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Exploratory Study on Infant Development under Institutional Sheltering in the North Region of Brazil

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Abstract

This study analyzed the child development through mental, motor, and behavioral assessment of twenty babies with ages from 1 to 12 months, who were part of an institutional sheltering service in the North region of Brazil. The babies were conveniently selected; the criteria were the absence of neurological problems and to be housed in the institution for longer than one month. The instrument used was the Bayley Scale of Infant Development (BSID-II). The socio-demographic data of the sample indicated that babies were welcomed in the institution for either reasons, family abandonment or negligence, in addition, their stay in the shelter has already lasted from one to nine months, and 50% of them had drug-abusing mothers. The assessment of the scales indicated that 70% of babies, in average, had performances in the normal limits of development, and 30% of them presented problems. The results contribute to demonstrating the use of this assessment method such as supporting institutional measures in elaborating the individual assistance plan, along with other information as social, family, and medical history, aiming at offering quality assistance directed to the development of babies and children assisted by institutions.

Keywords

Babies, Bayley Scales, Child Development Assessment, Institutional Sheltering

1. Introduction

Several laws were elaborated in the last years with the aim to decrease the number of children that live in shelter

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institutions around the world. In Brazil, the amount of children and adolescents sheltered in institutions are close to 30 thousand, according to The National Council of Public Ministry (*Conselho Nacional do Ministério Público*—CNMP, 2013). In 2009, the Law 12.010 was created (Brasil, 2009), which lead to changes in sheltering and adoption, from which are stressed: the child won't stay in shelter for longer than two years, in addition, their legal condition must be re-assessed every six months; the family is the main return locus of the child; technicians are obliged to elaborate an individual assistance plan (IAP); the places previously called shelters are now named sheltering institutions. Upon the implementation of this law the matter of time spent by the children in this institution is a hard premise, still not followed by some services of institutional sheltering in Brazil (Oliveira & Pereira, 2011; Corrêa & Cavalcante, 2013).

Early age at entering the institution, period of sheltering, and types of care received are variables considered by many scholars as crucial elements for the incidence of delays in the development of babies in such places. However, it is discussed whether the changes in the psychomotor development are due to violence that took place before the sheltering, or on the contrary, are originated by prolonged sheltering, and whether these places would certainly remain as keepers of this delay (Van Ijzendoorn et al., 2011; Tizard & Tizard, 1967; Tizard & Joseph, 1970; Siqueira & Dell'Aglio, 2006; Manso, Garcia-Baamonde, & Alonso, 2011). Nonetheless, other studies state that without detection and intervention, when necessary, this scenery may lead to future problems in older ages, as the rising of other incapabilities, for example those presented at school related to difficulties in essential areas for learning (Schlesiger et al., 2011; Conti et al., 2012; Cardona, Manes, Escobar, López, & Ibáñez, 2012).

Early identification of delay is not an easy task, the children that have difficulties in acquiring skills but can reach the normal development marks must be detached from those that truly suffer a deviation from the standard pattern for a given age. Therefore, the early recognition of developmental delay requires a deep knowledge of the skills predecessors. When combined early detection of delay and interventions are performed, the loss of important psychomotor development marks may be avoided (Soysal et al., 2014).

For an early identification of problems linked to the development of babies some assessments may be used through the psychosocial history, reports of the responsible people, information related to health, in addition to tests and scales. In Brazil the Bayley Scale of Infant Development (BSID-II) is continuously used in researches through translations, though without standardization for this population. That happens due to the lack of national tools or neurological tests adapted to the country's reality. The use of this instrument, according to the norms and care in translation are important for guiding the process of child assessment, especially in countries where the standardization of tests and tools are poor, chiefly concerning children in social vulnerability (Reis, Mello, Morsch, Meio, & Silva, 2012; Cruz, Dias, & Pedroso, 2014).

For Bayley (1993), BSID II is characterized as theoretically eclectic, its content is derived from several other development scales and a broad set of researches with babies and children. Its methodology enabled the understanding of several viewpoints represented in scales, without a specific theory that drives the content. It reaches samples of several emerging skills and lists the fixation of development marks. The scale results can be used for the identification of areas with relative deficiency or delay, thus develop intervention programs, besides evaluating the feedback of such interventions, when necessary. Nonetheless, for a more precise diagnose, which is presupposed by this scale, information of multiple sources must be gathered from medical and psychosocial files of the children.

