

Behavioral Symptoms in Nursing Home Residents with Dementia: Developing a Nursing Practice Model

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I . Introduction

Behavioral symptoms in dementia(BSD), such as aggressive behaviors, affect up to 90% of dementia patients and are the most disturbing problems experienced during caregiving of such people(Ballard et al., 2001). Because of their chronicity and aggravation of underlying disease, these behavioral symptoms are a major reason for nursing home placement and substantial increases in health care expenditures for patients and their families(Sorensen, Foldspang, Gulmann, & Munk-Jorgensen, 2001). Psychotropic drugs (PD) are frequently used to treat BSD, based on the theory that BSD may result from neurological changes in the brain(Smith et al., 1999). However, PD has been shown to have, at best, a modest efficacy in treating BSD(De Deyn et al., 1999). In addition, because of critical adverse effects such as extrapyramidal syndromes(EPS), the use of PD for frail elderly demented patients has received great concern from the public. Alternatively, non-pharmacological interventions

that track accounts of patient's unmet needs, may prevent triggering the occurrence of BSD, and are suggested as a major intervention for these types of behaviors(Tariot, Ryan, Porsteinsson, Loy, & Schneider, 2001).

A theoretical model that is applicable to nursing practice for BSD in nursing homes is essential in evaluating and modifying interventions for the provision of sufficient nursing care. However, there is a paucity of theoretical models to explain the relationships among PD usage and its determinants and behavioral outcomes. Previous theories have shown only partial relationships between such interventions and BSD despite the clinical importance of linkages between those phenomena. In the absence of theory, existing empirical findings are fragmented and difficult to interpret(Whittemore & Callista, 2002).

Based on the literature review, a conceptual model is proposed in this paper to provide the theoretical and analytical explanation of the relationships between PD usage, its determinants, and BSD. Fundamental bases of the proposed

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Received March 27, 2006 ; Accepted August 2, 2006

model are conceptualizations from two existing model: Algase and colleagues'(1996) Need-driven Dementia-Compromised(NDB) model and Donabedian's (1966; 1980) Structure-Process-Outcome Model. The former model provides a comprehensive conceptual framework explaining the occurrence of behavioral symptoms among nursing home residents with dementia, the latter one provides an organizing framework for the use of psychotropic medications and related resident outcomes in nursing homes. In addition, empirical findings in previous studies, and concepts from three related theoretical works including Cohen-Mansfield's(1998) Unmet-Needs Model, Lawton and Nahemow's(1973) Press-Competence Model, and Karasek's(1979) Job Demand-Control Model were also incorporated into the proposed model. The theory synthesis approach suggested by Walker and Avant(1995) was used to organize the model.

1. Procedure of Theory Synthesis

Theory synthesis includes three steps: 1) specifying focal concepts, 2) reviewing literature to identify variables related to the focal concepts and describing the relationship between these concepts, and 3) organizing statements into an integrated model. The first step of theory synthesis is to delineate focal concepts of interest. Concepts refer to labels, categories, or selected properties of objects to be studied. They are the bricks from which a theory is constructed. Two main concepts, PD usage and BSD were selected as focal concepts. The second step of theory synthesis is to review the literature to identify variables related to the focal concepts and their relationships. Review on theoretical works and studies related to the BSD and PD usage are presented in the next section.

II. Theoretical Work

1. Behavior Model

Three theoretical works were incorporated to explain the occurrence of behavioral symptoms in dementia: the Need-Driven Dementia-Compromised Behavior(NDB) model(Algase et al., 1996), the Unmet Needs Model(Cohen-Mansfield & Werner, 1998), and the Press-Competence Model(Lawton & Nahemow, 1973).

Lawton(1975) suggested the Press-Competence Model(P-CM) in his ecologic model of aging, whereby behavior can be seen as a function of competence in dealing with demands from the environment. This model suggests that low ability and high demand from the environment can result in behavior inappropriateness in relation to the situation. The P-CM also suggests that as personal competence decreases, the environment becomes a more potent determinant of behavioral outcomes. It is not difficult to find clinical examples that support the idea presented in this model. For instance, bathing while sitting on a cold chair in a strange room and attended by an unfamiliar person can place a high demand on cognitively impaired elderly persons who are suffering from memory deficit and have difficulty expressing their needs. This experience can induce fear or frustration that results in uncooperative aggressive behavior.

