

The premature newborn in mid-twentieth century according to Julius Hess

Recém-nascido prematuro em meados do século xx, na ótica de Julius Hess

Recién nacido en la primera mitad del siglo xx, en Julio Hess óptica

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ABSTRACT

Objective: To describe analytically the proposed care on the admission of the newborn in the work in question. **Method:** historiographical operation from the perspective of micro- history, with time frame in the twentieth century. **Results:** For the admission of the newborn (NB), measures such as the use of wool hooded cloak or a combination of gauze with sterile cotton to wrap the NB should be employed, as well as the use of bottles with hot water and incubators for maintaining the temperature . As for the permeability of the airways, it was known that the removal of secretions could be done by means of gravity and positioning of the newborn, or even with the finger wrapped in gauze were the featured measures. **Conclusion:** Over the years analyzed, it is possible to point out that some modifications and adaptations were made, but based on the same rationale for the care itself. **Descriptors:** Infant, Newborn, History.

RESUMO

Objetivo: Descrever, analiticamente, os cuidados propostos na admissão do recém-nascido na obra em referência. **Método:** Operação historiográfica na perspectiva da micro-história, com recorte temporal no século XX. **Resultados:** Para a admissão do recém-nascido, medidas como o uso de capa de lã com capuz ou a combinação de gaze com algodão estéril para envolver o recém-nascido deveriam ser empregadas, assim como o uso de garrafas com água quente e incubadoras para a manutenção da temperatura. Quanto à permeabilidade das vias aéreas, era sabido que a remoção das secreções seja por meio da gravidade e posicionamento do RN, ou mesmo por dedo envolto em gaze eram as medidas em destaque. **Conclusão:** Ao longo dos anos analisados, é possível apontar que algumas modificações e adaptações foram feitas, mas com base em uma mesma justificativa para o cuidado em si. **Descritores:** Prematuro, Recém-nascido, História.

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RESUMEN

Objetivo: Describir analíticamente la atención propuesta al ingreso del recién nacido en la obra en cuestión. **Método:** La operación historiográfica desde la perspectiva de la micro - historia, con el marco de tiempo en el siglo XX. **Resultados:** Para la admisión del recién nacido, medidas como el uso de la capa con capucha de lana o una combinación de gasa con algodón estéril para enganchar el RN se deben utilizar tan bien o el uso de botellas con agua caliente y las incubadoras de el mantenimiento de la temperatura. Como la permeabilidad de las vías respiratorias, se sabe que la eliminación de las secreciones o por medio de la gravedad y el posicionamiento del recién nacido, o incluso el dedo envuelto en una gasa fueron las medidas destacados. **Conclusión:** A través de los años analizados, es posible señalar que se hicieron algunas modificaciones y adaptaciones, pero basadas en el mismo fundamento de la propia atención.

Descriptor: Prematuro, Recién nacido, Historia.

INTRODUCTION

In the first half of the nineteenth century, children were “ignored” by the health field, with little or no place to attend to their care.¹⁻²⁻³ In that era, children born prematurely and those with malformations were expected to die early. From a perspective that natural selection would act in these situations, the newborn was understood as less adapted to survival.⁴

The focus on the care of the newborn was awakened at the end of the nineteenth century and at the beginning of the twentieth century by means of discussions focused on the possibility of providing care to this particular clientele.⁵ Accordingly, the interest has arisen not only for maternal conditions in the immediate postpartum, but also in the children who were born.⁴

In the same way, legitimating previous information, there were high rates of infant mortality, which lasted at the end of the nineteenth century in a ratio of 100 to 200 deaths per 1000 children born alive, coupled with a fall in the birth rate, provoked reactions, thus leading to the emergence in Europe of the movement called the “Movement for Children’s Health” with the goal of preserving the children’s life, including the premature infants.¹⁻³⁻⁶

From the Movement for Children’s Health (1870-1920), the practice of preventive care, the expansion of maternities and the production of incubators began to gain prominence, which promoted medicine to the newborn, marked by political and social concerns.

