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HOW DID THE PANDEMIC LOCKDOWN AFFECT THE DEVELOPMENT OF INFANTS' SOCIAL AND COMMUNICATION SKILLS? A RETROSPECTIVE STUDY FROM TÜRKİYE

PANDEMİ KARANTİNASI BEBEKLERİN SOSYAL VE İLETİŞİM BECERİLERİNİN GELİŞİMİNİ NASIL ETKİLEDİ? TÜRKİYE'DEN RETROSPEKTİF BİR ÇALIŞMA

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ABSTRACT

Objective: Limited socialisation during the COVID-19 pandemic is one of the factors that may affect children's social and communication skills. In this study, we assessed the social communication skills of children aged 1-2 years during the COVID-19 pandemic period and compare them with the pre-pandemic era.

Material and Methods: Children who were two years old before the pandemic (Group 1) and children who were two years old during the pandemic quarantine (Group 2) were included in the study. For both groups, demographic information, anthropometric measurements at birth, ages at reaching developmental milestones, Social Communication Area Screening Test for Infants (SCASI) scores at 15 and 24 months [total, pre-speech skills (F1a), vocabulary (F1b), awareness skills scores (F2; n)], and screen time exposure were collected from medical records. Comparative analyses of these variables between the two groups were performed.

Results: A total of 202 children (Group 1; n=123, Group 2; n=79) were included in the study. The rate of girls was higher in Group 2 (p=0.041). No significant difference was found in terms of birth weeks, birth height, weight, head circumference measurements and the initial times of head holding, sitting without support and walking independently. The screen exposure duration for ≥2 hours at 15 and 24 months was higher in Group 2 (p=0.110; p=0.014,

ÖZET

Amaç: COVID-19 pandemisi sırasında sınırlı sosyalleşme, çocukların sosyal ve iletişim becerilerini etkileyebilecek faktörlerden biridir. Bu çalışmada, COVID-19 pandemisi döneminde 1-2 yaş arası çocukların sosyal iletişim becerilerini değerlendirmeyi ve pandemi öncesi dönemle karşılaştırmayı amaçladık.

Gereç ve Yöntem: Pandemi öncesinde iki yaşında olan çocuklar (Grup 1) ve pandemi karantinası sırasında iki yaşında olan çocuklar (Grup 2) çalışmaya dahil edildi. Her iki grup için demografik bilgiler, doğumdaki antropometrik ölçümler, gelişimsel kilometre taşlarına ulaşma yaşları, 15 ve 24 aylık Bebekler İçin Sosyal İletişim Alanı Tarama Testi (SİATT) skorları (toplam, konuşma öncesi beceriler (F1a), kelime kullanımı (F1b), farkındalık becerileri skorları (F2)) ve ekrana maruz kalma süresi tıbbi kayıtlardan toplandı. Bu değişkenlerin iki grup arasında karşılaştırmalı analizleri yapıldı.

Bulgular: Toplam 202 çocuk (Grup 1; n=123, Grup 2; n=79) çalışmaya dahil edildi. Grup 2'de kız çocuklarının oranı daha yüksekti (p=0,041). Doğum haftası, doğum boyu, kilo, baş çevresi ölçümleri ve baş tutma, desteksiz oturma ve bağımsız yürüme başlangıç zamanları açısından anlamlı bir fark bulunmadı. Grup 2'de 15 ve 24. aylarda ≥2 saat ekrana maruz kalma süresi daha yüksek saptandı (sırasıyla p=0,110; p=0,014). Sosyal İletişim de-

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respectively). In the Social Communication assessments, the rate of children with risky SCASI results was higher in Group 2, both at 15 and 24 months (p=0.312; p=0.004, respectively).

Conclusion: Our findings suggest that the COVID-19 pandemic might have an impact on the social communication skills of children aged 1–2 years. It is important to monitor the development of communication skills as a part of paediatric health monitoring and to closely follow up with early interventions.

Keywords: COVID-19, language development, social communication, SCASI

ğerlendirmelerinde, riskli SIATT sonuçları olan çocukların oranı hem 15. hem de 24. ayda Grup 2'de daha yüksekti (sırasıyla p=0,312; p=0,004).

Sonuç: Bulgularımız, COVID-19 pandemisinin 1-2 yaş arası çocukların sosyal iletişim becerileri üzerinde etkili olabileceğini göstermektedir. Pediatrik sağlık izleminin bir parçası olarak iletişim becerilerinin gelişiminin izlenmesi ve erken müdahalelerle yakından takip edilmesi önemlidir.