Algase and colleagues(1996) proposed the NDB model in which disruptive behaviors are viewed as expressions of unmet needs. They indicate that the most common intervention for behavioral problems in dementia is using psychotropic drugs which can cause undesirable outcomes. It is often ineffective and does not address the root causes of the behavior. In the model, they suggest two types of potential origins of the behavioral symptom: background factors and proximal factors. Background factors include Alzheimer's disease-compromised functions, health state, demographic variables, and psychosocial variables.

These factors are individual characteristics that are broad, unchanging, and relatively more stable than proximal factors. Proximal factors are current situational factors such as underlying need states and the patients' inability to express their needs in a normal manner. Physical and social environments such as light, sound, staff mix and stability, and ward ambiance are also included in these proximal factors. We can easily imagine clinical situations that can be explained by this model. For instance, unmet physiological needs such as sleep disturbance that may result from frequent awakening for treatment during the night, can be a source of aggressive behaviors during a bath in the early morning. Despite several actual clinical situations and environments supporting theory that can help to explain BSD based on unmet needs and environmental factors, little empirical research have been founded in this area.

The Unmet-Needs Model proposed by Cohen-Mansfield and Werner(1998) is conceptually similar to the NDB Model, proposing that the occurrence of behavior can be the consequence of patients' unmet needs. According to this model, most unmet needs arise because of dementia-related impairments in both communication and the ability to use the environment appropriately to accommodate needs. Problem behaviors such as agitation are seen as a mechanism to alleviate the needs or attempts to communicate the needs.

Theories relating to BSD can be divided into two categories. The first category includes the three previously discussed theories in which behavioral symptoms can be seen as a consequence of a demented patient's inability to cope with an environment that does not meet their needs. The other category of theory views the BSD in the light of a neuropathophysiologic basis. Cohen-Mansfield(2003) calls this kind of model as a "direct-impact model" that hypothesizes behavioral symptom in dementia are the

result of neurologic changes in the brain. With this kind of model, in order to provide accurate interventions for patients, the specific neurotransmitter to the specific loci in the brain and the particular mechanism of transmission need to be clearly identified, and patients should be treated based on patients' own specific impairment status(Cohen-Mansfield, 2003). There is, however, still a lack of knowledge about the neurological mechanisms of behavioral symptoms of dementia patients, thus it is difficult to provide individualized interventions at this level in clinical situations. In contrast, the need based-models seem to be able to provide caregivers more understandable directions for guiding patient-centered, individualized, and safe care to demented patients with behavioral symptoms.

2. System Model

Two system models, the Donabedian's(1966, 1980) Structure-Process-Outcome(SPO) Model, and Karasek's(1979) Demand-Control Model were incorporated to the proposed model.

The SPO model has been the most frequently used model in health service outcome research (Kane, 1997). Structure indicates organizational characteristics that affect process and outcome. These include physical environment, staffing and policies. Patient's characteristics such as demographics have often been included as one of the structure factors in system-related research. Process refers to interventions and what is done in the organization, and process usually interacts with characteristics of the organization and patients. Outcome refers to the result of the actions that occur in the process.

Karasek's(1979) Demands-Control Model provides a framework for assessing both the work environment and its influence on job performance. This model suggests that the work

environment can directly affect health outcomes for patients and their health care providers. The work environment can include: how fast and how hard one must perform the necessary tasks, whether there is enough time to perform job tasks, the proportion of work performed under time pressure, the amount of work, the presence of conflicting demands, and how often tasks are interrupted or work is slowed by having to wait for others.

III. Literature on BSD

1. Description of BSD

Behavioral symptoms in dementia(BSD) found in the literature vary widely in terms of their scopes and descriptions. BSD have often been labeled as problematic behaviors, disruptive behaviors, disturbing behaviors, or behavioral problems. All of these terms have been generally used interchangeably(Cohen-Mansfield, 2003). In clinical studies, the most frequently used term for disturbing behavior was BPSD(behavioral and psychological symptoms in dementia). The International Psychogeriatrics Association defines BPSD as “disturbances of perception, thought content, mood, or behavior that occur in patients with dementia”(Finkel, Costa e Silva, Cohen, Miller, & Sartorius, 1996). This group suggests that behavior is an act that could be identified on the basis of observation and could include aggression, screaming, restlessness, agitation, wandering, culturally inappropriate behaviors, sexual disinhibition, hoarding, cursing, and shadowing.

