

Quality of life and neuropsychomotor development of infants between 4-18 months in daycare center

Qualidade de vida e desenvolvimento neuropsicomotor de bebês de 4-18 meses em centros de educação infantil

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Abstract *Quality of Life (QoL) is a predictor of development depending on multiple factors, being the QoL of infants still little studied, especially in permanent settings such as infants educational center or daycare centers. Correlate quality of life with age, family income and the neuropsychomotor development of infants between 4 and 18 months of age in daycare centers. Descriptive transverse study research, with clinical trials registration: RBR 2hd6sm on November 2, 2016. Quality of life was evaluated with interviews with the family through Pediatric Quality of Life Inventory-PedsQL™ (Brazilian version). The infants were evaluated in a playful way, through the use of Alberta Infant Motor Scale (AIMS) and Denver II test. 88 infants participated in the study. The infants evaluated had a good quality of life, with scores above 64%. AIMS presented the correlation with for physical functioning and total score of QoL. QoL of infants from 4 to 18 months of age is correlated with their neuropsychomotor development, which suggests the need for investigations between this theme and daycare centers.*

Key words *Infant, Quality of life, Day care center, Infant development*

Resumo *Qualidade de vida (QV) é um preditor de desenvolvimento e depende de múltiplos fatores, sendo a QV de bebês ainda pouco estudada, especialmente em ambientes de permanência como os centros de educação infantil ou creches. Correlacionar a qualidade de vida com idade, renda familiar e desenvolvimento neuropsicomotor de bebês entre 4 a 18 meses de idade que frequentam centros de educação infantil. Pesquisa descritiva transversal, com registro clínico RBR 2hd6sm em novembro de 2016. A Qualidade de Vida foi avaliada por meio de entrevistas com as famílias com o questionário Pediátrico de Qualidade de Vida-PedsQL™ (versão brasileira). Os bebês foram avaliados de maneira lúdica pela escala motora infantil de Alberta (AIMS) e pela Denver II. 88 bebês participaram do estudo. Os bebês avaliados tiveram uma boa qualidade de vida com escores acima de 64%. AIMS apresentou correlação com os escores de capacidade física e escore total de qualidade de vida. Qualidade de vida de bebês de 4 a 18 meses de idade correlacionam-se com seu desenvolvimento neuropsicomotor, sugerindo a necessidade de investigações sobre esse tema em centros de educação infantil.*

Palavras-chave *Bebês, Qualidade de vida, Centros de educação infantil, Desenvolvimento infantil*

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Introduction

Quality of Life (QoL) is a predictor of development and embraces components of well-being, in an ecological perspective, depending on multiple factors, such as familiar and social relations, economic conditions, among others; it can be considered subjectively or objectively^{1,2}. When it comes to very young children, self-reports are not possible, and parents or the closest caregivers are the most indicated to identify and quantify these³. The construct which opposes the evaluation of QoL in this age focuses on the current moment of the child, differing from adults that have plans and future perspectives which involve personal QoL⁴.

Today, it is believed that neuropsychomotor development (NPMD) on children is a result of the influence of multiple systems and extrinsic factors related to environment and task, in a nonlinear manner, with critical periods of development. This is what guides current conceptions and studies⁵. Among these factors, the social-economic condition also shows influence upon NPMD⁶. Today, as consequence of an amplified vision over health and International Classification of Functioning, Disability and Health-ICF², the concept of well-being, related to QoL, contributes to a plain NPMD. To evaluate QoL in this stage of life, multifactorial instruments⁴ are used. In the current literature no studies about QoL of infants have been found.

In this context, in infants' NPMD, both question of family context and the daycare merit a feature in the identification of risks to development⁷. Daycares or CECs (Children Educational Center) constitute spaces that receive children from 0 to 3 years old and pre-scholars from 4 to 6⁸.

In these spaces, teachers/caregivers may be considered the first social connections of the child⁹. Daycare as a related context to development raised with the insertion and increasing participation of women in the job market, because it is the main alternative for the care of infants and children¹⁰.

In these places, since children are there for long periods of time, they cease to have an assistentialist character and start growing relevance in education and NPMD stimulation with parents and caregivers¹¹. Therefore, since they may bring consequences on potential to the adulthood and to the country's economy (every dollar invested in NPMD may later represent a decrease of 8 to 14 dollars in its cost), they started to be considered investigation spaces¹².

