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NURSING CARE PROTOCOL WITH VACUUM THERAPY FOR FOURNIER'S GANGRENE IN ADULT MEN

PROTOCOLO DE CUIDADOS DE ENFERMAGEM COM TERAPIA DE VÁCUO PARA A GANGRENA DE FOURNIER EM HOMENS ADULTOS

PROTOCOLO DE CUIDADOS DE ENFERMERÍA CON TERAPIA DE VACÍO PARA LA GANGRENA DE FOURNIER EN HOMBRES ADULTOS

Bárbara Gonçalves[1], Edmundo Ferreira[1], Ana João[2,3], Margarida Goes[2,3], Florbela Bia[2].

[1]São João de Deus School of Nursing, University of Évora, Évora, Portugal.
[2]Nursing Department, University of Évora, Évora, Portugal.
[3]Comprehensive Health Research Centre (CHRC), Évora, Portugal.

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ABSTRACT

Introduction: Fournier Gangrene [FG] is a necrotizing infection that occurs very rarely in the genital, perineal and perianal region. Diabetes Mellitus [DM] is considered a risk factor, since the presence of hyperglycemia for long periods has negative effects pathogens on the person's immunity. The use of vacuum therapy has gained importance in the treatment of complex wounds, being considered in the control of injuries caused by Fournier Syndrome, as it stimulates angiogenesis and leads to increased tissue formation.

Objective: Analyze and systematize the Nursing care protocol that incorporates vacuum therapy in the treatment of Fournier's Gangrene in adult men. This investigation focuses on investigating the effectiveness of the care protocol in the management of Fournier's Gangrene, considering the clinical results achieved and the contribution of Nursing professionals in this process. Additionally, we sought to understand how the protocol is implemented, identifying the key elements of the Nursing intervention and its influence on therapeutic results. The comprehensive analysis of the nursing care protocol with vacuum therapy aims to provide relevant insights for the continuous improvement of care provided to people with Fournier Gangrene, contributing to increasing nursing knowledge in clinical practice.

Methodology: This investigation adopted an Integrative Literature Review [RIL] approach to respond to the proposed objectives. The search for relevant studies occurred in databases such as PubMed, Scopus and CINAHL, using terms related to Negative Pressure Therapy, Fournier Gangrene and Nursing Care. The selection of studies involved screening titles and abstracts, followed by full text analysis, including specific inclusion and exclusion criteria. The analysis of the results followed a qualitative approach, with extraction of relevant data from the selected studies. Common themes were identified, addressing aspects such as the Negative Pressure Therapy intervention, clinical results and the role of Nursing professionals. Compilation of these findings allowed for a comprehensive synthesis and identification of patterns and gaps. Additionally, the methodology used in this investigation provided an in-depth analysis of the relationship between Negative Pressure Therapy and Fournier's Gangrene, highlighting the role of Nursing professionals, contributing with relevant information for clinical practice and future investigations.

Results: After applying the methodology, a final set of 12 studies was obtained, which suggest that there is scientific evidence that Negative Pressure Therapy, compared to conventional dressings, results in less pain, less need for analgesics, greater mobility and fewer dressing changes. In addition, it reduces the mortality rate.

Conclusion: Based on scientific evidence, it can be stated that TPN accelerates the wound healing process and clinical recovery in cases of FG.

Keywords: Fournier's Gangrene; Nursing Care; Negative Pressure Therapy; Vacuum Therapy.

RESUMO

Introdução: Gangrena de Fournier [GF] é uma infeção necrosante que ocorre muito raramente na região genital, perineal e perianal. A Diabetes Mellitus [DM] é considerado um fator de risco, uma vez que a presença de hiperglicemia por longos períodos tem efeitos patogénicos na imunidade da pessoa. O uso da terapia de vácuo tem vindo a ganhar importância no tratamento de feridas complexas, sendo considerado no controlo das lesões provocadas pela Síndrome de Fournier, pois estimula a angiogénese e leva ao aumento da formação tecidual.

Objetivo: Analisar e sistematizar o protocolo de cuidados de Enfermagem que incorpora a terapia de vácuo no tratamento da Gangrena de Fournier em homens adultos. Esta investigação tem como foco, investigar a eficácia do protocolo de cuidados na gestão da Gangrena de Fournier, considerando os resultados clínicos alcançados e a contribuição dos profissionais de Enfermagem nesse processo. Adicionalmente, procurou-se compreender como o protocolo é implementado, identificando os elementos-chave da intervenção de Enfermagem e da sua influência nos resultados terapêuticos. A análise abrangente do protocolo de cuidados de Enfermagem com terapia de vácuo visa fornecer insights relevantes para a melhoria contínua dos cuidados prestados a pessoas com Gangrena de Fournier, contribuindo para o aumento do conhecimento de Enfermagem na prática clínica.

