

SYSTEMATIC OR INTEGRATIVE REVIEW

NURSING CARE TO PATIENTS WITH HIGH BODY TEMPERATURE: AN INTEGRATIVE REVIEW

CUIDADOS DE ENFERMAGEM A PACIENTES COM TEMPERATURA CORPORAL ELEVADA: REVISÃO INTEGRATIVA

CUIDADOS DE ENFERMERÍA DE PACIENTES CON ELEVADA TEMPERATURA CORPORAL: UNA REVISIÓN INTEGRADORA

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ABSTRACT

The aim of this integrative review is to identify available evidence in the literature concerning the best practices in nursing care for patients with high body temperature. The search was performed in the databases PubMed/MedLine, LILACS, CINAHL and Cochrane Reviews. The sample was composed by 16 studies. The studies were analyzed according to their level of evidence and grade of recommendation. The articles of the sample are classified as systematic reviews, randomized clinical trials, case studies, descriptive, transversal, qualitative, experience report and quasi-experimental. The best evidence refers to care of children and adults with fever. There is a lack of studies with experimental design that test the nursing practices recommended in the literature for patients with high body temperature in different ages, specially the elderly. We suggest the development of new clinical researches, which will investigate nursing care interventions to adult patients with the nursing diagnosis hyperthermia, especially the physical interventions such as warm/cold bathing, warm/ice compresses and also ventilation of the environment.

Keywords: Fever; Nursing Care; Nursing; Body Temperature; Nursing Diagnosis.

RESUMO

Revisão integrativa para identificar as evidências disponíveis na literatura sobre os melhores cuidados de enfermagem para o paciente com temperatura corporal elevada. A busca foi realizada nas bases de dados PubMed/MedLine, LILACS, CINAHL e Cochrane Reviews. A amostra foi constituída de 16 estudos. Os estudos foram avaliados em relação ao nível de evidência e grau de recomendação. Os artigos da amostra são de revisão sistemática, ensaio clínico randomizado, estudo de caso, descritivo, transversal, qualitativo, relato de experiência e quase-experimental. As melhores evidências referem-se aos cuidados com crianças e adultos com febre. Existe uma carência de estudos com delineamento experimental que testem os cuidados de enfermagem recomendados na literatura a pacientes com temperatura corporal elevada nas diferentes faixas etárias, principalmente com idosos. Sugere-se o desenvolvimento de pesquisas clínicas que analisem os cuidados de enfermagem a pacientes adultos com o diagnóstico de enfermagem de hipertermia, especialmente relacionados à utilização de métodos físicos, como realização de banho morno, aplicação de compressas mornas, bolsas de gelo e ventilação do ambiente.

Palavras-chave: Febre; Cuidados de Enfermagem; Enfermagem; Temperatura Corporal; Diagnóstico de Enfermagem.

RESUMEN

Revisión integradora para identificar la evidencia disponible en la literatura acerca de la mejor atención de enfermería para pacientes con temperatura corporal elevada. La búsqueda se realizó en las bases de datos PubMed/MEDLINE, LILACS, CINAHL y Cochrane Reviews. La muestra consistió en 16 estudios que se evaluaron para el nivel de evidencia y grado de recomendación. Los artículos que integran la muestra son revisiones sistemáticas, ensayos controlados aleatorios, estudios de caso descriptivo, transversal, cualitativo, relatos de experiencia y cuasi-experimental. La mejor evidencia se refiere a la atención de niños y adultos con fiebre. Escasean los estudios de diseño experimental que ponen a prueba la atención de enfermería recomendada en la literatura para pacientes con temperatura corporal elevada en diferentes grupos de edad, especialmente en los ancianos. Sugerimos más investigación clínica para analizar los cuidados de enfermería de pacientes adultos con diagnóstico de hipertermia, sobre todo relacionados con el uso de métodos físicos, tales como el baño caliente, la aplicación de compresas calientes, bolsas de hielo y ventilación del ambiente.

Palabras clave: Fiebre; Atención de Enfermería; Enfermería; Temperatura Corporal; Diagnóstico de Enfermería.

