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ORIGINAL ARTICLE

A perspective from the practice of swaddling by Turkish mothers

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Abstract

Aim: The purpose of this study was to investigate the practice of swaddling by Turkish mothers residing in different areas of the country (rural or urban), and determine to their level of knowledge on its positive and negative effects on children's health.

Material and Methods: A total of 632 mothers with an infant aged 0-3 months who presented to our University Hospital volunteered their participation and 598 mothers were included in the study. The study was based on a questionnaire form given to the mothers.

Results: Two hundred eighty three (283) mothers swaddled their infants (47.3 %), while 315 mothers did not swaddle (52.7%). The mothers that swaddled their baby cited tradition ("That's what I learned from my elders") as the most common reason (38%) for swaddling. The most important reason (32%) for not swaddling was the mothers' belief "that it would prevent normal development".

Conclusion: In Turkey, the swaddling tends to decrease with the increase of maternal education level and socio-economic situation.The level of Turkish mother's knowledge about beneficial and adverse effect of swaddling were insufficient. We think that the information about properly swaddling should be given to mothers In order to benefit from it's positive effects and at the same time and avoid its adverse effects. Hippokratia 2012; 16 (2): 130-136

Key words: swaddling, child care, traditional methods

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Parents' ideas and practices in the care of their children continue to be an area of social interest because of their effects on child development. It has been shown that especially the ideas and practices of the mother with respect to the care of their children are strongly correlated with childhood mortality, morbidity and physiological as well as psychological development of the child. It is also a fact, however, that parental approach is highly affected by social changes[1, 2].

Despite practical differences, in many parts of the world, one of the child care techniques that has been utilized since ancient times is swaddling. It is estimated that more than 20% of all children in the world are swaddled. Swaddling the newborn is a common tradition worldwide, especially in Central Asia and South America. Though more frequently seen in the less developed or developing countries, it is known to be practiced in western cultures such as England, the United States and Holland [3,4]. There are publications about a renewed interest in swaddling among mothers in the United States [4]. The swaddling ratio has been found to range between 53.2-93% in small number of studies conducted in Turkey [5].

Many studies have revealed the potential adverse effects of swaddling. Clear evidence exists about the risk of swaddling for the development of hip dysplasia, especially when the child is swaddled in extension and adduction and SIDS, but only when the swaddled infant is placed prone. There have been indications of an increased risk of overheating. Some evidence exists for an added risk of vitamin D deficiency and acute respiratory infections. Swaddled infants who are briefly separated from their mothers after birth and receive supplements have a delayed weight-loss recovery [6].

The purpose of this study was to collect information regarding the opinions and practices of mothers related to swaddling in rural and urban areas of the country.

Material and Methods

Every mother of an infant aged between 0-3 months who presented to our University Hospital and volunteered their participation were included in the study. A questionnaire developed by the researchers in accordance with the related literature was used (Appendix 1). The questionnaire forms were given to the mothers. After all

APPENDIX 1. QUESTIONNAIRE FORM

Age of mother:
Place of recidence:
Level of education:
Employment:
Socioeconomic level:
Low: Monthly income < Us $ 800
Intermediate: Monthly Income us $ 800-1600
High: Monthly income > Us$ 1600
Number of pregnancies:
Did she swaddle the previous children
If yes, for how long?
Any deceased babies? If so, why?
Familial history of DHD?
Would the babies gender affect
Tendency to swaddle?
Is the mother concidering swaddling
the current baby?

YES => WHY?
A- Baby will sleep better
B- It is what i learned from my elders
C- Baby will not get cold
D- Baby will cry less and calm down
E- I observed good results from my previous children
F- All of the above
G- Others:

For how many months:

NO => WHY?
A- Will increase the risk of hip dysplasia
B- Baby will not pass gas
C- Will incease the risk of sudden death
D- Will increase the risk of lung infection
E- Will prevent development
F- Babie's legs will develop irregularly
G- Boys do not like hot weather
H- All of the above
I- Others:

Source of information regarding swaddling:

A-From my elders
B-From my environment
C-From healthcare workers
D-Via the tv/internet/media
E-Book

erroneous and incoherent forms were excluded, the study included the data obtained from 598 women in total. Thirty four (34) forms were excluded from the study.

In 2008, the monthly poverty line of a family of four was reported to be US$ 767 by the Turkish Statistical Institute. Based on that data, monthly income below US$ 800 was accepted as low socioeconomic status, between US$ 800-1600 as intermediate socioeconomic status and above US$ 1600 as high socioeconomic status.