Metodologia: Esta investigação adotou uma abordagem de Revisão Integrativa da Literatura [RIL] para dar resposta aos objetivos propostos. A procura por estudos relevantes ocorreu em bases de dados como PubMed, Scopus e CINAHL, usando termos relacionados à Terapia por Pressão Negativa, Gangrena de Fournier e Cuidados de Enfermagem. A seleção dos estudos envolveu triagem de títulos e resumos, seguida de análise completa dos textos, incluindo critérios de inclusão e exclusão específicos. A análise dos resultados seguiu uma abordagem qualitativa, com extração de dados relevantes dos estudos selecionados. Foram identificados temas comuns, abordando aspetos como a intervenção de Terapia por Pressão Negativa, resultados clínicos e papel dos profissionais de Enfermagem. A compilação destes achados permitiu uma síntese abrangente e a identificação de padrões e lacunas. Adicionalmente, a metodologia utilizada nesta investigação proporcionou uma análise aprofundada da relação entre Terapia por Pressão Negativa e Gangrena de Fournier, colocando em evidência o papel dos profissionais de Enfermagem, contribuindo com informações relevantes para a prática clínica e futuras investigações.

Resultados: Após aplicada a metodologia, obteve-se um conjunto final de 12 estudos os quais sugerem existir evidência científica de que a Terapia por Pressão Negativa, comparada aos curativos convencionais, resulta em menos dor, menor necessidade de analgésicos, maior mobilidade e menos trocas de curativos, além disto, diminui a taxa de mortalidade.

Conclusão: Com base na evidência científica, pode afirmar-se que a TPN acelera o processo de cicatrização das feridas e a recuperação clínica em casos de GF.
Palavras-chave: Cuidados de Enfermagem; Gangrena de Fournier; Terapia de Pressão Negativa; Terapia de Vácuo.

RESUMEN

Introducción: La Gangrena de Fournier [GF] es una infección necrotizante que se presenta muy raramente en la región genital, perineal y perianal. La Diabetes Mellitus [DM] es considerada un factor de riesgo, ya que la presencia de hiperglucemia por períodos prolongados tiene efectos patogénicos sobre la inmunidad de la persona. El uso de la vacumterapia ha cobrado importancia en el tratamiento de heridas complejas, siendo considerada en el control de las lesiones provocadas por el Síndrome de Fournier, ya que estimula la angiogénesis y conduce a una mayor formación de tejido.

Objetivo: Analizar y sistematizar el protocolo de cuidados de Enfermería que incorpora la vacumterapia en el tratamiento de la Gangrena de Fournier en hombres adultos. Esta investigación se centra en investigar la efectividad del protocolo de atención en el manejo de la Gangrena de Fournier, considerando los resultados clínicos alcanzados y el aporte de los profesionales de Enfermería en este proceso. Además, buscamos comprender cómo se implementa el protocolo, identificando los elementos clave de la intervención de Enfermería y su influencia en los resultados terapéuticos. El análisis integral del protocolo de atención de enfermería con vacumterapia tiene como objetivo proporcionar conocimientos relevantes para la mejora continua de la atención brindada a las personas con Gangrena de Fournier, contribuyendo al aumento del conocimiento de enfermería en la práctica clínica.

Metodología: Esta investigación adoptó un enfoque de Revisión Integrativa de la Literatura [RIL] para responder a los objetivos propuestos. La búsqueda de estudios relevantes ocurrió en bases de datos como PubMed, Scopus y CINAHL, utilizando términos relacionados con Terapia de Presión Negativa, Gangrena de Fournier y Cuidados de Enfermería. La selección de los estudios implicó la selección de títulos y resúmenes, seguido de un análisis del texto completo, incluidos criterios específicos de inclusión y exclusión. El análisis de los resultados siguió un enfoque cualitativo, con extracción de datos relevantes de los estudios seleccionados. Se identificaron temas comunes, abordando aspectos como la intervención de Terapia de Presión Negativa, los resultados clínicos y el papel de los profesionales de Enfermería. La recopilación de estos hallazgos permitió una síntesis integral y la identificación de patrones y brechas. Además, la metodología utilizada en esta investigación proporcionó un análisis profundo de la relación entre la Terapia de Presión Negativa y la Gangrena de

Fournier, destacando el papel de los profesionales de Enfermería, aportando información relevante para la práctica clínica y futuras investigaciones.

Resultados: Luego de aplicar la metodología, se obtuvo un conjunto final de 12 estudios, que sugieren que existe evidencia científica de que la Terapia de Presión Negativa, en comparación con los apósitos convencionales, resulta en menos dolor, menor necesidad de analgésicos, mayor movilidad y menos cambios de apósito. Además, reduce la tasa de mortalidad.

Conclusión: Con base en la evidencia científica se puede afirmar que la NPT acelera el proceso de cicatrización de heridas y la recuperación clínica en casos de GF.

Desciptores: Atención de Enfermería; Gangrena de Fournier; Terapia de Presión Negativa; Terapia de Vacío.

INTRODUCTION

FG is a condition characterized by polymicrobial necrotizing fasciitis caused by aerobic and anaerobic microorganisms that act synergistically. This condition affects the perineum, external genitalia, subcutaneous tissue and muscular fascia, being more common in the abdominal wall, genital region and can extend to the dorsal region, upper limbs and retroperitoneum[10].

FG can also serve as a portal of entry for microorganisms, especially for urogenital tract, digestive or skin diseases, which can lead to sepsis, multiple organ failure and death[10].

