incomplete higher	260 (11.0)
	Secondary	318 (13.5)
	Vocational	590 (25.0)
Pregnancy duration	With complication	1800 (76.2)
	Without complication	562 (23.8)
Parents health condition	Normal	2242 (94.9)
	Maternal chronic diseases	50 (2.1)
	Paternal chronic diseases	70 (2.9)
Number of children in family	1	1512 (64.0)
	2	567 (24.0)
	> 2	283 (12.0)
Type of family	Nuclear (< 4)	827 (35)
	Medium (4-5)	1313 (55.6)
	Extended (> 5)	222 (9.4)
Maternal health self assessement	Satisfactory	2123 (89.9)
	Presence of chronic disease	239 (10.1)
Paternal health self assessement	Satisfactory	2256 (95,5)
	Presence of chronic disease	106 (4.5)

Table 2

Diagnostic Coefficients of indicators predicting low QL level among early age children

Predictive index	Index characteristics	A (total score of QL)	log(B-A), (B is 5.0 points)	Coefficients of Diagnostic Value (point), 10·log(B-A)
Medico-biological factors				
Health group	I group	4.1	–0.046	–1
	II group	3.4	0.204	+2.4
	III group	3.0	0.302	+3.0
Body mass index	normal nutrition	4.0	0.0	–1
	weight deficit	3.0	0.301	+3
	obesity	2.9	0.322	+3
Factor of child's intellect according to Apgar score	7–10	4.1	–0.046	–1
	4–6	3.45	0.19	+2
	1–3	2.4	0.415	+4
Index of child's health according to Apgar score	>100%	4.1	–0.046	–1
	<100%	3.62	0.14	+1.4
Mother's age	up to 35	4.1	–0.046	–1
	35 and older	3.5	0.176	+3
Health status deviations	absent	3.9	0.04	+0.4
	present	3.2	0.255	+3
Normal psychological development level (NPD)	normal	4.0	0.0	–1
	low NPD	3.2	0.255	+3
Preterm delivery in anamnesis (case history)	presence	3.8	0.079	+1
Flare – ups of chronic disease during pregnancy	presence	3.5	0.176	+2
Birth with asphyxia	presence	3.4	0.204	+2
Premature birth	presence	2.9	0.322	+3
Presence of 2 or more diseases in the neonatal period of life	presence	2.7	0.362	+4
Level of physical development	low	3.4	0.204	+2
	medium	4.0	0.0	–1
	high	3.0	0.301	+3
The frequency of URTI during a year	< 2 times	3.5	0.176	+2
	3–4 times	2.9	0.322	+3
Rickets	absence	4.1	–0.046	–1
	presence	3.2	0.255	+3
Certain conditions originating in the prenatal period	absence	4.1	–0.046	–1
	presence	3.5	0.176	+2
Anemia	absence	4.1	–0.046	–1
	presence	3.3	0.23	+2
Nervous system disease	absence	4.1	–0.046	–1
	presence	2.9	0.322	+3
Respiratory system disease	bronchitis in anamnesis	2.8	0.342	+3
	pneumonia in anamnesis	2.5	0.398	+4
Disease of skin and subcutaneous tissue	absence of atopic	4.1	–0.046	–1
	dermatitis presence	2.9	0.322	+3
Digestive system disease	absence	4.1	–0.046	–1
	gastritis	2.9	0.322	+3
	gastro esophageal reflux disease	3.0	0.301	+3

Table 3

Diagnostic Coefficients of indicators predicting low QL level among early age children