Anahtar kelimeler: COVID-19, dil gelişimi, sosyal iletişim, SİATT

INTRODUCTION

Environmental interactions, along with genetic inheritance, play a significant role in children's development (1, 2). Children's interaction with their environment, the variety of stimuli, the social behaviours exhibited in peer and play settings and the freedom to engage in physical activities have a powerful impact on their development. Environmental stressors, such as poverty, limited access to education, environmental exposure, and caregiver characteristics, directly influence the child's development (3, 4).

The Coronavirus Disease 2019 (COVID-19) pandemic has brought about numerous changes in the lives of individuals at various levels (5-7). UNICEF has classified the impact of COVID-19 on children under three main categories: direct transmission of the virus, short-term socioeconomic consequences of preventive measures, and delays in achieving the Sustainable Development Goals (8). Although the direct impact of the virus on children has been less severe, the secondary consequences of the pandemic on children are reported to pose significant risks (9, 10).

Measures such as social isolation, quarantine, and social distancing, taken as protective actions during the pandemic, have been suggested to adversely affect children's development (11). The inability to participate in play and leisure activities outside the home, restricted socialisation, difficulties in understanding facial expressions due to mask-wearing, limitations in communication and language learning and increased screen exposure are all factors that may disrupt the development of children's cognitive, behavioural, social and communication skills (7, 12, 13). This study aimed to evaluate the impact on the social communication skills of children aged 1-2 years during the COVID-19 pandemic and to compare the results with the social communication skills of children aged 1-2 years in the pre-pandemic period.

MATERIALS AND METHODS

This study was conducted retrospectively at the Department of Paediatrics, Division of Social Paediatrics Well-Child Outpatient Clinic, Istanbul University Faculty of Medicine. The İstanbul University İstanbul Faculty of Medicine Clinical Research Ethics Committee approved the study (Date: 06.09.2024, No: 17).

At the Well-Child Outpatient Clinic, children's growth and development are evaluated from birth until the age of 10. The follow-up intervals were monthly for the first six months, every 3 months from months 6 to 18, every six months from 18 months to six years, and yearly thereafter. If a problem is detected, the follow-up intervals are shortened, and necessary interventions are applied. During each follow-up, weight, height, and head circumference measurements were recorded and plotted on growth charts for continuous growth monitoring. Along with growth, developmental milestones are also assessed. Children are screened to ensure that they have reached developmental milestones for their age. The International Guide for Monitoring Child Development (GMCD) test and the Modified Checklist for Autism Test (M-CHAT) are administered by trained staff in accordance with recommendations from the Turkish Ministry of Health's General Directorate of Public Health (14-16). In addition, the Social Communication Area Screening Test for Infants (SCASI) was used between 6 and 24 months (17). If necessary, the children are referred for multidisciplinary evaluation and appropriate interventions. Furthermore, vaccinations from the Expanded National Immunisation Program, as well as non-routine vaccinations, are administered.

SCASI is a screening test that was developed in 2011 and has been validated for content and construct validity, reliability, and normative studies in Turkish children (17). It was designed as a parent-reported test focusing on the development of social communication to screen the development of children aged 6-24 months. The SCASI consists of 43 items structured under two factors within a single domain. The first factor (F1), "Communication-oriented social skills," is divided into two subgroups: preverbal skills (F1a; 26 items) and vocabulary (F1b; 5 items). The second factor (F2), "Awareness Skills" consists of 10 items. Although the last two items are not included in the total score, they serve as red flags, particularly for regression (Supplemented file). After the administration of the SCASI, the scores were compared with appropriate developmental age norms. If a child's score was above

the cut-off point, their development was considered "normal." The children were evaluated as "normal" or "at risk" according to the cut-off score. An "Educational Programme" booklet was provided for children identified as being at risk to assist in developing tailored educational support programs (17).

Children who were born between 1 January 2017 and 31 December 2017 and who had reached two years of age before the pandemic (Group 1) and children who were born between 1 January 2019 and 31 December 2019 and who reached two years of age during the pandemic (Group 2) were included in the study. For both groups, data including demographic information, anthropometric measurements at birth, ages at which developmental milestones were reached, SCASI total and F1a, F1b, and F2 sub scores, and screen time exposure at 15 and 24 months and if there was a diagnosis of speech disorders, autism, bilingualism, in which speech skills could be affected in the follow-up, were collected from their medical records.