The same condition is characterized by obliterative endarteritis, followed by ischemia and thrombosis of the subcutaneous vessels that result in necrosis of the skin and adjacent subcutaneous tissues[10].

Among the risk factors for the development of FG, diabetes mellitus, present in 40 to 60% of patients, and alcoholism, found in 25 to 50% of cases, stand out. Furthermore, other predisposing factors include poor perfusion, urinary tract infections, renal failure, trauma, primary anorectal infections, cirrhosis, immunosuppression, smoking, intravenous drug dependence, malignancies, inadequate nutrition, morbid obesity, spinal cord injuries,malnutrition, arterial hypertension, advanced age, anorectal abscess, peripheral vascular disease, orifice surgeries, vasectomy, perineal trauma, urethral stricture, advanced colorectal neoplasia, hematological neoplasms, radiotherapy,human immunodeficiency virus (HIV) infection, appendicitis, acute diverticulitis, perforated duodenal ulcer and inflammatory bowel disease, mechanical trauma and prolonged hospitalization[10].

Negative Pressure Therapy (NPT), introduced as part of wound treatments in 1997 by Argenta and Morykwas, has the main objective of accelerating tissue repair. This therapy consists of creating a humid environment with negative pressure, monitored and localized, promoting healing[3].

During Negative Pressure Therapy, the application of pressure allows the absorption of the exudate present in the wound through a foam or gauze covering, which covers the entire wound bed. Then, a thin, transparent film is applied to completely seal the extent of the wound. A suction duct is fixed and connected to a reservoir that collects the sucked material. This entire process is monitored by a computer, which allows the parameters to be programmed in advance and emits an audible warning if leaks occur[3].

Early diagnosis, adequate treatment and nursing care with precise interventions are essential for the good evolution of FG and guarantee a more positive prognosis. Nursing plays an essential role throughout the treatment process to promote patient recovery[10].

The objective of this study is to analyze and systematize the Nursing care protocol that incorporates vacuum therapy in the treatment of Fournier's Gangrene in adult men. This investigation focuses on investigating the effectiveness of the care protocol in the management of Fournier's Gangrene, considering the clinical results achieved and the contribution of Nursing professionals in this process. Additionally, we sought to understand how the protocol is implemented, identifying the key elements of the Nursing intervention and its influence on therapeutic results. The comprehensive analysis of the nursing care protocol with vacuum therapy aims to provide relevant insights for the continuous improvement of care provided to people with Fournier Gangrene, contributing to increasing nursing knowledge in clinical practice.

The present investigation is of significant relevance due to the need to fill gaps in current knowledge on this topic and address complex clinical challenges associated with the treatment of FG in adult men. The scarcity of studies that specifically address the role of Nursing in administering vacuum therapy for this health condition highlights the importance of this investigation. Fournier's Gangrene is a debilitating condition that requires multidisciplinary approaches and effective interventions. In this context, a detailed analysis of the nursing care protocol with vacuum therapy can contribute to a better understanding of treatment strategies and their clinical impact. By exploring the results achieved with this care approach, as well as the direct influence of nursing professionals on the therapeutic process, this research seeks to offer a valuable contribution to nursing practice and other health professions. The eventual identification of best practices and the definition of effective guidelines can contribute in optimizing health outcomes and improving the quality of life of people facing this challenging condition.

Given this scenario, the research question that guides this study is the following: "What is the current evidence supporting the positive results of vacuum therapy in the treatment of Fournier Gangrene in adult men, as well as the clinical impacts observed when this therapy is administered by nursing professionals?".

This research focuses on analyzing in detail the specific aspects related to Fournier's Gangrene and Negative Pressure Therapy [NPT]. Regarding Fournier's Gangrene, etiological, epidemiological factors and the clinical picture will be explored, with the aim of establishing a comprehensive understanding of the pathology. Additionally, the underlying clinical challenges and implications for the quality of life of affected patients will be analyzed.

Regarding TPN, the study will focus on the meticulous description of the procedure, its operating principles and applications, as well as the theoretical benefits that can be associated. The fundamentals of NPT administration by nursing professionals will be covered, covering patient preparation, application technique, monitoring of results and continuous evaluation of therapy.

Therefore, this study aims to explore the relationship between Negative Pressure Therapy and Fournier's Gangrene, with special emphasis on the crucial role played by Nursing professionals in administering the therapy and its influence on the clinical results of individuals affected by this condition. The scope of the investigation aims to provide a detailed and comprehensive view of these elements, contributing to a deeper understanding of FG treatment from the perspective of Nursing care and NPT.

METHODS

This investigation adopted a RIL approach to respond to the proposed objectives. The search for relevant studies occurred in databases such as PubMed, Scopus and CINAHL, using terms related to Negative Pressure Therapy, Fournier Gangrene and Nursing Care. The selection of studies involved screening titles and abstracts, followed by full text analysis, including specific inclusion and exclusion criteria.

The analysis of the results followed a qualitative approach, with extraction of relevant data from the selected studies. Common themes were identified, addressing aspects such as the Negative Pressure Therapy intervention, clinical results and the role of Nursing professionals. Compilation of these findings allowed for a comprehensive synthesis and identification of patterns and gaps.

