

Late start of early intervention in children with Down syndrome

Inicio tardío de programas de atención temprana en niños y niñas con síndrome de Down

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What do we know about the subject matter of this study?

In children with Down syndrome, early therapeutic intervention, through early intervention programs, achieves improvements in language development and motor and socio-affective skills, using the brain plasticity period of the first years of life.

What does this study contribute to what is already known?

In Chile, 51% of children with Down syndrome start early intervention programs late. Those born in the public health system are 11 times more likely to start their therapies late. Hospitalizations and the low educational level of parents also delay the start of early intervention.

Abstract

Early intervention (EI) is key in the lives of children with Down syndrome (CHwDS). Starting it before 60 days of life (DOL) has better results in future development. **Objective:** To assess the factors that delay the beginning of EI in CHwDS. **Subjects and Method:** Parents of CHwDS who attended EI programs during their first year of life participated. Social, family, and health factors that could influence the time of initiation of EI were evaluated and compared according to the start of EI (before vs after 60DOL). For the analysis of categorical variables, Fisher's exact test was used and for the association between the numerical ones, the Student T-test for independent samples. **Results:** 125 questionnaires were analyzed. 51.2% started EI after 60DOL, and of them, 25% started after 6 months of age. Late initiation of EI was associated with hospitalization before 3 months of age (OR = 2.5), long hospital stays (OR = 2.4), lower educational level of the father (OR = 4.7) and of the mother (OR = 3.4), birth in the public health system (OR = 11.8), and access to free EI centers (OR = 2.4). The high socioeconomic level was the only protective factor (OR = 0.4) for early initiation. **Conclusions:** More than 50% of CHwDS begin EI programs late. This was associated with early hospitalization, prolonged hospital stays, and socioeconomic status. It is urgent to allocate resources and generate public policies that allow guaranteed access to EI programs.

Keywords:

Down Syndrome;
Early Intervention;
Child Health Services;
Disabilities

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Introduction

Down syndrome (DS) is a genetic condition determined by the presence of three chromosomes 21 instead of two. It occurs in one in 600 to 700 births and affects males and females equally. In Chile, more children are born with DS (ChwDS) than reported in the international literature, with a prevalence of 2.4 per thousand live births^{1,2}. Psychomotor and cognitive development in this population is characterized by heterogeneous strengths and weaknesses in different areas of development³⁻⁵.

Early intervention (EI) is known as the set of therapeutic actions and comprehensive and systematic support, aimed at both ChwDS and their families, and is implemented in the first years of life, with an approach oriented to the prevention and intervention in the development of children who present developmental disorders or are at risk of presenting them, seeking to ensure that they receive everything that can enhance their capacity for development and well-being, enabling their inclusion in the family, school, and social environment as fully as possible, as well as promoting their autonomy^{6,7}.

In ChwDS, EI has been established as one of the main strategies to enhance their development and thus reduce specific psychomotor problems inherent to their condition⁷⁻⁹. During the first years of life, there is a period of greater brain plasticity, where an environment enriched with adequate stimuli, along with a specific therapy that promotes development, can have a greater impact on the efficacy of therapeutic interventions^{5,7}. Through follow-up studies, it has been shown that implementing these strategies benefits ChwDS, achieving improvement in the most disadvantaged areas, particularly language¹⁰, motor skills^{5,11}, and socio-affective areas^{9,12}. It is not only relevant whether there is a specific intervention, but the mere fact of starting stimulation strategies early, that is, on average, before two months of life^{11,13,14}, would allow a greater benefit in these areas of development^{15,16} and its effect could be maintained, at least, for the first 6 years of life¹⁷⁻²¹.

Currently, there are evidence-based clinical guidelines that support the importance of these strategies in ChwDS⁷, but there are few reports²²⁻²⁵ regarding those factors that interfere with the timely initiation of EI.

The objective of this study was to detect factors associated with the time of EI initiation in ChwDS in Chile.