Taken together, these two definitions concur that “action” and “observable” are key factors in defining behaviors. Given the definition of disturbing behaviors in dementia, consideration of psychiatric symptoms such as delusions, hallucinations, and mood disorders when describing

characteristics of the behavior, may not be appropriate because they are not observable actions. In addition, the term agitation has often been used when referring to behavioral symptoms in dementia. This could mean any behaviors ranging from verbal outbursts to pacing and physical aggression(Herrmann, Lanctot, & Naranjo, 1996). Cohen-Mansfield(1989) defined agitation as any excessive motor activity that was nonproductive and repetitious such as pacing, wandering, fidgeting, hand wringing, pulling clothes, and inability to sit still, which could be distinguished from physical and verbal aggression.

There is still no international agreement with respect to the description and definition of BSD (Herrmann et al., 1996). Therefore, in this paper, behavioral symptoms refer to any problematic behaviors which are observable and physical acts including aggression, agitation, or wandering, which are separated from psychotic symptoms such as hallucinations and delusions.

2. Etiology of BSD

This section reviews two kinds of etiology of BSD: 1) resident's unmet needs including physical and psychosocial unmet needs; and 2) dementia-compromised functions including declined cognitive and functional ability, and depressive symptoms.

1) Unmet Needs in BSD

When the three models introduced earlier are examined together, two types of unmet needs related to BSD in nursing home residents are identified: physical environmental needs and social environmental needs.

(1) Physical environmental needs

The physical environment refers to the overall nursing home setting including the building organization and layout, light, and noise(Algase et al., 1996). Several environmental studies support the idea that building modifications

which help residents enhance their orientation and autonomy, may have a positive effect on resident's behaviors. In a study by Namazi and Johnson(1992), a less restrictive facility structure, such as allowing residents free access to secure outdoor areas through an unlocked door, reduced adverse stimulations to nursing home residents with dementia. In another study, residents in facilities designed around H or square-shaped corridors were shown to have improvement in behavioral symptoms such as aggressive behaviors, when compared with residents in facilities with traditional long corridors and large, communal gathering places (Elmstahl, Annerstedt, & Ahlund, 1997).

In addition, visual and auditory stimulation from nursing home environments have been found to be associated with episodes of BSD. One study found that certain auditory simulation, such as the sounds of gentle ocean and mountain streams, reduced the frequency of verbal agitation among nursing home residents with dementia(Burgio, Scilley, Hardin, Hsu, & Yancey, 1996). Some studies have also shown that bright light was associated with decreased behavioral problems nursing home residents with dementia. Lovell and colleagues(1995) examined the effect of bright light treatment on agitated behaviors in nursing home residents. The investigators reported that significantly less agitation was observed in the light treatment group than those in non-treatment residents.

(2) Psychosocial environmental needs

It has been suggested that three social environments including caregiver factors, group size and density, and ward ambiance, have an impact on behavioral symptoms in dementia. For instance, one study found that disruptive behaviors occurred more frequently with unlicensed personnel who lacked adequate preparation to reduce environmental demands (Kolanowski, Hurwitz, Taylor, Evans, & Strumpf,

1994).

Caregivers' attitudes toward residents can have an effect on the occurrence of BSD as well. Because of burden-induced intolerance, caregivers often underestimate the patients' functional abilities and rush caregiving tasks. This may result in an aggravation of behavioral disturbance. In a study involving 58 pairs of dementia patients and their caregivers, Burgener and colleagues(1992) observed interactive behavior in several situations such as bathing and dressing. They reported that relaxed caregiving and positive facial expressions such as smiling tended to calm aggressive behaviors of residents.

Other studies have shown that nursing home units with fewer residents can reduce stimulation and have a positive effect on behaviors. Several studies have shown that residents in larger unit sizes with high patient densities were associated with higher levels of agitation, while residents who were moved from high to low density environments showed significant improvements in disruptive behaviors (Morgan & Stewart, 1998).

Similarly, the structure of the social environment, such as the home-like and familiar versus. Institutional, has been shown to have an effect on behavioral symptoms of nursing home residents. For example, in a study that examined agitated or aggressive behaviors of patients provided with a natural environment during shower baths, Whall and colleagues(1997) found that patients exposed to the natural environment demonstrated a significant decrease in agitated aggressive behavior. In observations of dementia patients in several types of nursing home settings, Struble(1995) observed that patients in hotel-like environments behaved more formally, as if they were appearing in a public forum. Patients in home-like settings, however, conducted themselves in a more relaxed and friendly manner. The investigator concluded that the home-like setting was associated with more

positive behavioral outcomes among persons with dementia.