Additionally, the methodology used in this investigation provided an in-depth analysis of the relationship between Negative Pressure Therapy and Fournier's Gangrene, highlighting the role of Nursing professionals, contributing with relevant information for clinical practice and future investigations.

After this introduction, we will present the results of our RIL highlighting the main findings related to vacuum therapy in the treatment of Fournier Gangrene. Next, the relevance of these results will be discussed, addressing implications for Nursing practice and possible directions for future investigations.

Ethical Aspects

For this project, obtaining an opinion from the Ethics Committee was not required, since its nature is considered secondary. The problem formulation process was conducted with meticulous adherence to the principles of clarity, objectivity and precision, aiming to achieve substantial results related to interventions and care within the scope of nursing practice. Specifically, the research focused on addressing the control and prevention of painful symptoms in patients affected by FG.

Data Analysis

The data taken from the selected studies were subjected to rigorous analysis, taking into account the results obtained in these specific investigations. The interpretation of the results was based on the reliability of the extracted data, providing a solid approach to the analysis and discussion of the results.

Referencing

The referencing of authors followed the standards established by good academic and scientific practices. The appropriate use of citations and bibliographic references was observed throughout the development process of this study, ensuring the proper attribution of ideas and contributions.

Respect for Existing Literature

When conducting the integrative literature review, a conscious effort was made to respect and value previous investigations. This was achieved through critical analysis and careful synthesis of the results of these studies in order to build on the already established knowledge base.

Methodological Rigor

The conduct of this study followed a rigorous methodological process to ensure the validity and reliability of the results. The steps, from study selection to data analysis and interpretation, were carried out with precision and consistency, ensuring a robust approach in addressing the research question.

Study Limitations

It is important to highlight that, despite the methodological rigor used, this study may face some limitations inherent to the availability and quality of the studies included in the integrative literature review. These limitations may influence the generalizability of the results and should be considered when interpreting the conclusions of this work.

Type of Study

Nurses' clinical practice is guided by the continuous search for the most up-to-date scientific evidence, which translates into quality nursing care. Evidence-based practice encompasses a comprehensive process that involves the collection, interpretation, evaluation, and implementation of clinical data relevant to healthcare professionals' decision-making[4].

In this context, this study adopted the Integrative Literature Review approach, with the purpose of providing quality care based on the most recent scientific evidence. This process comprises the following steps: I) Identification of the research question; II) Search in scientific databases; III) Establishment of study inclusion and exclusion criteria; IV) Selection of studies according to the defined criteria; V) Analysis of selected articles; VI) Presentation and discussion of results and; VII) Synthesis of the knowledge obtained[2].

Therefore, the objective of the study is to ensure that clinical nursing practice is based on the most solid evidence, contributing to the provision of effective and safe nursing care.

Methodological Procedures

The methodological approach adopted in this study was RIL. The research began with the formulation of the following research question: "What is the current evidence supporting the positive results of vacuum therapy in the treatment of Fournier's Gangrene in adult men, as well as the clinical impacts observed when this therapy is administered by nursing professionals?". This question was structured based on the PICO mnemonic, to direct the research precisely (Chart 1↗).

The search for information was conducted in the CINAHL and MEDLINE databases on the EBSCO platform, during the period from April 16, 2023 to May 1 of the same year. The search strategy encompassed the terms "fournier gangrene" and "vacuum therapy". Fur-

thermore, the search was applied to include national and international web pages, which culminated in the identification of 4 relevant review articles.

The selection of articles followed clearly defined inclusion and exclusion criteria. Publications between 2016 and 2023 were considered, and texts in Portuguese or English. The PICO structure guided the construction of these criteria: population (adult men with Fournier Gangrene), intervention (vacuum therapy) and results (evidence of positive results and clinical impacts when administered by nursing professionals).

Studies prior to 2016 and the lack of relevant content were established as exclusion criteria. After the initial search, we identified 16 articles. When evaluating titles and keywords, we excluded 2 articles, resulting in 14 articles for a complete read. After a thorough analysis of these 14 articles, 12 articles were considered relevant and included in the literature review (Figure 1↗).

This detailed methodological approach attempted to ensure that the selected studies were relevant and appropriate to answer the new research question. The analysis and discussion of the results are based on a solid and carefully selected database of articles, offering valuable insights for research into the effectiveness of vacuum therapy in the treatment of Fournier's Gangrene in adult men, as well as the clinical impacts of this therapy administered by nursing professionals.

RESULTS

The results obtained from the articles selected and analyzed in this study are presented in Chart 2↗, which follows the ascending chronological order.

DISCUSSION

The discussion of the articles selected and analyzed in this RSL reveals interesting results on the approach and treatment of Fournier Gangrene (FG). This discussion was organized into thematic topics, all of them related to aspects relevant in the approach and treatment of Fournier Gangrene, in order to facilitate a better understanding and analysis of results.

Diagnosis and Predisposing Factors:

FG is a serious condition that requires early diagnosis for effective treatment[7,8,10]. Most studies agree that the diagnosis is often made clinically, although radiological techniques can help[5,7,8,10,12]. The disease is more prevalent in men, especially the elderly, and is often associated with risk factors such as diabetes, obesity, cancer and immunosuppression[1,5,7,8,10,12]. Perianal infections are often identified as a trigger for this condition.