INTRODUCTION

Body temperature is considered an intrinsic factor controlled by the human body and presents a constant value in physiological conditions¹. The average oral measurement of normal body temperature is between 36.5°C and 37°C, and if measured by rectal route is approximately 0.6°C higher². The regulation of body temperature mainly occurs by mechanisms of neural feedback, through regulatory temperature centers located in the hypothalamus². These mechanisms are influenced by diverse factors as: physical activity, changes in the ambient temperature, menstrual cycle in women, diet, emotional state, medications, circadian cycle and even body posture. Posture is important because the esophageal, sublingual and rectal temperatures are elevated when measuring with individual standing, and lower in the supine position.³

Age also influences basal temperature and febrile response; infants present large variations of temperature, and newborns, mainly the premature, may not develop fever or even may present hypothermia in the presence of severe infections. This pattern of thermal unresponsiveness is also observed in elderly people and can be attributed to several causes, including thermogenesis disorders (decrease of basal metabolism, inefficiency of muscle tremors and peripheral vasoconstriction), excess of lipocortin-1 (an intracellular intermediate of corticosteroid action) and altered behavioral ability (inability to warm up)². Since 1986, NANDA-International (NANDA-I) has established the nursing diagnosis of hyperthermia. This diagnosis is within the domain of personal safety/response, and is defined as body temperature elevated above normal range.⁴

High body temperature can be considered as either fever or hyperthermia⁵. Fever is an elevation of body temperature that exceeds the daily normal variation and occurs due to the increase of the hypothalamic set point, for example, from 37°C to 39°C⁶. This increase occurs in response to a chemical signal (endogenous pyrogen) released as part of the inflammatory response with liberation of mediators as interleukin-1B and interleukin-6. Fever can be caused by infections, atelectasis, thromboembolic disease and drug interactions, and occurs in about one third of hospitalized patients.⁷

Hyperthermia is the increase in body temperature due to an imbalance between production and heat dissipation. Hyperthermia differs from fever due to the fact that in the case of hyperthermia the hypothalamic thermal threshold is preserved and the increase in body temperature occurs by excessive production of heat or failure in heat dissipation or even by dysfunction of the thermoregulatory center⁸. It takes place in the cases of illness as heatstroke, neurological disorders or malignant hyperthermia, often with body temperature above 40°C. Human organism does not adapt to hyperthermia, thus it must be treated as a clinical emergency.⁵

The pathological mechanism of fever and hyperthermia is different, and both demand a set of related, appropriate and specific evidence-based care. However, little is known about the best care to be provided to human patients with high body temperature.⁹

It is observed in the clinical practice, the nurse's role facing a patient with high body temperature being restricted to, in most of cases, collaborative interventions, such as administration of medications and use of physical methods. Traditionally, bedside nurses have used care protocols during the process of assessment, diagnosis, treatment and outcomes of the patients. However, these protocols have been based on previous experience gathered during time and in predetermined routines that, in most cases, are not updated regularly. Thus, it becomes essential to provide a safe nursing assistance, of high quality and cost effective, based on updated information. Thereby, the aim of this study is to identify results that elucidate the best practices in nursing with respect to caring for a patient with high body temperature.

METHODS

This is an integrative review (IR) performed following the steps: selection of the thematic issue (formulation of a guiding question), establishing inclusion and exclusion criteria of articles, selection of articles (sample selection), analysis and interpretation of the results^{10,11}

The elaboration of the guiding question was developed through the PICO strategy (P= patient or problem, I= intervention, C = control or comparison, O = outcome or outcomes).¹² It was attributed to P patients with high body temperature; I was defined as nursing care; C was not described due to the fact this is not a comparative study, and O was pointed as reduction of body temperature. Thus, the guiding question was outlined as "Which are the best nursing care, available in the literature, for reduction of high body temperature in human patients?"

The survey of indexed publications was performed in the period from May 05 until May 15 of 2014, in the databases U.S. National Library of Medicine - National Institute of Health (PubMed), Latin American and Caribbean Health Sciences (LILACS), Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Cochrane Reviews. In PubMed and CINAHL the key words used for search were "fever" AND "nursing care", and ("Fever" AND "Nursing care"). In the databases LILACS and Cochrane, the key words used were: fever, nursing care, having as search strategy: (MH: C23.888.119.344\$ OR Febre OR Fiebre OR Fever OR Hipertermia OR hyperthermia) AND (MH: E02.760.611\$ OR "Cuidados de Enfermagem" OR "Atención de Enfermería" OR "Nursing Care" OR "enfermagem" OR "Enfermería" OR "Nursing").

