

A Review of the Role and Importance of Swaddling in Persian Medicine

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Abstract

Background

There are controversial views on the advantages and disadvantages of swaddling. Perhaps an explanation on how to swaddle according to the teachings of traditional Persian Medicine will make it easier to have a better judgment of this kind of treatment.

Materials and Methods

This study was based on the books of famous Persian Traditional Medical scholars as well as modern medical literature, published or in databases.

Results

The study showed that nowadays, the Sudden Infant Death Syndrome (SIDS), and hip joint dislocation were considered as the disadvantages of swaddling while baby's' better sleep was believed to be its advantage. However, in Persian traditional medicine, swaddling was known as a treatment for joint dislocation during labor or a means of preventing the dislocations which might occur while carrying the infant. Based on this aim, a careful method for swaddling was proposed which not only diminished the above mentioned disadvantages but also, provided positive side effects like better sleep and preserved body temperature for the newborn baby.

Conclusion

There is a big difference between the ideas of traditional medical scholars and those of people on swaddling. Therefore, by reviewing the works of Iranian scholars and combining modern medical findings and Iranian experience, we can provide a different definition of swaddling. By teaching it to physicians, nurses and mothers, it can be considered as a treatment in the neonatal complications of childbirth. It is used during childbirth, and taking advantage of other benefits of this practice, also prevents its harm.

Key Words: Children, Iran, Swaddling, Persian Medicine.

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1- INTRODUCTION

Swaddling as a part of child care guidelines was popular throughout the world until 18th century A.D. (1). The history of doing this can be traced back to time immemorial; even in religious books, for example, in the Luke's Gospel: “*and she gave birth to her firstborn son and wrapped him in swaddling clothes and laid him in a manger, because there was no place for them in the inn*” (Luke 2:7, ESV) (1, 2)2).

It was also clearly illustrated in many works of 14th-century Italian painters such as Barna da Siena and Giotto in which Jesus was portrayed in a swaddle (**Figure.A**). Also, the discovery of a pottery in the Tangyangyu province of China belonging to the Song Dynasty, now held at the British Museum, confirmed the historical prevalence of this tradition among different ethnic groups and religions (**Figure.B**) (3).



Fig1: Swaddling through ages, A) The Holy Mary and Jesus in the swaddle; B) Pottery in the Tangyangyu) province of China belonging to the Sang dynasty (presently kept British Museum).

Barry and Paxson in an article stated that in 1971, about 70 countries from 139 countries still used swaddling (2). Swaddling in recent years has also attracted the attention of researchers. Some mentioned the positive effects such

as better sleep and less crying. Some have also noticed its disadvantages like: respiratory infections, increasing the risk of Sudden Infant Death Syndrome (SIDS) and hip dislocation (4, 5). This issue was so controversial that some researchers

believed that SIDS was prevented by swaddling, while others strongly considered it as a cause of SIDS. In this case, people do not know whether to use it or not. It may be argued that these disagreements were due to differences in the way it was handled among tribes and even individuals; because, as mentioned above, swaddling had its root in the history of humanity. It might have undergone some changes through the ages even though it might originally be a comprehensive and scientific approach. As an example, swaddling was used for 35 days in China, for 5 months in Mongolia and for one year in Turkey (6). The duration of swaddling according to Persian traditional medicine was between 3 to 4 months (7).. The purpose of this study was to examine the views of the great Persian medicine scholars on swaddling, with the expectations that the outcome together with the views in modern medicine, will greatly contribute to resolve those controversies. Also, the aim of this study was to find out the advantages and problems of bathing in modern medicine, by reviewing the articles of researchers in databases, so that the possibilities of adaptation of the findings of modern medicine and traditional medicine of Iran from different dimensions for the audience.

2- MATERIAL AND METHODS

In this review study, we tried to investigate the subject in a long period of time, from the golden age of Iranian medicine (ages 3-5 years old) before the advent of modern medicine (12th century lunar). Therefore, with more emphasis on the famous books of each period, the subject of the research was from a naturalistic point of view such as Rhazes (854–925 A.D.), Avicenna (980-1037 A.D.), Baha'al-Dawlah Razi (d.1508 AD) and Mohammad Hossein Aghili-e Khorasani-shirazi (17th –18th century) . In this regard, the words related to the subject

matter of the research were taken from the original books of Iranian medicine, including al-Mansouri fi al-Tibb, Canon, Kholasatol Hekmah, and Kholasat Al-tajarob. Keywords such as swaddling, al-Habbali al-atefal, the decree of birth, were extracted and the next step was to define each key vocabulary from reference books and valid cultures and text compilation. Also, electronic search in databases like Web of Science, Medline (via PubMed), Scopus, EBASE, UpToDate (International databases); Magiran, SID Irandoc, IranMedex (National databases), and the Google Scholar search engine were done using key words like: swaddling, takmit, Sudden Infant Death Syndrome (SIDS) and hip dislocation, advantages and disadvantages of swaddling as Persian and English. All the notes taken were categorized and referred to in the course of the research.