With the purpose of offering assistance to the neonate, the development of technological apparatuses was highlighted at the end of the 19th century, allied to medical and technical advances regarding the care to the newborn.⁶ Consequently, a new relation with the child was created due to the need for an organization regarding care, considering the cost for survival.⁷

In this line of reasoning, it should be mentioned that the United States, in the mid-nineteenth century, went through a significant post-war period, where thousands of men died in the battlefields, being considered “the most lethal and costly war in the history of the United States”. In addition to that fact, the country’s participation

in the World War I, in 1917, can be inferred to have corroborated the mortality of the population in general and, consequently, the reduction of a possible workforce for the nation.⁸

In this context, the care for the newborn gained a new focus and the feelings and values related to the infant, family and children begin to generate interest in medicine, focusing on their singularities, illnesses and treatments.⁹⁻¹⁰

One of the milestones of this care occurred in France, 1880, when the first incubator was developed by the obstetrician Tarnier Martin, who adapted heating chambers for birds to warm newborns, which reduced the mortality of newborns weighting less than 2000 g from 66% to 38%, implementing a technological vision of the care for this clientele.¹⁻⁹⁻¹¹

A decade after the advent of the incubator (1892), another obstetrician, Pierre Constant Budin, in addition to perfecting the incubators, developed the principles and methods that influenced the origins of neonatology, with the expansion of Tarnier’s works.⁶⁻⁹

In this sense, Budin expanded his concerns about newborns beyond the birth room and was the pioneer in recording the care of newborns from a perspective based on the control and maintenance of temperature, prevention of hospital infection, breastfeeding and the permanence of mothers with their children. This focus on the care for newborns was pointed out in the book described by Budin, in 1907, entitled “The Nursling”.¹⁻⁹⁻¹¹

In 1896, Coney, who was a disciple of Budin, traveled to the United States and began to offer specialized care to premature children.¹² In Chicago, 12 years later (1914), he organized an exhibition of premature infants with the intention of showing to the medical class the importance of the care practiced and directed to this clientele.¹⁻¹²

So far, as we can identify, there was a certain dispute between the social agents involved, which resulted in investments destined to the newborns toward academic interests when the American Julius Hess came on the scene with his research on the care and support technology for premature infants, becoming one of the greatest American specialist in prematurity.⁶⁻⁹⁻¹²

The book entitled “Premature and Congenitally Diseased Infants” was published in America and the United Kingdom in several editions, being considered the first American book on the subject.^{6,13} It was used as a reference for other books published as the Jeffrey Baker’s “The Machine in the Nursery” (1996) and Thomas Cone’s “History of the Care and Feeding of the Premature Infant” (1985).

Julius Hess excelled in both academic and care areas about premature newborns and its peculiarities. He was responsible for the publication of several works throughout the 1920s, 1930s and 1940s and was the founder of units developed for caring this clientele, specifically.

The purpose of this study has been the newborn care proposed by Julius Hess in the work “Premature and Congenitally Diseased Infants”, in the middle of the 20th century, which led to the objective of analytically describing the care proposed in the admission of newborns in this Hess’s work.

In order to justify the research, it is suggested that the history research serves to clarify the situation and provide the meanings of this context by reinforcing the construction of knowledge in socio-economic, cultural and political aspects, by influencing the course of the trajectory over the practice of care.¹⁴

Thus, it is necessary to emphasize the assertion that “understanding and explaining why things resulted in what they resulted and how they relate to each other”^{15:88} leads to the justification, relevance and contribution of the object of study by enabling the investigation of the care given to newborns.