Inclusion criteria were full articles with available abstracts that address nursing care for patients with high body temper-

ature, developed in humans, published until May 15 of 2014, in the languages Portuguese, English or Spanish. The exclusion criteria were: articles that did not address nursing care to patients with high body temperature and that focused in drug therapy, because in Brazil prescription of drugs is not a competence of nurses.

Titles and abstracts of the articles found were read. After having established relevance to the topic, search for the full articles was performed and the studies read entirely.

Table 1 describes the path taken in the identification and selection of the articles of the study sample.

Table 1 - Electronic search strategy in the databases

Database	Articled Found	Excluded Articles	Sample
	n	n	n
PubMed	207	197	10
CINAHL	88	87	01
LILACS	95	92	03
Cochrane	29	27	02
Total	419	403	16

In order to characterize the selected studies, a data collection tool was used¹³. The tool contained items such as descriptors used, title, authors, area of expertise, publication year, language, design, objectives, methods, results, conclusions, recommendations, limitations and level of scientific evidence of the study. The selected articles were evaluated according to level of evidence and grade of recommendation.¹⁴⁻¹⁵ As to the ethical aspects of research, the authorship of all articles included was respected.

RESULTS

Sample was composed by 16 articles, published between 1985 and 2011. Of the 16 articles, only 2 (12.5%) were published within the past five years, both in 2011. Between 2000 and 2007, 6 articles were published (37.5%). In de 90s, 7 articles were published (44%) and 1 (6.25%) in 1985. Among the articles of the sample, 13 (81.25%) were produced in English, 2 (12.5%) in Portuguese and 1 (6.25%) in Spanish. The majority of publications (7-44%) are originated from the United States of America, followed by 2 (12.5%) from Brazil, 3 (19%) from Australia, 1 (6.25%) from England, 1 (6.25%) from Canada, 1 (6.25%) from Cuba and 1 (6.25%) from Hong Kong.

Among the 16 articles of the review, four (25%) are Randomized Clinical Trials; three (19%) are Descriptive Studies; 2 (12.5%) are Systematic Reviews; two (12.5%) are Quasi-experimental Studies; one (6.25%) is a Transversal Study; one (6.25%)

is a Case Study; two (12.5%) are Qualitative Studies and one (6.25%) is a Experience Report. Regarding level of evidence and grade of recommendation, it was observed that six (37.5%) articles presented high level of evidence, level 1 or 2; three (19%) presented level of evidence 3; three (19%) presented level of evidence 4; four (25%) had level 5. None of the studies were designated as level of evidence 6 (expert opinion). Table 2 presents the articles included in the present review.

It is understood that nursing care for individuals with high body temperature changes according to the patient's age group. Intervention methods can be physical or pharmacological.

NURSING CARE TO CHILDREN

In the nursing care to children with fever, systematic reviews^{20,23} showed that assessment of signs and symptoms of fever, as chills, sweating, tachycardia and checking the increase of temperature is mandatory. Nurses should also aim to increase the comfort; seek to reduce the anxiety of the parents with guidance to increase the level of knowledge and abilities to care for their children; stimulate hydration; remove excess of clothing, secure the air circulation of the environment; promote comfort for children that present diaphoresis, through the use of warm compresses. The implementation of thermal curve for children to track the progress or not of the fever and evaluating the effectiveness of drugs are also interventions of extreme importance.^{20,23}

Randomized clinical trial³¹ was conducted to evaluate the efficacy of the use of warm compresses associated with antipyretics (treatment group) and single administration of antipyretics (control group) in the decrease of body temperature in children admitted in Emergency Unit. Among 130 children that were part of the sample, 73 received warm compresses combined with antipyretic and 57 received just the antipyretic. No statistical difference was found, being the use of compresses only recommended in situations of high environment temperature or when the child is incapable of sweating.³¹