Statistical analysis

Statistical Package for the Social Sciences (IBM SPSS Corp., Armonk, NY, USA) version 29 programme was used for statistical analyses. The study data were evaluated using descriptive statistical methods (mean, standard deviation, median, frequency, percentage, minimum, and maximum). The conformity of the continuous variables to the normal distribution was tested by the Shapiro-Wilk test and graphical analyses. The Mann-Whitney U test was used for comparisons of the continuous variables that did not show a normal distribution between the two groups, and the t-test was used for comparisons of the continuous variables that conformed to the normal distribution. The Pearson Chi-Square test and Fisher-Freeman-Halton test were used to compare categorical data. The statistical significance will be set as $p<0.05$.

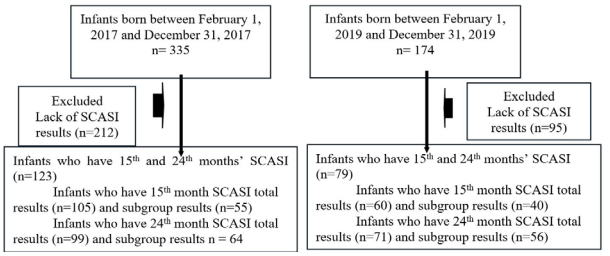

Figure 1: Flow diagram of the study
SCASI: Social Communication Area Screening Test for Infants

RESULTS

A total of 509 records were evaluated, and 202 infants (Group 1 n=123, Group 2 n=79) were included in the analysis (Figure 1). In Group 1, 105 infants had the 15th-month SCASI total results, 55 had subgroup results, 99 infants had the 24th-month SCASI total results, and 64 had subgroup results. In Group 2, 60 infants had the 15th-month SCASI total results, 40 had subgroup results, 71 infants had the 24th-month SCASI total results, and 56 had subgroup results. In Group 1, 81 infants had both 15th and 24th months of SCASI results, and in Group 2, 52 had.

In the demographic data evaluation, the mean maternal ages were 32.7 (±5.1) for Group 1 and 32.8 (±4.7) for Group 2. The maternal age was similar between the groups, but when the maternal educational status was evaluated, the university graduation rate was higher in Group 2 ($p=0.005$). The employment rate of the mothers was higher in Group 2 than in Group 1 (70.9% and 61.8%, respectively), but there was no significant statistical difference ($p=0.185$). The mean paternal ages were 38.5 (±5.6) for Group 1 and 35.5 (±5.5) for Group 2, and in both groups, all fathers were employed. There were no significant differences in paternal age, education levels, and employment status between the groups (Table 1).

Among the participants, girls were 42.3% (n=52) and 57% (n=45) in Group 1 and Group 2, respectively. The median age was 86 (±29) months for infants in Group 1 and 54 (±2) months in Group 2. The birth weeks, birth height, weight, head circumference measurements and the initial times of head holding, sitting without support and walking independently were not statistically different between the groups. When the duration of screen exposure was compared, it was higher in Group 2 and the difference was statistically significant in the 24th month of age ($p=0.014$). The comparisons of the demographic characteristics among the groups are presented in Table 1.

In Group 1, 10.5% of the children (n=11) in the 15th month exhibited total SCASI values, indicating a potential risk. The rates of children identified as being at risk in the SCASI subgroup assessments were 10.9% for pre-verbal skills (F1a), 32.5% for word usage (F1b), and 16.4% for awareness-containing skills (F2) (Table 2). In Group 1, among the risky children who were assisted with developing a tailored educational support program at 15 months, two were found to be at risk at 24 months. One of these children showed improvement without receiving any other special treatment during the follow-up, while the other was diagnosed with autism and continued to be followed up by child psychiatry. Of the eight children who were found to be at risk at 24 months, two were also found to be at risk at 15 months, while six had a normal SCASI (Table 2).

