The Effect of Touch and Massage Techniques Applied to Children on Parental Role Perception and Perceived Stress*

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Abstract

Aim: The study examined the effects of tactile and massage techniques on the occupational therapist's perspective on the role perception and stress levels of parents and the changes in children's sensory processing.

Method: A total of 30 children, (18 females and 12 males), aged 3-6, with normal development, and their parents were included in the study. A diverse community sample of mothers (M=33.6±5.521 years) and their preschool-aged children (M=4.5±1.2 years) participated in the study. The following instruments were employed: Parental Stress Index, Self-Perception Scale for Parenting Role, and Sensory Profile Test. Parents were instructed in a number of touch and massage techniques devised by the Occupational Therapist within the framework of Sensory Integration Theory. Following the 15-minute and 20-session implementation period, the parents were then tested. After the sessions were completed, the tests were repeated.

Results: The findings indicated that at the end of the study, there was a decrease in parental stress levels, and an increase in parental role perception and children's sensory processing skills ($p < 0.05$). The study demonstrated that touch and massage techniques can positively impact parent-child interaction.

Conclusion: Studies examining the potential enduring effects of positive parental touch on stress levels and parental role perception rarely extend beyond infancy. It is believed that research with a larger sample size on this topic would contribute significantly to the existing literature.

Keywords: Occupational therapy, tactile sense, proprioception, massage, stress, parenting role, sensory processing.

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Çocuklara Uygulanan Dokunma ve Masaj Tekniklerinin Ebeveynlik Rolü Algısı ve Algılanan Stresi Üzerine Etkisi

Öz

Amaç: Araştırma ergoterapist bakış açısıyla planlanan dokunma ve masaj tekniklerinin ebeveyn üzerindeki rol algısı ve algılanan stres üzerindeki etkilerini ve duyusal işlemleme açısından çocuktaki değişimi incelemek için yapılmıştır.

Yöntem: Uygulamaya normal gelişim gösteren 3-6 yaş aralığında 18'i kız, 12'si erkek toplam 30 çocuk ve ebeveynleri dahil edilmiştir. Araştırmaya annelerden (33,6±5,521 yaş) ve onların okul öncesi çağındaki çocuklarından (4,5±1,2 yaş) oluşan çeşitli bir topluluk örneği katılmıştır. Ebeveyn Stres Indeksi, Ebeveynlik Rolüne Ilişkin Kendilik Algısı Ölçeği ve Duyu Profili Testi kullanılmıştır. Ebeveynlere ergoterapist tarafından Duyu Bütünleme Teorisi çerçevesinde planlanmış birtakım dokunma ve masaj teknikleri öğretilmiştir. Ebeveynlerce uygulanan günlük 15 dakikalık ve 20 seanslık uygulama süreci takip edilmiştir. Seanslar tamamlanınca testler tekrar uygulanmıştır.

Bulgular: Bulgulara göre uygulamanın sonunda ebeveyn stres düzeyinde düşüş, ebeveynlik rol algısı ve çocukların duyusal işlemleme becerilerinde artış görülmüştür ($p<0.05$). Çalışma, dokunma ve masaj tekniklerinin ebeveyn çocuk etkileşimine katkı sağladığını göstermiştir.

Sonuç: Olumlu ebeveyn dokunuşunun stres düzeyi ve ebeveynlik rol algısı üzerindeki olası devam eden etkisini inceleyen çalışmaların bebeklik döneminin ötesine nadiren uzandığı bilinmektedir. Daha büyük örneklem grubu ile ilgili konuda yapılacak çalışmaların literatüre katkı sağlayacağı düşünülmektedir.

Anahtar Sözcükler: Ergoterapi, dokunma duyusu, propriyosepsiyon, masaj, stres, ebeveynlik rolü, duyusal işlemleme.

Introduction

Throughout the lifespan, humans utilize touch as a communication tool to interact with others, express affection, seek support, and build relationships[1]. From infancy onwards, touch serves as a communication tool that facilitates optimal development, as touch often accurately reflects our emotions[1-3]. The younger the individual, the more open the brain is to change and the faster it can be influenced. One of the key elements regulating the organization in the developing brain is sensory signals[4]. Sensory processing involves the processing and organization of sensory information from the body and environment. During this period, the brain receives and organizes a great deal of sensory information. This period, defined as the preschool period, is of particular importance for sensory processing, occurring between the ages of 3 and 6[5]. The brain processes all sensory information subconsciously, creating appropriate responses. The tactile and proprioceptive systems function simultaneously, supporting emotional development and contributing to the formation of a sense of self-confidence[6]. The vestibular and

proprioceptive systems are mutually reinforcing; the vestibular system serves as a specialized proprioceptor[7]. Proprioceptive sensation has been demonstrated to have a calming, regulating, and soothing effect on the body[8]. It is therefore postulated that proprioceptive sensation brings the body energy to a normal level.