Subjects and Method

Descriptive study that seeks to characterize the time of EI initiation by ChwDS in Chile. A question-

naire was used to identify and describe the variables that influence - or not - the early or late start of EI, for subsequent statistical analysis.

Data collection was carried out through a questionnaire applied to parents of ChwDS, who were seen at the UC CHRISTUS Health Network or who participated in organizations or groups related to DS. Participants were invited through an invitation published in social networks of the UC Down Syndrome Center (@centroudown).

Parents whose children with DS were older than 3 months and younger than 3 years of age and who received EI in Chile during their first year of life were included.

For the analysis, we excluded those questionnaires answered by another member of the family who did not complete at least 80% of the responses or who did not provide essential data for the analysis, and which were marked as mandatory fields in the questionnaire.

The variables to be recorded were defined as follows:

- ChwDS: clinical diagnosis according to phenotype, by recognition of classic physical characteristics and/or certainty diagnosis with trisomy 21 karyotype, for any of its three genotypes (free trisomy 21, translocation, or mosaicism).

- Early initiation of EI programs: attendance to stimulation sessions with a professional in physical therapy, speech therapy, occupational therapy, and/or special education of an EI program within the first 60 days of life (dol). The attendance could have been to a developmental stimulation center, foundations, private consultation, programs in clinics or hospitals, or rehabilitation centers such as *Teletón* or *Instituto de Rehabilitación Pedro Aguirre Cerda*, among others.

- Late start of EI programs: attendance to stimulation sessions with a physical therapy, speech therapy, occupational therapy, and/or special education professional of an EI program, after the first 60 DOL.

- Very early start of EI programs: attendance to stimulation sessions with a professional in kinesiology, speech therapy, occupational therapy, and/or special education of an EI program, within the first 30 DOL.

- Family socioeconomic level (SEL) was defined according to Casen 2017 survey parameters.

- Standard professional of intervention team: made up of a speech therapist, occupational therapist, physical therapist, special education teacher, and psychologist.

The time of DS diagnosis was recorded, considering it as postnatal when the diagnosis was made at the time of delivery or later, and as a prenatal diagnosis when the diagnosis was made during pregnancy, both in confirmed cases and in those in which it was sus-

pected due to suggestive ultrasound findings, but without confirmation at the prenatal stage.

Generational distance between siblings was considered “distant” when there was a difference of 10 years or more between the ChwDS and her/his closest sibling.

Regarding information about DS, respondents were asked if they had any knowledge about the condition before the birth of their child with DS, or if after diagnosis they participated in any ChwDS parent group.

We asked about hospitalization in the first 3 months of life, and if so, we requested the length of stay, place of stay, cause of hospitalization, use of oxygen or mechanical ventilation, among others.

For the evaluation of the factors associated with late initiation of EI, the variables to be studied were categorized into 1) demographic, 2) medical history of the ChwDS, 3) socioeconomic data of the parents, 4) characteristics of the child's health system (public or private), and 5) characteristics of the stimulation centers they attend or attended. In addition, a section was included in which parents, in an open-ended manner, described the reasons that in their opinion could have explained the early vs. late start of EI in their children.

The variables included in the questionnaire were chosen based on the international literature on factors related to EI in ChwDS^{20,22-24,26}. Those variables that, in the authors' opinion, could influence the timing of initiation of EI programs in ChwDS and that were not described in the literature were also included in the questionnaire.

A questionnaire was created in Google Forms, which was answered by the participants. The questionnaire was answered online, after the electronic signature of informed consent. The answers to the questionnaire were recorded anonymously in an *ad-hoc* form and the respondents automatically received a backup copy to the e-mail address indicated by them.

During the study period, 3 invitations to participate were made through the UC DS Center's social networks.

