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Connecting the dots: multidisciplinary care for individual health from the perspective of Betty Neuman

Conectando puntos: atención multidisciplinaria para la salud individual desde la perspectiva de Betty Neuman

Conectando pontos: assistência multidisciplinar à saúde do indivíduo sob a ótica de Betty Neuman

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Abstract

This study aimed to analyze the applicability of the Neuman Systems Model in multidisciplinary health care, highlighting its potential to promote a more comprehensive and effective approach to promoting health and well-being. The study was conducted through a reflective analysis focused on theoretical concepts. This approach is justified by the need to critically discuss the integration between Neuman's theory and multidisciplinary healthcare practice. The results show that applying the Neuman Model facilitates multidisciplinary practice by integrating holistic care and considering biological, psychological, social, and environmental factors. The open system approach identifies vulnerabilities and stressors, allowing coordinated interventions. However, challenges such as fragmentation of care and the need for better communication between professionals to improve clinical outcomes persist. Adopting the Neuman Systems Model can improve clinical outcomes, reduce risks, and promote more humanized and efficient care, especially in highly complex contexts, such as those faced by multidisciplinary teams in contemporary health care.

Descriptors: Nursing Theory; Multidisciplinary Care; Comprehensive Health; Patient Care; Health Care Models.

Resumén

El objetivo fue analizar la aplicabilidad del Modelo de Sistemas de Neuman en la atención multidisciplinaria de la salud, destacando su potencial para promover un enfoque más integral y eficaz en la promoción de la salud y el bienestar. El estudio se realizó a través de un análisis reflexivo, centrado en conceptos teóricos. Este enfoque se justifica por la necesidad de discutir críticamente la integración entre la teoría de Neuman y la práctica de la atención sanitaria multidisciplinaria. Los resultados muestran que la aplicación del Modelo Neuman facilita la práctica multidisciplinaria al integrar la atención holística, considerando factores biológicos, psicológicos, sociales y ambientales. El enfoque de sistema abierto identifica vulnerabilidades y factores estresantes, lo que permite intervenciones coordinadas. Sin embargo, persisten desafíos, como la fragmentación de la atención y la necesidad de una mejor comunicación entre profesionales para mejorar los resultados clínicos. La adopción del Modelo de Sistemas Neuman puede contribuir a mejorar los resultados clínicos, reducir los riesgos y promover una atención más humanizada y eficiente, especialmente en contextos altamente complejos, como los que enfrentan los equipos multidisciplinarios en la atención médica contemporánea.

Descriptores: Teoría de Enfermería; Atención Multidisciplinaria; Salud Integral; Cuidado al Paciente; Modelos de Atención en Salud.

Resumo

Objetivou-se analisar a aplicabilidade do Modelo de Sistemas de Neuman na assistência multidisciplinar à saúde, destacando seu potencial para promover uma abordagem mais integral e eficaz na promoção da saúde e do bem-estar. O estudo foi realizado por meio de uma análise reflexiva, focada em conceitos teóricos. Essa abordagem se justifica pela necessidade de discutir de forma crítica a integração entre a teoria de Neuman e a prática da assistência multidisciplinar à saúde. Os resultados mostram que a aplicação do Modelo de Neuman facilita a prática multidisciplinar ao integrar cuidados holísticos, considerando fatores biológicos, psicológicos, sociais e ambientais. A abordagem de sistema aberto identifica vulnerabilidades e estressores, permitindo intervenções coordenadas. No entanto, persistem desafios como a fragmentação dos cuidados e a necessidade de melhor comunicação entre os profissionais para melhorar os desfechos clínicos. A adoção do Modelo de Sistemas de Neuman pode contribuir para a melhoria dos desfechos clínicos, a redução de riscos e a promoção de um cuidado mais humanizado e eficiente, especialmente em contextos de alta complexidade, como os enfrentados pelas equipes multidisciplinares na saúde contemporânea.

Descritores: Teoria de Enfermagem; Assistência Multidisciplinar; Saúde Integral; Cuidado ao Paciente; Modelos de Cuidado em Saúde.

Introduction

The healthcare sector faces increasingly complex challenges in providing quality care, especially in the care of patients with chronic and multifactorial conditions. Multidisciplinary healthcare teams play a central role in addressing these demands, offering a diverse range of expertise and interventions. However, the effectiveness of these teams is often compromised by fragmented care and a lack of integration and coordination among the professionals involved[1].