METHODS

This is a research based on the historiographic operation, which can be understood as a triad of social location, practices and written composition, and, in the face of analysis, translates what is produced by a given text.¹⁶ In conjunction with the historiographic operation, the perspective of microhistory with temporal delimitation in the 20th century with a focus on microhistory was used, which includes one of the possibilities in the historiographic approach.¹⁷

The applicability of the microhistory approach is justified because it is understood as “social or cultural problems”, in which the researcher proposes to study with a vision directed to a specific social activity, trajectory of certain social actors, nucleus of representations, occurrences or any other aspect in this sense.^{17:169}

In this study, an analytical description of a part of the pediatrician Julius Hess’ work (1922) will be made, under the approach of the microhistory, that fits the scope of the proposed objective, in the sense of “dealing with the fragment as a means to visualize an wider social issue or a significant historical or cultural problem”.^{17:174-175}

This implied in the historiographic operation of the construction of a period not lived by the authors, but described and analyzed based on the understanding of the fragments and traces captured by the lexicon and images published by Hess in his work.

In order to meet the object of analysis of the study, allied to the chosen methodological operation, the chapters seven and nine of the Hess’ work were used. Along with this, other national and international references, which stand out in the area of neonatology, served as base for discussions and analysis.

Finally, it is clarified that the ethical aspects of the research were respected, considering the determination of Law 9.610/1998, and its chapters III and IV about the copyright of the author.

RESULTS AND DISCUSSION

The assistance to premature children in hospitals and residences, according to Julius Hess, indicated some primordial points, aiming to reach success in the treatment of this clientele. The author emphasized the need to fulfill a routine of care and observations involving immediate actions, such as those related to the umbilical cord, eyes, skin and genitalia.¹⁸

Nevertheless, regarding the children’s admission, it is understood, at first, that the term used in the context of the discussions is consistent with the first moment of care intended directly to the newborn in the course of his birth. It should be emphasized that the description provided by Julius Hess and other authors that the reception of the newborn, and therefore his admission, comprises the moment where the care related to the upper airway permeability and the care related to maintain the body temperature should be prioritized.¹⁸

Considering the preservation of the body temperature shortly after birth, Julius Hess, as previously outlined, described that careful supervision was necessary because of the thermolability with a tendency to low temperatures, which is a characteristic of the prematurity. The main objective should be to prevent excessive heat loss, which in itself could be a danger to the child, and consequently minimize the loss of energy. As a procedure to be followed, the child should be wrapped in material with poor heat conduction, and then placed in a heated bed. Both were pointed out as essential for the success of maintaining the body temperature.¹⁸

In another passage, Hess emphasized that the heat preservation should be initiated immediately after birth, preferably in the bed itself, because of the extent of the initial temperature loss that could have consequences for the premature newborn. Thus, after cutting the umbilical cord, it was recommended that the baby should be placed in a heated basket or incubator, which included the necessary equipment in a birth room.¹⁸

The Figure 1 illustrates the equipment pointed out in Hess’ work for the admission of the newborn.

Figure 1 – Hess Model of the open incubator in 1922.¹⁸



Source: authors

Such equipment is an open incubator model created by Hess himself in 1914, which consisted of a double iron wall, with the space between them filled with hot water, in addition to the electric heating with the thermostat control in order to avoid the external loss of heat.¹⁸

Other characteristics of the equipment included safety (the maximum temperature reached inside the bed would be 43.33 °C, with the upper structures properly positioned), simplicity of operation (except if extreme temperature changes occurred in the environment, since the insulation of asbestos would prevent radiation from the outside of the incubator and the heater would keep the water at a constant temperature), ventilation (adequate supply of fresh air), humidity (equalized to the surrounding air by an evaporation tank under the cradle), and, finally, easy cleaning and disinfection.¹⁸

From the previous descriptions, Figure 1 shows that the incubator is supported on a surface by six fixed round supports. At the center, a meter with seven marking levels is at the bottom of the incubator itself, possibly to control the internal temperature. Above there is the incubator, consisting of three parts of asbestos; the larger is for the accommodation of the newborn, of rounded shape, with high sides, which are covered by the other two parts that constitute the cover, which is slightly flat with a small handle and a cover with a more convex surface.

Still, in its external part, there was an apparatus at the right of the image, parallel to the equipment and attached to it in two points. Until today, the purpose of this apparatus has not been uncovered.