Quantitative methodology was used for the statistical analysis of the data. The description of categorical variables was expressed as percentages and frequencies, and continuous variables were reported as mean (\pm SD). The population studied was classified into those who reported “early start of EI” (≤ 60 DOL) and a second group that reported “late start of EI” (after 60 DOL), in order to subsequently identify factors that could influence late initiation of EI. For the association between variables, univariate analysis of categorical variables was performed using Fisher's exact test. For the association between numerical variables, the Student T-test for independent samples was used. When possi-

ble, we analyzed whether the probability of occurrence of a factor differed or not in the early or late initiation groups, for which we calculated the Odds Ratio (OR) with a 95% confidence interval. For this research, a p value < 0.05 was considered statistically significant. The statistical software “SPSS Statistics® version 25” was used for the analysis.

This project was approved by the Research Ethics Committee of the Faculty of Medicine of the Pontificia Universidad Católica de Chile. Project ID 170316012.

Results

Between March and August 2018, 137 questionnaires were received, of which 12 (8.7%) met exclusion criteria (figure 1), resulting in 125 questionnaires. Table 1 shows the demographic characteristics of the participants.

48.8% ($n = 61$) reported initiating EI before 60 DOL, 51.2% ($n = 64$) reported receiving EI after 60 DOL and of these, 25% initiated it after 6 months of age ($n = 16/64$). A 22.4% ($n = 28$) started the EI program very early (within the first 30 DOL) and 77.6% ($n = 97$) started attending EI programs after one month of life. Table 2 summarizes the analyses of determinant factors for early versus late initiation of EI.

Table 3 describes the professional teams of the intervention centers, travel times, and expenses associated with therapies.

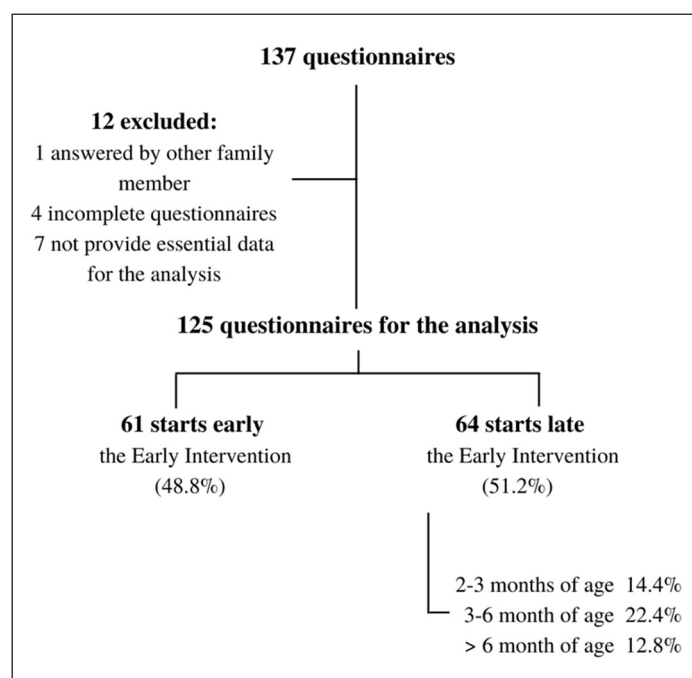


Figure 1. Questionnaires included and group distribution.

Protective variables were evaluated, where the only significant factor for initiating early therapy was high family socioeconomic status OR = 0.4 [95%CI 0.2-0.9] $p < 0.03$. In addition, univariate analysis was performed for the very early EI group (< 30 DOL, cut-off based on the ideal target established in the literature), without adding new variables of statistical significance.

When participants were asked about the reason why they considered that they had started their child's EI late, more than $\frac{1}{4}$ of the interviewees referred to lack

of knowledge, their child's hospitalization, and coordination or vacancy problems at the Intervention center as reasons. Table 4 summarizes the free-text responses.