The lack of efficient integration between teams can lead to adverse outcomes, such as delays in diagnosis, inadequate treatments, and increased healthcare costs. Furthermore, this fragmentation of care can result in a partial and disconnected view of the patient's needs, compromising the quality and continuity of care provided. Given this scenario, it is essential to adopt approaches that promote more coordinated and integrated care, capable of overcoming these challenges[1,2].

The Neuman Systems Model, developed by Betty Neuman, offers a holistic and comprehensive perspective for understanding and caring for human beings, which can facilitate integration among members of multidisciplinary teams. This model proposes that the individual be understood as an open and dynamic system, in constant interaction with the environment, which enables a preventive and integrative approach to health care[3].

This study aims to analyze the applicability of the Neuman Systems Model in multidisciplinary health care, highlighting its potential to promote a more comprehensive and effective approach to promoting health and well-being. By adopting the principles of this model, health teams can develop a more complete understanding of patients' needs, resulting in more coordinated care and, consequently, better clinical outcomes.

Methodology

This study is a theoretical reflection with a qualitative approach, whose purpose is to analyze the applicability of the Neuman Systems Model in multidisciplinary health care. The methodology adopted follows the principles of a reflective study, which aims to broaden the understanding of a topic based on the critical and theoretical analysis of a consolidated model in nursing and its interface with multidisciplinary practice[4].

The study was conducted through a reflective analysis, focused on theoretical concepts. This approach is justified by the need to critically discuss the integration between Neuman's theory and the practice of multidisciplinary health care. The choice of a qualitative methodology allows for greater depth in the discussion of the aspects involving the practical application of the model in the healthcare reality[4,5].

The central theoretical framework of this study is the Neuman Systems Model, which proposes a systemic view of the patient, understanding him/her as an open system in constant interaction with internal and external stressors. The model is also based on different levels of prevention — primary, secondary, and tertiary —, which provides support for a comprehensive and multidisciplinary approach to the individual's health[3,5].

Data collection was performed through a review of scientific literature, selecting articles that discuss Betty Neuman's theory and multidisciplinary health care. The sources were in the PubMed, SciELO, and Google Scholar databases, using the descriptors: "Nursing Theory", "Multidisciplinary Care", "Comprehensive Health", "Patient Care" and "Health Care Models". The selection included studies published between 2018 and 2024, written in Portuguese and English, with a theoretical or practical focus on the integration between Neuman's principles and multidisciplinary care. The search was conducted between June and July 2024.

For the analysis, articles that address the Neuman model in different health contexts and its interrelation with care practice in multidisciplinary teams were considered. Critical reading of the selected texts allowed us to identify the contributions and limitations of the model regarding the coordination of care between different areas of health.

Studies that discussed the Neuman Systems Model applied to different health contexts, with a focus on multidisciplinary care and comprehensive patient care, were included. Articles that did not present a theoretical discussion of the model, that were exclusively quantitative, or that did not address multidisciplinary practice were excluded.

Data analysis followed a process of critical interpretation, comparing the findings in the literature with the key concepts of the Neuman Model: open system, stressors, lines of defense, levels of prevention and resistance. These concepts were correlated with the principles of multidisciplinary care, emphasizing how the model can contribute to a more integrated, effective and patient-centered practice. The reflection was based on the application of the model in different care contexts, considering the interaction between members of the health teams and the complexity of patient care.

Results and Discussion

Open system and holistic vision

Betty Neuman's Systems Model considers the human being as an open system, in constant interaction with the surrounding environment, influenced by a range of internal and external factors. This concept is based on systems theory, which sees the individual as a dynamic entity, in a continuous process of exchanging energy and information with the environment. In this context, health is not seen simply as the absence of disease, but as a state of balance between internal and external demands, and the individual's ability to respond to these demands[5].

The open system concept in Neuman's model suggests that the patient is a complex organism whose responses to illness or stress are modulated by a series of interactions between physical, psychological, sociocultural, developmental, and spiritual variables. Thus, the individual's health is affected not only by biological aspects, such as a physical illness but also by emotional (anxiety, depression), social (family relationships, socioeconomic conditions), and

environmental (housing conditions, exposure to pollutants) factors[4,6].