In Group 2, 15% of the children (n=9) in the 15th month exhibited total SCASI values, indicating a potential risk. The rates of children identified as being at risk in the SCASI subgroup assessments were 17.5% for pre-verbal skills (F1a), 42.5% for word usage (F1b), and 37.5% for awareness-containing skills (F2) (Table 2). In Group 2, among

Table 1: Comparisons of the demographic characteristics among groups

	Group 1	Group 2	p
Maternal age (year); mean (SD)	32.7 (±5.1)	32.8 (±4.7)	0.896*
Paternal age (year); mean (SD)	38.5 (±5.6)	35.5 (±5.5)	0.808*
Maternal education; n (%)			
0 years	1 (0.8)	0 (0)	
5 years	25 (20.3)	12 (15.4)	**0.005****
11 years	46 (37.4)	15 (19.2)	
14 years	51 (41.5)	51 (65.4)	
Paternal education; n (%)			
0 years	0 (0)	0 (0)	
5 years	25 (20.3)	17 (21.8)	0.064***
11 years	42 (34.1)	15 (19.2)	
14 years	56 (45.5)	46 (59)	
Gender (Girl); n (%)	52 (42.3)	45 (57)	**0.041*****
Gestational week; mean (SD)	38.5 (±1.4)	38.3 (±1.2)	0.443*
Birth weight (g); mean (SD)	3276.1 (±447.7)	3264.8 (±444.8)	0.897*
Birth height (cm); mean (SD)	49 (±4.7)	49.3 (±2.2)	0.877*
Birth head circumference (cm); mean (SD)	34.6 (±1.5)	34.5 (±1.3)	0.858*
Head control (months); Median (range)	2 (1-5)	2 (1-4)	0.930*
Sitting without support (months); median (range)	7 (2-9)	7 (5-12)	0.866*
Independent walking (months); Median (range)	12 (9-24)	13 (8-19)	0.379*
15. month screen exposure; n (%)			0.110**
None	31 (43.7)	13 (37.1)	
1 hour	38 (53.5)	17 (48.6)	
≥2 hours	2 (2.8)	5 (14.3)	
24. month screen exposure; n (%)			**0.014****
None	35 (47.3)	5 (36.6)	
1 hour	36 (48.6)	17 (41.5)	
≥2 hours	6 (4.1)	9 (22.0)	

SD: Standard Deviation, *: Mann–Whitney U Test, **: Fischer Freeman–Halton Test, ***: Chi-square

Table 2: Risk assessment of children at 15th and 24th months

SCASI		Group 1	Group 2	p*	Group 1	Group 2	p*
		15th month			24th month		
		n (%)	n (%)		n (%)	n (%)	
F1a	Normal	49 (89.1)	33 (82.5)	0.392	60 (93.7)	48 (85.7)	0.143
	Risky	6 (10.9)	7 (17.5)		4 (6.3)	8 (14.3)	
F1b	Normal	37 (67.5)	23 (57.5)	0.330	54 (84.4)	43 (76.8)	0.292
	Risky	18 (32.5)	17 (42.5)		10 (15.6)	13 (23.2)	
F2	Normal	46 (83.6)	25 (62.5)	0.019	60 (93.7)	48 (85.7)	0.143
	Risky	9 (16.4)	15 (37.5)		4 (6.3)	8 (14.3)	
Total	Normal	94 (89.5)	51 (85.0)	0.392	91 (91.9)	54 (76.1)	0.004
	Risky	11 (10.5)	9 (15.0)		8 (8.1)	17 (23.9)	

SCASI: Social Communication Area Screening Test for Infants
F1a=preverbal skills, F1b=vocabulary skills, F2 = awareness skills, *: Pearson Chi-Square test

the risky children who were assisted with developing a tailored educational support program at 15 months, one child was found to be at risk at 24 months. Except for this at-risk child, the 15-month SCASI scores of the children identified as at-risk at 24 months were normal. No child diagnosed with developmental delay or autism spectrum disorder was found in the follow-up of children with at-risk SCASI scores at 24 months in Group 2.

In the SCASI assessments, the rate of children with risky results was higher in Group 2, both at 15 and 24 months. In the subgroup analyses of the 15th month, the rate of children found at risk was higher in Group 2 for all subgroups: pre-verbal skills (F1a), word usage (F1b), and awareness-containing skills (F2). However, this difference was statistically significant only in awareness-containing skills (p=0.004). In the 24th month results, the rate of children with a total SCASI score at risk was statistically significantly higher in Group 2 (p=0.004). In the subgroup analyses of the 24th month, the rate of children found at risk was also higher in Group 2 for all subgroups, but no significant difference was found.

