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Araştırma

Baby Walker Use and Its Consequences in a Group of Turkish Children

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Objective: *Although not recommended, nowadays baby walkers (BWs) are commonly used by many parents in the pre-walk period of children. Therefore studies are needed about the use and effects of BWs on child health and development to provide evidence based recommendations to parents. The aim of this study was to determine the frequency of BW-use, and related injuries among baby walker users, to investigate the effect of BW use on gross motor development of children and the relationship between BW use and gait disorders.*

Material and Method: *193 children aged 8-84 months, born full-term without any chronic disease who were followed up in Outpatient Clinics of Social Pediatrics of Istanbul Faculty of Medicine, and Marmara University Training and Research Hospitals, and their families were included in the study. Information was gathered during face to face interviews about sociodemographic characteristics of the families, their attidues about plays, and toys, gross motor development of the baby, its use of baby walkers, accidents, and diseases the baby experienced, and its manner of walking. Children using BWs for at least 30 minutes per day for more than a month were considered as BW users.*

Results: *Of all children 57,5% were BW users. The most frequent reason asserted by families for not using BW was "physician's recommendation", and they used BWs "to keep the baby occupied". The frequency of injuries was higher among BW users than non-users. This difference was statistically significant. Both groups attained their motor development stages at similar ages. Gait disorders were seen at a higher rate among BW users than non-users. Ages for the were similar in both groups.*

Conclusion: *As was seen baby walkers are prevalently preferred by parents. In our investigation we determined that BW use does not affect the gross motor development process but the frequency of gait disturbances were found to be higher among BW users than non-users. Further prospective studies are needed to investigate the effect of BW use on toe walking.*

Keywords: *Baby walker, baby, child, injuries, gait disorders*

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Bir Grup Türk Çocuğunda Yürüteç Kullanımı ve Sonuçları

Amaç: *Yürüteçler önerilmemesine rağmen, günümüzde pek çok ebeveyn tarafından çeşitli nedenlerle yürüme öncesi dönemde kullanılmaktadır. Bu nedenle, anne babalara kanıta dayalı öneriler sunmak için yürüteçlerin çocuk sağlığı ve gelişimi üzerindeki etkileri hakkında çalışmalara gereksinim vardır. Bu araştırmada, çocuklarda yürüteç kullanım sıklığının ve yürüteç kullananlarda kaza geçirme sıklığının belirlenmesi, yürüteç kullanımının kaba motor gelişim ve yürüyüş bozuklukları üzerine etkisinin incelenmesi amaçlanmıştır.*

Gereç ve Yöntem: *Araştırmaya İstanbul Tıp Fakültesi ve Marmara Üniversitesi Eğitim ve Araştırma Hastanesi Sosyal Pediatri polikliniklerinden izlenen, miadında doğan, herhangi bir kronik hastalığı olmayan, 8-84 ay arasındaki 193 bebek ve çocuğun ailesi dahil edildi. Yüz yüze uygulanan anketler ile ailelerin sosyodemografik özellikleri, oyun ve oyuncak konusundaki tutumları, bebeğin kaba motor gelişimi, yürüteç kullanma durumu, geçirdiği kazalar ve hastalıklar, yürüyüş biçimi konularında bilgi toplandı. Bir aydan uzun süre ile, günde en az 30 dk. yürüteç kullananlar yürüteç kullanan grubunda değerlendirildi.*

Bulgular: *Çocukların %57.5'inin yürüteç kullandığı saptandı. Ailelerin yürüteç kullanmama nedenleri incelendiğinde en sık "doktor önerisi" nedeniyle kullanmadıkları, kullanma nedenleri incelendiğinde ise en sık "bebeğin oyalanması için" kullandıkları saptandı. Yürüteç kullananların kullanmayanlara göre daha fazla kaza geçirdiği belirlendi. Aradaki fark istatistiksel açıdan anlamlı idi. İki grup arasında motor gelişimsel basamakları kazanma zamanı benzerdi. Yürüteç kullananlarda yürüyüş bozukluklarının görülme oranı daha yüksek bulundu.*

Sonuç: *Yürüteçlerin ebeveynler tarafından yaygın olarak tercih edildiği görülmüştür. Araştırmamızda yürüteç kullanımının bebeklerde kaba motor gelişim sürecini etkilemediği fakat yürüyüş bozuklukları ile ilişkili olduğu belirlenmiştir. Çocuk gelişimi ve sağlığı açısından, yürüteç kullanımının parmak ucunda yürüme üzerine etkisini inceleyen detaylı araştırmalar yapılması gerekmektedir.*

Anahtar kelimeler: *Yürüteç, bebek, çocuk, kazalar, yürüyüş bozuklukları*

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INTRODUCTION

Baby walkers (BWs) are currently used in the pre-walking stage of children for various reasons. Several studies have showed that the incidence of BW use is over 50% [1-3]. In a study carried out in an urban city of Turkey, the frequency of BW use was found to be 75% [1]. The reasons why the families prefer to use

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BWs include the expectation that their babies would develop better, or that BW would provide distraction for the baby thus decreasing the parent's attendance time [4]. In this context, specifying the benefits and harms of BW use are important in terms of preventive medicine. Although there are different opinions on this issue, the literature includes a small number of studies examining the effects of BWs on the development and health of children.