It should be noted that the equipment could be used for the care of premature newborns, their protection immediately after childbirth, and for cases of hypothermia.¹⁸

Equally, in this perspective, with a broader view at the environment where the newborn was born, that is, the birth room, Budin, in his 1907 publication, had a discussion based on the assertion of Lépine (1870), which expressed that if the premature newborns are exposed to temperatures between 15 °C and 17 °C in the birth room before dressing them properly, their body temperatures would drop to approximately 33 °C, but within 24 hours they would return to 36 °C or 37 °C.¹⁹ Budin, using his studies, disagreed partially with this, indicating that the return to the ideal temperature was not easily achievable.¹⁹

Budin's disagreement highlights the importance of the notes related to the temperature of the birth room as an relevant item to minimize the hypothermia in premature newborns, as well as reinforces the later affirmations of Julius Hess.

For the newborns at home, the recommendation was to use hot water bags, a properly protected electric cushion, or an improvised incubator that warms the child. It is emphasized that these children could be easily burned with some degree of gravity and fatality.¹⁸

Still in this context, about twenty years after Hess' publication, Dunham, in 1943, in his recommendations

published in the book entitled "Standards and Recommendations for Hospital Care of Newborn Infants, full-term and premature", he agreed that, at birth, the newborn should be received in a soft, heated and sterile flannel blanket and that a heat source should be used to aid the heating.²⁰

Similarly, Hess and the nurse Evelyn Lundeen, in a 1949 publication, advised that the baby, after his birth, should be received in a warm blanket or a flannel blanket with an attached cape and then immediately accommodated in a crib or warm bed (incubator).²¹

The Figure 2 illustrates a newborn wrapped with a hood made of wool to maintain his body temperature.

Figure 2 - Child wrapped in a cape of wool.¹⁸



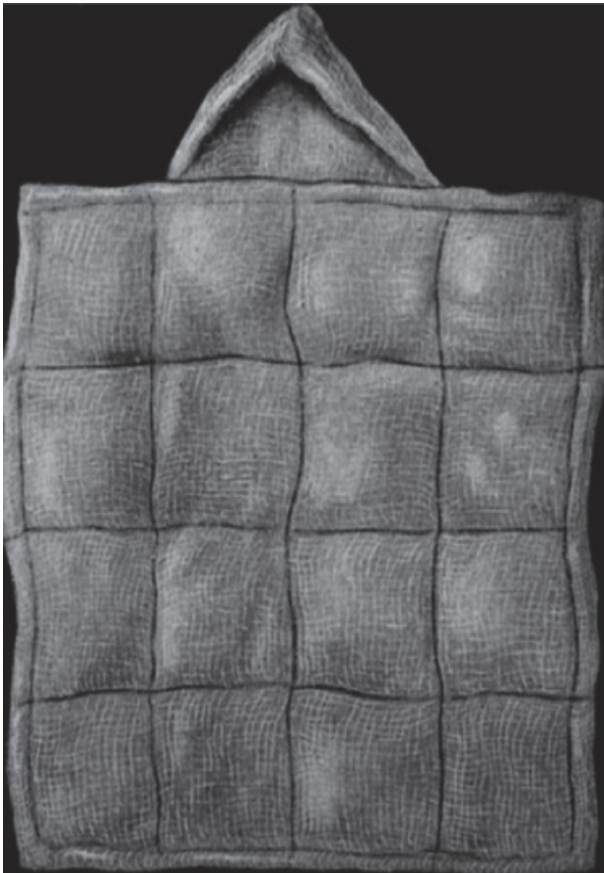
Source: authors

The clothing contained in the image can be described as a flannel blanket, where its top makes the mold of a cover or hood. It had about 30 centimeters of length and 20 centimeters of width.¹⁸

In addition to the equipment itself, and the cover with the hood, other measures were also noted.