Discussion

In our study, 51% of the respondents reported that their child started attending an EI program late, that is, after two months of life, which is a worrying result in terms of missing opportunities for timely and useful intervention in this group of vulnerable children. This high frequency of late initiation of EI could even be higher and be underestimated due to the selection bias of the population that answered the questionnaire, which was mostly from the Metropolitan Region (capital city) and of high SEL, and probably biased towards families with access to the Internet due to the methodology of invitation to participate. On the other hand, it should be considered that we used a looser range as a definition of early EI compared with some foreign references (less than 1 month of life)^{11,13}, which would further increase the frequency of late EI to 77.6%.

The factors that significantly influenced the late initiation of EI were hospitalization before 3 months of life, which had a risk 2.5 times higher than those that had early initiation of EC, the low educational level of the parents (OR 4.7 [95%CI 1.48-15.1] and OR= 3.4 [95%CI 1.16-10.1]) respectively, and birth in the public health system, with a risk 11.8 times higher. From a public health point of view, this last result is worrisome considering that about 78% of the Chilean population is seen in this health system²⁹.

Reasons that could explain these results could be the prioritization of addressing the associated morbidity over the need for developmental stimulation during the hospital stay of patients with DS; the educational level of the parents that would determine a lack of access to updated information or mistaken beliefs about the relevance of this intervention; the low SEL, and finally the difficulty in accessing EI programs, along with the lack of availability of government programs aimed at ChwDS from the public health system.

The medical and socioeconomic factors that had a significant influence on late EI were similar to those reported by parents in the free text, where lack of knowledge, medical problems of the child, and difficulties with the availability of vacant places in the centers offering EI programs stand out. The latter was probably determined by the lack of vacant places in the free centers, where children are usually left on a waiting list and the start of EI is postponed.

The importance of intervening in socioeconomic variables such as those described in this study has already been determined for other pathologies, where

Table 1. Demographic characteristics of population surveyed

Characteristic	Participants (%)
	n = 125 (100)
Mother	115 (92)
Father	10 (8)
<i>Mother</i>	
Age -mean (\pm SD)-, years	37.5 (\pm 6.07)
Educational level (%)	
Secondary education	18 (14.4)
Technical education	25 (20)
Higher education-Professional	80 (64)
Program	
<i>Father</i>	
Age -mean (\pm SD)-, years	39.5 (\pm 7.1)
Educational level (%)	
Secondary education	16 (14.4)
Technical education	19 (15.2)
Higher education-Professional	86 (68.8)
Program	
<i>Parents live together (%)</i>	
Yes	115 (92)
No	10 (8)
<i>Family socioeconomic status (%)^a</i>	
Low socioeconomic status	17 (3.6)
Middle socioeconomic status	32 (25.6)
High socioeconomic status	76 (60.8)
<i>Residence (%)</i>	
MR (Capital city)	78 (62.4)
Different from the MR	47 (37.6)
<i>Timing of DS diagnosis</i>	
Suspected prenatal diagnosis	16 (12.8)
Confirmed prenatal diagnosis	18 (14.4)
Postnatal diagnosis	91 (72.8)
<i>Child's birthplace (%)</i>	
Private healthcare system	92 (73.6)
Public healthcare system	33 (26.4)
<i>Children with DS</i>	
Age -mean (\pm SD)-, months	19.9 (\pm 10.6)
Gender	
Female	50 (40.8)
Male	75 (59.2)

MR: Metropolitan Region; DS: Down syndrome; SD: Standard Deviation.^aClassification according to average family income (CAsen 2017).

Table 2. Comparison between early versus late start groups in Early Intervention Programs