3- RESULTS

Since there is a difference between the modern view of medicine in relation to the Persian medicine, and the differences in terms of purpose and method of doing work, this section attempted to address the origin of the differences in modern medicine, the benefits and the disadvantages of swaddling. Furthermore, the goals of swaddling and the method of doing it in Iranian medicine were described. Meanwhile, the recommendations and points of view that Iranian sages had in the past, during and after care were explained.

3-1. Views of Modern Medicine on Swaddling

Some modern researchers have cited advantages for swaddling and some others have depicted its disadvantages:

3-1-1. Benefits of Swaddling

3.1.1.1 Better Sleep

Many mothers in different countries believe that their babies will not go to sleep unless they are swaddled. This belief is consistent with new studies, which showed that there is a shorter period of being awake in swaddled babies before falling asleep again. Swaddling also reduces the frequency of wake ups and increases sleep duration (8-10).

3-1-1-2. Pain Reduction

Therapeutic methods, such as blood sampling and insertion of the nasogastric tube which may be done on the baby for a variety of reasons, can cause pain. Severe and prolonged pain in premature babies may increase intracranial pressure and brain damage. Also, the decreased arterial oxygen saturation may cause pain and free radicals production that can disrupt the rapid growth of brain tissue (11, 12). Studies have shown that non-pharmacological methods have a greater effect on reducing the pain associated with neonatal health interventions. Swaddling is one of these methods which were ignored for many years (13). A review study by Van Sloan et al. showed that four articles out of the 78 articles on swaddling were related to the effect of swaddling on pain (14). The study of Dejdard et al, on examining the effect of swaddling on blood sampling in preterm infants, revealed that it had a positive effect on their heart rate, arterial oxygen saturation and face changes, all of which were indications of neonatal pain. Swaddling is a simple and inexpensive method, so it can be used in painful therapies (15). The results of the study by Salimi et al. on the effect of swaddling on the pain caused by the insertion of the nasal tubes showed that the heart rate increased in swaddled babies during the insertion of the nasogastric feeding tube, which indicated it as a painful therapeutic method. However, the range of heart rate changes in the conventional method was higher than that

in swaddling method which indicated a relative relieving effect on the infant (16).

3-1-1-3. Infant Body Temperature Stability

The World Health Organization (WHO) has included the infant body temperature control among neonatal care requirements in developing countries (17). In the absence of thermal protection, the baby may lose a significant amount of body temperature (18). The abnormal temperature in which the baby's body temperature falls below 36.5 °C is defined as "neonatal hypothermia", and if nursing cares such as drying the baby and swaddling are delayed, the risk of it increases. Hypothermia in early hours of birth is one of the major causes of sickness and eventual death of infants in developing countries (19). Swaddling is an effective way to prevent loss of heat (20) and can be used to prevent hypothermia.

3-1-1-4. Reduction of Sudden Infant Death Syndrome

Sudden infant death syndromes (SIDS) are idiopathic syndromes that can cause sudden deaths in infants while sleeping. The causes of SIDS are unclear, but the undeveloped central nervous system, upper airway obstruction, heat conduction system disorders, digestive problems, oxygen depletion, and carbon dioxide increase; are thought to be the involved reasons (21). Cardiac changes in response to stimuli in swaddled infants increase, especially when lying on their back. In this situation the heart rate increases which may reduce the risk of SIDS (22).

3-2. Disadvantages of Swaddling

Today, the Sudden Infant Death Syndrome (SIDS) and hip joint dislocation are considered as the disadvantages of swaddling.

3-2-1. Hip Joint Dislocation

Hip joint dislocation is one of the most common orthopedic problems in newborns. Its diagnosis and timely treatment is very important (23). Studies have shown that swaddling, in a way that the legs stick together smoothly, increases the incidence of hip dysplasia (24). It seems that the disease is more common in societies where the baby is swaddled, and the disease is less common in areas where mother carries the baby on her back or in front. This difference is probably due to the condition of the baby's thighs (closely together in swaddling or far in other methods of carrying the baby) (24).