This holistic approach aligns directly with the concept of integral health, which is widely discussed in contemporary multidisciplinary practices. The vision of integral health requires that therapeutic interventions not only focus on treating the disease or the isolated symptom but also consider the entire context in which the patient is inserted. In this way, Neuman's model offers a framework that enables the promotion of the patient-centered approach, a central principle in the practice of multidisciplinary care, where different health professionals collaborate to ensure that all spheres of the patient's life are addressed in a coordinated and interdependent manner[5,6].

Applying the open system concept to clinical practice requires multidisciplinary teams to adopt a collaborative perspective that goes beyond the fragmented work of each healthcare professional. This means that each member of the team—whether nurse, physician, psychologist, physical therapist, or social worker—must understand and contribute to the overall care of the patient. For example, when caring for a patient with a chronic disease such as diabetes, the team must identify and treat not only the physical symptoms related to glycemic control, but also the psychological and social stressors that may negatively impact treatment adherence. Aspects such as financial stress, limited social support, or the presence of psychological comorbidities such as anxiety or depression need to be considered and addressed in an integrated manner[4-6].

The collaborative approach of the health team becomes essential when considering that different dimensions of the patient's health may be interrelated and require precise coordination. The fragmented vision of each specialty, if worked in isolation, can lead to disjointed care, which increases the risk of diagnostic delays, conflicting or suboptimal treatments, and the deterioration of the patient's health status. In this sense, Neuman's model challenges a synchronized interdisciplinary action, where information shared among team members allows an understanding of the reality of the patient's condition and needs[5,7].

A practical example of this approach can be observed in the care of patients with chronic conditions and multiple comorbidities, such as those suffering from congestive heart failure and type 2 diabetes mellitus. These patients often experience physical stressors, such as fatigue and pain, but also suffer from emotional and social challenges, such as fear of death, social isolation, inability to perform daily activities, and financial concerns. Coordinated care between physicians (pharmacological control and medical supervision), nurses (monitoring and self-care), psychologists (emotional support and psychological adjustment), social workers (financial and organizational support), and nutritionists (guidance on eating habits) becomes crucial to maintaining the health balance of these patients, leading to a more global and individualized approach.

The flexibility and resilience of the open system are also emphasized, allowing patients to respond uniquely to the interventions of the health team. The focus on a dynamic model highlights the need for continuous and adaptive assessment of the patient's condition. By considering the individual as an open system, health professionals are called upon to intervene at multiple levels—biological, psychological, social, and environmental—synergistically. This reflects the importance of effective interprofessional communication and joint planning of therapeutic strategies, optimizing the use of available resources and reducing fragmentation of care[5,7].

Therefore, adopting the open system concept in Neuman's model interconnects health care, allowing the multidisciplinary team to see the patient as an integrated and complex unit. By recognizing and acting on the stressors and the different subsystems that make up the individual, the team can provide more individualized, holistic, and effective care, promoting global well-being that goes beyond the simple elimination of symptoms.

Stressors and lines of defense

In the Neuman Systems Model, the concept of stressors refers to any factor that can destabilize the patient's balance, compromising their health status. These stressors are key elements in understanding the individual's vulnerabilities and in strategies to restore or maintain their well-being. Stressors can be classified into three main categories: internal, external, and interpersonal, each with the capacity to generate an imbalance in the patient's biological, psychological, and social systems[8].

Internal stressors are those that arise from within the body itself. They can include physiological changes, such as infections, metabolic disorders or chronic diseases. The emergence of an autoimmune disease, for example, represents an internal stressor, in which the body begins to attack its cells, generating a complex reaction that compromises internal balance. External stressors, on the other hand, are influences that come from the patient's surrounding environment. These include everything from physical factors, such as extreme weather conditions, to changes in the social or family environment, such as unemployment or the loss of a loved one. These external stressors can directly influence an individual's ability to maintain their health stability, especially when they interact with internal factors of vulnerability, such as low immunity or associated comorbidities. Interpersonal stressors involve the individual's relationships and interactions with other people. Family conflicts, pressure in the workplace, social isolation, and lack of emotional support are examples of interpersonal stressors. Such stressors can increase the burden of psychological distress and often aggravate existing health conditions, such as cardiovascular disease or anxiety disorders[5,8].