Considering interfering factor on QoL as outcomes that must be considered on ICF's perspective¹³, the Pediatric Quality of Life Inventory (PedsQLTM) of infants presents validation and reliability to be used both with healthy children, as well as the ones with diseases or atypical development³. However, in very young children, a self-report is not possible and the family and/or caregivers are the ones indicated to assist on the identification and quantification of these components³.

This instrument has versions according to age and health condition. To infants, it's presented the 1-12 months old version and another one for 13-24 months old, performed through interviews of parents and caregivers³. Most of the articles use this scale when pathologies exist.

Although it's common understanding that environmental and external influences have power over NPMD, yet there are many questions without answer and low investigative relevance seems to be given to infants's QoL (typical or in development risk at daycare environment).

Therefore, the goal of the present research was to correlate the QoL with age, family income, and NPMD of 4 to 18 months old infants that are in daycare at full time.

Methods

This is a descriptive transverse study, approved by Federal University of Paraná committee of ethics, with retrospectively clinical trials registration of RBR 2hd6sm at 2 November 2016, and composes part of a bigger Brazilian study by public name of "*Alegria em Movimento: intervenção precoce para crianças*" (Portuguese name for "Joy on the Move: Early Intervention for Children"). This characterization was performed from June to July of 2016, with selection of participants made for convenience.

Four authorizations for application for the study in daycares were granted by the Secretary of Education of a city of Paraná, also denominated CECs. The four CECs were public, and the CECs 1 and 3 had a co-participation in the monthly payment given by the parents according to their income, whereas the CECs 2 and 4 were fully subsidized by the government.

Inclusion criteria for the study interview were infants of both genders¹⁴, between 4 and 18 months old, frequenting daycare at full time for at least two weeks, and allowed by parents or accountable through an Informed Consent Form.

Since there is evidence that the gender will not influence the NPMD in the first 24 months of life¹⁴, the gender will not be considered an analysis variable.

The exclusion¹⁵ was: infants with congenital malformations (musculoskeletal) that presented any signs of neurological deviance (seizures, nervous system infections, neonatal asphyxia, nervous system bleedings, atypical reflexes¹⁶), genetic syndromes, sensorial deviance, infants with history of congenital infections (STORCH-HIV) diagnosed during neonatal period¹⁷, malformations that may influence the expression of speaking, visual and/or auditory deviance¹⁸.

All the parents and/or closest family member of the infants that were in the baby nursery of daycares were invited to receive explanation about the research. After the acceptance to participate the research, all the parents and/or closest family member were interviewed by the same evaluator, a Physiotherapist. The process of data gathering was divided in two steps: the first was performed with the parents directly and lasted 30 minutes in average, and second was performed with the infants, also directly.

1st Step: interviews with the parents

Anamnesis report with: born date, parent's names, weight and height when born, gestational age (GA), data about the delivery and/or intercurrents, existence of diseases (previous or old or actual). Besides that, data about parents' schooling, age, economical aspects (the Economic Classification Criteria Brazil 2012, proposed by the Brazilian Association of Research Companies-ABEP¹⁹) and values informed by family income.

The data about QoL were registered through individual interviews with parents or child's closest family member, through PedsQLTM survey, Brazilian version, 1-12 and 13-24 months. The score goes from 0 to 4 and then it is transformed in a percentage. The higher the percentage, the better the child's QoL is^{3,20}.

2nd Step: evaluation of the NPMD of the infants

All the infants of both genders were evaluated through motor and psychomotor scales in a ludic way: *Alberta Infant Motor Scale* (AIMS) and Denver II²¹ after a 2 week familiarization between researcher and infants.

Denver II scale is a valid instrument^{22,23}, and is the most used screening test in Brazil¹⁸, it allows

psychomotor evaluations in motor functioning (gross and fine), personal-social, language and cognitive-adaptable. This is a low cost, fast and of easy application test, with 20-30 minutes medium time for evaluation, through the observing of specific items for the assessed age, in each area/domain in the scale²⁴. This test is carried out by tracing a line and verifying which items need to be evaluated²⁵. Four categories were considered for assessment: "passed" when the subject performed correctly; "failed" when there were errors during the execution; "refusal" when subjects refused to perform an item; and "not evaluated" when items were impossible to be examined²⁴. It has a version with cultural adaptation for Brazil^{22,23}. If the child has 1 failed or 2 caution, he or she presents a questionable psychomotor profile, and, as for 2 failed or 1 failed plus 2 cautions, it is considered delay²⁶.