Demographic characteristics	Early start in EI n = 61	Late start in EI n = 64	P Value	OR [CI 95%]
Mother Age -mean (\pm SD)-, years				
Father Age -mean (\pm SD)-, years	37,4 (\pm 5,9)	37,2 (\pm 6,2)	0,82	
Parents are living apart (%)	40,5 (\pm 7)	38,4 (\pm 6,9)	0,09	
Mother or Father with depressive disorders (%)	2 (1,6)	8 (6,4)	0,11	0,23 [0,04-1,16]
Gender of Chw DS (%)	19 (15,2)	22 (17,6)	0,44	0,86 [0,4-1,8]
Female				
Male	28 (22,4)	23 (18,4)	0,25	1
Current age of ChwDS -mean (\pm SD)-months	33 (26,4)	41 (32,8)	0,51	1,5 [0,73-3,09]
Residence different from the MR (%)	20,5 (\pm 11)	19,4 (\pm 9,9)	0,56	
Travel time to the EI Center > 1h (%)	19 (15,2)	28 (22,4)	0,14	0,58 [0,28-1,2]
Change in family composition (%)	14 (11,2)	13 (10,4)	0,72	1,16 [0,4-2,74]
Number of siblings -mean (\pm SD)	12 (9,6)	9 (7,2)	0,35	1,5 [0,6-3,8]
Número de hermanos - media (\pm DE)-	1,4 (\pm 1,2)	1,4 (\pm 1,2)	0,98	
> 10 years of age gap between ChwDS and his/her closest sibling	39 (31,2)	38 (30,4)	0,87	1,2 [0,59-2,5]
<i>Knowledge about DS condition (%)</i>				
Prior ignorance about DS condition	46 (36,8)	47 (37,6)	0,81	1,1 [0,5-2,5]
Postnatal diagnosis	46 (36,8)	45 (36)	0,81	1,3 [0,59-2,9]
No participation in DS parents group	31 (24,8)	24 (19,2)	0,30	1,7 [0,84-3,5]
<i>Medical history of the ChwDS (%)</i>				
Hospitalization during first 3 months of life	34 (27,2)	49 (39,2)	0,01*	2,5 [1,2-5,5]
N° of hospitalizations -median (range)-	0.75 (0-4)	1,2 (0-10)	0,03*	
Main diagnosis of hospitalization				
Congenital heart disease	10 (8)	24 (19,2)	0.008*	3.0 [1.3-7.1]
Cardiovascular surgery	6 (4,8)	13 (10,4)	0.10	0.42 [0.15-1.2]
Other surgeries	5 (4)	12 (9,6)	0.07	0.4 [0.12-1.1]
Respiratory problems	16 (12,8)	12 (9,6)	0.31	1.5 [0.7-3.6]
Metabolic disorders ^b	10 (8)	23 (18,4)	0.01*	2.8 [1.2-6.6]
Thermoregulation disorders	1 (0,8)	8 (6,4)	0.03*	8.5 [1.03-70]
Suction-swallowing disorders	6 (4,8)	16 (12,8)	0.02*	3.0 [1.1-8.4]
Preterm infants	11 (8,8)	14 (11,2)	0.59	0.8 [0.32-1.9]
Other diseases	4 (3,2)	10 (8)	0.10	0.38 [0.11-1.3]
Complexity of hospitalization				
Oxygen requirement	23 (18,4)	28 (22,4)	0.49	0.7 [0.38-1.6]
IMV requirement	10 (8)	23 (18,4)	0.01*	2.8 [1.1-6.5]
NIV requirement	13 (10,4)	25 (20)	0.03*	2.3 [1.07-5.2]
IMV requirement > 7 days	2	0		
NIV requirement > 7 days	3 (2,4)	9 (7,2)	0.08	0.31 [0.08-1.2]
Stay in ICU	29 (23,2)	37 (29,6)	0.25	0.66 [0.32-1.3]
Stay in ICU more than 10 days	9 (7,2)	24 (19,2)	0.004*	3.4 [1.4-8.2]
Stay in hospital more than 10 days	20 (16)	35 (28)	0.01*	2.4 [1.1-5.1]
Developmental stimulation during hospitalization ^c	20 (16)	19 (15,2)	0.70	1.15 [0.5-2.4]
Developmental stimulation during the ICU stay ^c	15 (12)	14 (11,2)	0.71	1.2 [0.5-2.7]
Presence of chronic diseases	35 (28)	42 (33,6)	0.34	0.7 [0.3-1.4]
Presence of multiple chronic conditions	3 (2,4)	5 (4)	0.50	0.61 [0.14-2.7]
<i>Socioeconomic characteristics (%)</i>				
Low educational level of the mother	5 (4)	15 (12)	0.02*	3.4 [1.16-10.1]
Low educational level of the father	4 (3,2)	16 (12,8)	0.004*	4.7 [1.48-15.1]
Family income				
Low	11 (8,8)	6 (4,8)	0.11	2.1 [0.7-6.1]
Middle	20 (16)	12 (9,6)	0.13	2.1 [0.9-4.8]
High ^c	43 (34,4)	33 (26,4)	0.03*	0.4 [0.2-0.9]
Birth in public healthcare system	4 (3,2)	29 (23,2)	<0.0001*	11.8 [3.8-36.4]
Monthly expenses of EI programs (CLP\$)				
Free of charge	10 (8)	21 (16,8)	0.03*	2.4 [1.05-5.85]
> \$100.000	34 (27,2)	26 (20,8)	0.09	0.4 [0.17-0.97]

