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The Application Progress of Johnson's Behavior System Model

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ABSTRACT
This paper expounds the basic content of Johnson's Behavior System Model, and summarizes the application status of Johnson's Behavior System Model in countries from the quantitative research and qualitative research, in order to provide valuable reference for the promotion of Johnson's behavior system model.
KEYWORDS - Johnson's Behavior System Model ; Nursing theory; Quantitative research; Qualitative research

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I. INTRODUCTION

Based on Bertalanffy's general system theory, Johnson drew lessons from sociological theory, biological theory and other theories and professional practice, and the behavior system model was formed and developed. Throughout Johnson's educational practice experience[1], it can be found that his era background is in the period of transformation from "disease-centered" to "patient-centered" biomedical model[2]. The theory promotes the shift of nursing from the concern of disease to the concern of all patients' behaviors, distinguishes the responsibilities of nursing and medical care, and then promotes the development of nursing as an independent discipline[3]. Johnson behavior system model (JBSM) emphasizes the evaluation and intervention of individual behavior system. It holds that nurses can reflect the operation of their implicit individual whole system through explicit behavior changes, and change individual behavior to solve problems through the implementation of nursing intervention. Although the theory was put forward completely in 1980, Most of the JBSM research focuses on literature review, paraplegia, gastrointestinal decompression and other clinical applications. The clinical application of JBSM in foreign countries is summarized as follows to explore the application prospect of JBSM in nursing field.

II. THEORETICAL BASIS

Johnson thinks that everyone is a behavior system composed of certain types of purposeful and repetitive activities, which is composed of seven subsystems: subordination, dependence, intake, sex, excretion, progress and achievement. With the development and improvement of the theory, some researchers supplement the recovery subsystem and form eight subsystems. Each subsystem has its own specific objectives and functions. Only when each subsystem operates in coordination, can the integrity and good operation of the whole behavior system be maintained. The ability of each subsystem to perform its own functions depends on the necessary conditions of three functions, that is, the needs of protection, nutrition and stimulation. Each subsystem has four dimensions: motivation, orientation, selectivity and behavior.

The theory adapts four core concepts of nursing, and holds that human is composed of biological system and behavioral system, in which behavioral system is the focus of nursing, health is the balance and stability of each subsystem, and nursing is the external adjustment force to take actions to maintain the best organization and integrity of the total system. The theory is systematically used to divide the nursing process into four basic stages: Assessment, diagnosis, intervention and evaluation. The evaluation includes two levels: the first level describes the structure and function of the subsystem and the whole system; the second level determines the effectiveness and efficiency level of the system function. Among them, structural intervention focuses on the goal, setting, selection and action of effective behavior function, and suppresses those actions that are not conducive to effective function; functional intervention should focus on the protection, cultivation and stimulation of individuals.

III. APPLICATION STATUS OF JBSM

3.1 The JBSM is applied to the nursing evaluation of tumor, nerve and spirit to provide theoretical basis for quantitative research

3.1.1 Application of the JBSM in Tumor Nursing

Based on the Johnson's behavioral system model (JBSM), according to the biological

indicators and the related factors such as emotion and cognition that affect the individual's behavior, Dertiarian[4] developed the dertiarian behavioral system model (JBSM) scale to evaluate the changes of self-assessment subsystem behavior of cancer patients. With the help of JBSM's core concepts (including balanced or balanced state, unbalanced or unbalanced state, disease, behavior), it can be transformed into operational definitions (change, change dimension, increase, decrease, importance, the impact of disease) to describe and record the change of patients' behavior, including the existence, direction, importance of change and the corresponding disease impact, so as to define nursing for patients To provide reasonable basis for nursing intervention. The scale includes eight dimensions of achievement, subordination, progress, dependence, excretion, intake, recovery and sex, with 21 items in total. Each item respectively describes whether the patient's behavioral change exists (positive or negative, i.e. "+" or "-"), direction (increase or decrease, i.e. "I" or "d"), importance (0-100 points) and the effect of disease (text record), in which the direction of behavioral change, "I" is increase, "d" is decrease, which refers to the perceived size and number of factors related to the identified change of the patient Change in quantity and intensity; importance refers to the importance of patients' perception of change; disease impact refers to the physiological, psychological, social and other related factors related to patients' perception and behavior change. By reliability and validity test, the internal consistency range was 0.50-0.92, and the retest reliability range was 0.34-0.97.