The response to these stressors is mediated by the patient's system's lines of defense, which act as protective barriers at different levels. In Neuman's model, these lines of defense are organized into three layers that reflect different degrees of resistance and response to stressors and

are fundamental to preserving balance and maintaining health[7].

The first line of defense is a flexible and adaptable barrier that responds immediately to stressors. This layer of protection is influenced by factors such as general health, lifestyle, nutrition, preventive practices, and social support. In a clinical context, the first line of defense may include primary prevention strategies such as vaccination, proper hygiene practices, and mental health promotion. These elements function as external shields that, when well-managed, can prevent the infiltration of deeper stressors. However, when these mechanisms fail or are insufficient, stressors bypass this first barrier, requiring a more complex response from internal systems[6,9].

In the second line of defense, if stressors exceed the first line, the second line of defense — also called the normal line of defense — is activated. This line reflects the patient's usual state of health and resistance to destabilizing factors. The normal line of defense can be understood as the individual's homeostatic equilibrium point, representing their typical functioning before the introduction of stressors. For example, a person with controlled blood pressure may see their normal line of defense compromised when faced with ongoing stressors, such as chronic stress or lack of adherence to medical treatment, resulting in uncontrolled high blood pressure. The role of health teams at this level is to work to restore balance through therapeutic and educational interventions, helping the patient to cope with and mitigate the effects of stressors before they reach deeper layers of their defenses[3,9].

The third line of defense, also known as the line of resistance, is activated when stressors have already breached the first two barriers and the patient's health is under critical threat. This line consists of deeper internal protective mechanisms, such as the immune system, the body's regenerative capacity, and complex biological responses that aim to repair the damage caused by stressors. At this stage, interventions are typically tertiary, focused on rehabilitation and restoring internal balance after significant damage. In a clinical context, this may involve intensive disease management, such as administering immunosuppressive medications to transplant patients or providing advanced therapies for recovery after cardiac or surgical events[2,3,9].

However, the effectiveness of these lines of defense is directly related to the patient's level of vulnerability and the complexity of the stressors. A patient with comorbidities, for example, may have weakened lines of defense, requiring more intensive and careful management by the multidisciplinary team. Thus, coordination between health professionals is essential to ensure that the response to these stressors is adequate and effective across all layers of defense, especially when the first and second lines prove incapable of containing the damage[7].

Furthermore, continuous monitoring of the patient's condition is vital to understanding when the lines of defense are under threat and to adapt therapeutic interventions according to the individual's needs. The multidisciplinary team must work together to assess not only clinical signs but also underlying factors that may be weakening the lines of defense, such as psychological stress, poor nutrition, or lack of social support. This integrated and proactive approach allows for early intervention and can prevent the patient's health from deteriorating. By recognizing and addressing stressors in a coordinated manner, the healthcare team can strengthen the lines of defense and promote a faster and more effective recovery, preventing the patient from reaching a critical state[1-3].

Challenges and opportunities in applying the Neuman Model

Although the Neuman Systems Model offers a consistent and widely recognized theoretical framework for the delivery of multidisciplinary health care, its practical implementation faces a few significant challenges. One of the main obstacles lies in the lack of efficient integration between the different health professionals who make up multidisciplinary teams. In many health systems, especially those that are fragmented or overburdened, communication between professionals is not sufficiently structured to promote a truly collaborative approach, which compromises the applicability of the model[2,5].

Fragmentation of care is a common challenge that occurs when healthcare professionals work in isolation, without a shared view of the patient's overall needs. In this scenario, physicians, nurses, psychologists, social workers, and other specialists may work independently without adequate coordination, leading to inconsistencies in treatment and often increased healthcare costs due to duplication of tests, ineffective treatments, and lack of continuity of care. In addition, the lack of structured communication between disciplines can result in delays in identifying and resolving health problems, compromising the quality-of-care provided[3,8].