Kinmonth et al.²⁹ developed a randomized clinical trial with 52 children between the ages of 3 months and 5 years, to compare the acceptability of parents and the effects oof the following interventions in reducing axillar temperature of children with fever: remove clothes, apply warm compresses, administer only paracetamol and apply paracetamol associated with warm compresses. It was verified that the use of warm compresses is an additive in the decrease of body temperature of children, promotes rapid reduction of temperature, prevents convulsive crises and must be used in the treatment of non-responsive to antipyretic fever. However, the parents accept more the use of the paracetamol than the other methods.²⁹

Table 2 - Articles included in the study

Authors	Type of study	Evidence/ Recommendation	Recommendations
Thompson, Kagan ¹⁶	Qualitative Study	5 A	Nurses need to understand fully the temperature regulation and febrile response to provide best practice.
Bisetto <i>et al.</i> ¹⁷	Descriptive Study	4 A	Nursing care for treatment of fever indicated are: rest in a ventilated place; administer water and other liquids; keep breastfeeding and use antipyretics recommended by institutional routine; apply ice packs, cold compresses and warm water bath.
Giusti <i>et al.</i> ¹⁸	Case Study	5 A	In a child with ectodermic dysplasia and the diagnosis of hyperthermia, it must be monitored: temperature every two hours; pulse; breathing pattern; color and skin temperature; signs and symptoms of hypothermia and report them; promote adequate ingest of liquids and nutrients; adapt environment temperature to the child's needs.
Loke <i>et al.</i> ¹⁹	Randomized Clinical Trial	2 A	In a child with ectodermic dysplasia and the diagnosis of hyperthermia, it must be monitored: temperature every two hours; pulse; breathing pattern; color and skin temperature; signs and symptoms of hypothermia and report them; promote adequate ingest of liquids and nutrients; adapt environment temperature to the child's needs.
Watts <i>et al.</i> ²⁰	Systematic Review	1 A	Actions as incentive the hydric ingest, remove the excess of clothes, guarantee air circulation in the environment and parents education, in order to enhance their knowledge and abilities to take care of a son with fever and decrease anxiety, are indicated. The care must be individualized and based on current knowledge about the efficacy and risks of the interventions.
Edwards <i>et al.</i> ²¹	Qualitative Study	5 A	Perform training of nurses regarding nursing care to children with fever, especially for the ones with less than one year of graduation at college.
Henker <i>et al.</i> ²²	Quasi-experimental Study	3 B	No statistical significance was found, however, patients that received antipyretic associated with blanket at a temperature of 18°C presented more decrease in body temperature.
Watts ²³	Systematic Review	1 A	The primary purpose of any intervention is to increase the child's comfort (or decrease their discomfort); Parents should be educated about the use of paracetamol, and also alternative measures for treating fever (e.g. increasing fluids and removing clothing).
Jones ²⁴	Descriptive Study	4 A	It is recommended the association of antipyretics to physical methods for decrease of body temperature, being the physical methods more used: removing of bedding, application of ice packs or warm compresses, stimulate oral hydration or IV therapy.
Montesinos <i>et al.</i> ²⁵	Quasi-experimental Study	3 B	The performance of bath with water at 37°C is efficient in the decrease of body temperature of hospitalized patients. It is recommended to teach patients and relatives about this care.
Grossman <i>et al.</i> ²⁶	Transversal Study	3 B	Administration of antipyretics associated with physical methods is more efficient in decreasing body temperature than just the use of antipyretics.
Thomas <i>et al.</i> ²⁷	Descriptive Study	4 A	Warm bath is indicated to help in the decrease of body temperature in children with fever; The use of warm compresses is indicated when the child presents body temperature between 38.9°C and 40.6°C.
Caruso <i>et al.</i> ²⁸	Randomized Clinical Trial	2 A	The use of blankets with the temperature of 23.9°C helps the decrease of tremors in patients with fever.
Kinmonth <i>et al.</i> ²⁹	Randomized Clinical Trial	2 A	Administration of Paracetamol in children with fever is more effective than applying just warm compresses, besides having more acceptability among parents. Warm compresses present an enhance effect in reducing body temperature.
Akers ³⁰	Experience Report	5 A	It is recommended the evaluation of the parameters: temperature; heart and respiratory rates; presence of tremors, redness and lethargy; culture exams evaluation; presence of signs and symptoms of infection; administration of drugs of continuous use.
Newman ³¹	Randomized Clinical Trial	2 A	The use of compresses is recommended just in situations of high environment temperature or when the child presents itself incapable of perspire.