As this scale is not so specific in relation to motor issues in the first 6 months of life, the infants have also been evaluated by *Alberta Infant Motor Scale* (AIMS)²⁷, through observation of the child's spontaneous movements, alignment and contact surface in 4 postures (prone, supine, sitting and standing), with no restrictions, no handling and/or facilitations²⁸. That protocol is low cost and of an easy application, consisting of directly observing the child, with 30-40 minutes of duration²⁹. The score was reported as passed/failed. By the end, the points in each observed posture were added in a total score of all items observed, being related to age and score to trace his/her percentile²⁸. It is considered a delay if the child presents < 5 percentile; suspicious if presents < 25 and > 6 percentile; and it is typical if > 25 percentile³⁰.

During the NPMD evaluation on the infants from daycare, the classroom teacher was present and toys were used in order to incentive the active performance of movements and postural changes. The infants were scored in the moment of evaluation, by an examiner who has more than 11 years of practicing the scale.

According to the evaluations, the child was considered in risk to NPMD when he/she presented suspicious or delay by AIMS, and/or questionable profile or delay by Denver II.

Firstly, it has been performed the descriptive data analysis, based on attendance calculation, percentage, medium, standard deviation, according to their nature. As there are evidences of social-economic influence⁶, before analyzing the QoL results among daycares, it was verified if there were any wage difference between them (Anova One-Way and Multiple comparison test),

mainly because CEC 1 and 3 are convened and have higher financial incentives than CEC 2 and 4, exclusively public.

As for the normality and homogeneity analysis, Shapiro-Wilk and Levene's test has been used. To compare groups in relation to quantitative variables, Anova was applied when variables involved had a normal distribution, complemented by the LSD test. When there was no normality, the non-parametric Kruskal Wallis test was applied, complemented by the DMS test.

To compare groups with respect to qualitative variables, the Chi-square test was applied. To evaluate the correlation between quantitative variables, the Spearman coefficient was obtained. When one of the variables involved was categorical (more than two categories), the Kruskal-Wallis test was applied.

For correlation, when Spearman's rho (r_s) was used, considering very weak correlation if $r_s < 0.25$; weak if $r_s \geq 0.25 < 0.5$; medium if $r_s \geq 0.5 < 0.75$ and strong if $r_s > 0.75$ ³¹. Data were analyzed in SPSS Statistics 22.

Results

A total number of 88 families were accepted to fully perform the research. Only two babies were preterm (> 35 weeks) and they had corrected age for evaluation.

For variables age and PedsQL™ punctuation, CEC's had a normal and homogeneous distribution ($p \geq 0.05$). The mean age of the infants evaluated was 12.30 ± 3.54 months.

For the family income, the distribution was not normal and homogeneous ($p = 0.005$). It is observed (Table 1) that the median income of CEC 1 and CEC 3 presented a higher value in extract and mean absolute value reported by parents, reaching values of family income higher than CEC 2 and CEC 4 (fully subsidized by the government) and this difference was significant. Because there was no correlation between family income and NPMD and PedsQL™ scores, it was not included in correlation scores in Table 2.

The gender variable was not considered for analysis, considering only its mean values. From the total evaluated infants, all CECs had infants with risk (delay and suspect or questionable) for development for 36% using AIMS score and for 31% using Denver II (mainly in the area of language and personal-social).

The delay was higher in CEC 4, which had lower family income and a lower rate of Emo-

tional Functioning in PedsQL™. Comparing the PedsQL™ scores among the CECs, there was a difference ($p=0.028$) with a lower score for the Emotional Functioning for CEC 4 ($p = 0.003$) but not confirmed by LSD test ($p > 0.05$). There was a difference ($p = 0.005$) for PedsQL™ Total Score. For other PedsQL™ variables, there was no difference among CEC's.

For all aspects of QoL analyzed, the found value was elevated, higher than 64%, which indicates that the infants from the studied daycares presented good QoL.

Table 2 indicates the correlation between the variables daycare, age, NPMD and the PedsQL™ subscores, as well as its total score.

Age had not association with NPMD scores. The age was associated only with higher scores for physical symptoms ($r_s = 0.271$, $p = 0.011$, weak effect).

