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ADHERENCE IMPROVEMENT MODEL
BASED ON KING INTERACTION SYSTEM

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BACKGROUND

Indonesia is the fouth largest contributor to tuberculosis (TB) in the world in 2012, the number of new cases of approximately 400,000–500,000 cases, after India (2.0 million-2.5 million), China (900,000–1,100,000) and South Africa (400,000–600,000) cases (WHO, 2012). According to Riset kesehatan nasional or National Health Study in 2001, the pulmonary TB is the number one desease and as the third cause of death in Indonesia (Depkes, 2001).

Based on data from TB Sub Directorate of the Ministry of Health Republic of Indonesia and WHO (2008) that until January 2007, 37% of hospitals implement DOTS with the different quality. TB average ranks number 2 in the outpatient clinic at the General Hospital and rank number 1 in Lung Hospital. Nearly 6.5% of the cases the treatments of category II who failed treatment and showed MDR-TB (multidrug resistant TB) are found in hospitals. Various attempts have been made by the government to address TB among TB control is a global plan aimed at achieving global targets in line with the WHO TB DOTS (directly observed treatment, short-course) and a new stop TB strategy. According to Ministry of Health Republic of Indonesia in 2008 TB prevalence was 253 per 100,000 population while the MDGs (Millennium Development Goals) targets in 2015 for TB is 222 per 100,000 population means that it is the conditions in Indonesia closer to the expected target. In 2009 to reach 71% case detection and treatment success rate reached 90% (Kemkes, 2011).

Nurses has important role in facilitating therapy and shaping constructive behavior to patients with TB thus they were motivated to become adhere to treatment. Current discrepancy in TB treatment includes health education was held by nurses was less optimal at nurse-patient interaction to improve patients' adherence. The participation of nurses in government programs is indispensable in order to avoid treatment failure which led to the MDR-TB or XDR-TB. In addition to supporting the government's program, one of which is the program PMO, nurses need to perform an approach to patients in performing the adherence of treatment. Based on the fact mentioned above, a new approach focused on nurse-patient interaction system is needed. King's Interaction System Model can be used to improve nurse-patient interaction thus the patients' adherence to treatment improved.

Framework dynamic interaction system of King used as a theoretical framework in developing adherence improvemnet model that focuses on the dynamic interaction of personal systems, interpersonal system and social system in achieving the goal of increased pulmonary TB patient adherence. Personal system according to King describes the characteristics of the individual and the individual is seen as an open system (Alligood & Tomey, 2006).

MODEL DEVELOPMENT

This model was developed through the stages of literature review, qualitative study and expert review. This model was developed to improve patient's adherence with pulmonary tuberculosis. Literature review was done to get a description of patient interaction systems to achieve adherence. Qualitative study with descriptive exploratory method produces an overall description of the patient's adherence based on personal system, interpersonal system and social system of nurse patient interaction systems on patients undergoing treatment in lung polyclinic. Qualitative analysis produced 12 theme expressed by participants (Tintin, 2015).

From research theme can be described personal system, interpersonal system and social systems of adherent patients. In a personal system, pulmonary TB patients adherent to have a positive perception, self-awareness to heal, optimal growth and development, positive self-image, a healthy environment, discipline to take medication and have effective coping. Adherent patients have a positive perception about the treatment of pulmonary TB, prevention of infection and proper nutrition to support healing. Patients also self-conscious if the disease is curable and diligent medical treatment must come alone though. Adherent patients had optimal growth and development because they still have hope of a better future and able to perform tasks in an optimal development. Patients have a positive self-image that is not ashamed to wear a mask and not be ashamed to lose weight. Patients discipline in take medication that is always taking the medication 1 hour before meals and use the alarm as a reminder. Patients also have effective coping during TB treatment because it is able to accept the conditions experienced and always think positive.