Predictive index	Index characteristics	A (point)	log(B-A), (B is 5.0 points)	Coefficients of Diagnostic Value (point), 10·log(B-A)
Socio-demographic factors				
Educational level of parents	secondary vocational higher	3.9 3.9 4.0	0.04 0.04 0.0	+0.4 +0.4 0
Families with low income	presence	3.9	0.04	+0.4
Families with bad habits	overuse	3.6	0.146	+1.5
Families prone to conflicts	present	2.9	0.322	+3
Family type	extended family medium size family nuclear family	4.7 4.1 3.6	–0.523 –0.046 0.146	-5 -0.5 +1.5
Number of children in family	1 child 2–3 children 4 and more children	3.9 3.9 4.0	0.04 0.04 0.0	+0.4 +0.4 0
Family's living conditions	favorable unfavorable	4.1 3.9	–0.046 0.04	–1 +0.4
Parents' role in child-rearing	both parents only mother	3.8 3.2	0.079 0.193	+0.8 +1.9
Family having a disabled child	absent present	4.1 3.0	–0.046 0.301	–1 +3
Health status of family	family with frequent morbidity family with rare morbidity	3.2 4.1	0.255 –0.046	+3 –1
Unwanted pregnancy	presence	3.9	0.04	+0.4
Artificial nutrition since birth	presence	3.4	0.204	+2

Discussion. The primary purpose of this study was to investigate the prognostic associations between QL and socio-demographic and medico-biological factors in early aged Armenian children.

There are a number of QL researches that studied the change of QL parameters during various diseases. Particularly remarkable are the researches, which are devoted to the changes of QL parameters in case of cancer [18, 19] and chronic diseases [20].

There are a lot of studies, which indicated that QOL deficits are significantly associated with the prognosis for overall survival in case of cancers [21], but studies which indicated socio-demographic and medico-biological risk factors prognostic role for quality of life quite rare [22].

HRQoL was found to be prognostic of survival in patients with hepatocellular and cholangiocarcinoma while covarying for demographics, disease-specific factors, and treatment. Stratifying patients based on HRQoL when testing novel treatments may be recommended. Health-related quality of life was found to be prognostic of survival in patients with hepatocellular and cholangiocarcinoma while controlling for demographics, disease-specific factors, and treatment-related factors [23].

One of the finding of this study, based on done analyses, was that abnormal weight children such as obese, overweight or underweight children are more likely to have lower quality of life compared to normal weight children.

Strength of this study is that it is one of the first and larger studies to explore the relationship between socio-demographic and medico-biological factors and HRQOL in a country with low income.

Conclusion. In terms of predictive evaluation of QL, it can be stated that a number of medico-biological and socio-hygienic factors affect the overall formation of QL and some of them may have a greater role as compared with others.

By means of predictive evaluation of QL one can originally set apart targeted risk groups and implement additional control over them. If the score of predictive evaluation is +13 and higher, it is necessary to implement health measures, which in their turn, may provide with improvements of QL criteria.

The following types of social-hygienic factors studied by us were more important: family type, conflicts in a family, disabled child and frequent morbidity families as well as the presence of artificial nutrition since birthday. Among medico-biological factors the presence of two or more diseases in neonatal period, BMI, child's health group and respiratory (pneumonia, bronchitis), nervous and digestive system diseases were more significant.

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ՍՈՑԻԱԼ-ԺՈՂՈՎՐԴԱԳՐԱԿԱՆ ԵՎ ԲԺՇԿԱԿԱՆ-ԿԵՆՍԱԲԱՆԱԿԱՆ ԳՈՐԾՈՆՆԵՐԸ ՈՐՊԵՍ ԿՅԱՆՔԻ ՈՐԱԿԻ ԿԱՆԽԱՏԵՍՄԱՆ ՑՈՒՑԱՆԻՇՆԵՐ ՎԱՂ ՄԱՆԿՈՒԹՅԱՆ ՇՐՋԱՆՈՒՄ