The item physical functioning in the QoL scale PedsQL™ had association with physical symptoms ($r_s = 0.340$, $p = 0.011$, weak effect), with emotional function ($r_s = 0.253$, $p = 0.017$, weak effect), with the total score of the scale ($r_s = 0.571$, $p < 0.001$, medium effect) and with AIMS scores ($r_s = -0.267$, $p = 0.012$, weak effect). The item physical symptoms had association with physical functioning ($r_s = 0.340$, $p = 0.011$, weak effect), with emotional function ($r_s = 0.340$, $p < 0.001$, weak effect), with the total score of the scale ($r_s = 0.438$, $p < 0.001$, weak effect). Emotional functioning had association with cognitive ($r_s = 0.262$, $p = 0.014$, weak effect) and total score ($r_s = 0.675$, $p < 0.001$, medium effect). Social and cognitive functioning had association with total score scale of PedsQL™ ($r_s = 0.452$, $p < 0.001$; $r_s = 0.635$, $p < 0.001$, with weak effect and medium effect respectively).

AIMS was associated with PedsQL™ Total Score ($r_s = -0.221$, $p = 0.039$). Denver II was associated with PedsQL™ Cognitive Functioning ($r_s = 0.229$, $p = 0.032$). AIMS e Denver II was associated ($r_s = 0.589$, $p < 0.001$, medium effect).

Discussion

In this study, the daycare had no association with other observed variables, although two of the daycares are convened and presents higher financial resources, while other two are public. Probably because all daycares have medium income, with stratum between C1 and C2, and few cases with inferior values, there were no income association with the NPMD, differently from what

Table 1. Sample Characterization.

CEC	n=88	Age (months)	Family Income	ABEPP	PedsQL™					NPMD		
					PF	PS	EF	SF	CF	TS	AIMS	Denver II
1	19	12.02 ±4.40	3105.26 ±1359.83	C1	83.85 ±15.30	82.50 ±13.23	76.32 ±11.35	89.93 ±12.66	67.91 ±24.58	80.10 ±9.19	63 %T 32% S 5% D	84% T 5% Q 11% D
2	30	13.88 ±3.21	2310.11 ±1539.63	C2	76.06 ±13.99	85.58 ±8.37	66.25 ±11.20	88.00 ±13.18	69.35 ±17.95	77.05 ±7.63	67 %T 20% S 13% D	67% T 10% Q 23% D
3	25	10.10 ±2.95	3116.48 ±1446.08	C1	78.33 ±13.85	80.70 ±10.77	71.58 ±16.20	89.45 ±15.36	72.22 ±20.15	78.46 ±8.72	68 %T 32% S 0% D	68% T 16% Q 16% D
4	14	13.19 ±2.50	1740.43 ±992.89	C2	69.84 ±14.62	80.00 ±13.62	64.14 ±14.62	77.05 ±25.86	57.19 22.75	69.64 ±8.87	50 %T 21% S 29% D	57% T 0% Q 43% D
P value		0.004*	0.005#	>0.05	0.065	0.447	>0.05**	0.427	0.189	0.005*		
Medium		12.30 ±3.60	2527.45 ±1473.06		77.40 ±14.76	82.64 ±11.16	69.60 ±13.88	87.09 ±16.61	67.92 ±21.13	76.93 ±9.00	64%T 26%S 10%D	69%T 9%Q 22%D

CEC = Children's Educational Center; SD = Standard Deviation; Min = minimum; Max = maximum; ABEPP = Brazilian Association of Research Companies; PF = Physical Functioning; PS = Physical Symptoms; EF = Emotional Functioning; SF = Social Functioning; CF = Cognitive Functioning; TS = Total Score; T = Typically; S = Suspect; Q = Questionable; D = Delay. P value < 0.05 (*Anova; **not confirmed by LSD test; #Kruskal-Wallis test; #Chi squared).

have been evidenced in others Brazilian³²⁻³⁴ and international^{12,35} studies.

Such results, despite being numerically contradictory, lead to the reflection that economic situations minimally adequate guarantee an appropriate NPMD. It may also be that these infants already had their NPMD privileged by the school environment, since both daycare are appropriate sites. Moreover, taking in consideration that the research has started in the second school semester, it might be for this reason that the school environment had fulfilled its NPMD and few associations had been evidenced relating to the family income. Another hypothesis is that even if the relation between income and NPMD is recorded, there are critical periods in this association; considering that a longitudinal study¹² reports this association to get stronger from 18 months, peaking at 4 years old, unlike the sample of this study which was composed with up to 18 months old infants. The lack of relationship between socioeconomic situation and infant development was also found by another Brazilian study with similar average economic situation³⁶.

The infants's age in the study showed association with physical symptoms. For greater ages, higher score of physical symptoms, demonstrating that the biologic maturation is identified by this variable³⁷.