2) Dementia-compromised function

Declined cognitive ability. Studies suggest that decline in cognitive ability in dementia is associated with the manifestation of BSD. One study examined the relationship between behavioral symptoms and cognitive impairment among 114 dementia patients, and found that behavioral symptoms such as activity disturbance were associated with cognitive impairment (Harwood, Barker, Ownby, & Duara, 2000).

(1) Functional ability

A major consequence of dementia is the loss of autonomy in activities of daily living(ADL) that may lead to manifestation of aggressive behaviors. Impairment in ADL accompanied with behavioral symptoms likely increases the burden for caregivers, and thus increases institution-alization of dementia patients(Lechowski et al., 2003). Very few studies in this area are available, and their study results are mixed. Tekin and colleagues (2001) examined relationships between level of activities of daily living and behavioral disturbance in 143 dementia patients. They suggested that behavioral symptoms might induce impaired daily living activities. To the contrary, some studies, however, found that the occurrence of behavioral symptoms was unrelated to functional impairment(Lechowski et al., 2003).

Despite these mixed results, clinical observation often suggests that dementia patient's frustration accompanying lack of ability to perform daily activities may induce aggressive behaviors. For instance, a patient may be aggressive toward the caregiver who tries helping him or her to bathe or change clothes. It is, however, not yet clear whether impairments in daily functioning triggers behavioral symptoms or the behavioral problems play a role in loss of functional ability.

(2) Depressive symptoms.

Some studies reported that depressive symptoms can occur in the course of dementia and are often related to behavioral symptoms such as physical and verbal aggressive behaviors (Cohen-Mansfield & Marx, 1988; Menon et al., 2001). One study suggested that there might be a common neurobiological mechanisms that mediated both depression and aggressive behaviors in dementia(Murphy et al., 1998). Few studies are available which explore the association between depressive symptoms and BSD, and demonstrate mixed finding. Cohen-Mansfield and Marx(1988) examined the relationship between agitation and depression in nursing home residents. They rated physical aggression, verbal aggression, non-aggressive behaviors, and depression, and found that depression was more associated with verbal aggressive behavior than with other agitated behaviors.

3. Mediate factor of BSD: Psychotropic Drugs

Psychotropic drugs(PD) are frequently used to treat BSD, based on the theory that BSD might result from neurological changes in the brain. However, PD has been shown to have, at best, a modest efficacy in treating BSD(Smith et al., 1999). One nursing home research, which examined the PD usage and BSD, found that the PD treatment did not mediate behavioral outcomes in nursing home residents with dementia(Kim, 2005). Drug-related adverse effects such as extrapyramidal syndromes are more prevalent and critical in demented elderly people than in other age groups. This may deteriorate the cognitive and functional ability of such people which is already damaged because of their disease. Nonetheless, it has been shown that PD still plays a large role in the treatment of BSD in nursing homes. In this section, efficacy of PD on BSD and factors associated with the use of PD in

nursing homes are briefly reviewed.

1) Efficacy and safety of PD for BSD

PD generally refers to a group of drugs that improve psychological function, and antipsychotics such as haloperidol, risperidone and olanzapine have been used for BSD(Hopker, 1999). Reported efficacy of antipsychotics for treatment of BSD is reported as moderate. For instance, De Deyn et al.(1999) reported that 63% of participants who received haloperidol showed improvement in disruptive behavioral symptoms.

Katz et al.(1999) evaluated risperidone's effect at doses of 0.5, 1, and 2mg a day with 625 elderly patients with dementia, and reported that all three risperidone treatments led to improvement in psychosis such as hallucinations and delusions as well as aggression. Response rates were 45% in the 1mg/d group and 50% in the 2mg/d group. Approximately 20% of subjects who received 2mg/day of risperidone experienced EPS, which was higher than those on lower dosages. Other dose-related adverse events reported were sedation and peripheral edema.

2) Factors associated with PD usage in nursing homes.

Epidemiological studies have reported substantial and unexplained variation in the magnitude of PD usage across nursing homes. One study examined the prevalence of PD in 172 Tennessee nursing homes, and found that there was a considerable variation in drug use across facilities (Shorr, Fought, & Ray, 1994). This indicates that the BSD is not an independent factor associated with the PD usage, but some facility characteristics such as nurse staffing may affect the PD usage in nursing homes. Shorr et al. (1994), for example, examined the relationship between PD use and nurse staffing pattern, and found that excessive use of the PD was associated with a shortage in the nursing labor force. They

also found that nursing homes that had fewer third-shift staff members were more likely to use PD than nursing homes that did not.