The sociodemographic characteristics of the mother, number of pregnancies, number of children (both living and deceased), cause of death, (if any children had died), family history of developmental hip dysplasia (DHD), history of swaddling or not previous babies, and if present, the swaddling duration were investigated in the questionnaire. The mothers were also queried about their thoughts and practices regarding swaddling the current baby, the reasons for swaddling or not swaddling and the source of the mother's information regarding swaddling.

Statistical analyses

After data obtained from the participants via the questionnaires was transferred to the computer, the necessary error-proofing and corrections were made. Compliance of the continuous data (age of patient, duration of swaddling, number of pregnancies, etc.) with normal distribution was examined graphically and using the Shapiro-Wilk test. In the display of descriptive statistics, for age, mean ± standard deviation, for the data that do not conform to normal distribution, median (interquartile range–IQR), and for the categorized data, numbers and percentages were used. The difference in age with regards to views on swaddling was examined with the Student's t test. To test the difference between categorical variables, the chi-square test was used. For statistical analyses and calculations, MS-Excel 2003 and SPSS for Windows Ver. 15.0 (SPSS Inc., Chicago, IL, USA) were used. A value of $p \leq 0.05$ was accepted to be indicative of significant difference in all statistical decisions.

Results

The study was conducted on 598 women whose ages ranged between 17 and 56 (x= 28.45 ± 5.60) years. The participants' distribution according to region and educational level is shown in Table 1.

One hundred and seventeen of the participants (19.5%) were working and 483 (80.5%) were housewives. Regarding monthly income of the families, 301 (50.2%) had low, 232 had intermediate (38.7%) and 67 (11.2%) had high monthly income. The mean number of pregnancies of all participants was calculated to be 2.0 (IQR = 2.0). With respect to the number of living children, 197 (32.8%) had one child, whereas 36 (6.0%) had 4+ children. The mean number of living children was calculated to be 2.0 (IQR = 1.0). 47.3% of the participants stated that they swaddled their current babies. The mean duration of swaddling in women with swaddling history was calculated to be 3.0 (IQR = 3.0) months.

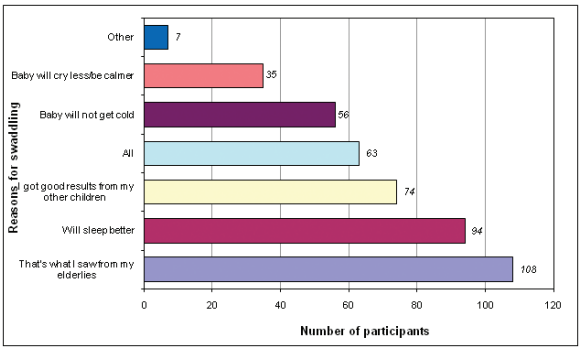


Figure 1: Distribution of reasons for swaddling (More than one answer could be given, which is why n has folded).

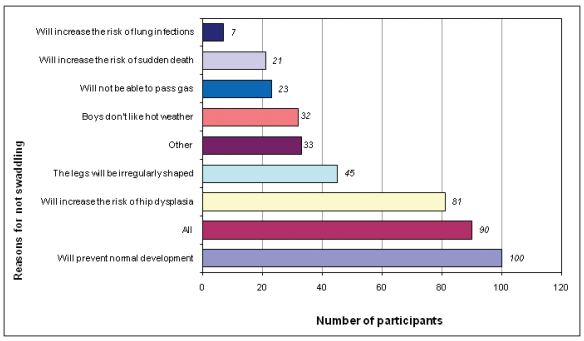


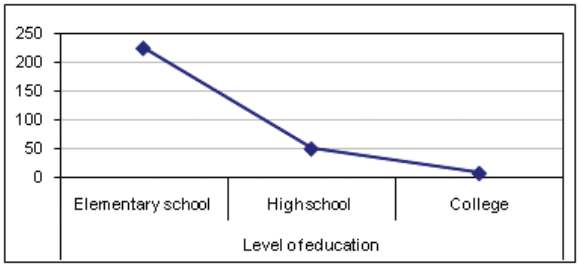
Figure 2: Distribution of reasons for not swaddling (More than one answer could be given, which is why n has folded).

Two hundred and seventy-five (84.4%) of the participants with no swaddling history stated that they would not swaddle their current baby, whereas 51 (15.6%) stated that they would. Forty (14.8%) of the participants with history of swaddling stated that they would not swaddle their current baby, whereas 231 (85.2%) stated that they would. The effect of history of swaddling was statistically significant with regard to swaddling the current baby as well ($\chi^2 = 287.585$; $p < 0.001$). Most of the participants who swaddled their previous babies planned to swaddle the current infants well (85.2%).