EI= Early Intervention; DS= Down Syndrome; ChwDS= Children with Down Syndrome MR= Metropolitan Region (Capital city); IMV=invasive mechanical ventilation; NIV= non-invasive ventilation; ICU= intensive care unit; SD= Standard Deviation; CLP=Chilean peso; OR=Odds Ratio; CI= Confidence interval. *p value calculated by Chi-square for dichotomous variables. Fisher's exact test for values obtained with a small sample. Student's t-test for continuous variables. ^bIncludes: Hypoglycemia, hyperbilirubinemia, and others. ^cEvaluated as a protective factor.

*Significative p value ≤ 0.05 .

Table 3. Characteristics of the Early Intervention centers according to the moment of beginning of participation in the program.

Characteristic	Early start in EI n = 61 (%)	Late start in EI n = 64 (%)	p Value	OR [CI 95%]
<i>Intervention professional team^a</i>				
Standard	19 (65.5)	10 (34.5) ^b	0.04*	1 ^b
3-4 professionals	30 (46.9)	34 (53.1)	0.65	0.5 [0.18-1.1]
< 3 professionals	12 (37.5)	20 (62.5)	0.13	0.31 [0.1-0.9]
<i>Travel time to the EI center</i>				
<1 hour	47 (48)	51 (52)	0.72	1 ^b
>1 hour	14 (51.9)	13 (48.1)		0.9 [0.4-2]
<i>Monthly EI program costs (CLP\$)</i>				
Free of charge	10 (16.4)	21 (32.8)	0.034*	1 ^b
< \$50.000	10 (16.4)	6 (9.4)	0.24	3.5 [0.99-12.4]
\$50.000 - \$100.000	7 (11.4)	11 (17.2)	0.36	1.3 [0.4-4.5]
\$100.000 - \$200.000	17 (27.9)	15 (23.4)	0.57	2.4 [0.85-6.6]
> \$200.000	17 (27.9)	11 (17.2)	0.15	3.2 [1.11-9.4]
<i>Number of sessions per week -mean. (± SD)</i>	2.75 (± 1.2)	2.1 (± 1.1)	0.07	

EI: Early Intervention; CLP: Chilean pesos; SD: Standard Deviation; CI= Confidence interval. ^aStandard stimulation team made up of Speech therapists, Physiotherapists, Occupational Therapist, Special education teachers and Psychologist. ^bReferential risk used to calculate the risk of other categories of the variable. p value calculated by Chi-square for dichotomous variables. Student's t-test for continuous variables.

*Significative p value ≤ 0.05

the opportunity for access and cost reduction is reflected in better health outcomes³⁰.

Regarding protective factors, the high SEL had six times more opportunity to initiate early therapy than the late EI group, which is probably determined by the greater and better access to paid therapeutic services both in health centers and in foundations or specialized institutions.