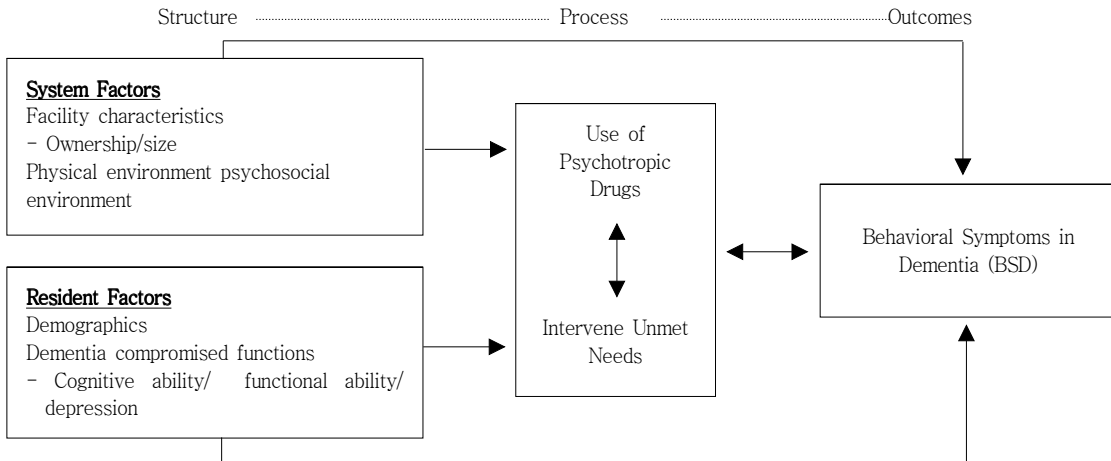
Studies also demonstrated that nursing home characteristics such as size and ownership were associated with PD use, however, these findings were not consistent. For instance, one study reported that higher rates of PD use were associated with the for-profit nursing home ownership and also with small size of nursing homes(Garrard, Chen, & Dowd, 1995), whereas Ray and colleagues(1980) found that residents in larger facilities used more PD than residents in smaller facilities.

IV. Proposed Conceptual Model

The final step of theory synthesis for the model presented here was to organize variables and their relationships into an integrated representation. Based on the theoretical work and findings from the literature review, several variables related to the two focal concepts were found. These variables can be separated into two categories: resident variables and nursing home variables. The former includes resident's demographical characteristics such as age and gender, and dementia-compromised functions such as cognitive and functional impairment. The latter indicates system characteristics including physical and social environments, facility types, and caregiver environments.

Blalock(1969), as quoted by Walker and Avant (1995) recommended organizing sets of variables into theoretical "blocks". With this approach, variables that are more proximally related are organized together into a block and their interrelationships specified. Using Blalock's blocking method, an integrated model of behavioral symptoms in dementia is presented in <Figure 1>.

In this model, structure includes nursing home



<Figure 1> A proposed model of behavioral symptoms among nursing home residents with dementia

characteristics and resident characteristics. These structure variables are assumed to directly affect the process variables which include psychotropic drug use and intervening in residents' unmet needs. The process variables are hypothesized to influence the outcome variables(i.e., BSD). The resident characteristics and nursing home characteristics need to be statistically controlled in order to isolate the impact of use of PD on BSD because of their potential impact on the BSD.

V. Implication for Nursing Practice and Research

Behavioral symptoms in dementia are one of the most disturbing behaviors to caregivers in nursing homes. Nursing home residents with such behavioral symptoms have often been treated with a view of a medical paradigm in which the subsiding present behavioral problem itself takes first priority rather than intervening the fundamental factors behind the behaviors. Nurses see phenomena with four central nursing concepts (i.e., human being, environment, care, and health). With a totality paradigm view in

nursing, the human is seen as a biopsychosociocultural spiritual being who interacts continuously with environments(King, 1981). Therefore, behavioral BSD need to be viewed as phenomena in dementia care related to the patient and their environment, rather than as a simple disease symptom. Care providers often regard demented persons as non-demented persons expecting normal and reasonable behaviors, and may feel that the patient's behavioral symptoms are disturbing and abnormal. In the view of nursing paradigm, however, the resident's behavior must be viewed within the context of the environment, and can be seen as an expression their unmet needs, which can be meaningful for caregivers to plan nursing interventions.