3-2-1. Hip Joint Dislocation

On the other hand, Pease et al. (2016) review over the past two decades revealed that swaddling increases the risk of sudden death which is highly dependent on the state of sleep and the age of the baby. So, if the swaddling continues while the baby is asleep, the risk increases up to 13 times as long as the baby is not overweight. This ratio is more than 3 times greater if the baby falls to the side, and if it falls to the back, it is close to 2 times. Also, the chance of having a sudden death syndrome increases in children over six months of age and tends to double (25).

3-3. Swaddling in Persian Traditional Medicine

By examining traditional texts on medicine, one can conclude that it was not only widespread in Iran during this long period, but it was also such an important practice that scholars always dealt with it and made recommendations for it. We will further highlight these goals and recommendations.

3-3-1. Aim of Swaddling in Persian Medicine

In Persian medicine, swaddling was more often named as, *Takmit* (In Arabic, *تكميط*) which referred to a kind of cloth used for fastening fractures (26); a name which is

not irrelevant to the goals of swaddling in Persian medicine, since one of these goals was to treat infant joints dislocation. Other goals included better carriage, gradual introduction of the environment to the baby, better sleep and avoiding colds.

3-3-2. Preventing and Treating Joint Dislocation

Each ancient doctor would swaddle the baby together with manual maneuver which was described in their works. For example, Mohammad bin Zakaria Razi (865-925 A.D.) in *Al-Mansouri Fi tib*, asserted: "*Rubbing and oil massaging and stretching of the limbs in various directions and swaddling should be permanently pursued*". (27, 28) Similarly, Abolqasem Zahravi (1013-936 A.D.), a well-known surgeon in Andalusia, in his book *at-Tasrif* (The Method of Medicine) stated thus: "*limbs should be stretched in different directions ...*" (29), and 'Ali ibn al-'Abbas Ahvazi (died 982–994 A.D.), and latinized as *Haly Abbas*, stated: "*the baby's arms and legs should be pulled and, the joints should be bent and straightened out and Myrtus communis and crushed. Red rose should be put between the thighs and then nicely swaddled*" (30, 31).

This manual maneuver was also described in some books in more details; for example, Aghili Shirazi, one of the famous doctors of the 17th-18th century A.D., described it as follows: "*Take its hands once to the back, then to the back of its head, then to the right and left, and for the legs, bend them gently in such a way that it does not bother the child*" (7).

It seems that doing this maneuver before swaddling was a kind of examination to assess the condition of the baby's bones and joints. They were aware of the infant joint disorders and their causes. They divided these disorders into three kinds; congenital, during labor and after labor (32). In another classification, they divided

joint dislocations into two groups of total joint dislocation and partial joint dislocation or the joint vulnerable to dislocation (33). Avicenna (938-1037 A.D.) recommended that when swaddling, each limb which is deformed during childbirth must be kept in its normal position as much as possible and the part which is wide, like the forehead, should be wrapped widely; while the part which is thin, slim and small, should be dealt with accordingly. To do so, he recommended a slow and gentle touching of the limbs, "*Whenever you want to swaddle your baby, you should start softly to touch the limbs and keep them in a position which best suits them. All should be done with fingertips and with delicacy*" (34, 35).

Also, in the *Kholasat al tajarob*, Baha'ul-Dawlah Razi (1456-1521 A.D.) explained thus, "*When wrapping the infant in the cloth which is called swaddle, the parts of the body which is hurt or dislocated must first be fixed, and after treatment, every limb must be right wrapped and swaddled as in its normal position*" (33).

Of course, it is also important to note that swaddling did not only belong to babies with dislocated joint at birth, but it was advised to be done for all children. This was because of the fact that doctors believed that the joints of the neonates were susceptible to dislocation. They believed that there was a high prevalence of moisture in the baby's body, and due to its softness and delicacy, it could be harmed by the baby itself moving the limbs. Hence, in explaining the causes of injury to the limbs, one reason was the movement of the limb by the baby itself before the body was strong. In the book of *Mofarah al-Gholoob*, along with other reasons, it was stated that: "*... Before the body is strong enough, the movement of the limbs can lead to dislocation of the joints. Therefore, by limiting the movement of the limbs, before the limbs are tightened, swaddling can play a protective*

role in this regard. Another way the infant may get hurt is the way it is carried here and there; so, by swaddling it will still be protected from the damage. Swaddling is a means of protecting limbs so as not to be harmed while lifting or carrying".