Therapeutic massage is a method of stimulating the brain through the transmission of specific impulses. Through the application of pressure to the skin, sensory inputs are transmitted to the central nervous system. Massage is one of the most accessible and natural methods of establishing touch and eye contact, which improves the bond between mother and infant[9]. In one study, it was found that early massage encouraged parent-child interaction, and mothers who practiced massage increased their interaction with their children[10]. It is well established that massage with a brush plays a supportive role in the perception and awareness of the body, and stimulates the proprioceptive and tactile systems with moderate pressure[11]. Joint massage is a method that stimulates and activates muscles and joints through proprioceptive sensations, which allows information to be sent to the brain[9]. This process promotes relaxation and increases blood circulation. Research has demonstrated that when massage is applied with moderate pressure, there is a reduction in heart rate, as well as changes related to electroencephalogram (EEG). Furthermore, in analyses evaluating the long-term effects of massage at the end of a certain period, changes in mood, social relationships, and temperament dimensions requiring calming were observed in children[12].

Massage therapy has been demonstrated to have stress-reducing effects, as evidenced by decreased cortisol levels, and revitalizing effects, as indicated by increased serotonin and dopamine levels[13].

The autonomic nervous system, which regulates heart rhythms, matures in response to tactile stimuli provided by the mother's body and is shaped by her physiological and behavioral rhythms[14]. The hypothalamic-pituitary-adrenal axis, which regulates cortisol production and the body's response to stress, is regulated in response to maternal contact early in neuroplasticity[15]. It is well established that parental contact is associated with a number of biobehavioral processes that support the child's physiological and behavioral development, as well as affecting brain systems that manage stress and increase social adaptation. Research over the years has revealed that the parental role is a vital determinant that predicts various outcomes, including emotional, behavioral, cognitive, and social development[4].

A positive parental touch in early childhood has been found to have a long-lasting regulatory effect on a child's stress response[16]. In one study, a protein derived from a gene that controls stress responses was more strongly expressed in mice raised by caring mothers. This study reveals that mother-child contact contributes to the development of individuals who can respond effectively to emotional demands and express themselves freely[17]. Another study demonstrated that individuals who are not acquainted with one another can communicate intended emotions through touch alone[3]. If we consider this phenomenon in greater depth, a study has also confirmed that children's behavior is influenced by the attention and touch of their parents who raise them, and that there is an intergenerational socialization transfer[18].

However, it is known that studies examining the possible ongoing effect of positive parental touch on stress levels rarely extend beyond infancy. Parental role satisfaction can be defined as the extent to which a parent feels satisfied with their role as a parent and their relationship with their child. The parent's perceived competence can be understood as the parent's self-evaluations of their ability to fulfill their role in the relationship with their child and their feelings of adequacy towards their child[19]. A study examining the effects of role satisfaction in the mother-child relationship suggests that role satisfaction supports parents in perceiving themselves as adequate mothers and in maintaining positive self-esteem. Consequently, the parent becomes more sensitive to their role as mothers[20].

A review of the Turkish literature reveals a dearth of studies that examine the evolution of sensory systems and concurrently assess the parenting role and stress levels associated with massage practices that target the basic sensory systems of typically developing children during the early childhood period. It is well established that the sensory-based massage approach plays a pivotal role in enhancing the quality of interaction between typically developing children and their parents. When we examine the theoretical underpinnings of sensory systems, it becomes evident that this approach is indispensable in supporting the development of sensory systems. The objective of massage applied in early childhood is to enhance the interaction between parent and child. The following objectives were identified within the scope of the research:

Ho: Parent-child interaction through touch and massage does not reduce parental stress.

H1: Parent-child interaction through touch and massage has a reducing effect on parental stress.

H0: Parent-child interaction through touch and massage has no effect on the development of the perception of the parenting role.

H1: Parent-child interaction through touch and massage contributes to the development of the perception of the parenting role.