The current research recognizes the importance of augmenting the knowledge on child development for it is necessary to investigate other determinants that may be involved in the variation of the development of babies under the care of sheltering institutions, such as: physical abuse, negligence, and abandonment. From this perspective, it is known that biological problems may be modified by environmental factors and is determined by vulnerability situations of varied etiology. Therefore, this study aimed at assessing babies in sheltering situations, using Bayley II scale, for the comprehension of a psychomotor development profile, giving emphasis to aspects related to the comprehension of cognitive, motor, language, and behavioral development level, besides the qualitative aspects of behavior.

2. Method

2.1. Participants

20 babies who were sheltered in an institution who attended children from zero to six years old, both genders, in

social vulnerability situation were separately assessed. The sample was intentional, non probabilistic, excluding babies with the diagnose of neurological changes and giving priority to those with higher probability of staying in the institution. The designed age range was from 1 to 12 months, due to the few studies performed with babies in this context, additionally it is contained in the age demands established by the Bayley II scale. The application period with each baby was 30 minutes, in average.

2.2. Environment

The institution is set in the North region of Brazil, and may attend up to 50 children, though, frequently welcomes a larger number of children. The common area are two nursery rooms, five dormitories, two bathrooms, a room for stimulating the babies, a multimedia room for psycho-pedagogical and artistic-cultural activities, a toy library, a cafeteria, backyard with trees, and at the back a brick house, and a sheltered area for recreation (the shed).

2.3. Instruments

2.3.1. Bayley Scales of Infant Development—BSID-II

Bayley II is composed of three complementary sub-scales that aim at identifying the psychomotor development index, and detect delays in the development of children aging from 1 to 42 months. The main assessed aspects by each sub-scales are: 1) mental scale (the functioning of sensory and perceptive capabilities), it includes items that evaluate: memory, adaptation, problem-solving skills, primary concepts of numbers, classification, generalization, vocalization, language, and social skills; 2) motor scale (fine and gross motricity), evaluates the control of general and specific muscles groups, which includes movements associated to rolling, crouching, crawling, sitting, standing, walking, running, and jumping. This scale also tests little motor manipulations that gathers apprehension, the adapted use of writing tools, and imitation of hand movements.

The third behavioral scale—Behavior Rating Scales—BRS (qualitative evaluation of the interaction of children with objects and people) evaluates qualitative aspects of the child's behavior during a test considering the time for habituation with the babies. This scale enables the evaluator to assess aspects related to the emotional regulation, the child's attention/arousal, orientation/engagement, and the quality of motor movements. Emotional regulation contains items related to the adaptability, cooperation, persistence, frustration, and tolerance. It is also associated to the temper and quality of humor of the child. The factor attention/arousal has items associated to situations of alertness and attention of the babies up to 5 months old, hence, how it may respond to environment stimulus. The factor orientation/engagement deals with the behavioral tendency of a child to approach or move away from tasks related to environmental and social interactions. On the other hand, the motor quality evaluates a variety of neuromotor functions that may be observed in childhood. Among them are the muscular tonus, gross and fine motor control, bradykinesia (slow movements) and quality of movements. The information of the behavioral scale must be used as complementary to the ones obtained by the Mental and Motor Scales.

2.3.2. Information from the Children's Chats

The information regarding gender, age, health condition, reason of sheltering, time in the institution, and socio and legal situations were obtained from individual files of each baby.

2.4. Procedure

For the research to be developed according to ethical parameters, at first the legal authorization was sought on account that the babies that participated were under the State guard, represented by court authority. On the continuance, the research was subjected and received approval from the research ethics committee with human beings. The data collection took place between the months of January and July, 2012.