Some studies have reported that use of BWs had negative impact on motor functions of children, while some others proposed that these devices had no effect on neuro-motor development [2,3,5-9]. There are studies that investigated the relation between BW use and accidents/injuries in children. The general view according to the findings of these studies is that use of BWs increases the risk of accidents and injuries [2,4,10-16].

A research study demonstrated that there is a genetic tendency about toe walking but also indicated that there may be nongenetic factors which may cause gait disorders [17]. To our knowledge there is no study about the relation between BW use and gait disorders in the literature.

The aim of this study was to determine the frequency of accidents/injuries among BW users and to investigate the effect of BW use on some developmental milestones and gait disorders.

MATERIAL and METHOD

The study encompassed 193 children aged 8-84 months and their parents/caregivers who consecutively admitted to the well child clinics of Hospitals of two Medical Schools in Istanbul between January and February 2014. Children born full term (≥37 gestational week), without any chronic disease were included in the study. The study was approved by the Ethics Committee of Istanbul University School of Medicine (no. 2013/732).

In both clinics where the study was conducted, children were followed up from birth to the age of ten years. All families were informed that they should avoid using BW for their children, in case they asked a question about the use of BW.

The information about sociodemographic characteristics of the families, the status of BW use, the reasons for BW use were collected by a questionnaire that applied to one of the parents. The parents were also asked to provide information about the gross motor development of the child, the history of accidents and the gait pattern of the child. The children who used BWs for at least 30 minutes per day for more than a month constituted the group of BW user.

SPSS version 18 (Chicago, IL, USA) was used for statistical analysis. The demographic properties were examined by descriptive statistical analysis. Mann-Whitney U test and chi-square test were used for comparisons. A p value <0.05 was considered to be statistically significant.

RESULTS

Of all children 50.2% were female. The frequency of BW use was 57.5%. The mean age of onset of BW use was 7.6±1.9 months. Most babies started to use BW between 7 and 9 months (56.8%). The comparisons between the characteristics of BW user, and non-user children and their families are presented in Table 1. Highly educated fathers and those working in the health sector were less likely to use BWs for their children.

The reasons for families for and against BW use are shown in Table 2. The most common reason for using BWs was found to be "distracting attention", and the most common reason for not using a BW was because of the "recommendation of their physicians".

Although the time to start unsupported sitting, crawling and walking independently were slightly delayed in the BW user group, the difference was not statistically significant (Table 3). The frequency of accidents was higher among BW users (13.5%) than non-users (3.7%) ($p=0.020$). These accidents were not reported to be related to the use of BW. The gait disorders and toe walking were more common in the BW- user group than in non-users (Table 4).

Table 1. The comparison of the sociodemographic properties of the families between BW users and non-users.

	BW user (n= 111)		BW non-user (n= 82)		
	n	%	n	%	p
Gender of the children					
Female	55	49.5	43	52.4	0.691
Male	56	50.5	39	47.6	
Caretaker at home					
Mother	85	76.6	53	64.6	0.069
Other (father, family elders, child carer, older sister, aunt)	26	23.4	29	35.4	
Mother's occupation					
Health sector	10	9	12	14.6	0.473
Self-employment	18	16.2	12	14.6	
Government employee (teacher, police officer, government officer)	7	6.3	8	9.8	
Not working	76	68.5	50	61.0	
Father's occupation					
Health sector	5	4.5	11	13.4	0.004
Self-employment	90	81.1	49	59.8	
Government employee (teacher, police officer, government officer)	16	14.4	22	26.8	
Mother's working status					
Working	35	31.5	32	39	0.343
Not working	76	68.5	50	61	
Maternal education					
Illiterate	5	4.5	7	8.5	0.064
6-11 years	53	47.7	26	31.7	
12 years and above	53	47.7	49	59.8	
Paternaleducation					
Illiterate	3	2.7	4	4.9	0.037
6-11 years	78	70.3	43	52.4	
12 years and above	30	27.0	35	42.7	
Number of children in family					
Single	27	24.3	32	39	0.457
2 children	49	44.1	28	34.1	
3 children	29	26.1	10	12.2	
4 and more	6	5.4	12	14.6	

BW: Baby walker
p <0.05 was considered statistically significant

DISCUSSION

BBW is commonly used all around the world. More than half of the parents reported that they used BWs for their children in our study. The incidence of BW use was 50% in England, 54.5% in Iran, 54% in Ireland, 95% in Kuwait, and 90% in Singapore [2,3,9,10,18]. In a community-based study conducted in the capital city of Turkey, three quarter of participants were found to use BWs [1]. This rate was higher than our results. This difference may be due to the hospital-based nature of our work and recommendations given during the well-child visits.