H0: Parent-child interaction through touch and massage has no effect on the child's sensory processing development.

H1: Parent-child interaction through touch and massage contributes to the child's sensory processing development.

Material and Methods

Procedure

The ethics committee approval has been obtained from Uskudar University Non-Interventional Research Ethics Committee report number of B.08.6.YÖK.2. ÜS.0.05.0.06/2018/954 (25 November 2018).

A total of 30 children, comprising 18 girls and 12 boys, were enrolled in the study, aged between preschool age (3-4 years old) and school starting age (6 years old). The children exhibited normal development and did not present any clinical problems. The data were collected using a four-part instrument, which was validated and reliable, including Social-Demographic Information, Parental Stress Index, Parenting Sense of Competence Scale, and Sensory Profile Test. Parents were instructed in the application of touch and massage techniques designed by the occupational therapist within the framework of Sensory Integration Theory to their children. A total of 20 sessions were conducted over a period of 5 weeks and 4 days, with each session lasting an average of 20 minutes. The sessions were facilitated by the parents in collaboration with the occupational therapist. Upon completion of the sessions, the scales were administered again.

Participants

A total of 30 children, comprising 18 girls and 12 boys, were included in the study. These children exhibited normal development and no clinical findings between the ages of 3 and 4 years, which is the typical age range for preschool-age children, and 6 years, which is the typical age range for school-age children. The mean age of the children was 4.5

years, with a standard deviation of 1.2 years. The age range of the parents of the children participating in the study was between 20 and 45 years old (33.6±5.521 years). The educational levels of the parents were distributed as follows: 6.3% had obtained a master's degree, 28.2% had obtained a bachelor's degree, 28.1% had obtained a high school diploma, 15.6% had obtained an associate degree, 9.4% had obtained a secondary school diploma, and 9.4% had obtained a primary school diploma. The distribution of family income status was as follows: very good (18.8%), good (28.1%), medium (37.5%), and low (12.5%).

Instruments

Demographic Information Questionnaire

This form is designed for parents and consists of two stages containing demographic information about parents and their children. The first section includes the parent's age, occupation, income status, marital status, and contact information. The second section covers the child's age, birth information, medication use, presence of health issues, primary caregiver information, whether they received any pre-school education, and whether they undergo sensory integration or similar therapies.

The Sensory Profile Test

The Sensory Profile was developed to assess sensory processing skills of children aged 3 to 10 years[21]. It is completed by parents or caregivers and consists of 125 items scored on a 5-point Likert scale based on the frequency of behaviors. Scoring is performed by therapists specializing in sensory integration. The items are divided into three sections: sensory processing, sensory modulation, and behavioral and emotional responses. The sensory system includes auditory, visual, vestibular, tactile, multisensory, and oral sensory areas. Information obtained from the Sensory Profile provides insight into the child's sensory processing issues, how they interpret sensory input, how they adapt to environmental stimuli, and how they participate in or react to daily life activities. However, it is important to note that the absence of clinical findings on the test does not necessarily indicate the absence of sensory processing issues.

Parenting Sense of Competence Scale

The scale was developed to measure the individual's perceived competence in the parenting role, the satisfaction derived from the role, investment in the role, and the extent of balance between their parenting role and other adult roles. The scale consists

of a total of 22 items, divided into four subscales: competence (6 items), role satisfaction (6 items), investment (5 items), and role balance (5 items)[22].

The Parenting Stress Index

This scale was developed to assess the stress levels of parents related to parenting in children demonstrating normal development. The scale consists of 18 items and is structured as a single dimension encompassing parenting, parent-child relationship, and child characteristics. The Parenting Stress Index is an assessment tool rated on a scale ranging from 0 (Not at all descriptive) to 4 (Very descriptive). The score range of the scale is between 0 and 72, where higher scores indicate higher levels of parenting stress. It is a measurement tool that can be easily applied to parents with at least one child and an education level of primary school and above[23].

The Touch and Massage Techniques Home Intervention Program

A home-based program was created in which the occupational therapist trained the parent on how to perform all steps in the intervention during the first session. The intervention was then carried out over a period of time in the home environment. Each parent was provided with a therapy brush and demonstrations of how to carry out the intervention were recorded on video. During the first session at the child's home, the pressure was demonstrated on the child and parent by the researcher to ensure that the pressure was applied correctly. The parent then repeated the procedure on their child and the researcher to demonstrate a clear understanding of the pressure. Participants were followed up weekly by telephone. Parents were provided with a daily record form to keep records during the intervention. Additionally, parents were given the option to provide any feedback to the occupational therapist by telephone or email. First, parents were instructed to apply the intervention at the same time each day, two hours after the meal, and to choose a time during the day when the child is active. It was observed that this period should not be conducted before sleep.