Warm bath and the use of warm compresses, practices frequently used in the care for children with fever, were questioned in a descriptive study regarding their clinical benefits. According to the authors, bath should be indicated to assist in the decrease of temperature in children with fever and the use

of warm compresses is indicated when the child presents body temperature between 38.9°C and 40.6°C.²⁷

In children with ectodermic dysplasia that present the nursing diagnosis hyperthermia, a bath with water in a comfortable temperature must be given to the child; monitor the tem-

perature at least every two hours, pulse, breathing pattern, color and skin temperature, signs and symptoms of hypothermia and hyperthermia, besides documenting them; to promote adequate ingest of liquids and nutrients; loosen or remove clothes.¹⁸

Descriptive study¹⁷ highlights fever as an adverse effect prevalent in post vaccinated children, being indicated the following nursing care activities to those patients: stimuli rest in a cool place; administer water and other liquids; keep breastfeeding; use antipyretics recommended by institutional routine and adapt environment temperature to the child's needs. These actions may be complemented with the inclusion of non-medicaments techniques, as the use of ice packs, cold-water compresses and warm bath.¹⁷

Qualitative study²¹ conducted with 15 nurses, showed the necessity of training of those professionals concerning nursing care to children with fever, especially among nurses with less than 1 year of graduation from college. It was observed that there is no consensus among the performed practices, being those executed from previous experience, not being based on institutional protocols and current scientific evidence.

NURSING CARE TO ADULTS

Randomized clinical trial¹⁹ was conducted to compare the efficacy of use of blankets with airflow cooling system and blankets with water flow cooling system in ICU hospitalized adult patients with fever. This study found a higher proportion of patients in the airflow than in the water flow cooling blanket group who reached the desired temperature of <38°C in shorter time (3.1 versus 5.7h, $p < 0.001$).

A study²² compared the use of antipyretic and physical cooling on body temperature and cardiovascular responses in critically ill adult patients. The patients were randomly distributed to receive only antipyretic ($n=5$), antipyretic combined with blanket at a temperature of 18°C ($n=3$) and just cooling with blanket at 18°C ($n=6$). No statistical significances were found, however, it was verified that from the starting point until three hours later, the average of body temperature reduced from 39.1°C to 38.6°C in the group that received antipyretic and blanket at 18°C; 39.1°C to 39.0°C in the group that received only blanket at 18°C and among patients who received only antipyretic, the average body temperature increased from 39.2°C to 39.4°C.

Randomized clinical trial²⁸ conducted with adult patients with fever compared the efficacy of the use of blankets at different temperatures. The patients were randomized into 4 groups (group 1 received blankets at the temperature of 7.2°C; group 2, blankets at the temperature of 12.8°C; group 3, blankets with temperature of 18.3°C and group 4, blanket at 23.9°C), all associated with the administration of an antipyretic. It was not identified any statistical difference in the mean time (in minutes) in the reduction of body temperature among

groups, however, it was observed a trend of less tremors in patients with higher body temperature and that were allocated in the groups that received blankets.²⁸

In HIV/AIDS carrier patients hospitalized and that presented fever episodes, nurses have been associating administration of antipyretics with physical methods to decrease body temperature, being the most used: removal of bedding when the patients feel hot; application of ice packs when the in the armpits and groin regions; application of warm compresses, being the temperature of the water to wet the compresses comfortable to touch.²⁴

It was found in a quasi-experimental study²⁵ conducted with 115 hospitalized adult patients with fever, that compared the implementation of cold water bath ($n=40$), environment temperature water bath ($n=20$), warm water bath at 37°C ($n=30$) and bath with alcohol ($n=25$), the patients who received bath with water at 37°C had their body temperature reduced faster than the remaining methods.