Another factor that contributes to the difficulty of applying the model is the workload faced by health professionals, especially in high-demand settings such as public hospitals or health facilities in remote areas. Overload may prevent professionals from having the time or resources to participate in collaborative meetings, discuss the care plan in an integrated manner, and carry out a patient-centered approach, which is essential for the effectiveness of the Neuman Model. Without this ongoing collaboration, care becomes fragmented and the principles of the model, which emphasize prevention and protection through coordinated interventions, may not be fully implemented[1-3,8].

However, despite the challenges, the Neuman Model also offers significant opportunities for restructuring and improving health care. When applied effectively, the model has the potential to transform dynamics among health care professionals and foster a culture of interdisciplinary collaboration, where care is more cohesive and focused on the comprehensive needs of the patient. The multidisciplinarity promoted by the model not only benefits clinical practice but also allows the patient to be seen as a

whole, considering physical, emotional, social, and environmental aspects that affect their health[1,2,8].

One of the main benefits of the Neuman Systems Model is its emphasis on prevention at its different levels (primary, secondary, and tertiary), which contributes to a more proactive care practice. The focus on prevention allows health professionals to identify and address potential problems before they become critical. For example, by applying the concept of stressors and lines of defense, health teams can monitor and reduce risk factors that, if left unchecked, could destabilize the patient's equilibrium. This includes implementing health education programs, preventive interventions, and discharge planning that reduce the recurrence of illnesses and promote self-care[9].

Another aspect worth highlighting is that the model can serve as a catalyst for innovation in healthcare, offering a comprehensive theory that can be adapted to the specific needs of different populations and clinical settings. For example, the use of technology and digital communication tools can facilitate the implementation of the model, promoting real-time information exchange among team members, and ensuring that clinical decisions are made based on up-to-date data and a comprehensive view of the patient.

Furthermore, by adopting the Neuman Model, healthcare organizations could reorganize their processes in ways that improve the flow of communication and foster continuous interaction between different disciplines. This could include creating collaborative care protocols, in which each healthcare professional clearly understands their role within the care process and how their actions integrate with those of other team members. This structured approach can not only improve the quality of care provided, but also increase staff satisfaction by fostering a more collaborative and less fragmented work environment.

Another challenge, however, is the need for ongoing training so that health professionals can apply the Neuman Model effectively. Interprofessional education and training are essential to ensure that all members of the multidisciplinary team understand the principles of the model and know how to use it in their daily practices. This includes developing communication and team coordination skills, as well as familiarity with holistic assessment and early intervention techniques. Without adequate training, there is a risk that the model will be applied superficially, without realizing its full potential to promote more integrated and effective care[1-8,9].

Furthermore, adapting the model to different cultural and socioeconomic realities can also present challenges. In settings where resources are limited and access to health care is poor, full implementation of the Neuman Model may require adjustments to meet local needs. In such cases, the approach should be flexible and adaptable, focusing on strategies that are realistically implementable within the specific context of each health system.

Final Considerations

It was demonstrated that the Neuman Systems Model provides a robust theoretical framework for practical application in the context of multidisciplinary health care. By adopting a systemic and holistic perspective, the model facilitates the understanding that the patient is an open system, in constant interaction with internal and external factors, which requires preventive and interventional approaches at multiple levels.

The main contribution of this study lies in the recognition that multidisciplinary care when guided by the principles of the Neuman model, promotes a more coordinated and comprehensive practice. The emphasis on the concept of an open system reinforces the need for collaborative and integrated action among the various health professionals, which is directly aligned with the complexity of contemporary health care. This allows the team to consider the patient in his/her entirety, covering not only the biological aspects, but also the psychological, social, and environmental factors that influence his/her health status.

Furthermore, the concept of stressors and lines of defense, central to Neuman's model, offers a perspective - which deserves attention - for identifying vulnerabilities in patients and developing more effective interventions. Preventive action, at its different levels (primary, secondary, and tertiary), reinforces the multidisciplinary team's ability to prevent illness, promote well-being, and respond more efficiently to crises.

However, the application of the model requires overcoming practical challenges related to the fragmentation of care. The study highlights that fragmentation persists as a significant obstacle to the effectiveness of multidisciplinary care, often resulting in disarticulation between professionals and unsatisfactory clinical outcomes. Neuman's model, by proposing an integrated view of the patient, offers a theoretical path that can minimize this fragmentation, but its implementation requires continuous efforts of interprofessional coordination, effective communication, and joint planning of interventions.

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