In the initial stage of the application, an equivalent therapy brush with a comparable function to the Wilbarger brush was utilized[24]. The Wilbarger Approach is an individualized intervention protocol employed to treat sensory defensiveness, particularly tactile defensiveness, in children between the ages of 2 and 12[11,25]. The protocol necessitates the utilization of a specific therapeutic brush that provides deep-pressure tactile penetration and stimulation to the child's legs, arms, hands, feet, and

back[11]. I was instructed to apply a deep-pressure massage with a therapy brush (Figure 1).

Figure 1. Wilbarger Approach

In the second phase, joint compressions in the shoulders, trunk, arms, and legs were taught to enhance joint perception and feedback. In order to maintain homeostasis and regulate the repeated sensory input, each joint area was instructed to perform stretching movements three times.

In the third stage, the child was instructed to grasp the handle with both hands, smile, and maintain eye contact. They were then asked to apply deep pressure to the upper arm, lower arm, hand, and finally, from the shoulder to the fingertips. This entailed systematically massaging the area, starting with specific body parts and gradually encompassing the entire area. The rationale behind this approach is that stimulation applied to specific body areas creates more general effects.

Finally, the child was asked to grasp the face area with both hands. The child was instructed to perform a circular massage on the forehead, around the eyes, cheeks, and lips. During this process, the significance of maintaining eye contact and smiling was emphasized. Additionally, it was reiterated that the parent should focus their mental attention on their child and engage in positive emotional interactions.

Data Analysis

The data obtained from this study were analyzed using the software package SPSS® version 20.0, IBM Inc., Chicago, IL, USA. The Paired Sample t-test was employed to compare the pre-test and post-test scores of parents and their children, with 30 samples included in the analysis.

Results

A total of 30 participants and their mothers were included in the study. Approximately 60% of the children who participated in the study were female. The majority (43.3%) of the parents who participated in the application were in the 35-40 age range. The majority of the children's mothers had completed high school (28.1%) or were currently pursuing undergraduate education (28.2%). It has been determined that 37.5% of the monthly income was at the middle level.

The results of the study, as presented in Table 1, indicate that touch and massage techniques applied by parents to their children significantly enhance their perception of their parenting role (p<0.001).

Table 1. Self-Perception of Parental Role (SPPR) Scale

SPPR subtests	**Pretest (n=30)**	**Posttest (n=30)**	***t***	***P****
Satisfactoriness	18± 2.39	22± 1.95	-12.915	**P < 0,001**
Role Satisfaction	16 ±2.77	22 ± 1.60	-16.280	**P < 0,001**
Investment	13±2.30	18±1.26	-14.348	**P < 0,001**
Role Balancing	12±2.48	18±1.64	-15.377	**P < 0,001**

p<0.05*

The results of the study, as presented in Table 2, indicate that the application of touch and massage techniques by parents to their children is associated with a significant reduction in parental stress levels (P < 0.001).

Table 2. Parental Stress Index

Parental Stress Index subtests	**Pretest (n=30)**	**Posttest (n=30)**	***t***	***P****
PD	38± 7.63	31 ± 6.07	10.930	**P < 0,001**
PCDI	22 ±5.31	17± 4.06	7.922	**P < 0,001**
DC	25±7.75	16±5.93	6.181	**P < 0,001**

p<0.05*. PD: Parental Distress, PCDI: Parent–Child Dysfunctional Interactions, DC: Difficult Child.

The results of the study, as presented in Table 3, indicate that touch and massage techniques applied by parents to their children can positively impact the sensory processing abilities of typically developing children (p<0.001).

Table 3. Sensory Profile

Sensory Profile subtests	**Pretest (n=30)**	**Posttest (n=30)**	***t***	***P****
VP	48± 3.98	51±2.18	-6.190	**P < 0,001**
TP	79±5.89	84±2.72	-6.180	**P < 0,001**
MP	30±3.38	32±1.58	-6.086	**P < 0,001**
MRBPM	38±4.95	43±4.22	-11.138	**P < 0,001**
MSIAER	17±2.57	19±1.19	-8.071	**P < 0,001**

p<0.05*. VP: Vestibuler Processing, TP: Touch Processing, MP: Multisensory Processing, MRBPM: Modulation Related to Body Position and Movement, MSIAER: Modulation of Sensory Input Affecting Emotional Responses.