Grossman et al.²⁶ in a transversal study performed with 150 medical records of acute adult patients hospitalized evaluated the current practice of nurses in the assistance to the patients with fever. It was verified that the intensity of the fever interfered directly in the decision of the nurses on how to treat the fever episode ($p < 0.0001$). The study indicates application of physical methods associated with use of antipyretic medication as more efficient; this combination is little used in the clinical practice. The possible reasons for this fact are the production of chills and vasoconstriction caused by physical methods, the lack of knowledge and time of the nursing team for the application of referred methods.²⁶

In the nursing assistance to adult patients with fever of neurologic cause, a qualitative study¹⁶ conducted with 17 nurses that work in neurological units or mixed units, it was found that these professionals must fully comprehend the temperature regulation process and the febrile response, in order to offer the best practices. It is necessary strict control of body temperature and evaluation of other signs and symptoms.¹⁶

In an experience report about the construction of an algorithm with orientations for the treatment of fever in oncology patients, the following nursing care are recommended: assessment of the temperature; heart and respiratory rates; presence of chills, redness and lethargy; evaluation of culture exams; presence of signs of infection; administration of medicaments of continuous use.³⁰

DISCUSSION

It is undeniable the important role of nurses in monitoring body temperature of patients that present elevation of it. However, it is perceived a lack of standardization of the care offered and that, most of cases, the ones are not based in current scientific knowledge.

It was verified that among the 16 articles of the sample, the majority (7 - 44%) was published in the 90s. Besides that, only 6 (37.5%) articles presented strong level of evidence, level 1 or 2. Thus, it is found that even though the patient with nursing diagnosis of hyperthermia is part of the routine of nursing assistance, there are little studies about the subject and the existent one are outdated.

In the assistance to patients with high body temperature, it is essential to monitor the vital signs (temperature, blood pressure, heart and respiratory rates, oxygen saturation). The monitoring intervention is cited in several studies as the care to be provided to all patients with high body temperature, regardless age group.^{20,23,30} Besides that, monitoring body temperature of a febrile patient is a critical requirement of nursing. It must be noted that each case is different; checking the temperature depends on an individualized plan of care, according to evaluation of the needs and frequency.³²

In the nursing care of children with fever, the evaluation of signs and symptoms of fever, as chills, sweating, tachycardia and monitor of temperature increase through realization of thermal curve, are paramount.^{20,23} The use of warm compresses is indicated in situations of high temperature environment, when the child presents itself unable to perspire, with body temperature between 38.9°C and 40.6°C, or in cases of fever unresponsive to antipyretics.^{29,31} The warm bath should be indicated to assist in reducing temperature.²⁷

Among pediatric patients, it is important to question if an intervention is justified for decreasing fever. Not complicated fever is relatively harmless and an important method of immune defense. When recommended, the intervention must be directed to reduce the discomfort of the child, and not the fever. However, the interventions must also be evaluated in terms of potential risks.^{20,23}

It was verified the use of warm compresses as an additive in the reduction of body temperature of children,²⁹ however, there is a lack of evidence to support this routine. The use of compresses is indicated only in situations of high environment temperature or when the child presents itself incapable of perspire.³¹

Warm baths, a practice frequently used in pediatric febrile care, has had its clinical benefit called into question.²⁷ This common practice may cause additional discomfort to the children, as the body will try to compensate for the loss of heat with tremors, causing the patient to respond with vasoconstriction of skin blood vessels, therefore, creating more heat. There is the necessity of clinical studies to test the efficacy of this intervention in the decrease of body temperature in patients with the nursing diagnosis of hyperthermia.²⁷

In adult patients, the use of cooling blanket with airflow system is more effective than the use of the same type of blanket with water flow system.¹⁹ The use of blankets with temperature at 18°C combined with antipyretic presents a better

reduction of body temperature than the single use of blanket or antipyretic.²² The intensity of the body temperature affects directly in the decision of nurses to treat the episode of fever with the combination of antipyretics and physical method.²⁶

Research that tested the association of antipyretics with physical methods like warm compresses, ice packs or blankets with different temperatures for the decrease in body temperature of adult patients, with fever of infectious focus, corroborated with the statement that the association of methods is more efficient in the reduction of body temperature than the single use of antipyretic.^{22,26} It was identified that the use of blanket with airflow cooling system is efficient in the reduction of body temperature when compared to the use of blanket with water flow cooling system.¹⁹