DISCUSSION

Our study, which aimed to evaluate the social communication skills of children aged 1–2 years during the COVID-19 pandemic, revealed that children who turned 1–2 years old during the pandemic exhibited a higher risk in social communication skills, particularly at 24 months, as assessed by the SCASI. Additionally, screen time exposure was also notably higher in Group 2, especially at 24 months, suggesting that the pandemic's impact on daily routines has influenced early childhood development in significant ways.

The development of social communication is linked to social engagement. Low levels of social engagement among infants and their caregivers have been associated with developmental delays (18). A qualitative study from the COVID-19 pandemic period reported that social isolation restrictions resulted in 25% of infants not having the chance to meet a child of the same age by their first birthday, leading to a reduction in social peer interaction (19). Because of the isolation measures, it is probable that babies in the COVID-19 era heard a more limited repertoire of speech and were exposed to fewer unmasked faces speaking to them (20). A study examining infant neurodevelopment during the COVID-19 pandemic highlighted that a higher risk of delayed communication development in one-year-old children may be related to experiencing the COVID-19 pandemic and public health strategies for contact isolation during that period (21). In our study, the increased risk of social communication skills in Group 2 aligned with concerns about the pandemic's potential negative effects on child development (22).

As infants spend most of the quarantine in a familiar home environment, it is suggested that they are less likely to encounter new interests that may lead to pointing, for example, parents being in close proximity and anticipating infants' needs before the need to point (20). Byrne et al. also found a reduction in babies' skill in waving bye-bye during the COVID-19 pandemic, which was likely related to reduced opportunities for babies to learn due to limited social contact (20). In our study, the risk status in preverbal skills (F1a), such as pointing, peek-a-boo games, or hand waving, was also higher in Group 2. Early childhood is a critical period for the development of social communication skills, and disruptions in routine social activities and limited peer interactions may have hindered the natural progression of these skills during the pandemic (7, 23).

Increased screen exposure can disrupt natural language development and social engagement in children by limiting face-to-face interaction with caregivers and peers (24, 25). Excessive screen time has also been linked to disrupted sleep patterns, stress, and reduced physical activity, all of which can contribute to developmental challenges in young children (5). Limited screen both for foreground and background exposure for children is recommended, emphasising interactive, non-screen-based activities for healthy development (26). Chonchaiya and Pruksananonda reported that toddlers who started watching TV at <1 year of age and watched >2 h/day were about six times more likely to have speech and language delays (27). In our study, at 24 months, the screen exposure was significantly higher in the group during the pandemic period, which was consistent with the literature (28, 29). The higher screen time in Group 2 could be attributed to parents using digital media as a coping mechanism during lockdowns, potentially impacting children's social communication development.

While higher parental education is generally associated with better developmental outcomes, the higher educational level of the mothers in Group 2 did not mitigate the observed developmental delays (14). The relationship between higher education and higher job opportunities is well known. It can be thought that the mothers in Group 2 are unemployed, have lost their jobs during the pandemic, and this can be a source of stress, which may lead to a decrease in the care of their children. Studies that will evaluate this area on a broader scale can be planned. Despite the mother's higher education, our findings suggest that the extraordinary circumstances of the pandemic may overshadow the impact of protective factors such as parental education (4). The importance of environmental enrichment in early childhood underscores the critical need for social and educational interventions that provide children with structured, interactive learning environments to support children's development (4).

Early identification of delays is crucial to ensure timely interventions, which have been shown to be more effective when applied in early childhood (2). The use of the SCASI tool allowed for the effective identification of children at developmental risk, emphasising the importance of early screening and intervention.

Limitations include the retrospective design and reliance on medical records, which may lack comprehensive data on all potential confounders, including socioeconomic status beyond parental education, parental mental health, and detailed home environment. In addition, the smaller sample size of Group 2 due to the pandemic may affect the generalizability of the results.

CONCLUSION

In conclusion, the COVID-19 pandemic might have an impact on the social communication skills of children aged 1–2 years. The higher rates of delayed communication skills and increased screen exposure in children who reached this age during the pandemic indicate the need for targeted interventions to support early childhood development. It is important to monitor the development of communication skills as a part of paediatric health monitoring and to closely follow up with early interventions.

Ethics Committee Approval: Ethics committee approval was received for this study from the İstanbul University İstanbul Faculty of Medicine Clinical Research Ethics Committee (Date: 06.09.2024, No: 17).

Informed Consent: Due to the retrospective design of the study, informed consent was not taken.

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