Discussion

The objective of this study was to investigate the sensory effects of massage intervention applied to children in early childhood and the effect of the application on parents' role perception and stress levels. It has been demonstrated that touch is a powerful interpersonal communication tool and that emotions can be reflected to the other person through touch[1]. It was hypothesized that the individual time spent by parents and their children would contribute to the relationship through massage, resulting in a change in stress levels. The findings indicated a significant decrease in the stress levels of the parents according to the Parental Stress Index scale following the massage applications. Maternal touch has been shown to affect physiological regulation and cognitive development from infancy, with sociability playing an important role in development during preschool childhood. To date, few studies have considered the potential long-term impact of positive maternal touch during the preschool period on the child's stress responses[26].

Significant differences were found in all four subsections of the Self-Perception of Parental Role Scale. The findings indicated that there were significant changes in parents' competence, investment, role satisfaction, and role-balancing skills.

Additionally, the significant decrease in stress levels observed in this study supports the results obtained from the role perception scale. One of the factors affecting the fulfillment of parenting roles and attachment to the parental role is stress in parent-child communication[27]. Furthermore, high parental stress levels negatively affect the parent's self-efficacy[28].

The capacity of parents to cope with stress is regarded as a crucial aspect of their competence as parents[29]. Regular application of these techniques can enhance parents' self-efficacy and facilitate a more positive perception of the parenting role. At the same time, touch and massage utilized during interactions with children can reinforce parents' capacity to form bonds and communicate with their children, which can contribute to more fulfilling parenting experiences. The establishment of communication between parents and children serves to strengthen the bond within the family[30]. In a number of studies, the use of touch and the power of touch, which are communication tools, has been employed to facilitate the development of relationships between parents and children[12-13].

As reported by parents, children appeared to enjoy the process and felt relaxed during the one-on-one time spent. Many children participating in the study indicated that they would continue to massage their children even after the completion of their massage treatments. Another study, which supports the aforementioned study, recorded the statements of parents who observed improvements in their relationships with their children through the massage application process. These parents expressed a desire to engage in more massage sessions and felt that they could do so[12]. Contact between family members is a fundamental determinant of children's ability to express positive emotions and also their ability to express themselves in the future[31]. Although there are numerous studies on the applications of massage in the literature, there is a paucity of quantitative studies in the Turkish literature for children aged 3-6 years, conducted under the supervision of an occupational therapist. Consequently, this research will provide a foundation for future studies. Research is needed to evaluate the specific processes by which parental care shapes the biological mechanisms underlying neurodevelopment.

Limitations

The number of individuals volunteering to participate in the research is limited. In order to increase the number of volunteers, a team is needed to regularly monitor the parents during the implementation process.

A five-week intervention program was designed to ensure stability. It is thought that conducting the research with a longer intervention program on a voluntary basis in order to examine the long-term effects will contribute to science.

Conclusion

Consequently, this method is a viable option for any mother who is mindful of her child's development. A parent can integrate massage therapy into their daily lives at home, thereby fostering their child's growth and development. By spending quality time with their child through the massage application, parents can experience a reduction in stress levels and an enhancement in their self-perception.

The field of sensory integration therapy has recently gained importance and started to develop in our country, yet the existing literature remains insufficient in this area. The application of sensory input through massage has yielded meaningful results in children who are developmentally typical. The provision of sensory input through massage has healing and integrative effects on the central nervous system. This therapy is of significant importance for children in the developmental process. In certain educational programs, this discipline can be harmonized by raising the awareness of individuals in the school, home, and social environment.

Patient Informed Consent

A voluntary consent form for parental participation in the work has been obtained.

Ethics Committee Approval

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Conflicts of Interest

There are no conflicts of interest to declare.

Author Contribution Area and Rate

BAB (%50): Data acquisition, interpretation of data for the study, collection of review of literature, writing the manuscript.

BM (%50): conception/design of the work, help in data analysis, critical revision for important intellectual content. Guided in developing the extent of the study and contributed to the manuscript with his critiques.

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