Regarding the costs that families must incur for their children's EI therapies, it is noteworthy that, regardless of the educational or socioeconomic level described and regardless of the time of initiation of EI, about half of the families have a monthly expenditure on therapies of over CLP \$100,000, which is high considering that the minimum wage in Chile is CLP \$326,500³¹, representing one-third of the minimum monthly wage of our population.

It is noteworthy that those ChwDS who initiated therapy promptly (before 60 DOL) also participated in programs made up of an intervention professional team considered "standard"^{27,28}, both in terms of the variety of professionals and the number of sessions per week. This is probably because most of the group that started early EI had been attended at a center with programs for people with DS, and probably the timely and adequate delivery of information, counseling, and continuity in outpatient care could have influenced the early initiation of EI and prompt referral to specialized and experienced institutions that have adequate equipment for stimulation therapies in this population.

Although we could consider that parents' memory of the experience of the first year of their son or daughter with DS remains intact over the years, one limitation of the study is the possible associated memory bias, which we tried to reduce by excluding parents of children older than 3 years and questionnaires with less than 80% of the data answered. On the other hand,

Table 4. Parents reports: Reasons for initiating or delaying participation in Early Intervention programs.

Characteristics	Surveyed (%) n = 125
<i>Reason for early start in EI programs^a</i>	Surveyed (%)
Personal impression	23 (37.7)
Healthcare team recommended it	20 (32.7)
Self-search information	15 (24.5)
Family member or friend recommended it	4 (6.5)
Parent group recommended it	2 (3.2)
<i>Reason for delay the participation in EI programs^a</i>	n = 64 (%)
Child's hospitalization or surgery	23 (35.9)
Lack of knowledge	23 (35.9)
Problems with the EI center	17 (26.5)
Economic issues	9 (14)
Children with multiple diseases	9 (14)
Parent Job	7 (10.9)

CI: Early Intervention. ^aReferred by parents as reasons for initiating or delaying the start of participation in EI programs.

the use of an online questionnaire requires technological accessibility on the part of the participants, a factor that could generate selection bias.

Finally, most of the participants had a high educational level, high monthly income, and received care in the private health system, so the sample is not representative of the Chilean population. However, it is estimated that if the number of participants with a lower educational level, lower monthly income, from outside the metropolitan region or from the public health system was to increase, the results would reflect even more the lack of timely access to EI programs for ChwDS, a situation that is even more worrying.

Conclusions

There are non-modifiable variables such as hospitalization, complex pathologies, long hospital stays, which delay the start of attendance to EI programs for ChwDS, however, there are modifiable factors to which we must give relevance; resources and public policy management, which could be considered by optimizing the capacity already established in the Primary Care Centers of the country, improving the stimulation rooms available there, and strengthening the intersectoral work facilitated by the *Chile Crece Contigo* (Chile Grows With You) System. In addition, to guarantee access to EI programs, providing education both to the professionals who advise families and to the population regarding this condition and its needs, as well as emphasizing the importance of the moment when EI begins, a relevant intervention for the future development of this group of children.

It would be pertinent to establish and improve protocols for the accompaniment of ChwDS, especially when providing information at the time of discharge from the maternity ward for timely referral to EI centers, or initiating it during hospitalization in those cases in which the neonatal hospital stay is prolonged.

It is urgent to generate public policies that guarantee access to EI to all ChwDS, regardless of their SEL,

region of residence, health system where they are seen, educational level of their parents, or associated health condition.

Ethical Responsibilities

Human Beings and animals protection: Disclosure the authors state that the procedures were followed according to the Declaration of Helsinki and the World Medical Association regarding human experimentation developed for the medical community.

Data confidentiality: The authors state that they have followed the protocols of their Center and Local regulations on the publication of patient data.

Rights to privacy and informed consent: The authors have obtained the informed consent of the patients and/or subjects referred to in the article. This document is in the possession of the correspondence author.

Conflicts of Interest

Authors declare no conflict of interest regarding the present study.

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