The babies were selected according to the criteria already mentioned, the sessions for applying the scale were performed by the researchers, in a room provided by the institution in periods and time that the children would be in an alert state. The evaluation was individual and took place only once and in the presence of the baby's educator. Before applying the scale the evaluator would interact with the child in order to decrease the unfamiliarity and situational anxiety. During the application it was followed the norms of the manuals and forms to register the performance of children in each item, and the standard abbreviations of the Bayley scale were used, in

which are contained: C (Credit), the child replied or performed as expected and scored a point for the item; NC (No credit), the child replied or performed incorrectly and didn't score a point for the item; and RF (Refused) in which the child refused to perform the task and didn't receive credit for the item. The points were then added up and verified the raw scores and development indexes. This is a quantitative study with the use of descriptive statistical analysis by calculating frequency and percentage of the data collected from the charts and indicators obtained from the Bayley scale of child development.

3. Results and Discussion

The psychosocial characterization of babies was accomplished through the individual charts analysis. Generally, the determinant reasons for sheltering were abandonment and family negligence. This indicates that in 85% of the cases they were found unattended, or accompanied by young siblings, or left with unacquainted people.

Health negligence with these children, upon arriving the institution, was also another important factor, fourteen children (70%) had some kind of disease as: viruses, skin rashes, or congenital diseases as syphilis and HIV. Therefore, the basic necessities for survival of the babies were not being attended. Such indexes corroborate Müller's study (2014) on the reasons for sheltering in Brazil, in which it was found that family negligence is a cause, but also a consequence of the social vulnerability this population is inserted due to the lack of implementation of public policies.

Another factor analyzed in the information from the charts and demonstrated by **Table 1** is the use of psychoactive substances identified in 50% of the children's mothers evaluated in the study. This data along with negligence and abandonment are in agreement with the last indexes released by CNMP (2013) that state the drug use of parents from institutionalized children appear as the main reason for sheltering in Brazil. Several of these factors related to physical assaults carried out by the ones responsible for these children, previous to sheltering, are capable of causing impairments to the child development, therefore, upon detection they must be fixed the best way possible (Golin & Benetti, 2013).

In the present study it was noted by the sociodemographic data that half of the babies had drug abuser mothers, which could indicate a compromised performance of the babies in the scales. Such evidence is confirmed by Bayley (1993) in studies with children exposed to drugs in the pre-natal period, the results from Bayley II Scale indicated that the babies had performances below average in the mental scale, when compared to other babies with the same age. Nelson, Bos, Gunnar, & Sonuga-Barke (2011) and Pajulo et al. (2012), also stressed in their studies that the use of drugs by mothers may affect negatively the development of the children's brain.

The mental development index assessments presented in **Table 2** demonstrate that from the twenty children assessed 70% in average had results in the normal range for their age, while 30% are underdeveloped for their age, demonstrating profiles slightly or severely delayed. Nonetheless, as signed by the scale, they didn't score in essential aspects, such as those that relate to the personal-social development, attention, language, and recognition memory, in other words, aspects mainly related to cognition. Similar results were reported by Desmarais, Roeber, Smith and Pollak (2012) in their research on the memory of adopted babies. The authors emphasize that damages acquired early by babies, in areas as memory and language, may have influence on difficulties in learning during school phase.

Regarding the personal-social area for analyzing if the behavior is socially directed to the environment since they are two months old, it was verified in this study that some personal-socio behavior skills identified in mental and behavioral scales showed development indexes between the normal range, as: smile to the examiner, looks at people, is responsive to vocalization, and stare at the examiner.

The results obtained from the analysis of the babies' behavior scale are described in **Table 3**. It is observed that babies C4, C5, and C17 have non optimal profiles for the orientation/engagement factor and emotional regulation. Behavior changes are found in several studies with institutionalized children, either in literature classics or in more recent studies (Spitz, 2004; Tizard & Rees, 1974; Smyke et al., 2012; Barcons et al., 2012; McLaughlin, Fox, Zeanah, & Nelson, 2011). Muhamedrahimov et al. (2014) agree that behavioral changes along the development are recurrent when children in sheltering institutions are assessed and followed, and one of the possible ways to intervene in those cases is the socio-emotional support of the caretaker. Therefore, the institution must favor a sensitive and consistent care, motivating interactions between the babies and peers, and reference people for establishing attachment relationship, in addition to an environment rich in pleasant stimuli and diverse and age appropriate objects. Thus, it is necessary to invest in technical training of caretakers, as well as offering support to caretakers/educators which take care of the babies and children (Corrêa & Cavalcante, 2013).