Although it has been demonstrated that abnormalities in neurobiologic systems potentially correlate with the pathophysiology of BSD, their specific relationships remain unclear(Raskind & Peskind, 1994). Clinical drug trials to test the efficacy of PD in behavioral symptoms found only a modest effect of these drugs. Clinicians must be careful not to prescribe PD solely on the basis of a presence of BSD. Rather, assessment of the

resident and environment-related triggers of the behavioral symptoms should be conducted as the first step of the intervention.

One study(Kim, 2005) guided by the proposed model presented that nursing home factors especially registered nurse staffing had a great impact on the prescription of PD. Other studies support these findings where staffing factors in nursing homes such as RN number(Shorr et al., 1994; Sorensen et al., 2001) had been significantly associated with PD use in nursing homes. Therefore, maintaining sufficient levels of nurses and development of staff education programs are important to prevent inappropriate PD use as well as to improve the BSD in nursing homes.

Kim's study also showed that BSD occurred during daily caregiving such as shower baths both for residents with and without PD use. Especially, the shower baths given during the night-shift were found to be significantly associated with the occurrence of BSD. Care providers need to have flexibility for scheduling the shower bath according to resident's need rather than stick to work schedule. Also, interventions which focus on reducing stressors associated with the bath environment need to be developed and implemented.

As shown earlier section, many previous studies have reported successful results of intervening in the resident's behavioral problems using physical and psychosocial environmental interventions. It can therefore be suggested that interventions that fit the individual resident's need, and care provision by qualified care providers, may improve the quality of care in nursing homes, and produce better resident's health outcomes.

Behavior models introduced earlier are fundamental for developing the proposed model. Despite its comprehensive explanation of developing BSD, these models, however, do not

contain intervention variables such as pharmacological treatment which is currently often used to manage the behavioral problems and may significantly influence the occurrence of BSD. The proposed model includes the intervention variable and complements the previous behavior models by employing the Structure-Process-Outcome model, in which researchers can systemically explore what are the causing problems(i.e., structure), what intervention can be done to solve the problems(i.e., process), and what are the consequences(i.e., outcomes). There are few cross-sectional studies to test the partial relationships of the model(Kim, 2005, Kim & Whall, 2006), but future clinical studies employing a longitudinal study design are needed to verify and apply the model for nursing practice.

References

- Algase, D., Beck, C., Kolanowski, A., Whall, A., Berent, S., & Richards, K., et al. (1996). Need-driven dementia-compromised behavior: an alternative view of disruptive behavior. *Am j alzheimers dis, november/December*(11), 10-19.
- Ballard, C. G., Margallo-Lana, M., Fossey, J., Reichelt, K., Myint, P., & Potkins, D., et al. (2001). A 1-year follow-up study of behavioral and psychological symptoms in dementia among people in care environments. *J Clin Psychiatry, 62*(8), 631-636.
- Blalock, H. (1969). *Theory construction: From verbal to mathematical formulations*. NJ: Prentice-Hall: Englewood Cliffs.
- Burgener, S., Jirovec, M., Murrell, L., & Barton, D. (1992). Caregiver and environmental variables related to difficult behavior in institutionalized demented elderly persons. *J gerontol, 47*(4), 242-249.
- Burgio, L., Scilley, K., Hardin, M., Hsu, C., &

