

The Clinical Application of the Johnson's Behavioral System Model and the Challenges of its Application in Nursing; a Systematic Review

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Abstract

Aims: The purpose of this study was to review the application of Johnson's behavioral system model in nursing and the challenges of applying this model in nursing.

Information & Methods: This research is a systematic review study limited to domestic and foreign studies from 1980 to 2022. The search used domestic and international electronic databases and search engines, including Pubmed, Science Direct, CINAHL, ISC, Google Scholar, SCOPUS, Magiran, and SID. The keywords were (Behavioral Systems Model OR Behavioral Systems Theory) AND (Johnson Nursing Model OR Johnson Nursing Theory) AND (Johnson Model) AND (Clinical OR Trial). Farsi and English keywords were used for searching.

Findings: After screening the studies based on the inclusion and exclusion criteria, 17 clinical studies were selected and reviewed. By examining the studied groups, it was found that Johnson's behavioral model has been studied at all ages and can generally be an effective model in practice. However, its implementation may be associated with challenges in some situations and environments. This theory is limited mainly to nursing concerns about the disease and the hospitalized person and is not compatible with nursing's orientation towards health.

Conclusion: Nurses can use Johnson's model and consider the behavioral subsystems of this model in their care of chronic patients. On the other hand, considering that the volume of good studies has been done in Iran and has had positive results, this model can be effective in the nursing field in Iran.

Keywords

Model [Not in MeSH];

Theory [Not in MeSH];

Johnson's Behavioral System Model [Not in MeSH];

Nursing [<https://www.ncbi.nlm.nih.gov/mesh/68009729>]

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Introduction

Dorothy E. Johnson, a nursing theorist, considers humans a behavioral system whose consequences can be seen [1]. During the experience of Johnson's educational practice, it can be seen that her background is in a period of transformation from a "disease-centered" to a "patient-centered" biomedical model [2, 3]. This theory promotes a change in nursing from concern for disease to attention to all patient behaviors. It also differentiates nursing and medical care responsibilities and promotes the development of nursing as an independent field [4].

The behavioral system model emphasizes the assessment and intervention of the individual behavior system and believes that nurses can reflect the performance of their implicit individual system through noticeable behavioral changes and change individual behavior to solve problems through the implementation of the nursing intervention [2]. From Johnson's point of view, the client has seven behavioral subsystems (attachment, achievement, aggressive, dependence, sexual, ingestive, and eliminative subsystems) [5]. Each subsystem has its own goals and tasks. Only when each subsystem works in harmony can the integrity and good functioning of the entire behavioral system be maintained. The ability of each subsystem to perform its functions depends on the essential conditions of three functions, i.e., the need for protection, nutrition, and stimulation. Each subsystem has four dimensions: motivation, orientation, selectivity, and behavior [6]. The goal of a nurse is to maintain or restore the balance and stability of a person's behavioral system or to help the patient achieve the desired level of balance and performance [7].

Johnson's Behavioral System Model (JBSM)

Johnson believes that the client has seven behavioral subsystems. When the subsystem fails to fully develop and/or receives an adequate supply of something, it is quickly thrown out of balance. Other times, there is a discrepancy, which means that the subsystem is not working well enough to achieve the ultimate goal, which is the best state. The conflict between the subsystem components is unsuitable for the body as much as one of the subsystems dominates the others [1, 6]. Those are the main causes of subsystem imbalances that cause people to feel unwell and, therefore, become ill. When this energy is not directed in the right direction, clinical problems arise, which can be seen as violence or aggressive language [5]. Johnson believes the nurse's primary responsibility is to support the patient to return to a steady state in case of imbalance, which means returning to average balance. Therefore, nurses must be patient with aggressive patients to get to the root of the problem. Most aggressive

behavior is caused by anger and emotional stress. Therefore, it is the nurse's responsibility to create a favorable external environment for the patient. In the analysis and development of this theory, Johnson has pointed out the contribution and effects of the environment on the body. Here, the environment is divided into external and internal, where the internal environment is the subsystem, while the external environment includes everything outside the body [8]. Regarding health, this theory believes that a healthy person is a person who has complete balance and stability in the functioning of the seven subsystems. Whenever there is instability in the system, the nurse has a role in rebalancing. According to Johnson, the "science and art" of nursing should be focused on the patient as a person and not on the existence of a specific disease. Johnson used the work of behavioral scientists in psychology, sociology, and ethnology to develop her theory [9, 10].