Standardization of language about the nursing problems and treatments has been developed to clarify and communicate some essential rules in the implementation of care. Despite this effort, there are still many problems and treatments not standardized that are common in the daily nursing practice, as identified in this IR. In these situations, nurses are required to have technical abilities and knowledge acquired through experience to examine the effectiveness of their practices, implement procedures and evaluate the quality of care offered to patients. However, those need to be described, researched and published.³³

CONCLUSION

The present study identified research concerning nursing care for patients who present with an increased body temperature. It was found that the interventions described in the studies refer to children and adults with fever, majorly of infectious focus. There is a lack of studies with experimental design to test nursing care to patients with elevated body temperature, being from fever or hyperthermia. In this sense, it is suggested development of clinical studies that analyze nursing care offered to different causes of the nursing diagnosis hyperthermia, especially the ones related to use of physical methods, such as warm baths, applying warm compresses, ice packs and environment ventilation. It is also added the need of studies with elderly patients and not only pediatric and adults, as acknowledged in this IR. It is important that the efficacy of these interventions be established and tested to expand the knowledge of professionals caring for patients who present with an increased body temperature.

IMPLICATIONS FOR CLINICAL PRACTICE

Care should be individualized, based on current knowledge about the efficacy/risks of the interventions implemented. In patients with the nursing knowledge hyperthermia, re-

regardless of age, it is recommended the assessment of the parameters: temperature, heart and respiratory rates, presence of chills, redness and lethargy, evaluation of culture exams, presence of signs of infection, keeping the administration of drugs of continuous use.

Actions as incentive the hydric ingestion, remove excess of clothes, guarantee the circulation of air in the environment and education of parents, in order to enhance their knowledge and abilities to take care of their febrile child and decrease the anxiety are indicated in the treatment of children with fever. The administration of antipyretic associated with physical methods is more efficient in the reduction of body temperature than the single administration of antipyretic. The use of warm compresses is indicated when the child presents temperature between 38.9 °C and 40.6°C.

In adult patients, the use of blankets with airflow cooling system is recommended for the decrease of body temperature. For hospitalized HIV/AIDS carriers that present fever episodes, it is recommended the administration of antipyretics associated with physical methods to decrease body temperature. The bath with water at 37°C is indicated for reducing body temperature in hospitalized adult patients.