Initial Treatment and Debridement:

Treatment of FG involves effective patient resuscitation, appropriate antibiotic therapy, and aggressive surgical debridement. Complete debridement is essential to stop the progression of infection and eliminate the systemic effects of necrotic material, toxins and bacteria. The surgical approach varies in relation to the extent of the defect and the affected structures. The results highlight that specialized surgeons prefer more complex techniques to obtain better results[5,8,9,12].

Vacuum Therapy (VAC):

VAC therapy is an effective approach in treating wounds associated with FG. VAC has demonstrated significant advantages, including reduction of wound area, formation of granulation tissue, and elimination of exudate. Compared to conventional dressings, VAC therapy results in less pain, less need for analgesics, greater mobility and fewer dressing changes. This therapy transforms an open wound into a temporarily closed environment, promoting more effective healing. However, its availability may be limited in some locations[3,5,8,9,11,12].

Reconstruction and Plastic Surgery:

Reconstructive surgery is a crucial step after FG debridement. The choice of reconstructive method depends on the size of the defect and the affected structures. Specialized surgeons prefer more complex approaches to obtain better results. Early reconstructive surgery appears to shorten hospital stays and improve the patient's psychological well-being. Approaches such as the use of dermal templates and negative pressure therapy have been shown to be effective[6,8].

Hyperbaric Oxygen Therapy (HBOT):

HBOT is an adjuvant therapy that has shown promise in the treatment of FG. It has been shown to reduce the mortality rate in some studies, but its use may be more associated with more advanced cases of the disease. However, the restricted availability of HBOT and the complexity of FG make it difficult to conduct conclusive clinical studies[7].

Knowledge and Experience of Healthcare Professionals:

The study on nurses' knowledge regarding FG revealed significant gaps in the understanding of the disease and its therapeutic approaches. Many nurses have not received adequate training on FG, leading to insufficient understanding of various aspects of the disease, such as gender prevalence, adjuvant treatments and complementary surgical procedures. This result highlights the importance of continuing education and the search for scientific evidence to improve the knowledge of health professionals[1].

Mortality Rate and Prognosis:

The mortality rate of FG varies across studies, but is influenced by early diagnosis and treatment. Survival rates are highest in patients who receive early diagnosis, complete debridement, and appropriate antimicrobial therapy. VAC therapy and HBOT appear to positively influence the mortality rate in certain contexts[5,7,8,10,11,12].

Need for Multidisciplinary Studies:

The complexity of FG requires a multidisciplinary approach to its treatment and management. Collaboration between surgeons, nurses, clinicians, wound specialists and other areas is essential to ensure the best possible outcome for patients[1,8].

In summary, discussion of the results of the articles analyzed reveals that the approach to Fournier's Gangrene involves a combination of aggressive surgical debridement, appropriate antimicrobial therapy, advanced reconstruction techniques, vacuum therapy and, in certain cases, hyperbaric oxygen therapy. Early diagnosis and a multidisciplinary approach are essential to optimize results and reduce the mortality rate. The knowledge and training of healthcare professionals, especially nurses, also play a crucial role in providing effective care to people with FG.

Study Limitations

The limitations identified in this integrative literature review are related to some aspects. Firstly, the limited selection of studies may have resulted in a restricted number of sources available on the topic of interest, making it difficult to obtain a broad and representative sample.

Another limitation faced was the difficulty in synthesizing divergent results, as some studies presented contradictory conclusions, making it challenging to consolidate the evidence in a clear and conclusive way.

Furthermore, it is important to note that few publications specifically addressed the characterization of health professionals' knowledge about the disease and patient care, especially in the nursing context. This lack of information represents a gap in access to knowledge that could improve the level of skills of these professionals and, consequently, the quality of care provided.

Another limiting factor was the restriction of analysis to articles in Portuguese and English only, which potentially resulted in the loss of relevant international research written in other languages.

Contributions to Nursing

Nursing plays an important role in the therapeutic process of patients with FG, providing comprehensive care that involves the administration of drug therapy, continuous assessment, wound care and clinical monitoring.

Lesions resulting from FG cause physical impacts, such as loss of skin integrity in the perineal, perianal and genital regions. Furthermore, there are emotional repercussions on patients, including negative feelings regarding pain, disease progression, changes in self-image and the hospitalization process. It is essential to value these aspects to promote comprehensive and humanized assistance.

In this context, it is crucial that nurses adopt the Nursing Care Systematization methodology to make individual and team decisions, in order to manage and plan their activities. To achieve this, it is essential that professionals have knowledge about the pathology and the ability to evaluate and make appropriate decisions for the treatment of patients with FG.

However, the lack of emphasis during academic training and the lack of practical experience, combined with the rarity of the disease, can represent barriers for nurses in the search for knowledge about FG.

CONCLUSION

In this integrative literature review, several studies were explored that addressed FG and its therapeutic approaches, with a specific focus on the role of health professionals, mainly in nursing, in the management and care of people affected by this serious condition. The analysis of the results and discussions present in the studies examined allows the elaboration of some relevant conclusions.