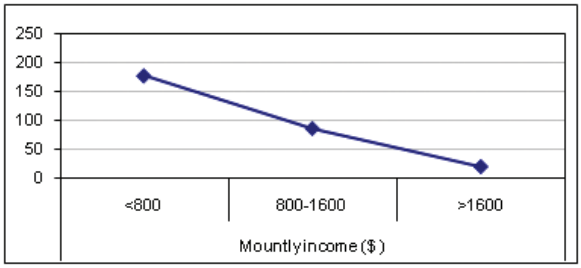
Participants who stated that they would swaddle their current babies planned on continuing swaddling for 3.0 (IQR = 4.0) months. When the reasons for swaddling were investigated, it was concluded that the most common reason (107 participants) was tradition ("That's what I learned from my elders"). Sixty-one participants stated that swaddling would protect the baby from getting cold (Figure 1).

The most important reason (100 participants) for not swaddling was the mothers' belief that "It would prevent normal development". This was followed by "All of the above" by 90 participants, and "It would increase the risk of hip dysplasia" by 81 participants. The distribution of reasons for not swaddling is demonstrated in Figure 2.

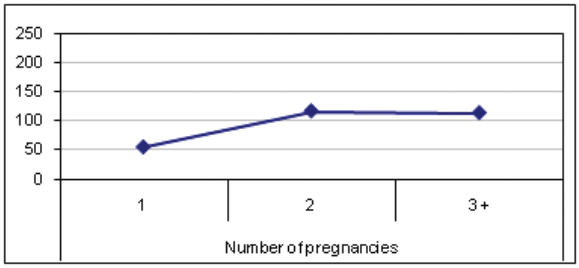
The demographic features and related comparison of participants who were or were not considering swaddling are shown in Table 2. It can be seen that the mother's age was not statistically significant with respect to swaddling



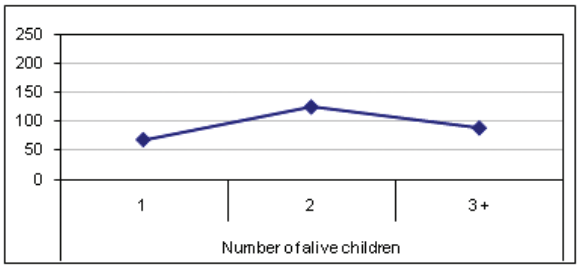
a. According to level of education



b. According to monthly income



c.According to number of pregnancies



d. According to number of living children

Figure 3: Tendency to swaddle, according to some demographic properties (y axis shows the number of participants with a tendency to swaddle).

or not. The mean ages of mothers considering or not considering swaddling were similar.

Differences according to the regions where the participants lived were statistically significant. The tendency to swaddle was observed to decrease as the place of residence approached the west of the country (Table 1).

The level of maternal education was statistically significant as well. Participants with higher levels of education were less inclined to swaddle. Similarly, the ratio of swaddling among working mothers was significantly lower than among the non-working mothers (Figure 3a).

The rate of swaddling decreased in conjunction with an increase in the monthly income. The decrease in swaddling with increasing monthly income was also deter-

Table 1: Women's educational levels according to regions.

Region		Level of education			Total
		Elementary	High school	College	
West	n	87	42	31	**160**
	%	54.3	26.5	19.3	**100.0**
North	n	58	20	8	**86**
	%	67.4	23.3	9.3	**100.0**
Center	n	58	46	29	**133**
	%	43.6	34.6	21.8	**100.0**
South	n	45	16	7	**68**
	%	66.0	23.5	10.2	**100.0**
East	n	133	13	7	**153**
	%	86.9	8.5	4.6	**100.0**
Total	**n**	**381**	**137**	**82**	**600**
	%	**63.5**	**22.8**	**13.7**	**100.0**

mined to be statistically significant (Figure 3b).

The tendency of swaddling significantly increased in conjunction with the number of pregnancies (Figure 3c). It is thought that this increase was due to the increasing age of the participants (mean ages: 1 pregnancy = 25.73 ± 4.64, 2 pregnancies = 27.70 ± 4.86, 3+ pregnancies = 31.74 ± 5.65 years). Similarly, the tendency to swaddle increased in conjunction with the number of living children (Figure 3d).

Family history of deceased babies and of hip dysplasia was not significant in terms of tendency to swaddle.

Finally, the source of information of the participants regarding swaddling was investigated. Two hundred and fifty-one (88.7%) patients who considered swaddling stated that they obtained the information from their elders, while this ratio was lower in participants who did not plan to swaddle their babies (130 participants, 41.3%). Sources of information about swaddling as cited by the participants are shown in Table 3.