Such associations were observed with the AIMS (with physical functioning) and Denver II (with cognitive functioning) of PedsQL™. Although it does not present a casual relation, it is interesting to reflect upon this linkage, for it may lead to think that the QoL's investigation, which is a multidisciplinary tool, may be used as choice and in cases of low scores, it may indicated necessity of specialized professional physical and motor evaluation.

The highest score in daycare was for the social interaction, perhaps because there was a suitable environment in the school for interpersonal relationships and stimulation from the teachers/caregivers, although correlations have not been identified for this variable.

The association among emotional functioning with physical functioning, physical symptoms and cognitive functioning of PedsQL™, possible reflected a contextual model, for affection and emotions are initially built in the parental relationship³⁸. They compose important experiences of the infants with themselves and others, and impact in their cerebral organization³⁸.

The emotional aspects evaluated by PedsQL™ regard anger, crying, fear and agitation. Past the 5 first months, crying usually reflects the child's intention, who still cannot speak and needs to communicate with the caregiver somehow; it is

Table 2. Association between variables age, PedsQL™ and NPMD scales.

PedsQL™ (rs)	n=88	PedsQL™ (rs)				NPMD (rs)				
		Age (ANOVA)	Physical Functioning	Physical Symptoms	Emotional Functioning	Social Functioning	Cognitive Functioning	Total Score	AIMS	Denver II
Age (ANOVA)	rs		.111	.271*	-.077	-.203	.034	.039	[-]	[-]
Physical Functioning	P		.303	.011	.478	.058	.755	.717	.077	.317
Physical Symptoms	rs	.111*		.340*	.253*	.035	.120	.571*	-.267*	-.095
Emotional Functioning	P	.303		.001	.017	.747	.266	.000	.012	.376
Social Functioning	rs	.271*	.340*		.340*	-.073	.059	.438*	-.133	.024
Cognitive Functioning	P	.011	.001		.001	.499	.582	.000	.216	.826
Total Score	rs	-.077	.253*	.340*		.186	.262*	.675*	-.047	.035
AIMS	P	.478	.017	.001		.083	.014	.000	.661	.743
Denver II	rs	-.203	.035	-.073	.186		.200	.452*	-.016	.015
	P	.058	.747	.499	.083		.062	.000	.885	.891
	rs	.034	.120	.059	.262*	.200		.635*	-.008	.229*
	P	.755	.266	.582	.014	.062		.000	.945	.032
	rs	.039	.571*	.438*	.675*	.452*	.635*		-.221*	.037
	P	.717	.000	.000	.000	.000	.000		.039	.731
	rs	[-]	-.267*	-.133	-.047	-.016	-.008	-.221*		.589*
	P	.077	.012	.216	.661	.885	.945	.039		.000
	rs	[-]	-.095	.024	.035	.015	.229*	.037	.589*	
	P	.317	.376	.826	.743	.891	.032	.731	.000	

rs = Spearman correlation coefficient; [-] ANOVA; p = significance level for 2 ends*. The correlation is significant in level 0.05 (2 ends).

often understood as lack of emotional control³⁹ and maybe, for this reason, obtained one of the worse scores, due to immaturity and language still on development.

It is likely that high values of interaction may be favored by the familiarity in the daycare, rules of the same that make parents to note a good interaction of their children with other people and infants, since they are the ones who answer to the survey, whereas lower values of emotional aspects are related to the attachment behavior, bond with their relatives, which tends to be higher than the attachment to the teacher/caregiver⁴⁰, since usually among family, they retain all the attention in the house.

Most of the PedsQL™ items for the social interaction in the age group 1-12 and 13-24 are related to expressing a reaction to the presence, contact or action of someone else and not necessarily to only physical or verbal aspects. Lordelo⁴¹ reports that, in general, kids who frequent public daycare present a number of episodes of nonverbal interaction, with more physical contact other, than kids from private daycare, or in comparison to the home environment. It would be a profitable study to compare the QoL of infants who frequent daycares and ones who doesn't, to verify and make comparisons regarding the type of stimulation they've gotten.

As for the following items, physical functioning and physical symptoms are associated, probably reflecting upon the fact it is about healthy infants, and mostly with typical NPMD, even considering that the evaluation took place during winter in the south region of Brazil, where temperatures can be very low, time in which respiratory alterations are more recurring, mostly in infants⁴². The winter could have influenced lower QoL scores for emotional and cognitive functioning⁴³ considering most of the infants were evaluated during winter.

It is interesting to observe that the physical functioning had no association with cognition different to a previous study performed⁴⁴. The medium values related to cognitive functioning aspects in PedsQL™ were $67.92\% \pm 21.13$, and showed big variability, as the items in this QoL scale involve mostly the child's capacity of imitation, and they use several brain areas for processing and execution.