For newborns in emergency situations, when appropriate clothing was not available, a cotton packaging/package, represented in the Figure 3, could completely involve the child, except for his face and genitals.¹⁸

Figure 3 – Emergency cover made of a combination of gauze and cotton.¹⁸



Source: authors

Such clothing should be loosely attached by bandages or pins, bringing benefits in the preservation of body temperature. In contrast, Hess pointed out that a disadvantage of its use was the possible limitation of body movements.¹⁸

However, as soon as safe and convenient, the newborn should be dressed in simple and easily wearable attire, preferably with separate pieces for the upper and lower limbs.¹⁸

For the region of genitalia and anus, a cotton swab or gauze could be applied with the aid of a cover on the outside of the cotton to keep it well positioned.¹⁸

For Hess, the essential features of the clothes would be: to maintain good thermal insulation, provide protection against temperature changes, be clean, and be easy to apply and remove with minimal child manipulation.¹⁸

Discussions involving the admission of newborns continued to be debated by other studies. For Costa, in his work entitled "*Lições de Clínica Obstétrica*" [Obstetrical Clinic Lessons], published in 1952, the premature at birth should be accommodated and received in a container with sterile water at a temperature of 38 °C in order to minimize the excessive heat loss. It is important to mention that this practice has not yet been described by other authors.²²

Additional procedures such as drying the newborn after his birth were pointed out by other authors years later, where they pointed out the necessity of drying the newborn soon after the birth and wrapping him/her in a blanket in order to minimize the risks of hypothermia.²³⁻²⁴

With this statement, it is perceived that the term "drying" was introduced in the publications, but the use of the blanket could not be highlighted as novelty since it has been pointed out since the beginning of the 20th century as a procedure to minimize heat loss in the premature newborn.

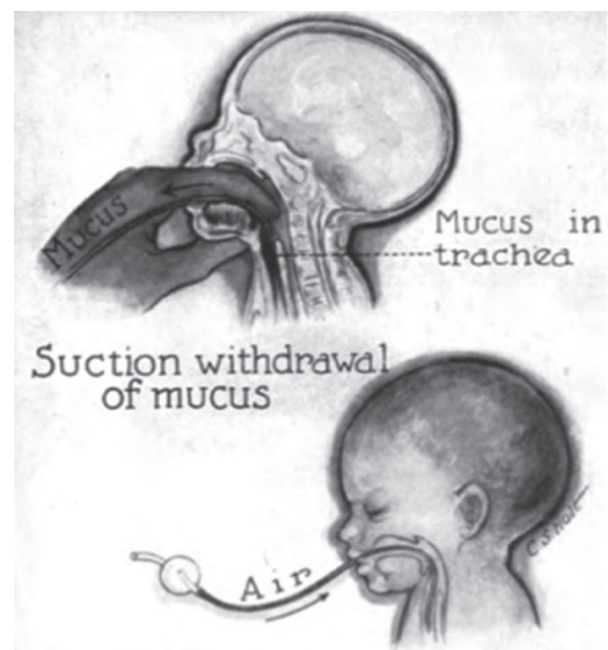
In the same perspective, other publications related the importance of drying the infant as early as possible, with a heated towel in a warm environment.

It was only in 1995, among the studies highlighted in this analysis, that the appearance of something innovative for that time could be implemented in the birth room as a heating method for newborns, since the authors make a note relating the warm body of the mother as a heater for the baby, resembling the kangaroo method.²⁷

Regarding the care related to the airway permeability, Hess (1922) pointed out that at the time of head detachment, the face and eyelids should be gently cleaned with warm water, and the mucus should be removed from the air passages by a careful cleaning of the nose and mouth with a soft gauze pad. The body and the umbilical cord should be protected from all contact with material considered infected. After the expulsion of the body, the child would have to be turned upside down, allowing the mucus and secretions of the airways to be eliminated.¹⁸

In a description of the care after the birth, Hess and Lundeen pointed out to the removal of mucus in the orotracheal cavity using the finger protected with sterile gauze in order to release the passage of air through the airways. If this method was not effective, the authors referred to the use of a catheter for aspiration of the content.²¹ Such statements are illustrated in Figure 4:

Figure 4 – The Removal of mucus in the orotracheal cavity with finger wrapped in the gauze or with the use of an aspiration catheter.²¹



Source: authors

In that sense, during approximately twenty-seven years, Hess modified his notes for the drainage of airway secretions, making improvements in the description and execution of the care. It is worth mentioning that the question of positioning the newborn upside down, using the knowledge of gravity, has continued in other works.