In a study conducted in Iran, it was found that educated parents, and/or families with a single child especially used BWs at higher rate when compared with uneducated parents, and/or families with more children [2]. In our study, no significant relation was found between the mother's education level and the number of children in the family and BW use. However, highly educated fathers and those working in the health sector were less likely to use BWs for their children.

In our study, the most common reason for not using BW was a physician's recommendation, and the most common reason for using BWs was "for

Table 2. The reasons of families for using and not using a baby walker for their children.

The reasons for using baby walker	n	%
To keep the baby occupied	38	34.2
To enable a better development	33	29.7
With recommendations of neighbors and relatives	6	5.4
To prevent the baby's feeling cold on the floor	4	3.6
With the recommendation of a physician	2	1.8
No reason	28	25.2
Total	111	100
The reasons for not using baby walker	**n**	**%**
With the recommendation of a physican	17	20.7
Because they did not find it necessary	15	18.3
Concern that it may affect the baby's development negatively	14	17.1
Because the baby did not want to use it	5	6.1
Lack of financial possibility	3	3.7
To be protected against injuries	2	2.4
It may be harmful for the genital organ of the male baby	1	1.2
No reason	25	30.5
Total	82	100

Table 3. The comparison of the time to gain the gross motor skills of the children between BW users and non-users.

Age of onset of gross motor skills (months)	BW user $\bar{X}$±S	n	BW user $\bar{X}$±S	n	p
Unsupportted sitting	7.22±1.7	110	7.1±1.3	77	0.771
Crawling	8.14±1.8	74	7.8±1.5	57	0.413
Walking independently	12.7±2.4	101	12.2±1.5	72	0.177

BW: Baby walker
p <0.05 was considered statistically significant

Table 4. The comparison of the gait disorders between BW users and non-users.

	BW user (n= 101)		BW non-user (n= 72)		
	n	%	n	%	p
Gait disorders					
Yes	36	35.6	10	13.9	0.001
No	65	64.4	62	86.1	
Toe walking					
Yes	18	17.8	4	5.6	0.020
No	83	82.2	68	94.4	
Stepping inwardly					
Yes	10	9.9	4	5.6	0.401
No	91	90.1	68	94.4	

BW: Baby walker
p <0.05 was considered statistically significant

distracting the attention of the baby". Similarly Alessa et al. [10] reported that one of the main reasons of parents to use BWs was to keep the baby occupied.

Controversial results have been reported in studies which evaluated the effects of BW use on gross motor development of children. Shiva et al. did not find any difference between BW users and non-users in terms of the age to start walking [2]. Some studies showed that the babies who used BWs were delayed in gaining the skills of standing on their feet and walking without support, compared to the babies who did not use [3,6]. In a study from United States, the motor and mental scores resulting from the Bayley Developmental tests were lower in BW user group than non-users [5]. On the other hand, in a retrospective study the gross motor skills of babies were evaluated by the Alberta Baby Motor Developmental Scale and it was found that BW use had no effect on the time of independent walking [7]. In another study age of independent walking was lower among BW users than non-users [8]. In our study although gross motor development was slightly delayed in the BW user group compared to the non-users, the difference was not statistically significant.

In our study the frequency of accidents was higher among BW users than non-users. Although these accidents were not related to the use of BW, this finding lead us to think that BW users had a tendency to the risky behaviours. In many studies, it has been reported that BW use may cause accidents and injuries [2,4,9-16]. Alessa et al. [10] reported that about 30% of BW users had some accidents related to BWs. It has been reported that use of BWs at home increased the risk of accidents by 9-fold [13]. Morrison et al. [14] showed that BW use was one of the first three causes of accidents during infancy.

To our knowledge no study in the literature has investigated the relation between BW use and gait disorders. In a current review about toe walking, BW use was not included among the causes [19]. However the current literature does not show consistent data about the frequency and causes of idiopathic toe walking [17]. Pomarino et al. [17] presented the genetic tendency of toe walking especially among boys and concluded that there may be

other nongenetic factors. In our study gait disorders were higher among children who used BWs than non-users. BW use may be one of the causes of gait disorders and may be involved in the etiology. Further studies should be performed which will investigate the relation between gait disorders and BW use.

One of the limitations of our study was that the children's gait were not followed up and the developmental tests were not applied regularly. Also it was a hospital- based study so the data were not representive for the whole population. However it is the first study that showed a relation between BW use and gait disorders. Our study sets the question of whether BW use may cause gait disorders among the children. Community- based prospective studies using developmental tests should be conducted on this issue

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