3-3-3. Protecting the Infant from Cold Weather and Common Cold

As the current medical findings also noted, the baby's body is very sensitive to cold compared to the adult one, which is why traditional doctors advised to wash and dry the infant and ordered to keep it warm by swaddling. For example, in the *The Canon of Medicine*, after explaining how to swaddle the baby and how to cover its head with a hat, Avicenna advises to keep it in a suitable bed in a room which is neither cold nor warm: "*Wrap it while its hands are close to knees and put a turban or hat on its head and keep it in a room that is neither too warm nor too cold*" (34) and in *Mofarah al-Gholoob*, it is mentioned that "the head should be covered in order to protect it from the cold weather and flu and colds". Aghili Khorasani Shirazi in *Kholassat Al-Hekmah* (The Principals of Traditional Iranian Medicine, 18th century A.D.) also stated that, "*There is no better way than swaddling to protect the child from warm or cold weather or any other harm which attacks the baby's body and to keep its body unharmed from dislocations and fractures and to keep limbs in shape*" (7).

3-3-4. Gradual Habituation to the Environment

In the past it was a strong belief that, by transferring from the womb to this world, the baby is exposed to very different circumstances. Therefore, the doctors emphasized that the body temperature of the baby should be kept close to that of the mother's womb (7). Hence, another goal of swaddling was to simulate the mother's womb in terms of limiting the movement of the limbs, in order to become gradually

accustomed to the new conditions of life. As it is mentioned in the modern medical literature, swaddled babies sleep better. It can be concluded that perhaps the reason for their better sleep is the physical similarity of the swaddle to mother's womb, in which all factors like temperature, light, and movement constraints were taken into account, and the reason for crying and sleep deprivation of babies who were not swaddled was probably the inconvenient environmental conditions that were suddenly imposed on the baby.

3-4. Recommendations on swaddling in Persian traditional medicine

In Persian traditional medicine, there were some suggestions on swaddling, which seemed to be necessary to consider, otherwise, the goals of swaddling will not be achieved, or it will lead to pain for the baby and trouble for the parents. These recommendations can be divided into three categories, that is, recommendations before, during, and after unbinding the swaddle.

3-4-1. Pre-Swaddling Recommendations

1.1. Choosing the Proper Cloth and Bandage

According to Avicenna, the baby's body is initially very sensitive to cold and harshness. In *The Canon of Medicine*, he says, "*It is correct that the baby at the beginning of its birth is vulnerable to the cold and harshness. Because of thin skin and low temperature of the body everything is cold, harsh and coarse to the baby...*" (34). Therefore, the fabric used for swaddling should be clean, soft and old. This recommendation is due to the fact that the old fabric is exposed to severe mechanical actions while washing and, loses its coarseness and does not hurt the baby's skin. About the bandage, Aghili Shirazi believed that "*It should be wide so that it wouldn't hurt the baby*" (7).

3-4-2. Bathing with Salty Water

Bathing the infant in salty water helps keep the baby's skin tight, and this can also help prevent baby's soft skin from getting hurt. Seyyed Esmaeil Jorjani (1043-1137 A.D.) stated in this regard that: "*The first thing to be done for the baby is that its skin should get so thick that its clothes will not annoy it, and the best way to do this is to bring it to warm salty water, as it is good for its skin, but do not allow the water to reach the eyes, nose, and ear and mouth*" (36-38). In addition to salty water bath, Avicenna found it useful to add a mixture of drugs like hemetite, "*To strenghten the baby's skin, wash the body with diluted salty water mixed with hematite, Galangal, sumac (*Rhus coriaria* L.); and Fenugreek (*Trigonella foenum-graecum* L), and prevent salty water from entering the nose and mouth*" (34).

3-4-3. Swaddling Should Be Done by Experienced Persons

Cyril Elgood, in his book, *Safavid Medical Practice*, says: "*The way of swaddling the baby for the first time was so important*" (39). Avicenna in *The Canon of Medicine* also mentioned that: "*and whenever you want to swaddle the baby, the midwife should so gently touch the limbs*" (34). From this expression and the emphasis of Cyril Elgood one can conclude that swaddling was done at least for the first time by a midwife or another skilled person and needed experience/ expertise.