Բուժառուների կյանքի որակի չափումներն օժտված են անկախ կանխատեսող արժեքով, և այդ գործոնները համարվում են ավելի տարբերակող բուժառուի առողջական վիճակը կանխատեսելու համար, քան նրա ընդհանուր սոմատիկ վիճակը: Այնուամենայնիվ, բժշկական գիտության ոլորտում կյանքի որակի կանխատեսմանը նվիրված հետազոտությունների թիվը փոքր է: Հետազոտության նպատակն է եղել գնահատել վաղ տարիքի երեխաների կյանքի որակի կանխատեսող չափումը: Իրականացվել է հեռանկարային դիտողական հետազոտություն: Հետազոտվել են վաղ տարիքի 2362 երեխաները (3 ամսականից մինչ 3 տարեկան)՝ Երևանի մանկական պոլիկլինիկաներից: Երեխաների կյանքի որակը գնահատվել է «QUALIN» միջազգային հարցաշարով: Ուղղի վերլուծական մեթոդը կիրառվել է կյանքի որակ չափանիշների կանխատեսող գնահատման և ռիսկային խմբի ձևավորման համար: Վիճակագրական նյութի վերլուծության և գնահատման համար օգտագործվել է SPSS Statistics ծրագրային փաթեթը: Սոցիալ-հիգիենիկ գործոններից առավել կարևոր են եղել ընտանիքի տեսակը, ընտանիքում առկա կոնֆլիկտները, հաշմանդամ երեխաները և հաճախակի հիվանդացնող ընտանիքները, ծննդյան օրվանից արհեստական սնուցման առկայությունը: Բժշկական-կենսաբանական գործոնների շարքում առավել նշանակալից են եղել նորածնային շրջանում երկու կամ ավելի հիվանդությունների առկայությունը, ֆիզիկական զարգացման ցածր և բարձր մակարդակը, քաշի պակասորդը և ճարպակալումը, երեխայի առողջության խումբը և շնչառական, նյարդային ու մարսողական համակարգի հիվանդությունները: Կյանքի որակի կանխատեսող գնահատման առումով կարելի է նշել, որ մի շարք բժշկական-կենսաբանական և սոցիալ-հիգիենիկ գործոններ ազդում են կյանքի որակի ընդհանուր ձևավորման վրա: Կյանքի որակի կանխատեսող գնահատման միջոցով կարելի է ի սկզբանե առանձնացնել նպատակային ռիսկային խմբեր, և եթե կանխատեսող գնահատման միավորը +13 և ավելի բարձր է, իրականացնել առողջապահական միջոցառումներ, որոնք կարող են ապահովել կյանքի որակի չափանիշների բարելավում:

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СОЦИАЛЬНО-ДЕМОГРАФИЧЕСКИЕ И МЕДИКО-БИОЛОГИЧЕСКИЕ ФАКТОРЫ КАК ПРОГНОСТИЧЕСКИЕ ПОКАЗАТЕЛИ КАЧЕСТВА ЖИЗНИ В РАННЕМ ДЕТСТВЕ

Показатели качества жизни пациента (КЖ) обладают независимой прогностической ценностью, и эти факторы считаются более отчетливыми,

чем общее соматическое состояние пациента, для прогнозирования состояния здоровья пациента. Однако количество исследований, посвященных прогнозированию КЖ в области медицины, невелико. Цель исследования - оценка прогностической меры КЖ детей раннего возраста. Проведено проспективное наблюдательное исследование. Объектами исследования стали 2362 ребенка раннего возраста (от 3 месяцев до 3 лет) из детских поликлиник Еревана. КЖ детей оценивали с помощью международного опросника «QUALIN». Аналитический метод Вальда применен для прогнозной оценки критериев КЖ и формирования группы риска. Для анализа и оценки статистического материала использован программный пакет SPSS Statistics. Среди социально-гигиенических факторов важнее были: тип семьи, конфликты в семье, дети-инвалиды и семьи с частой заболеваемостью, наличие искусственного питания с рождения. Среди медико-биологических факторов более значимыми были наличие двух и более заболеваний в неонатальном периоде, низкий и высокий уровни физического развития, дефицит веса и ожирение, группа здоровья ребенка, заболевания дыхательной, нервной и пищеварительной систем. С точки зрения прогнозной оценки КЖ можно констатировать, что ряд медико-биологических и социально-гигиенических факторов влияют на общее формирование КЖ. Посредством прогнозной оценки КЖ можно изначально выделить целевые группы риска, и, если оценка прогнозирующей оценки составляет +13 и выше, внедрить меры по охране здоровья, которые могут обеспечить улучшение критериев КЖ.