Framework

In nursing, theories are a vital part of the system. The main goal of nursing theories is to describe, explain, and predict the nursing phenomenon. Therefore, a good theory in this field ensures better patient care, professionalism, and better communication between nurses, and most importantly, it is a guide for further research and education in this field [11, 12]. A good theory has predictions for the foundations of nursing practice that help generate more knowledge and better direction in this field. A theory that shows what we already know and need to know in nursing plays a crucial role in patient care. Hence, theories have a long way to go in developing this profession [13]. A good theory makes sense, is supported by past research in the same field, and is consistent with everyday observations [12].

The concept of model application

The use of any nursing model in practice requires three conditions: Adaptation of the model to clinical requirements, its comprehensive development concerning clinical requirements, and its specificity in relation to clinical requirements. These conditions in applying a nursing model should be understood to enable clinical nurses to use the models appropriately and effectively in practice [14]. Johnson's behavioral system model meets the requirements of the professional perspective due to the interaction between subsystems. Subsystems are interactive and interdependent; recovery in one subsystem can affect recovery behavior in others. Therefore, all subsystems require diagnostic and intervention measures [1, 6, 7].

The purpose of this study was to review the application of Johnson's behavioral system model in nursing and the challenges of applying this model in nursing.

Information and Methods

This systematic review study is limited to domestic and foreign studies from 1980 to 2022. The criteria for entering the articles into the review included: 1) original research, 2) studies in Farsi and English 3) conducting studies in the clinical field. Articles that were not in line with the purpose of the study were excluded. Regarding that, the purpose of the study was to determine the applicability of the model and not just to provide quantitative data; articles that only their abstracts were available were also considered.

The search used domestic and international electronic databases and search engines, including Pubmed, Science Direct, CINAHL, ISC, Google Scholar, Scopus, Magiran, and SID. The keywords were (Behavioral Systems Model OR Behavioral Systems Theory) AND (Johnson Nursing Model OR Johnson Nursing Theory) AND (Johnson Model) AND (Clinical OR Trial). Farsi and English keywords were used for searching.

Findings

In the initial search, 72 articles were found, and after screening the articles based on inclusion and exclusion criteria and removing duplicate articles, 17 clinical articles were selected and reviewed. Figure 1 shows the flowchart of the process of selecting articles.

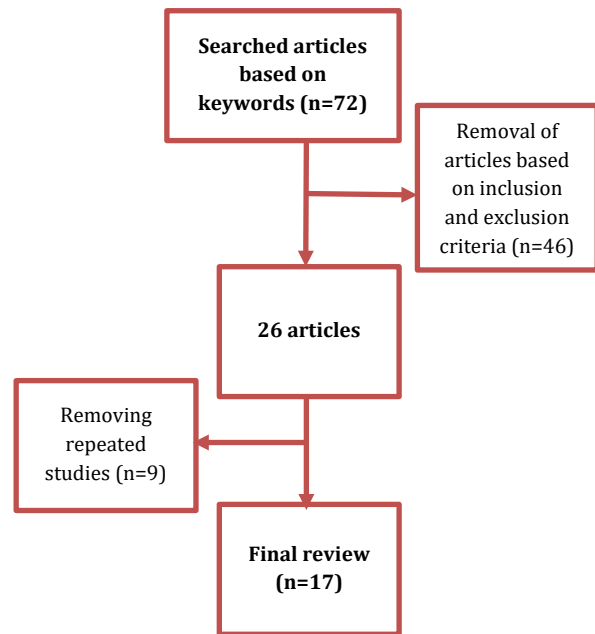


Figure 1. Flowchart of selecting articles

Among these articles, seven articles were Iranian, and 11 were foreign. By examining the groups studied in the articles, it was found that Johnson's behavioral model has been studied in all ages (children, teenagers, adults, and the elderly). Table 1 shows the selected articles with their details.