- Yancey, J. (1996). Environmental "white noise" : an intervention for verbally agitated nursing home residents. *J gerontol*, 51B(6), 364-373.
- Cohen-Mansfield, J. (1989). Agitation in the elderly. *Adv. Psychosom. Med.*, 19, 101-113.
- Cohen-Mansfield, J. (2003). Agitation in the elderly: Definition and theoretical conceptualizations. In D. P. Hay, D. Klein, L. Hay, G. Grossberg & J. Kennedy (Eds.), *Agitation in patients with dementia: a practical guide to diagnosis and management* (1st ed.). Washington, DC.: American Psychiatric Publishing.
- Cohen-Mansfield, J. & Marx, M. S. (1988). Relationship between depression and agitation in nursing home residents. *Compr Gerontol [B]*, 2(3), 141-146.
- Cohen-Mansfield, J. & Werner, P. (1998). Predictors of aggressive behaviors: a longitudinal study in senior day care centers. *J Gerontol B Psychol Sci Soc Sci*, 53(5), P300-310.
- De Deyn, P. P., Rabheru, K., Rasmussen, A., Bocksberger, J. P., Dautzenberg, P. L., Eriksson, S., et al. (1999). A randomized trial of risperidone, placebo, and haloperidol for behavioral symptoms of dementia. *Neurology*, 53(5), 946-955.
- Donabedian, A. (1966). Evaluating the quality of medical care. *Milbank Mem. Fund Q.*, 44(3), Suppl:166-206.
- Donabedian, A. (1980). *Explorations in quality assessment and monitoring. Part I: The definition of quality and approaches to its assessment*. Ann Arbor, MI: Health administration Press.
- Elmstahl, S., Annerstedt, L., & Ahlund, O. (1997). How should a group living unit for demented elderly be designed to decrease psychiatric symptoms? *Alzheimer Dis Assoc Disord*, 11(1), 47-52.
- Finkel, S. I., Costa e Silva, J., Cohen, G., Miller, S., & Sartorius, N. (1996). Behavioral and psychological signs and symptoms of dementia: a consensus statement on current knowledge and implications for research and treatment. *Int Psychogeriatr*, 8(Suppl 3), 497-500.
- Garrard, J., Chen, V., & Dowd, B. (1995). The impact of the 1987 federal regulations on the use of psychotropic drugs in Minnesota nursing homes. *Am J Public Health*, 85(6), 771-776.
- Harwood, D. G., Barker, W. W., Ownby, R. L., & Duara, R. (2000). Relationship of behavioral and psychological symptoms to cognitive impairment and functional status in Alzheimer's disease. *Int J Geriatr Psychiatry*, 15(5), 393-400.
- Herrmann, N., Lanctot, K., & Naranjo, C. (1996). Behavioural disorders in demented elderly patients. *CNS Drugs*, 8(4), 280-300.
- Hopker, S. (1999). *Drug treatments and dementia*. London ; Philadelphia: Jessica Kingsley Publishers.
- Kane, R. (1997). *Understanding health care outcomes research*. Gaithersburg, MD: Aspen publishers.
- Karasek, R. (1979). Job Demand, job decision latitude, and mental strain: implications for job redesign. *Admin Sci Quar*, 24, 285-308.
- Katz, I. R., Jeste, D. V., Mintzer, J. E., Clyde, C., Napolitano, J., & Brecher, M. (1999). Comparison of risperidone and placebo for psychosis and behavioral disturbances associated with dementia: a randomized, double-blind trial. Risperidone Study Group. *J Clin Psychiatry*, 60(2), 107-115.
- Kim, H. (2005). *Psychotropic Drug Usage, Its Determinants and Behavioral Outcomes among Nursing Home Residents with Dementia*. Unpublished Doctoral Dissertation, University of Michigan, Ann Arbor,.
- Kim, H. & Whall, A. (2006). Factors associated with the psychotropic drug usage among