In the interpersonal system, adherent patients have open communication with health workers and families, able to perform its role optimally, able to balance the stress during illness. Patients said that during the illness and treatment always communicate and interact with nurses and doctors. Nurses and doctors being friendly and always open and listen to patients complaints and provide the required information. Families can receive the patient and always support the patient to undergoing treatment. During the treatment no obstacle is too meaningful role in school or work. Schools and offices receive permits for sick letter from doctors. Adherent patients say that at the beginning of treatment that causes stress was bored taking medication and back and forth to the hospital but over time lost and enjoy the treatment.
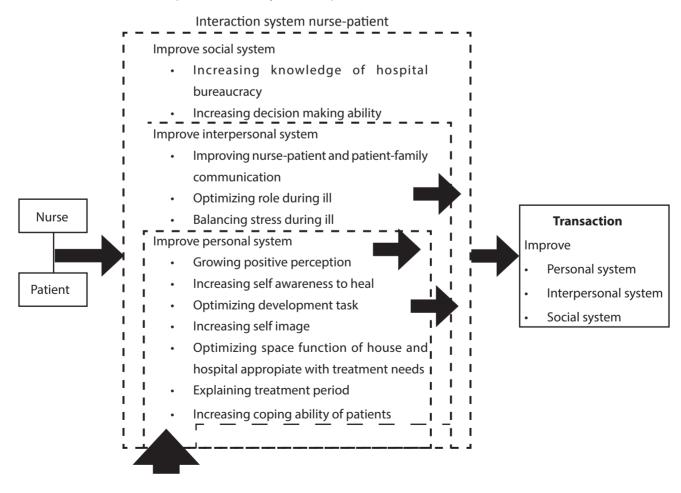
In the social system, adherent patients have knowledge about the healthcare bureaucracy at the hospital and able to take the decision to seek treatment in hospitals. Knowledge of the healthcare bureaucracy include knowledge services organizations in the lungs polyclinic, and knowing the power and authority of lungs polyclinic and patients are aware of his status as a patient who must adhere with hospital regulations. In the decision-making ability, adherent patients chose to continue treatment in the hospital because of the location closer of the house and the hospital had a doctor specialists and nurse specialists .

The next stage was the expert review that aims to get a review in order to obtain a model that is fit to be tested. Consultations carried out to nursing experts. The selected consultant was an nurse expert on pulmonary tuberculosis. The selected consultant as much as 3 people. The first step was to establish an expert chosen for consultation. After performing the contract for a meeting with the experts was then to explain the intent and purpose of the consultation. Consultation was done 1 time for each expert. Results from the expert consultation narrated, in the analysis and synthesis of the results of qualitative studies in order to achieve adherence improvement model based on King interaction system were fit and ready to be validation.

Scheme of interaction nurse-patient model based on King's interaction system model based on literature review, qualitatif study and expert review

Interaction system nurse-patient

Improve social system
- Increasing knowledge of hospital bureaucracy
- Increasing decision making ability

Improve interpersonal system
- Improving nurse-patient and patient-family communication
- Optimizing role during ill
- Balancing stress during ill

Improve personal system
- Growing positive perception
- Increasing self awareness to heal
- Optimizing development task
- Increasing self image
- Optimizing space function of house and hospital appropiate with treatment needs
- Explaining treatment period
- Increasing coping ability of patients

Nurse

Patient

Transaction
Improve
- Personal system
- Interpersonal system
- Social system

MODEL DESCRIPTION

Adherence improvement model based on King interaction model is a model that was developed to improve adherence in patients with pulmonary tuberculosis by improving nurse-patient interaction systems based on personal system, interpersonal system and social system of the patient. Learning media is made in the form of booklets representative and in accordance with the patient's level of understanding.

The focus of nursing at the personal systems of this model is to increase the personal systems of patients by increasing a positive perception, increasing self-awareness to heal, optimizing growth and development, improving self-image positive, optimizing healthy environment to support improving discipline to take medication and improving effective coping.

The focus of nursing of interpersonal system is to improving the nurse-patient and patient-family communication, optimizing the role of patients during illness and balancing the stress experienced by patients. The focus of nursing in the social system is to increasing patients' knowledge about the bureaucracy of hospital services and improving the ability of patients in decision making. All the above interventions aimed at achieving patient adherence in the treatment. Nurses as service provider, motivator, and educator for patients by improve the personal, interpersonal and social systems of patients.

GUIDE OF MODEL IMPLEMENTATION

This guide describes the model interventional procedures performed by nurses to patients consisting of interventions to improving personal system, interpersonal systems and social system of the patient. Adherence improvement model based on King interaction system as a whole consists of eight meetings which is 5 times the provision of education in week 1, week 2, week 4, week 6 and week 8 and 3 times that of monitoring and evaluation in week 12, week 16, and week 20. Health education materials are prepared based on the patient's needs.