REFERENCES

- Douglas CR. Tratado de fisiologia: aplicada às ciências médicas. 6ª ed. Rio de Janeiro: Guanabara Koogan; 2006.
- Guyton AC, Hall JE. Tratado de fisiologia médica. 12ª ed. Rio de Janeiro: Elsevier; 2011.
- Laganá MTC, Faro ACM, Araujo TL. A problemática da temperatura corporal, enquanto um procedimento de enfermagem: conceitos e mecanismos reguladores. Rev Esc Enf USP. 1992; 26(2):173-186.
- Diagnósticos de enfermagem da NANDA: definições e classificação 2012-2014. Porto Alegre: Artmed; 2013.
- Aclely BJ, Ladwig GB. Nursing Diagnosis Handbook: an evidence-based guide to planning care. Saint Louis: Mosby; 2007.
- Dinarello CA, Gelfand JA. Febre e hipertermia. In: Harrison TR, Fauci AS. Harrison medicina interna. 17ª ed. Rio de Janeiro: McGraw – Hill; 2008. p.112-6.
- Alves JGB, Marques NDCA, Marques CDCA. Tepid sponging plus dipyrone versus dipyrone alone for reducing body temperature in febrile children. São Paulo Med J. 2008; 126(2):107-11.
- Worfolk JB. Heat waves: their impact on the health of elders. Geriatr Nurs. 2000; 21:70-7.
- Scrase W, Tranter S. Improving evidence-based care for patients with pyrexia. Nurs Stand. 2011; 25(29):37-41.
- Whittemore R, Knafl K. The integrative review: updated methodology. J Adv Nurs. 2005; 52(5):546-53.
- Beyea SC, Nicoll LH. Writing an integrative review. AORN J. 1998; 67(4):877-80.
- Santos CMC, Pimenta CAM, Nobre MRC. A estratégia PICO para a construção da pergunta de pesquisa e busca de evidências. Rev Latino-Am Enferm. 2007; 15(3):508-11.
- Vasques CI, Rodrigues CC, Reis PED, Carvalho, EC. Nursing care for hodgkin's lymphoma patients subject to chemotherapy: an integrative review. Online Braz J Nurs. 2008; 7(1). [Cited 2013 Aug. 28]. Available from: <http://www.objnursing.uff.br//index.php/nursing/article/view/1416>
- Phillips B, Ball C, Sackett DL, Badenoch D, Straus S, Haynes B, et al. Oxford Centre for Evidence-based Medicine Levels Evidence. 2001. [Cited 2013 Sept. 12]. Available from: <http://www.cebm.net/index.aspx?o=1025>
- Stetler C, Morsi D, Rucki S, Broughton S, Corrigan B, Fitzgerald J, et al. Utilization-focused integrated reviews in a nursing service. Appl Nurs Res. 1998; 11:195-206.
- Thompson HJ, Kagan SH. Clinical management of fever by nurses: doing what works. J Adv Nurs. 2011; 67(2):359-70.
- Bisetto LHL, Cubas MR, Malucelli A. A prática da enfermagem frente aos eventos adversos pós-vacinação. Rev Esc Enferm USP. 2011; 45(5):1128-34.
- Giusti ACBS, Pellison F, Mendes WSR, Melo LL. Criança com displasia ectodérmica: diagnósticos e intervenções de enfermagem baseados em NANDA e NIC. Arq Ciênc Saúde; 2006; 13(1):39-43.
- Loke AY, Chan HCL, Chan TM. Comparing the effectiveness of two types of cooling blankets for febrile patients. Nurs Crit Care. 2005; 10 (5):247-54.
- Watts R, Robertson J, Thomas G. Nursing management of fever in children: a systematic review. Int J Nurs Pract Suppl. 2003; 9(1): S1-S8.
- Edwards HE, Courtney MD, Wilson JE, Monaghan SJ, Walsh AM. Fever management practises: what pediatric nurses say. Nurs Health Sci. 2001; 3(3):119-30.
- Henker R, Rogers S, Kramer DJ, Kelso L, Kerr M, Sereika S. Comparison of fever treatments in the critically ill: a pilot study. Am J Crit Care. 2001; 10(4):276-80.
- Watts R. Management of the child with fever. Best Practice. 2001; 5(5):1-6. [Cited 2013 Sept. 10]. Available from: <http://connect.jbiconnectplus.org/ViewSourceFile.aspx?0=4323>
- Jones SG. Nursing practice for HIV/AIDS fever care: a descriptive study. J Assoc Nurses AIDS Care. 1998; 9(5):53-60.
- Montesinos RC, Arias MC, Morejón JLT, Arrieta GD. Método físico para la regulación de la temperatura corporal. Rev Cubana Enferm; 1997; 13(2): 80-5.
- Grossman D, Keen MF, Singer M, Asher M. Current nursing practices in fever management. Medsurg Nurs. 1995; 4(3):193-8.
- Thomas V, Riegel B, Andrea J, Murray P, Gerhart A, Gocka I. National survey of pediatric fever management practices among emergency department nurses. J Emerg Nurs. 1994; 20(6):505-10.
- Caruso CC, Hadley BJ, Shukla R, Frame P, Khoury J. Cooling effects and comfort of four cooling blanket temperatures in humans with fever. Nurs Res. 1992; 41(2):68-72.
- Kinmonth AL, Fulton Y, Campbell MJ. Management of feverish children at home. BMJ. 1992; 305(6862):1134-6.
- Akers PA. An algorithmic approach to clinical decision making. Oncol Nurs Forum. 1991; 18(7):1159-63.
- Newman J. Evaluation of sponging to reduce body temperature in febrile children. Can Med Assoc J. 1985; 15; 132(6):641-2.
- Araújo TL, Faro ACM, Laganá MTC. Temperatura corporal: planejamento da assistência de enfermagem na verificação da temperatura; no atendimento da febre e da hipertermia maligna. Rev Esc Enferm USP; 1992; 26(3):315-24.
- Bulechek GM, Dochterman JM, Butcher HK. Classificação das intervenções de enfermagem (NIC). 5ª ed. Rio de Janeiro: Elsevier; 2010. 901p.