FG is an acute necrotizing infection that requires immediate medical intervention and a multidisciplinary approach. This review highlighted the importance of early diagnosis, complete surgical debridement and antibiotic therapy as fundamental pillars for patient survival. Surgical intervention must be broad and comprehensive, aiming to remove necrotic tissue and prevent the spread of infection.

Analysis of studies revealed that therapies such as negative pressure and hyperbaric oxygen therapy offer promising adjunctive strategies to accelerate wound healing and clinical recovery in cases of FG. Additionally, the implementation of specialized nursing practices, including vacuum therapy and appropriate surgical dressing management, has been shown to have a positive impact on wound management and patients' quality of life.

However, it is important to recognize the limitations highlighted in this review. The scarcity of studies that investigate in detail the knowledge of health professionals about the disease and its care, especially in the field of nursing, represents an area lacking research. This information gap can impact the competence of these professionals and, consequently, the quality of care provided to patients with FG.

Taking into account the results present in the studies analyzed and the limitations identified, it is crucial that future research is dedicated to filling the identified gaps and deepening the understanding of the knowledge and practices of health professionals involved in the treatment of FG. It should also be noted that the formulation of standardized care protocols, the promotion of continuous training and interdisciplinary collaboration are essential elements to optimize the approach of this complex condition and increase positive outcomes for those affected.

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Authors
Barbara Gonçalves
https://orcid.org/0009-0009-8374-4155
Edmundo Ferreira
https://orcid.org/0000-0003-1161-5396
Ana João
https://orcid.org/0000-0002-8600-6790
Margarida Goes
https://orcid.org/0000-0001-6017-6874
Florbela Bia
https://orcid.org/0000-0001-5822-6537

Corresponding Author/Autora Correspondente
Ana João – Escola Superior de Enfermagem S. João de Deus Universidade de Évora, Portugal.
alsjoao@uevora.pt

Authors' contributions/Contributos dos autores
BG: Study coordination, study design, data collection, storage, and analysis, review and discussion of results.
EF: Study design, data analysis, review, and discussion of results.
AJ: Study design, data analysis, review, and discussion of results.
MG: Study design, data analysis, review, and discussion of results.
FB: Study design, data analysis, review, and discussion of results.
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Chart 1 – "PI(C)O Mnemonic - Research Question Structure".

Mnemonic PI(C)O	Research Question
	What is the current evidence that supports the positive results of vacuum therapy in the treatment of Fournier Gangrene in adult men, as well as the clinical impacts observed when this therapy is used by nursing professionals?
P: Population	Adult men with Fournier's Gangrene.
I: Intervention	Vacuum Therapy.
(C): Comparison	(not specified in this question).
O: Results	Evidence of positive results and clinical impacts when vacuum therapy is used by nursing professionals.