3.1.2 The application of the JBSM in the nursing of nervous system diseases

A case study of Smith fruehwirth et al.[5] applied the JBSM to Alzheimer's caregivers to explore the evaluation and intervention of the theory in this population. Alzheimer's disease is a latent disease with stage development. Its main symptoms include mental, language and motor disorders, which may lead to forgetfulness, disability or even death[6]. Johnson's model has also been tried and successfully applied to group situations, such as the support group of Alzheimer's nursing staff. In this group, it is a clear requirement to solve problems and make choices to adapt to lifestyle changes[7]. Data analysis is conducted under the guidance of JBSM to evaluate any change of caregiver behavior pattern related to the seven subsystems (first level evaluation), as well as in-depth analysis and interpretation of the changed subsystems (second level evaluation). Using the JBSM to evaluate the behavior system is an effective way to determine many factors that affect the individual's ability to cope with and adapt to change.

3.1.3 Application of the JBSM in mental disorders nursing

Mental disorder refers to the brain dysfunction caused by various harmful factors. The clinical manifestations of mental disorders are people with abnormal mental activities, which are manifested in different degrees of obstacles in perception, thinking, attention, memory, emotion, behavior and intelligence[8]. It is helpful to define mental disorders, diagnose diseases, reasonably treat and prevent diseases. At present, the clinical classification of mental disorders mainly includes the international classification of diseases and related health problems (ICD-10), 1992, dsm-vi, 1994, CCMD-3, 2001[9], in which dsm-vi and ICD-10 are relatively detailed, most of which are not related to culture, but lack of description of symptoms; while CCMD has no description of symptoms There are many descriptions, but not enough quantification. Compared with ICD-10, Dsmvi requires a strict course of disease and emphasizes chronic characteristics. Due to the limited communication and cognitive behavior of people with mental disorders, their abnormal behaviors seriously threaten their own quality of life, and at the same time, the inpatients with mental disorders have a 20% - 40% chance to have aggressive behaviors[10]. Therefore, it is particularly important for the behavior recognition and prevention of people with mental disorders. Compared with the routine nursing procedures, the JBSM guided nursing mode emphasizes more attention to behavior changes in the process of data collection.

Auger et al.[11] Established a patient classification system (PCI) based on the JBSM, determined the effectiveness of the behavior changes of the measurable and observable subsystem of patients, and then gave targeted nursing interventions to patients with mental disorders. Vivien Dee et al.[12] Based on this, in order to promote the continuous improvement of the overall nursing quality, the retrospective picture review method was used to extract the clinical scores related to the patients' nursing needs and functional level from the records. Each subsystem was assigned 1-5 points (1-5 points from effective to severe ineffective), and the importance of the subsystem was ranked by the patients after the subsystem score. The overall behavioral system score was The average score of each subsystem is 1-5 (1 = health; 2 = possibility of health deviation; 3 = disease; 4 = serious disease; 5 = critical disease). At the same time, the influence factors of the patients' physiology, psychology, family and social culture on the behavior system were considered and evaluated. For example, the physiological aspect includes the medical condition of patients; the psychological

aspect includes self perception, cognitive activity ability and coping style. The score range of each influencing factor is 1-3, indicating the influence degree of the influencing factor on the behavior subsystem and the overall system (1 = none / minimum; 2 = some; 3 = many). Based on the evaluation of subsystems and influencing factors, the nursing staff worked together with the patients to develop and modify the nursing diagnosis and nursing plan.

Poster[13] used the JBSM to evaluate the changes of 38 patients with mental disorders during hospitalization, ranked the importance of 8 sub-systems and the overall behavior system category, and provided four levels of care according to the severity of symptoms and patients' nursing requirements, of which the overall category rating was particularly important, reflecting the overall function of patients.