The care related to the removal of airway secretions during the birth was common in the publications consulted.

The correct positioning for the mucus outflow and airway secretions included lifting the newborn, holding his foot with his head down, believing that the action of gravity would expel the secretions of the airways, associated with a smooth nose and mouth aspiration.²²⁻²⁸⁻³⁰ Then, the newborn should be placed so that his head was tilted downward at an angle close to 30° for four to eight hours.²⁸

Differently, considering that the care with the elimination of secretions in the upper airways should be established as soon as the neonate was born, Gesteira pointed out in an excerpt from his work entitled "Childcare: Physical and social hygiene of the child", the way the procedure should be accomplished:

The finger covered with a sterilized gauze pad and moistened with boiled water must be inserted inside the newborn's mouth carefully and gently, in a soft circular motion, to remove the mucus that obstructs the pharynx. Then, the cleaning of the nose will be done with another gauze pad.^{29 37}

Subsequent publications, such as that of Klaus and Fanaroff, published in 1984, pointed out only the use of equipment and materials for the aspiration of airways.²⁴

By unifying the concepts of positioning and drainage, Whaley and Wong, in the mid-1990s, showed that for the establishment of a permeable airway there was a need for an adequate positioning of the newborn in order to facilitate the drainage of secretions.

CONCLUSION

From the perspective of the premature care proposed by Julius Hess, it can be inferred that the two crucial and extremely important points to be performed at the time of receiving the newborn were common in the publications consulted.

Regardless of the manner in which the body temperature was maintained and the secretion of the airways was removed, in order to provide care for newborns after birth, it is plausible to note that the work of Julius Hess, published in 1922, already mentioned it. Concepts such as minimal exposure to cold, the need to preserve body temperature through clothing and/or using equipment, permeated discussions throughout the 20th century regarding the care to minimize hypothermia in the newborn, especially the premature ones.

With respect to the airway permeability, Julius Hess already pointed to such importance in order to eliminate

secretions and thus allow successful respiratory movements of the newborn.

Nevertheless, it should be noted that over the years analyzed, it is possible to point out that some modifications and adaptations were made, but based on the same justification for the care itself, which indicates that even within the period of almost a decade, the care proposed by Julius Hess directly or indirectly perpetuated as a theoretical and practical basis for other publications.

Furthermore, it is understood that the studies from the historical perspective to describe practices in different contexts enables the investigation of the progress of the care performed over the years until the present day.