- nursing home residents with dementia. *Nurs Res*, 55(4), 252-258.
- King, I. (1981). *A theory for nursing : Systems, Concepts, Process*. Albany, NY: Delmar Thomson Learning.
- Kolanowski, A., Hurwitz, S., Taylor, L. A., Evans, L., & Strumpf, N. (1994). Contextual factors associated with disturbing behaviors in institutionalized elders. *Nurs Res*, 43(2), 73-79.
- Lawton, M. P. & Nahemow, L. (1973). Ecology and the aging process. In C. Eisdorfer & M. P. Lawton (Eds.), *Psychology of adult development and aging*. Washington, DC: American psychological association.
- Lechowski, L., Dieudonne, B., Tortrat, D., Teillet, L., Robert, P. H., Benoit, M., et al. (2003). Role of behavioural disturbance in the loss of autonomy for activities of daily living in Alzheimer patients. *Int J Geriatr Psychiatry*, 18(11), 977-982.
- Lovell, B., Ancoli-Israel, S., & Gevirtz, R. (1995). Effect of bright light treatment on agitated behavior in institutionalized elderly subjects. *Psychiatry Res.*, 57, 7-12.
- Menon, A. S., Gruber-Baldini, A. L., Hebel, J. R., Kaup, B., Loreck, D., Itkin Zimmerman, S., et al. (2001). Relationship between aggressive behaviors and depression among nursing home residents with dementia. *Int J Geriatr Psychiatry*, 16(2), 139-146.
- Morgan, D. & Stewart, N. (1998). High versus low density special care units: impact on the behavior of elderly residents with dementia. *Canadian journal on aging*, 17(2), 143-165.
- Murphy, D. L., Andrews, A. M., Wichems, C.H., Li, Q., Tohda, M., & Greenberg, B. (1998). Brain serotonin neurotransmission: an overview and update with an emphasis on serotonin subsystem heterogeneity, multiple receptors, interactions with other neurotransmitter systems, and consequent implications for understanding the actions of serotonergic drugs. *J Clin Psychiatry*, 59 Suppl 15, 4-12.
- Namazi, K. & Johnson, B. (1992). Environmental issues related to visibility and consumption of food in an Alzheimer's disease unit. *American journal of Alzheimer's care and related disorders and research*, 7, 30-34.
- Raskind, M. A. & Peskind, E. R. (1994). Neurobiologic bases of noncognitive behavioral problems in Alzheimer disease. *Alzheimer Dis Assoc Disord*, 8 Suppl 3, 54-60.
- Ray, W. A., Federspiel, C. F., & Schaffner, W. (1980). A study of antipsychotic drug use in nursing homes: epidemiologic evidence suggesting misuse. *Am J Public Health*, 70(5), 485- 491.
- Shorr, R. I., Fought, R. L., & Ray, W. A. (1994). Changes in antipsychotic drug use in nursing homes during implementation of the OBRA-87 regulations. *JAMA*, 271(5), 358-362.
- Smith, C. D., Malcein, M., Meurer, K., Schmitt, F. A., Markesbery, W. R., & Pettigrew, L. C. (1999). MRI temporal lobe volume measures and neuropsychologic function in Alzheimer's disease. *J Neuroimaging*, 9(1), 2-9.
- Sorensen, L., Foldspang, A., Gulmann, N. C., & Munk-Jorgensen, P. (2001). Determinants for the use of psychotropics among nursing home residents. *Int J Geriatr Psychiatry*, 16(2), 147-154.
- Struble, L. M. (1995). *Ambulation behaviors of people with Alzheimer's disease: Case studies of residents in three facilities along the homelike continuum*. Unpublished Doctoral Dissertation, University of Michigan, Ann Arbor.
- Tariot, P. N., Ryan, J. M., Porsteinsson, A. P., Loy, R., & Schneider, L. S. (2001). Pharmacologic therapy for behavioral symptoms of Alzheimer's disease. *Clin Geriatr Med*, 17(2), 359-376.
- Tekin, S., Mega, M. S., Masterman, D. M., Chow, T., Garakian, J., Vinters, H. V., et al.

(2001). Orbitofrontal and anterior cingulate cortex neurofibrillary tangle burden is associated with agitation in Alzheimer disease. *Ann Neurol*, 49(3), 355-361.

Walker, L. O., & Avant, K. C. (1995). *Strategies for theory construction in nursing* (3rd ed.). Norwalk, CT: Appleton & Lange.

Whall, A., Black, M., Groh, C., Yankou, D., Kupferschmid, B., & Foster, N. (1997). The effect of natural environments upon agitation and aggression in late stage dementia patients. *Am J Alzheimer Dis (Sep/Oct)*, 216-220.

Whittemore, R. & Callista, R. (2002). Adapting to diabetes mellitus: a theory synthesis. *Nurs Sci Q*, 15(4), 311-317.

- Abstract -

Behavioral Symptoms in Nursing Home Residents with Dementia: Developing a Nursing Practice Model

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Purpose: Behavioral symptoms in dementia (BSD) are one of the most disturbing behaviors to caregivers and a major reason for nursing home placement. Behavioral symptoms are often treated with psychotropic drugs (PD), however, the effect of such drugs for the frail elderly dementia patient is not certain because of their

critical adverse effects. Theoretical model applicable to nursing practice for BSD in nursing homes, which is essential in guiding and evaluating such interventions, is absent. This article presents the process of developing a theoretical model of BSD in nursing homes.

Method: Using Walker and Avants' theory synthesis method, three behavior models and two system models were incorporated into the proposed model to provide the theoretical and analytical explanation of the relationships between PD usage, its determinants, and BSD.

Results: Resident variables and nursing home variables related to the two focal concepts (i.e., PD usage and BSD) were identified. Resident variables include demographical characteristics such as age and gender, and dementia-compromised functions such as cognitive and functional impairment. Nursing home variables include facility characteristics such as ownership type and size, and physical and psychosocial environment.

Conclusion: The proposed model suggests that fulfillment of resident unmet needs through improvement of physical and psychosocial environment may produce better health outcomes of nursing home residents with BSD. Assessment and intervening environmental triggers of such behaviors are also suggested to be prior to the PD usage.

Key words : Nursing practice model, Nursing home, Dementia, Behavioral symptoms

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