Table 1. Psychosocial characterization of the babies.

Child's name	Age	Entrance age	Entrance reason	Drug abuser parents	Presence of disease
C1	2 m 19 d	5 d	FN	NI	N
C2	2 m 19 d	13 d	A	NI	Y
C3	1 m 1 d	8 d	FN	Y	N
C4	11 m	8 m 20 d	A	NI	Y
C5	3 m 17 d	4 d	SV	NI	Y
C6	2 m 25 d	5 d	SS	NI	NI
C7	12 m	8 m 10 d	A	Y	Y
C8	5 m 23 d	5 m	FN	Y	N
C9	7 m	6 m 20 d	A	Y	N
C10	4 m 28 d	23 d	SV	NI	Y
C11	5 m 2 d	14 d	A	NI	Y
C12	1 m 15 d	13 d	A	NI	Y
C13	2 m 4 d	14 d	A	Y	Y
C14	1 m	7 d	A	Y	Y
C15	5 m 20 d	23 d	A	Y	Y
C16	2 m 13 d	2 m 1 d	A	Y	NI
C17	8 m 8 d	4 m 5 d	A	NI	Y
C18	9 m 21 d	1 d	FN	Y	S
C19	9 m 25 d	5 m 9 d	A	Y	S
C20	11 m 7 d	8 m 8 d	A	NI	Y

Note: m—Months; d—Days; A—Abandonment; FN—Family negligence; SV—Social vulnerability; NI—Not informed; N—No; Y—Yes.

Table 2. Characterization and indexes of mental development of babies.

Name	Age	Period of institutional sheltering	IDM
C1	2 m 19 d	2 m 14 d	BNR
C2	1 m 3 d	21 d	BNR
C3	1 m 1 d	24 d	BNR
C4	11 m	2 m	SDP1
C5	3 m 17 d	3 m 13 d	SDP1
C6	2 m 25 d	2 m 20 d	BNR
C7	12 m	3 m 12 d	BNR
C8	5 m 23 d	24 d	BNR
C9	7 m	3 d	BNR
C10	4 m 28 d	4 m 5 d	BNR
C11	5 m 2 d	4 m 21 d	BNR
C12	1 m 15 d	1 m 2 d	BNR
C13	2 m 4 d	1 m 20 d	BNR
C14	1 m	23 d	BNR
C15	5 m 20 d	4 m 27 d	SDP2
C16	2 m 13 d	13 d	BNR
C17	8 m 8 d	4 m 3 d	SDP2
C18	9 m 21 d	9 m 20 d	BNR
C19	9 m 25 d	5 m 9 d	SDP1
C20	11 m 7 d	2 m 30 d	SDP1

Note: m—Months; d—Days; IMD—Index of mental development; BNR—Between normal range; AP—Accelerated profile; SDP1—Slightly delayed profile; SDP2—Severely delayed profile.

Table 3. Characterization of the babies behavioral performance.

Name	Age	Attention/ arousal factor	Orientation/ engagement factor	Emotional regulation factor	Quality of movement factor	Total rank
C1	2 m 19 d	BNR	NA	NA	BNR	BNR
C2	2 m 19 d	BNR	NA	NA	BNR	BNR
C3	1 m 1 d	BNR	NA	NA	BNR	BNR
C4	11 m	NA	NO	NO	Q	NO
C5	3 m 17 d	BNR	NA	NA	BNR	BNR
C6	2 m 25 d	BNR	NA	NA	BNR	BNR
C7	12 m	NA	BNR	BNR	BNR	BNR
C8	5 m 23 d	NA	BNR	BNR	BNR	BNR
C9	7 m	NA	OP	OP	OP	OP
C10	4 m 28 d	BNR	NA	NA	BNR	BNR
C11	5 m 2 d	BNR	NA	NA	BNR	BNR
C12	1 m 15 d	BNR	NA	NA	BNR	BNR
C13	2 m 4 d	BNR	NA	NA	BNR	BNR
C14	1 m	BNR	NA	NA	BNR	BNR
C15	5 m 20 d	NA	NO	NO	BNR	NO
C16	2 m 13 d	BNR	NA	NA	NO	NO
C17	8 m 8 d	NA	NO	NO	NO	NO
C18	9 m 21 d	NA	BNR	Q	BNR	BNR
C19	9 m 25 d	NA	BNR	BNR	BNR	BNR
C20	11 m 7 d	NA	BNR	BNR	BNR	BNR

Note: NA—Not assessed in the age range; BNR—Between normal range; NO—Non optimal; OP—Optimal profile; Q—Questionable.