3-5. Recommendations during swaddling

3-5-1. Putting the limbs in proper position

In most Iranian medical sources, the proper condition of limbs during swaddling was mentioned to be the natural state in which the legs are smoothly stretched, and the arms are extended to the knees. For example, in *Khulasat al-hikmah*, the writer asserted thus "*While*

swaddling, the limbs should be gently massaged and, then they should be pulled alongside the body and swaddled" (7), and in *Zakhireye Kharazmshahi* it was mentioned that: "and whenever they want it to be swaddled", "its limbs should be right in "position" (38), or in the *Canon of Medicine*: "... and put its hands on its knees" (34) (Table.1).

3-5-2. Putting Cotton between Thighs

Another recommendation that indirectly affects the condition of the limbs and joints is the insertion of cotton between the thighs of the baby, because the cotton does not let the thighs to stick together and prevents the extra pressure on hip joint. It also prevents the hips from sticking together, rash and inflammation of the hip skin, "and between its two thighs there was something soft like cotton so that the legs would not rub against each other" (34).

3-5-3. Not Overtightening the Swaddle

The firmness of the swaddle was very important and most doctors talked about it. For example, Aghili Shirazi asserted, "and it shouldn't be too tight that it cannot move at all" (7), and on injuries to the infant, he mentioned too tight or too loose a swaddle as a reason for these injuries. "... too tight a swaddle deforms the limbs and too loose is also not good" (35). Avicenna recommended to gradually tightening the swaddle in proportion to the strength of the limbs, "they should be very loose at the beginning, and gradually increase in firmness and tightness, and when the child starts to move, it should be a little tighter so that the limbs wouldn't become deformed as a result of baby's sudden moves" (34).

3-5-4. Keeping the Baby's Face Uncovered

Keeping the baby's face and forehead uncovered is also one of the recommendations mentioned in some of the texts, and this recommendation is

probably for the protection of the baby from the heat and helps the baby's natural breathing, "Let her face and forehead be uncovered" (7).

3-6. After Swaddling Recommendations

3-6-1. Laying the Baby on its Back

"As their limbs are soft and their nerves weak, they should be laid on their back so that one side wouldn't be stronger than the other side" (33). In the book of *Kholasat-al-Tajarob* (Summary of Experiences), the reason behind laying the baby on its back is said to be the even growth of the whole body, others like *Baha'u'l-Dawlah Razi* had the same idea; however, laying the baby on its back has other benefits in the view of modern medicine already mentioned in this essay. It is also important that in swaddling, the baby's head must be higher than the rest of its body as recommended by Avicenna and other scholars (34). To Aghili Shirazi this prevents brain damage as it stops harmful substances to ascend to the brain, "and they must put stuffed cloth under its shoulder and neck, to keep the head higher than the legs, so that the wastes will not reach the brain" (7).

3-6-2. Unswaddling the Baby at Certain Intervals

In addition, Persian sages recommended that the baby should be unswaddled as soon as the baby is wet and the swaddling cloth should be changed. Meanwhile, this should be done at a specific time interval, even if the baby did not wet itself. However, the time interval for changing the swaddle varies slightly in different books. For example, Safavid physicians advised two or three times a day, "They often changed the swaddle two to three times a day, each time they opened the swaddle, and let the hands and feet of the baby free for some time so that it could move them" (39).

3-6-3. Bathing

In most of the sources, based on the baby's stamina and the season, it was advised to bathe the baby with lukewarm water from twice a day to once in two days, until it was 40 days old, and afterwards bathing would be reduced to one to two times a week (33, 40).

3-6-4. Body Oiling

In oiling the baby's body (with cow and almond oil) after swaddling, four months

for boys and two months for girls, was recommended. Oiling and massaging, also helps the baby's body to grow and to remove the effects of swaddling, "*and rub oil with thumbs on the nerves and muscles which are on both sides of the vertebrae up to the neck so that the stiffness and tiredness which is caused by swaddling or being in cradle for long is gradually removed*" (7).

Table.1: Recommendations during swaddling (7, 34, 38).