Discussion

Based on a very old child-care tradition, swaddling is still commonly practiced and has regained popularity in some countries such as the United States, England and Holland[1]. Swaddling remains common in Turkey. In this country, in which social and cultural diversity is apparent, "modern" and "traditional" ways of living coexist in the society. The outlook on life of those living in metropolitan areas resembles that of the western countries. However, those residing in metropolitan areas of low socioeconomic level live a more conservative and traditional life than those living in the rural areas. Family ties are still strong and have great effect on the shaping of social values, attitudes, desires, and goals[5]. This traditional approach was observed clearly in our study.

In studies conducted elsewhere, the swaddling frequency was reported to be 53.2-93%[7-11]. The swaddling frequency, which was 93.1% in the National Demographic and Health Survey of 1983, was determined to be 47.3% in this study. This difference may be due to differing numbers of participants of certain sociodemographic features, but it may also be a consequence of the intensification of education regarding mother-child healthcare and services for protection and treatment. In contrast to our study, there have been studies reporting an increase in swaddling in the Middle East and South America[3,4].

In our study, the tendency to swaddle decreased as we approached the west of the country. This result may be explained by the fact that economic and sociocultural levels are higher in the west; however, there are also studies reporting that swaddling rates are higher in the west[8,9].

In our study, the results showed that mothers who considered swaddling their babies obtained the information from their elders and their environment. Family history of swaddling had a significant effect on the tendency to swaddle the new baby. A similar result was obtained in a study conducted in 2008[12]. 91.9% of the mothers who swaddled their babies stated that they had been swaddled by their own mothers. The tendency to swaddle increased in conjunction with the number of pregnancies, and the difference was statistically significant. The sociodemographic features of the participants were determined to resemble the traditional lifestyle. These results show that the participants who were more inclinde to swaddle lived mainly in the rural regions and were affected more by the traditional approach. Those participants who did not consider swaddling lived in the western regions, maintained an urban lifestyle, were working, had higher educational levels, and had obtained the information via modern channels. In the study conducted by Stricker et al[13], it was reported that young and educated mothers did not tend to swaddle. In a study conducted in China, it was shown that swaddling rates were higher in families with more than two children, in crowded families and in families with lower sociocultural and educational levels[14].

In a study conducted in Turkey, it was determined that swaddling tendency increased in conjunction with an increase in the age of the mother[7]. Özyazıcıoğlu et al[8] reported that the duration of swaddling increased with the mother's age and tendency decreased with increasing educational levels. In our study, no significant relationship was determined between the mother's age and duration of swaddling; however, it was clearly seen that as the educational and socioeconomic levels increased, the duration of swaddling decreased.

In many studies, it was reported that swaddling affected the babies' sleeping periods[3,6]. In this study, the second most common reason for swaddling was the belief that swaddling resulted in improved sleeping. In a study conducted in Turkey, 69.9% of the mothers who swaddled their babies stated that the babies slept better swaddled[10]. The positive effects of swaddling on sleep patterns have been clearly shown[6,15,16]. Although the prone position, which is in fact contraindicatied, has been shown to help a continuous sleep, the supine position is recommended to prevent sudden infant death syndrome (SIDS).

Another reason for swaddling was shown to be its pacifying effect on babies. When compared to massaging the baby, swaddling was shown to significantly reduce infant crying and the mother's stress level[17] however, further research is needed on this subject.

In our study, one of the reasons for swaddling was stated

Table 2: Tendency to swaddle according to demographic features.

Demographic Properties	Considering of swaddling? YES		NO		Test Statistics	P
Mother's age	$\bar{x} \pm SD$		$\bar{x} \pm SD$			
	28.26±5.83		28.64±5.30		t=0.842	0.400
Region of residence	**N**	**%**	**n**	**%**		
West	57	39.2	102	60.8		
North	37	43.0	49	57.0	X^2=37.057	**<0.001**
Center	52	39.4	80	60.6		
East	96	62.7	57	37.3		
South	41	67.4	27	32.6		
Educational level						
Elementary	223	58.8	156	41.2		
High school	51	37.2	86	62.8	X^2=69.223	**<0.001**
College	9	11.0	73	89.0		
Working?						
Yes	26	22.2	91	77.8	X^2=36.768	**<0.001**
No	257	53.4	224	46.6		
Monthly Income						
Low	177	59.0	123	41.0		
Intermediate	86	37.2	145	62.8	X^2=34.055	**<0.001**
High	20	29.9	47	70.1		
Number of pregnancies						
1	54	32.7	111	67.3		
2	116	47.9	126	52.1	X^2=24.877	**<0.001**
3 +	113	59.2	78	40.8		
Number of living children						
1	69	34.8	129	65.2		
2	125	48.1	135	51.9	X^2=27.246	**<0.001**
3 +	89	63.6	51	36.4		
History of dead children						
Positive	2	40	3	60	X^2=2.78	0.425
Negative	281	47.5	310	52.5		
Familial DHD History						
Negative	277	47.8	302	52.2	X^2=1.474	0.225
Positive	6	33.3	12	66.7		