In the quality of moment factor 85% of babies demonstrated normal pattern of development. The other 15% was ranked as follows: one had a questionable profile, another had non optimal, and the third had a slightly delayed profile. That means some neuromotor functions as those that coordinates the fine and gross motor control, and quality of movement, are decreasing in these children. The assessment of the motor quality of babies in the behavior scale was a positive complementation for the motor assessment in general. Therefore, in this area, one must pay attention in early investigating babies with motor problems in order to create stimulating investigations in the sense to enable children to explore the environment, consequently, favor the psychomotor development in general (Janssen et al., 2008).

The most severe changes indicated by the scale, considering the indexes of mental development and behavior scales, were found in three children sheltered for more than two months: C4, C5 and C17. Due to the reduced time in the shelter, it is supposed that the developmental problems were already present before the institutionalization and there were misconduct of the staff in not identifying such conditions in the admission individual charts. Hermenau, Hecker, Elbert and Ruf-Leuschner (2014) state that the institution sometimes cannot provide adequate support for a proper development of children who were victims of physical assault, additionally, in some cases they can support the appearance of alterations in mental health, such as aggressiveness and depression. According to that study performed in Tanzania, besides children there were also babies, which had a great impact in the emergence of development changes at older ages, for this age is considered to have care and attention as priority.

From Bayley II assessments in the current research, ten babies that were welcomed in the institution, only some days old (**Table 3**), presented performances appropriate for their age, that is, showed a normal pattern of child development, hence demonstrating that the environment, somehow, positively interfere for the healthy performance of these children. These data is in agreement with the study performed with children aging between 2 and 12 months in a mental health institution, whose development took place with no severe disturbances, chiefly regarding psychomotor aspects and the interaction with people and objects (Lecannelier, Silva, Hoff-

mann, Melo, & Morales, 2014).

The results demonstrated here by Bayley II scales show that even though there are some changes in the development of some babies, those changes may be modified, as most babies presented performances within normality, without specific indicators of deficiency or severe development delay. Nevertheless, it is thought that the stimulation and intervention in these situations in sheltering services must always be priority, even though the frequency is lower in comparison to other children with proved delay risk. The changes that happen in the first two years of life are very intense and fast, and on that account, more likely to aggravate. Moreover, that is the time the baby best respond to intervention and environment stimuli (Figueiras, Souza, Rios, & Yehuda, 2005; Santos & Campos, 2010).

4. Conclusion

The objective of this study was to assess the development of babies aging from 1 to 12 months, attended at a temporary sheltering institution for children in the North of Brazil, by the use of a child assessment scale, Bayley II. The research didn't intend to generalize the results to other children. Though, it is expected that the study contributes for the researches on the use of this assessment method as a complement to construct the individual assistance plan (IAP), considering other information sources as social, family, and medical history in the study and interventions planning for the healthy child development.

It is mandatory that public policies are proactive in the assistance of children that need institutional shelter. To manage the primary causes of abandonment, as: support and services provided for the families in social vulnerability, incentive to education, prevention and monitoring or early pregnancy, and the use of drugs by the person responsible, among other things, are important to prevent sending children to institutions. Although, the current situation must also be dealt with in order to provide adequate conditions for a proper development of children that are already in such places and those that continue entering every day.

This study presents some limitations as the reduced sample amount, and single assessments of each child. The limit scores originally developed for the American population were followed, context in which the Bayley II scale was developed. For future studies that will make use of development scales it is expected that some changes are made, in order to adequate it to the development marks of the Brazilian children.

At last, we emphasize that the results indicate the need for better investment in researches to early detect the possible delays in the child development in order to formulate effective monitoring and interventions.

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