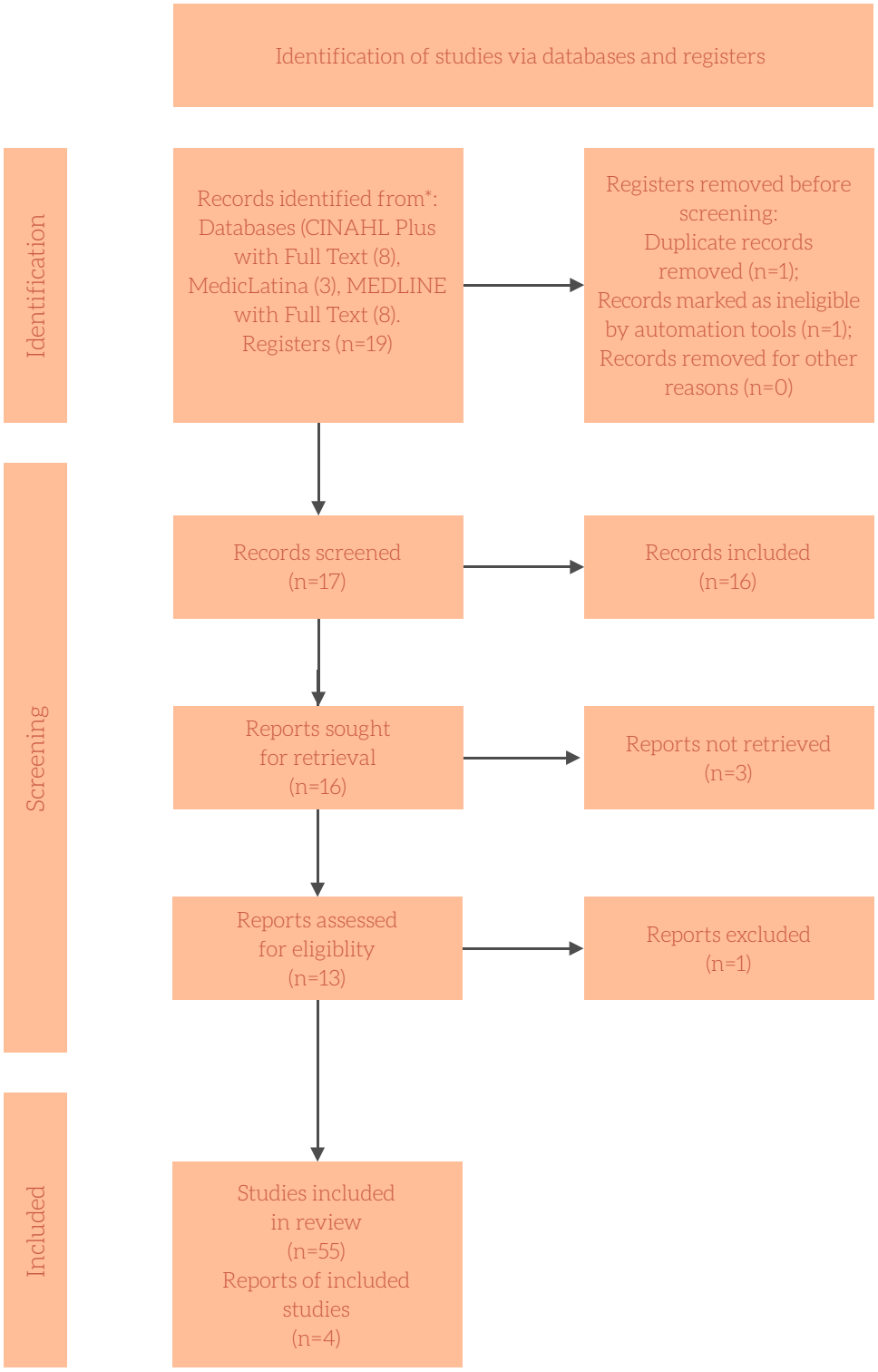


Figure 1 – PRISMA Diagram for the presentation of the research methodology.

Chart 2 – Identification of articles and main results.

Title, Authors, (Year), Reference and Design	Goals	Interventions/Phenomena of Interest	Results and Conclusions
Title: Fournier's gangrene. A clinical review **Authors:** Singh, A. *et al* (2016) **Study design:** RIL.	Highlight the research surrounding Fournier's Gangrene, in particular the various prognostic indicators and disease control strategies.	In this article, an integrative review of the literature on FG was carried out, which included a framework for the entire pathology, predisposing factors, clinical assessment were addressed and the various forms of control and treatment of FG were discussed, including surgery, vacuum and hyperbaric oxygenation. The importance of early diagnosis, complete debridement and adequate antibiotic therapy simultaneously was verified.	FG is a surgical emergency. Control should be based on avoiding sepsis, use of broad-spectrum antibiotics and surgical removal of non-viable tissue. The lack of high-quality evidence on adjuvant surgery and emerging therapies precludes their routine use. Survival rates exceed 70% in patients who receive early diagnosis, complete debridement, and appropriate antimicrobial therapy.
Title: Penile reconstruction with dermal template and vacuum therapy in severe skin and soft tissue defects caused by Fournier´s gangrene and hidradenitis suppurativa **Authors:** Ludolph, I. *et al* (2016) **Study design:** Case study.	Improve the treatment of patients with complete loss of penile shaft skin after Fournier Gangrene or hidradenitis suppurativa using modern biomaterials and topical negative pressure therapy.	Experimental study that allowed us to verify in 3 cases that when replacing penile skin with partial thickness skin grafts, using a dermal matrix, the application of total negative pressure proved to be a reliable and safe tool to stabilize and fix the grafts during the initial phase healing.	In all cases, the split-thickness skin grafts healed very well with the application of this therapeutic concept. Patients were very satisfied with the functional and aesthetic result.

Chart 2 – Identification of articles and main results.

Title, Authors, (Year), Reference and Design	Goals	Interventions/Phenomena of Interest	Results and Conclusions
Title: Comparison of convencional dressings and vacuum-assisted closure in the wound therapy of Fournier´s gangrene **Authors:** Yanaral, F. *et al* (2017) **Study design:** RIL Experimental study.	The purpose of the study is to compare vacuum assisted closure (VAC) and conventional dressings in the treatment of Fournier Gangrene (FG) wounds.	Experimental study that compared the use of conventional dressings with and without the use of VAC therapy. VAC therapy was found to be no better than conventional dressings in terms of clinical outcome. However, VAC therapy appears to be an effective and successful method that offers fewer dressing changes, less pain, and greater mobility compared to conventional dressings in treating patients with Fournier Gangrene.	The difference between the two groups was statistically significant in terms of number of daily patches (group I: 2, group II: 0.5), VAS (group I: 8, group II: 5), number of daily analgesics (group I : 4, group II: 2), number of daily narcotic analgesics (group I: 1, group II: 0), duration of mobilization per day (group I: 40, group II: 73 minutes) ($p < 0.05$).
Title: Fournier´s gangrene: A retrospective analysis of 25 patients **Authors:** Yücel, M. *et al* (2017) **Study design:** Descriptive study.	Conducting a retrospective analysis of the medical data of 25 patients operated on for Fournier Gangrene between January 2010 and June 2015.	In a retrospective study, it was found that aggressive surgical debridement and the use of VAC therapy in appropriate cases provide controlled wound care, reducing morbidity and mortality rates, as well as the need for an ostomy.	This study included 25 patients. Fourteen patients (56%) were female and 11 (44%) were male. The mean age of the patients was 54.3 years (range: 27-82 years). The average length of hospital stay was 21.4 days; the average number of debridements performed was 2.4. Thirteen patients (52%) had perianal abscesses and 20 (80%) had diabetes mellitus. All patients underwent exhaustive debridement; 16 patients (64%) underwent VAC in addition to debridement. Patients undergoing VAC had significantly longer hospital stays and a higher average number of debridements performed (p= 0.004 and = 0.048, respectively). An ostomy was performed on one patient and one patient died.