The model provided to patients is aimed to improving personal system, interpersonal system and social system of the patient. In this model consists of 8 sessions, namely from the beginning of patients diagnosed until the end of the 5th month of treatment. The first meeting in patients started at the beginning of patients diagnosed with pulmonary TB. At this meeting, needs to be improved in the personal systems are: creating a comfortable environment for the nurse-patient interaction in hospitals, improving a positive perception of pulmonary tuberculosis and increasing self-awareness to heal. At the interpersonal system that needs to be done at the first meeting is to improving the nurse-patient and patients family communication. In the social system, needs to be improved is to facilitate the patient's decision to run a treatment and improving knowledge about hospital services.

The 2nd meeting at the end of week 2 of treatment, at this meeting is improving the interpersonal system namely improving nurse-patient communication continuously and increasing the personal systems is to developing a positive perception by providing learning about the prevention of transmission and healthy environment for the healing of pulmonary TB patients. The intervention of social system is to explaining the healthcare bureaucracy by raising awareness of the patient will be his status as a patient to adhere with the rules of hospital. At the 3rd meeting, namely at the end of the 4th week is increasing interpersonal system that nurse-patient communication and improving personal systems that developing a positive perception by providing learning about the nutrients needed by patients with pulmonary tuberculosis. At a meeting at the end of 4th or 6th week is to improving personal systems that improving patient coping and the interpersonal system is to improving the nurse-patient communication and helping patients balance the stress experienced. At the 5th meeting or the end of the 8th week/end of the 2nd month, the intervention given the personal system is helping patients receive a positive self-image changes and optimizing the achievement of growth and development. Whereas the interpersonal system is to improving communication between the nurse-patient and helps patients optimizing role during illness. At the 6th meeting (end of 3rd month), 7th meeting (end of the 4th month) and the 8th meeting (late 5th month), the intervention focused solely to improving communication and interaction nurse-patient and monitoring of adherence patients.

Below is one example of intervention models:

STAGE OF INTERVENSION	PURPOSE	NURSING INTERVENTION	CONTENT	TIME	METHOD
	1. Improving self awareness to heal	1. Be sure the patient that the desease can be cured by showing patients who recover /almost healed, who was control in the hospital. 2. Discuss with the patient about resources system that help patients in treatment from internal and external patients. 3. Provide motivation for patients to continue treatment even have to attend alone to hospital		5–10 second	Interview and discussion

STAGE OF INTERVENSION	PURPOSE	NURSING INTERVENTION	CONTENT	TIME	METHOD
		4. Explain to the patient that his illness is not a curse or a punishment but as a gift from the God.			
		5. Be sure the patients that they not alone, but a lot of people have some desease and they can share experiences (show that patients who seek treatment in polyclinic have the same problem)			

E. MODEL EVALUATION

Documenting the evaluation of the actions carried out after the intervention models to patients with pulmonary TB. The nurse recorded the final evaluation of the actions of each patient encounter. Patients were evaluated levels of knowledge, motivation, self-confidence, prevention of transmission, nutrition adherence and medication adherence (dose, time, method and withdrawal/drop out of treatment) using the format listed at the end of the book models. Patient treatment adherence was monitored by checking at the list taking the medication, the medication packs and the leftover of the medication then recorded and matched to the patient's TB-01.

F. MODEL VALIDATION

Models were validated by conducting research on a quasi experimental toward pulmonary TB patients from initial diagnosis until the end of the 5th month of treatment during 8 times meeting. The intervention group was pulmonary TB patients seeking treatment in lung polyclinic Haji Surabaya Hospital and the control group were pulmonary TB patients who seek treatment at Ibnu Sina Hospital Gresik. From the results obtained that there were significant of knowledge, self-efficacy, motivation, prevention of infection and adherence nutrition. There was an influence on medication adherence on how to take medication but there was no difference in time to take medication and dosage. No difference drop out treatment between intervention and control group, but the intervention group no drop out, while in the control group there were 3 patients (6%) who drop out of treatment. Although looks small but that number can cause problems for patients who are at risk of drug withdrawal can lead to drug resistance and the spread of infection to others

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