Swaddle Method	The reasons for swaddle	Name of the physician
<ul style="list-style-type: none"> - Massage and body fat for the baby. -Strengthening the organs in different directions. - Keep the baby's head and nose and forehead. -The baby's swaddling in the swaddle. 	<ol style="list-style-type: none"> 1. Treatment of deformity and deformity during labor. 2. Protection against many diseases. 	Rhazes (854–925 A.D.)
<ul style="list-style-type: none"> - Wash your baby with salt water and astringent tools to thicken the skin to prevent damages. - Dry the baby's body with soft cloth. - Thin soft hands and feet with low pressure until the joints return to their place. - Slight smoothness of the hands and feet so that the organs are in their normal state (such that the hands stick on the side and the legs are smooth). -Putting cotton between thighs and thighs do not stick together. -Wrapping the baby in an old and very soft cloth, mildly in the first days, and gradually tightening it in the next days. 	<ol style="list-style-type: none"> 1. Treating the deformity of the organs during labor (and whenever you want to bite him, the midwife should touch the members softly and bring them in the best shape etc.). 2. Prevention of deformities caused by the movement of the organs by the child as long as the members are not tight (one of the corneas is the form of movement of the members by the child himself before the strength of the members). 	Avicenna (980-1037 A.D.)
<ul style="list-style-type: none"> - Sprinkle the salt on the child's body and wrap the fabric around the baby's body and keep it in this state for a few moments. - Bring the baby for a few moments in dilute salt water and half warm. - Wash your baby with lukewarm water or lukewarm water in which plants such as cayenne, such as sumac, cannabis, Freerana encens. -Extending hands and feet and smoothing unevenness and deformities during delivery. - Wrap the baby inside the swaddling. - Lying baby on the back. 	<ol style="list-style-type: none"> 1. Treatment of deformities and roughness of the organs. 2. Keep the body of the baby warm (body wrap it in soft cloths and warm your tone to warm your uterus to gradually get used to the outside) 	Baha'al-Dawlah Razi (d.1508 AD)
<ul style="list-style-type: none"> - Make the baby's bodies slowly and narrowly in their original form. -Grip your hands from your arms to the knees. - Cover the baby with head hugger or hat. - The swaddling is loosened in girls so that their abdomen grows so they cannot get pregnant in the future. 	<ol style="list-style-type: none"> 1. Treatment of the deformity of the organs during labor. 2. Easy transportation of children. 3. Helps to strengthen the organs. 4. Protecting the baby from cold (Wrapping a lightweight head hugger or hat on the head to protect the head from cold and protect against hurt and sores). 	Muhammad Akbar Arzani (d. 1722)

<ul style="list-style-type: none"> - Sprinkle the whole body of the baby (except for the eyes and ears and nose), and after a few moments, wash it with lukewarm water (or water boiling in such drugs as durum wheat, thyme, etc.). - Rubbing the members of the child during bathing. - Drying the baby's body. - Drag members slowly in different directions. - Organizing your hands and feet naturally. Cover the baby in a swaddle in a form that is open. - Tighten the swaddle and do not tighten it too much. - Loose swaddling for daughter babies. 	<ol style="list-style-type: none"> 1. Protect the child from cold. 2. Treatment of deformation of the organs. 3. Easy baby transport. 4. Easier feeding. 	<p style="text-align: center;">Aghili-e Khorasani- Shirazi(17th – 18th century)</p>
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4- DISCUSSION

The original purpose of swaddling has been so different from what ordinary people or even some scholars think about it today. When the aim is different, the method may be different, too. The ancient scholars suggested swaddling as a means of treating and preventing infant's joint dislocations and joint disorders (31, 33, 34); for which they devised methods like oil massaging, movement of the limbs (31, 34). Putting cotton between thighs, and gradually strengthening the swaddle (34). The interesting and remarkable point about Iranian is that, despite their profound look at the issue of swaddling, the disadvantages that researchers today have conceived were not remarkably dealt with in their books, as it might have needed centuries to come to light.

Also, they don't have detailed knowledge about the complementary recommendations by the Iranian sages such as sleeping a swaddling baby on the lower back and swaddling only up to 4 months and the good level of firmness of the swaddle (31); and observing these few points according to the new research can be effective on reducing sudden death syndrome in nursing newborns (24). As swaddling in Persian medicine is very timely and methodical, more research on this issue may prevent its disadvantages and pave the way to enjoy its benefits.

5- CONCLUSION

Swaddling is a care that depends on a variety of factors, including the type of culture, the purpose in doing it, the skill of the person who performs it, and so on. As the aim is different in, the results will be different, too. Therefore, it cannot be easily ruled out or accepted without paying attention to the historical background of this care and without knowing the various variables that might have affected it throughout history. Accordingly, the present meta-analysis could not lead to an absolute conclusion on whether to swaddle or not, as the accuracy of the current process and the changes that it has undergone through history has not been investigated. However, based on the present study, there are many interesting issues in this area that calls for more probes and investigations.

6- CONFLICT OF INTEREST: None.

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