Table 1. Clinical studies with the application approach of Johnson's behavioral system model

| Author(S) | Year | Target group | Study information |
|-----------------------|------|---|---|
| Nooreddini et al. [2] | 2021 | Patient with CVA (Cerebrovascular Accident) | This study investigated the nursing process based on Johnson's behavioral model in patients with CVA. Using Johnson's behavioral model was very useful and helpful in adjusting and correcting unstable behaviors. Therefore, it was suggested that this model be used as a framework for nursing care. |
| Paryab et al. [3] | 2021 | Mothers of children with cancer | The authors investigated the effectiveness of Johnson's behavioral model on the anxiety of mothers with children with cancer. They found that Johnson's theory is essential in reducing the anxiety of mothers of children with cancer. |
| Payamani et al. [15] | 2020 | Patients with multiple sclerosis | This study investigated the nursing process based on Johnson's behavioral system model in patients with multiple sclerosis. Using Johnson's behavioral model was very useful and helpful in adjusting and correcting unstable behaviors. Therefore, it is suggested that this model be used as a framework for nursing care. |
| Evgin & Bayat [16] | 2020 | Adolescents | This study was conducted experimentally with a pre-test and a control group to determine the effect of training based on the behavioral system model presented by the creative drama method on adolescent bullying. They found that drama training based on the behavioral system model effectively prevents bullying and may be used in prevention programs. |
| Karkhah et al. [17] | 2020 | Patient with wrist joint hematoma | This study was designed to use Johnson's behavioral model in caring for a middle-aged woman with severe left wrist pain, edema, and hematoma. They suggested that this model can be used as a general framework in the hospital to diagnose problems and evaluate and design the care plan. |
| Ghanbari et al. [1] | 2020 | Patients with heart failure | This study aimed to investigate the effects of Johnson's behavioral system model on the care of patients with heart failure, taking into account all its behavioral aspects. The patient presented unstable behaviors concerning aggressive protective, ingestive, eliminative, and sexual subsystems. After performing nursing care according to JBSM, her erratic behaviors decreased. |
| Rahmani et al. [7] | 2020 | Patients with heart failure | In this study, a nurse-led care program based on Johnson's behavioral system model was used to improve the balance of the behavioral system of heart failure patients. They found that this care program is very beneficial for improving the balance of the behavioral system of heart failure patients. |
| Ghanbari & Pouy [18] | 2018 | A child with acute lymphoblastic leukemia | The authors investigated the clinical performance of Johnson's behavioral model in a child with acute lymphoblastic leukemia. This article shows the application of the nursing process based on Johnson's behavioral theory in a clinic in a wider environment. Johnson's behavioral theory is related to clinical environments and can be used in hospitals as a framework for diagnosing patient problems and proposing and evaluating comprehensive nursing care. |

Continue of Table 1 from the last page

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|---|--------|---|---|
| Oyedele et al. ^[19] | 2013 | Teenagers | In this study, a teenage pregnancy prevention program in Soshanguve, South Africa was implemented using Johnson's behavioral systems model. The knowledge and perceptions of teenagers about teenage pregnancy were investigated, and found that this model will be somewhat effective. |
| Tamilarasi & Kanimozhi ^[20] | 2009 | Breast cancer survivors | In this study, an intervention was developed to improve the quality of life in breast cancer survivors. It was determined that Johnson's behavioral system model can improve breast cancer survivors' quality of life. |
| Colling et al. ^[21] | 2003 | Elderly with cancer | A self-monitoring program was planned for frail elderly cancer patients. The results of this study on 78 people showed that even in people with physical and cognitive disorders, a behavioral therapy program based on Johnson's behavioral system model can reduce urinary incontinence, costs, and caregiver burden. |
| Coward & Wilkie ^[22] | 2000 | Cancer patients | The results showed that Johnson's behavioral system model can be used to plan the pain management of cancer patients. Study findings guide oncology nurses to teach patients with metastatic bone pain and their family members pain management. |
| Poster & Beliz ^[23] | 1992 | Hospitalized adolescents | Johnson's behavioral system model was used to measure changes during hospitalization of adolescents. It was found that this model provides valuable information to clinicians to target specific interventions, monitor behavioral changes, and evaluate intervention effectiveness. |
| Fruehwirth ^[24] | 1989 | Support group for Alzheimer's caregivers | It was shown that Johnson's model can be used successfully in a group situation, such as a support group for Alzheimer's caregivers, where problem-solving and making choices to adapt to lifestyle changes are a definite requirement. |
| Riegel ^[25] | 1989 | Patient with chronic coronary heart disease | This study investigated the operationalization of Johnson's behavioral system model for social support and psychological adaptation to chronic coronary heart disease. The results showed that Johnson's model has positive results in these patients. |
| Dee & Auger ^[26] | 1983 - | | At the University of California, Los Angeles-Neuropsychiatric Institute (UCLA-NPI), a hospital classification system based on the Johnson model was developed. This system was integrated with the nursing process and is used as a clinical measure of patient progress. Auger and Dee's work led to the development of behavioral indices, and each subsystem was operationalized in critical adaptive and maladaptive behaviors. The behaviors were categorized according to the considered level of adaptability. Nurse practitioners can rate each behavior for compliance using an activity rating scale of 1 to 4. This scale provides a basis for allocating nursing resources at the UCLA-NPI. |
| Rawls ^[27] | 1980 | Amputee patients | Rawls described and evaluated this model in the care of amputee patients. He found that Johnson's behavioral model has positive results in the mental image of amputation patients. |