Poster[14] classified the behavior of patients with mental disorders according to eight subsystems from the perspective of the JBSM, and determines the effective operation degree of each subsystem. The tool makes full use of nursing records, medical records and other relevant information to measure the impact of nursing on the prognosis of patients with mental disorders, clearly points out the key points of nursing care, and divides them into four categories according to the behavior of patients with mental disorders: system balance, potential system imbalance, system imbalance and strict system imbalance, respectively corresponding to the nursing intervention objectives: the shortest nursing time in a group background. It provides the environment for training and stimulation, the appropriate nursing time provides the environment for training and stimulation in a group background, the environment for training, stimulation and protection in a small group, and the environment for training and protection at the individual level. Patient predictable outcome (PPOs) is a positive short-term goal, which is an observable and measurable behavioral description[15]. Nursing managers generally agree to provide demonstration nursing for patients in a concise framework, determine PPOs, and then guide professional nursing practice[7]. The main clinical manifestations of patients with mental disorders are behavioral disorders and emotional disorders. The accuracy of behavior evaluation depends on the ability of the observer to recognize the observed behavior target. Therefore, using the JBSM as the theoretical framework, on the one hand, it focuses on the individual behavior of patients, on the other hand, it provides a conceptually sound definition of patients, through recording, predicting and constructing clinical phenomena, to measure and achieve the positive prognosis of patients. The Cronbach'a coefficient of the scale is 0.88.

3.2 The JBSM applied to the conceptual analysis and relationship construction of disease-related behaviors, providing a theoretical framework for qualitative research

3.2.1 The application of the JBSM in the construction of inter concept relationship

Rigel et al.[16] introduced the JBSM into the relationship between social support and psychological adjustment of chronic coronary heart disease, and guided the construction of functional adjustment models of social support, self-esteem, anxiety, depression and myocardial infarction by using the dependency subsystem and the structural elements of behavior system: motivation or goal, orientation, choice and behavior. Johnson believes that individuals seek a new balance through behavioral strategies[17]. Based on this, social support, self-esteem, anxiety and depression, as the influencing factors of the dependent subsystem, can break or modify the behavioral system through the changes of social support and psychological adjustment, so as to achieve a new balance and reduce the occurrence of myocardial infarction and other behaviors.

3.2.2 The JBSM application in behavior concept analysis

In the existing research on female incontinence, different disciplines have different definitions of toilet behavior, and there is a lack of scientific and simple unified definition of female toilet behavior, which results in that toilet behavior cannot be fully evaluated. Therefore, Wang et al.[18] took the JBSM as the conceptual framework, and used Walker et al.[19] as the conceptual analysis method to analyze the related concepts of female toilet behavior. The behavior of excreting waste from the body belongs to the excretion subsystem of the JBSM. Influenced by the time, place and way of excretion, Johnson believes that social and psychological factors affect the biological aspects of the subsystem. In this theoretical framework, the motivation, orientation, selectivity and behavior of the structural factors of the subsystem are applied, the individual factors, social factors and environmental factors are taken as the antecedent variables, and the time, place and manner of urination are taken as the attributes of personal hygiene behavior to construct the conceptual framework of toilet behavior. Based on the JBSM theory and literature analysis, female toilet behavior is defined as a comprehensive biological, behavioral and social response process, which is related to the desire to consciously empty the bladder. That is, voluntary behaviors related to physiological events of urination, including specific attributes such as

time, place and way of urination, are affected by physical environment and social environment.

IV. CONCLUSION

To sum up, foreign research on the JBSM mainly focuses on clinical nursing and theoretical research, specifically, in terms of research content, quantitative research mainly focuses on the construction and application of evaluation tools, while qualitative research mainly focuses on concept definition and model construction; in terms of research methods, quantitative research mainly focuses on grounded theory and case study through factor analysis and investigation research Phenomenological analysis.