Chart 2 – Identification of articles and main results.

Title, Authors, (Year), Reference and Design	Goals	Interventions/Phenomena of Interest	Results and Conclusions
Title: Treatment of Fournier´s Gangrene With Vacuum-assisted Closure Therapy as Enhanced Recovery Treatment Modality **Authors:** Syllaios, A. *et al* (2020) **Study design:** Case Study.	To present the surgical management of Fournier Gangrene successfully treated with vacuum-assisted closure (VAC) therapy, a new approach to the treatment algorithm that may lead to a paradigm shift.	In a case study carried out, VAC therapy in patients with Fournier Gangrene proved to be a safe and effective technique, providing positive results in wound healing and recovery. This study highlights the need to develop more studies in this area.	When performing surgical debridement, antibiotic therapy and vacuum therapy, it can be seen that the bacterial colonization present in the wound was very reduced and that vacuum therapy proved to be effective and safe, presenting good clinical results. The patient was discharged on the 25th day of hospitalization.
Title: The role of vacuum-assisted closure (VAC) therapy in the management of Fournier's gangrene: a retrospective multi-institutional cohort study **Authors:** Iacovelli, V. *et al* (2020) **Study design:** Multi-institutional retrospective cohort study.	Explore the role of vacuum-assisted closure therapy versus conventional dressings in the treatment of Fournier Gangrene wounds.	Vacuum therapy has demonstrated in patients with disseminated Fournier Gangrene an advantage in terms of cumulative rate of wound closure at 10 weeks and overall survival at 90 days after initial surgery. It refers to the importance of carrying out more experimental studies on the importance of using vacuum therapy in Fournier's Gangrene.	Of the 92 patients, 62 (67.4%) had local FG and 30 (32.6%) had disseminated FG. After surgery, 19 patients (20.7%) with local FG and 14 (15.2%) with disseminated FG underwent VAC therapy; 43 (46.7%) with local FG and 16 (17.4%) with disseminated FG were treated with conventional dressings. Multivariate logistic regression analysis demonstrated that VAC in patients with disseminated FG led to a higher cumulative rate of wound closure than in patients treated without VAC (OR= 6.5; 95% CI 1.1-37.4, p= 0.036). Kaplan-Meier survival curves for OS showed a significant difference between patients without VAC with local and disseminated FG (90-day OS rate 0.90, 95% CI 0.71-0.97 vs 0.55 , 95% CI 0.24-0.78, respectively; Cox regression confirmed that non-CAV patients with disseminated FG had the lowest OS (sex- and age-adjusted hazard ratio HR= 3.4, 95% CI 1.1-10.4; p= 0.033).

Chart 2 – Identification of articles and main results.

Title, Authors, (Year), Reference and Design	Goals	Interventions/Phenomena of Interest	Results and Conclusions
Title: Hyperbaric Oxygenation in the Treatment of Fournier´s Gangrene: A Systematic Review **Authors:** Schneidewind, L. *et al* (2021) **Study design:** Systematic Literature Review.	Compare FG treatment with or without the use of hyperbaric oxygenation (HBO) as adjuvant therapy. Synthesize the current evidence for the use of HBO in patients with FG and hence, knowledge for planning new clinical studies, especially prospective evaluations.	In this systematic review of the literature, it was found that hyperbaric oxygen therapy has potential as a complement in the treatment of Fournier Gangrene, but there are few studies in this field.	Of the studies analyzed, the reduction in the mortality rate when using HBO stands out, despite this therapy only being used in more advanced stages of FG. Of the 5 case-control studies analyzed, involving 319 patients, the group that received HBO (145 patients) presented a 16.6% mortality rate and the group in which HBO was not applied revealed a 25.9% mortality rate. HBO has the potential as an adjunct in treatment with FG, but it is a challenge to carry out new studies due to the rarity of this disease, restricted availability of HBO and the complex nature of FG.
Title: Fournier's gangrene: nurses' knowledge about the disease and their experiences in caring for patients **Authors:** Alves, A. *et al* (2022) **Study design:** Cross-sectional, descriptive study with a quantitative approach.	To analyze the knowledge of nurses at a teaching hospital about Fournier's Gangrene and their experiences in caring for patients affected by the disease.	In a descriptive study that aimed to assess knowledge about Fournier's Gangrene, it was found that most nurses have no experience in caring for patients with FG and have not undergone training. It is necessary to promote training activities in this area.	Nurses (63/100%) never participated in training regarding Fournier's Gangrene, corroborating insufficient knowledge about the pathology and aspects of patient care, mainly about the prevalence of the disease in relation to gender, adjuvant treatments (hyperbaric therapy and vacuum), complementary surgical procedures (cytostomy and colostomy). They mentioned difficulties in caring for patients (33/52.38%), lack of material resources, gaps in knowledge about Fournier syndrome, lack of experience in caring for patients with the disease.