Discussion

In this systematic review, studies with the clinical application of Johnson's behavioral system model were reviewed. In this review, we found that this model can be implemented in different ages, from children to the elderly, and in general, it can be an efficient model at the bedside, although there may be challenges in its implementation in some conditions and environments. By reviewing Johnson's behavioral model and the conducted studies, we find that this theory is mainly limited to nursing's concern about the disease and the hospitalized person and is less compatible with nursing's tendency towards health ^[5, 9].

Although most of these studies were performed at different ages and in different patients and environments, they had positive results in the clinic. Therefore, it should be considered in future nursing studies as a model that can be efficient in nursing. Also, by reviewing the studies, we find that these studies were conducted on chronic patients or in need of long-term care, and no study is available in acute situations. This may be because the nature of investigating and recognizing behavioral patterns of individuals requires continuous time to know the patient. Johnson's theory is suitable for long-term care and does not apply to acute situations. Therefore, the implementation of this model in acute situations is limited.

On the other hand, this theory lacks a framework to examine and recognize families or communities. Johnson's model has been widely used for people who are ill or at risk of illness. The use of this model in families, groups, and communities is limited, and this is evident in the studies listed in Table 1. Johnson's theory focuses on the person and the disorder, which is inconsistent with nursing's claim to maintain and promote health and nursing's interest in interfering with community health ^[4, 5].

Reviewing the studies, we find that this model can be generalized in different cultures and societies and can be used. Also, this model has been used in inpatient, outpatient, and social environments and nursing management. Johnson's model has been implemented in different environments, and the findings show that it has sufficient stability in different clinical environments, which shows the potential of this model in nursing.

Another challenge of Johnson's behavioral model is that Johnson's model does not have a clear evaluation form, so challenges arise during implementation and evaluation, as well as comparing studies ^[22, 26]. On the other hand, one of the strengths of this model is that it discusses and proves the mission of nursing and separates it from the mission of medicine ^[6, 18, 28]. Also, in this theory, the patient is placed at the center of care rather than disease or malfunctioning biological systems.

Finally, by reviewing the studies, we find that there is still not enough research to prove the effectiveness of the clinical application of this model, and more research is needed in the future.

The previous model did not meet the requirements of practical structure well. Still, interaction and studies in this model led Johnson to add five types of intervention: nurturing, stimulation, protection, regulation, and control [28]. It still has a gap where it looks for existing problems. Johnson's behavioral model does not fit well with the scientific concept of action because it should be tested based on concepts, propositions, and assumptions. Despite the general failure of Johnson's model to pass professional standards, it is constantly being tested by some, and the passage of time may end or increase its value.

Finally, the findings of this study showed that Johnson's model has been implemented in several studies in the nursing clinical environment and had positive results. Therefore, nurses can use Johnson's behavioral system model and consider the behavioral sub-systems of this model in their care of chronic patients and check them. On the other hand, considering that the volume of good studies has been conducted in Iran and the results have been appropriate, it can be said that Johnson's behavioral model can be effective in the field of nursing in Iran. However, the volume of clinical research is small, and more clinical studies are needed to prove this model's actual application and investigate and solve the implementation and research challenges. Also, many of these studies are in the form of case reports, and there is a need to conduct clinical trials with a larger sample size to obtain more reliable results.

Conclusion

Johnson's behavioral model is applicable and efficient in clinical nursing, although there are challenges and limitations in implementing this model. Therefore, it is suggested to use this model in future nursing studies to increase its development and application and to make better clinical decisions.

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