REFERENCES

1. Tragante CR, Ceccon ME, Falcão MC. Desenvolvimento dos cuidados neonatais ao longo do tempo. *Revista Pediatria*. São Paulo. 2010; 32 (2): 121-30.
2. Oliveira ICS, Rodrigues RG. Assistência ao recém-nascido: perspectivas para o saber de enfermagem em neonatologia (1937-1979). *Revista Texto e Contexto de Enfermagem*. 2005; 14 (4): 498-505.
3. Avery, GB. *Neonatology*. 2ª ed. Rio de Janeiro: Medsi; 1984.
4. Avery, GB. *Neonatology. Fisiopatologia e tratamento do Recém-nascido*. 4ª edição. Rio de Janeiro: Medsi; 1999.
5. Philip AGS. The evolution of Neonatology. *Pediatrics*. 2005; 58 (4): 799- 815.
6. Lussy RC. A Century of Neonatal Medicine. *Minnesota Medical Association*. 1999; 82. Disponível em <http://mnmed.org/publications/MnMed1999/December?Lussy.cfm?PF=1>. Acesso em 01 de setembro de 2014.
7. Lamy ZC. Estudo das situações vivenciadas por pais de RN internados em Unidade de Terapia Intensiva Neonatal [dissertação de mestrado]. Rio de Janeiro: Fundação Oswaldo Cruz, Instituto Fernandes Figueira; 1995.
8. Karnal L, Purdy S, Fernandes LE, Morais MV. História dos Estados Unidos. Das origens ao século XXI. São Paulo: Editora Contexto; 2007.
9. Fialho, FA. A arte de cuidar em enfermagem: tecnologias aplicadas no cuidado neonatal [Dissertação de mestrado]. Juiz de Fora: Universidade Federal de Juiz de Fora. Setor Ciências da Saúde; 2012.
10. Braga, P. P.; Sena, R.. Cuidado e diálogo: as interações e a integralidade no cotidiano da assistência neonatal. *Revista Rene*. 2010;11(número especial): 142 - 49.
11. Christoffel MM. Tecnologias do cuidado de enfermagem neonatal: a dor e o estresse do recém-nascido durante procedimentos dolorosos. *Anais do VI Congresso Brasileiro de Enfermagem Obstétrica e Neonatal*; 2009; Teresina/PI.
12. Rodrigues RG, Oliveira ICSS. Os primórdios da assistência aos recém-nascidos no exterior e no Brasil: perspectivas para o saber de enfermagem na neonatologia (1870-1903). *Revista Eletrônica de Enfermagem*. 2004; 6 (2). Disponível em <http://www.revistas.ufg.br/index.php/fen>. Acesso em 01 de setembro de 2014.
13. Dunn PM. Julius Hess, MD (1856-1955) and the premature infant. *Arch Dis Child Fetal Neonatal Ed*. 2001; (85): 141-44. Disponível em: <http://www.fn.bmj.com/content/85/2/F141>. Acesso em 12 ago, 2015. 00:01.
14. Padilha MICS, Borenstein MS. História da enfermagem: ensino, pesquisa e interdisciplinariedade. *Revista da Escola de Enfermagem Anna Nery*. 2006; dez 10 (3): 532-8.
15. Barreira, I. A. Memória e história para uma nova visão da enfermagem no Brasil. *Revista Latino Americana de Enfermagem*. 1999; 7 (3).
16. Certau MA escrita da história. Rio de Janeiro. Forense Universitária;1982.
17. Barros JA. Sobre a feitura da micro-história. *OPSSIS*. 2007; 7 (9): 167-85.

18. Hess JH. *Premature and Congenitally Diseased Infants*. Philadelphia and New York: Lea & Febiger; 1922.
19. Budin P. *The Nursling: the feeding and hygiene of premature and full term infants*. London: Caxton Publishing CO; 1907.
20. Dunham EC. *Standards and recommendations for hospital care of newborn infants, full-term and premature*. [Washington] U.S. Dept. of labor, Children's Bureau; 1943.
21. Hess JH, Lundeen EC. *The Premature Infant: its medical and nursing care*. Philadelphia: J.B. Lippincott Company; 1949.
22. Costa CC. *Lições de Clínica Obstétrica*. 5ª edição. Rio de Janeiro: Guanabara; 1952.
23. Clohert, JP, Stark AR. *Manual of Neonatal Care*. Boston: Little, Brown and Company. 5ª edição; 1980.
24. Klaus MH, Fanaroff AA. *Alto Risco em Neonatologia*. 2ª edição. Rio de Janeiro: Interamericana; 1982.
25. Whaley LF, Wong DL. *Enfermagem Pediátrica. Elementos essenciais à intervenção efetiva*. 2ª edição. Rio de Janeiro: Guanabara; 1989.
26. Procianoy RS. *Cadernos de Terapêutica em Pediatria Neonatologia*. Rio de Janeiro: Editora Cultura Médica; 1989.
27. Klaus MH, Fanaroff AA. *Alto Risco em Neonatologia*. 4ª edição. Rio de Janeiro: Guanabara Koogan; 1995.
28. Nelson W. E. *Tratado de Pediatria*. 3ª edição. Spain: Salvart Editores S.A; 1956
29. Gesteira RM. *Puericultura. Higiene física e social da criança*. 3ª edição. Rio de Janeiro: Livraria Atheneu; 1957.
30. Bookmiller MM, Bowen GL. *Enfermeria Obstetrica*. México: Editorial Interamericana; 1959.

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