The Johnson's behavior system theory focuses on the interpretation of behavior mode, which can not only explain the behavior change and nursing phenomenon of a certain subsystem scientifically, but also clarify the overall behavior performance, and pay attention to the physiological, psychological, social and environmental aspects of the behavior system. It has the most obvious application effect in the diseases and symptoms with behavior abnormality as the main symptom. More researchers need to explore the application prospect of this theory in the field of nursing on the basis of foreign practice.

REFERENCES

[1]. Jiang Anli. Nursing theory [M]. Beijing: People's Health Press, 2009: 57-59.
[2]. Li Xiaomei, Feng xianqiong. Introduction to nursing [M]. Beijing: People's Health Press, 2017: 18.
[3]. Gerardin J, Raskind-Hood C, Rodriguez F R, et al. Lost in the system? Transfer to adult congenital heart disease care-Challenges and solutions[J]. Congenit Heart Dis, 2019, 20(7): 54-46.
[4]. Derdiarian A K, Forsythe A B. An instrument for theory and research development using the behavioral systems model for nursing: the cancer patient. Part II[J]. Nurs Res, 1983, 32(5): 260-266.
[5]. Fruehwirth S E. An application of Johnson's behavioral model: a case study[J]. J Community Health Nurs, 1989, 6(2): 61-71.
[6]. Hu Fushan. Psychiatry [M]. Beijing: Huaxia press, 2000: 282.
[7]. Li C, Hou Z, Liu Y, et al. Cognitive-behavioural therapy in patients with inflammatory bowel diseases: A systematic review and meta-analysis[J]. International Journal of Nursing Practice, 2019, 25(1): e12699.
[8]. Jiang Peifen. Effect of risk management concept application in psychiatric nursing safety management [J]. Electronic Journal of practical clinical nursing, 2019, 4 (10): 172-184.
[9]. Wu Aiqin, Wang Minjie, Sun Jing. Psychiatry [M]. Nanjing: Southeast University Press, 2010: 67.
[10]. Li Ling. Study on the causes and nursing measures of aggressive behavior of inpatients with mental illness [J]. Contemporary medicine, 2018, 24 (03): 157-159.
[11]. Jeanine A.Auger, Vivien Dee. A Patient Classification System Based on the Behavioral System Model of Nuring:Part 1[J]. The Journal of Nursing Administration, 1983, 4(01): 1-4.
[12]. Vivien Dee, Gwen van Servellen, Mary-Lynn Brecht. Managed Behavioral Health Care Patients and Their Nursing Care Problems, Level of Functioning, and Impairment on Discharge[J]. Journal of the American Psybiatric Nurses Association, 1998, 57(04):1-6.
[13]. Elizabeth C.Poster, Vivien Dee, Brooke P.Randell. Linda Beliz. The Use of the Johnson Behavioral System Model to Measure Changes During Adolescent Hospitalization[J]. International Journal of Adolescence and Youth, 1992, 10(4):73-84.
[14]. Elizabeth C.Poster. The Johnson Behavioral Systems Model as a Framework for Patient Outcome Evaluation[J]. Journal of the American Psychiatric Nurses Association, 1997, 23(6):23-27.
[15]. Derdiarian A K. The relationships among the subsystems of Johnson's Behavioral System Model[J]. Image J Nurs Sch, 1990, 22(4): 219-225.
[16]. Riegel B. Social support and psychological adjustment to chronic coronary heart disease: operationalization of Johnson's behavioral system model[J]. ANS Adv Nurs Sci, 1989, 11(2): 74-84.
[17]. Kaya N. Effect of attachment styles of individuals discharged from an intensive care unit on intensive care experience[J]. Journal of Critical Care, 2012, 27(1): 103-107.
[18]. Wang K,Palmer M H. Women's toileting behaviour related to urinary elimination: concept analysis[J]. J Adv Nurs, 2010, 66(8): 1874-1884.
[19]. Walker L.O, Avant K.C. Strategies for Theory Construction in Nursing [J]. Pearson Perentice Hall, 2012, 44(2): 157-169.