Percentages were calculeted using the formula as follows:
The number of person that respond to/ total number of person*100 (n / 283 *100)

Table 3: Participants' sources of information regarding swaddling.*

	Thinking of swaddling?			
	YES		NO	
	n	%	n	%
From my elders	251	88.7	130	41.3
From my environment	63	22.3	76	21.1
Healthcare professional	7	2.5	118	37.5
From the internet and media	3	1.1	45	14.3
From books	3	1.1	16	5.1

*Percentages were calculeted using the groups themselves. More than one answer could be given, which is why n is folded.

to be protection from cold. Although there is evidence that swaddling allows better heat control, it should not be forgotten that it can cause hyperthermia if applied erroneously[18] .

When the reasons for not swaddling were examined, the most important reason was found to be the belief that "it would prevent normal development". Although the degree of swaddle tightness was not included in our questionnaire form, it has been reported that certain swaddling techniques may restrict hip movement or chest wall excursion. However, the short- and long-term effects on motor development are not yet clearly demonstrated[6] . A study has showned that prolonged swaddling in the first year of life did not have any significant impact on children's early mental or psychomotor development[19] . On the contrary, there are some studies reporting its positive effects on neuromuscular development [20,21] .

Swaddling is a known risk factor for DHD[22] . In our study, this was the second most common cause for not swaddling. In a study conducted by Kutlu *et al* [23] in Turkey on 4173 **i**nfants between the ages of 3-24 months, DHD incidence was determined to be 1.34%. In our study, 3.1% of the participants had a positive family history of DHD; however, that had no effect on the families' thoughts on swaddling. In countries like Turkey, where consanguineous marriages are common, DHD and similar inherited diseases may pose important health issues. The fact that a positive familial DHD history had no effect on the participants' tendency to swaddle may be due to a lack of information. In a study conducted in our country, 85% of the mothers were unaware that DHD was a disease of inheritance and thought that full recovery could be achieved aftet the child started walking[24].

One of the reasons for not swaddling in our study was the mothers´s belief, drawn from various sources of information, that it increased the risk of SIDS. Many studies have been conducted regarding swaddling and SIDS. It was shown that tight swaddling including the head, especially in the prone position, increased the risk of SIDS[25,26] . There is insufficient evidence that infants swaddled while supine are at any increased risk for SIDS[27]. In fact, supine and loose swaddling was shown to decrease the risk of SIDS[28]. The limitation of the head and limb movements may trigger SIDS in the swaddled baby. This significantly increases the risk of SIDS in the baby placed in the prone position. In a multicenter study performed in 1995–1996 including Turkey, the prevalence of SIDS ranged from 0.1–1.4 per 1000 live births, but in this report Turkish prevalence was not mentioned. SIDS prevalence of Turkish infants is still unknown because autopsy cannot be widely performed[29].

Swaddling may cause vitamin D deficiency and lung infections because it limits the beneficial effects of the sunlight [6]. Swaddling the baby too tightly makes lung expansion impossible, and there are studies showing increased lower respiratory tract infections[30] . In our study, only 7 of the participants (2.4%) who did not consider swaddling their baby were against it due to the possibility of increased respiratory tract infections. Lung infections due to swaddling may not be seen frequently because of the routine vitamin D supplementations given in our country and the short duration of swaddling.

In this study we shown that tendency to swaddle is decreasing in parallel to increasing mother's education level and socioeconomic status in Turkey. The most frequent causes of quitting swaddling were mothers' thought about increasing risk of DHD and prevents the normal development of the babies who are swaddled. On the other hand, the most frequent causes for swaddling were traditional practising and its benefits about sleeping. The level of Turkish mother's knowledge about beneficial and adverse effects of swaddling were insufficient. There is reason to believe that loose swaddling, excluding the head and while the baby is on its back during certain times of the day –close to nap time, will not prevent the baby from developing normally, and in fact, maybe beneficial. We think that instructions should be given to all mothers regarding the recommended way of swaddling.So we can profit by its possible benefits if done properly, and avoid from its adverse effects when misapplied.

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