Association, along with cause and effect relations had already been mentioned in studies with low social-economical level families, in which daycare had a protector effect in the development, favoring cognitive^{6,45} and future academic

aspects, suiting even to diminish the development differences that are influenced by socioeconomic⁴⁵ factors.

As expected, the total score of PedsQL™ was associated to all of its sub scores. Thus, although correlations with NPMD have been identified only for physical and cognitive functioning, the domains of PedsQL™ have correlated with each other, ratifying the complexity and interaction of several domains on infant development⁴⁶.

The motor capacity is considered a good indicator for child development admeasurement⁴⁷ and was confirmed by the relation of AIMS with physical functioning and total score of QoL by PedsQL™.

As it had been already expected in all daycares, it was found infants at risk or delay for the NPMD. The CEC 4, with lower family income and a lower score for physical functioning had more risk/delay for NPMD.

These results are in agreement to the national and international estimative for the delay in NPMD, which may vary from 2 to 11%⁴⁸, 3%⁴⁹ to 13% of children⁵⁰ worldwide, 6.4% in 3-60 months old Turkish children³⁵, and of 13% of the North-American 9 to 24 months old children⁵⁰. In Brazil studies indicate 24% of infants between 4-18 months on public daycare⁵¹ and 48% of Brazilian children up to 12 months old⁵² and up to 52.7% from 6 to 18 months old⁵³, that probably get mixed to the estimative of disabled people, that is 10%⁵⁴. In that sense, national studies point that, for several reasons, the delay in DPNM may occur from 33%⁵⁵, 43.1%⁵⁶ to 52.6%⁵⁷, mostly in older kids and evaluated by Denver II.

The infants evaluated by Denver II with risks to NPMD, presented delay mainly in social personal and language areas. Most of the Denver studies^{18,26} identify language delays as being the one with the highest occurrence of failures during evaluation. As reported, the relation between motherly contact and language development requires attention to the development of this aspect when considering the daycare environment.

In all likelihood, that happens because although these variables are labeled in dimensions, during the development many brain areas are utilized for more than one task, widening their connections through usage and end up influencing other activities that use similar areas⁴⁴.

All of those studies indicate a multi-factorial nature for those delays²⁶, confirming the necessity of verifying the impact in their life quality. To Drachler⁵⁸, studies with high delay values could

consist in overestimated numbers due to cut-off criteria considered demanding for this author, mainly for studies that use Denver II, even if its use is valid and worldwide used, and it allows to consider several aspects of NPMD. Maybe the lack of criteria in determining what is delay, as many infants with atypical development due to brain injuries and/or syndromes also are labeled in this nomenclature, would lead to this difficulty of real and more precise estimative in terms of prevalence²¹, considering that in this study no infants with neuromotor pathology has been considered, seeking to minimize the influence of characterization the QoL of typical infants and in risk to the NPMD.

Through and with movements, infants can express not only the neurological integrity and motor development, but also aspects of affection, cognitive and social interaction with the environment⁵⁹. This association reinforces the necessity of monitoring of children in all aspects, by understanding and keeping up with the QoL, which means the comprehension of the impact and of the NPMD in a multifactorial way.

It is proposed monitoring verifying long term effects and the establishment of parameters through the use of PedsQLTM, an easy applicable

tool that can identify several aspects related to the QoL.

Conclusion

To our knowledge, this is the first study to address the QoL of infants.

The infant's QoL with ages from 4 to 18 months old with typical development and/or in risk was considered adequate, with medium score in PedsQLTM of 76.93%±9.00, as the highest values related to social interactions and the lowest related to emotional and cognitive aspects.

Emotional functioning of infants in one of the four CECs was different; all other variables in PedsQLTM were similar among daycare centers. PedsQL's total score was associated with AIMS scores.

Besides, few researches propose to study infant's QoL, other than in a specific pathology group.

It is concluded with the study that the QoL evaluated by PedsQLTM is associated with NPMD in 4 to 18 months old infants who frequent CEC for motor (with AIMS) and cognitive (with Denver II), which emphasizes the necessity of more studies to investigate the QoL of infants.

Collaborations

TR Melo: planning and execution of research, and main author. LB Araujo: execution of research and drafting of paper. B Yamaguchi: execution of research and drafting of paper. MP Ferreira: execution of research and drafting of paper. VL Israel: guiding, planning and execution of research, drafting of paper.

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