

NSG330:Review of Literature: Paper 2

To determine the efficacy of non-pharmacological methods of treating agitation in the demented patient, a literature review of five research studies will be presented. Each study selected looks at a different non-pharmacological intervention and its ability to produce a positive effect in its selected population.

Bright Light Therapy

Utilizing an experimental research design, Haffmans, Sival, Lucius, Cats and van Gelder (2001) performed a study to determine what effect bright light therapy and melatonin would have on motor restless behavior in dementia. In this study, the independent variable is the use of melatonin and the dependent variable is motor restless behavior.

The sample selection methodology was not specifically stated, but "ten patients were recruited from a 24-bed psychogeriatric medium-stay ward of a psychiatric teaching hospital" (Haffmans et al., 2001, p. 107). Exclusions were made based upon the presence of additional psychiatric diagnoses and/or the use of certain medications. The research subjects were then randomly assigned to either receive 2.5 mg of melatonin or a placebo in conjunction with bright light therapy application. Measurements were taken both before and after the use of the treatment.

Data analysis was performed using the analysis for repeated measurements of variance (ANOVA) method. Motor restless behaviors were measured on three scales at baseline and after treatment with the combination bright light therapy and placebo. Following a wash-out period, the behavior was measured at baseline and after treatment with the combination bright light therapy and melatonin. A comparison of the before treatment statistics was compared with that of the after treatment statistics to determine the effectiveness of melatonin in treating motor restless behavior.

Of the ten original subjects, only six were able to complete the study. Two subjects dropped out due to an increase in agitation and anxiety thereby becoming unsuitable to complete the study. Two were transferred to a nursing home and thus unavailable to complete the study period. It was determined that, based upon the chosen scale of measurement, patients were "capable of sitting down quietly more often or to do their pursuits longer" (Haffmans et al., 2001, p. 108) with the use of bright light therapy and the placebo. It was also found that the "effect of the treatment with both bright light and melatonin showed no statistical significance on any of the... scales" (Haffmans et al., 2001, p. 109).

A major weakness of this particular study is its lack of generalizability based upon the small sample size and the use of a single facility with a potentially static group of caregivers. A larger sample chosen from a variety of environments with a variety of caregivers would be a more representative study. Finally, there is the potential for problems with external validity based upon the measurement effects of pre-tests and post-tests. While many of the subjects may suffer with cognitive impairments, they might still be aware of testing being performed thus leading to a variance unaccounted for in the analysis of the data.

The strengths of the study include its use of an experimental design. Subjects were randomly assigned to the test groups and double-blind control was used in relation to which subjects received melatonin and which did not. The research team used standardized methods of data collection and existing, widely-accepted measurement scales which lends to the validity and reliability of the data.

In related research, the authors refer to a study performed by Lovell et al. (1995) that concluded the use of bright light therapy alone was helpful in reducing restless behavior in patients with dementia. Another study the authors refer to was conducted by Okawa (1991) and determined that sundowning was

appropriately curbed by forcing social interactions during the daytime causing the subjects to become sleepy at nighttime. It is possible that in Haffmans et al. (2001) study, the mere requirement of being awake for bright light therapy and the required interactions with staff are actually at the heart of the statistical changes. Another study conducted by Deacon and Arendt (1996) used melatonin for the regulation of sleep-wake cycles. Patients received their medication at varied times and those that received their dose later were negatively effected by its use with an increase in motor restless behavior. This could help to explain the behavioral changes in the two subjects that dropped out of the study. The Haffmans et al. (2001) study was not designed to control the timing of the medication delivery such that this effect could have been avoided.

Based upon this research the use of bright light therapy could be considered an acceptable non-pharmacological treatment for agitation. The use of melatonin is not indicated as it was shown to have no effect upon the behavior of the subjects.

Snoezelen

Van Weert, van Dulmen, Spreeuwenberg, Ribbe, and Bensing (2005) conducted research to study the effects of snoezelen on the behavior and mood of patients with dementia. Snoezelen is "an approach that actively stimulates the senses using light,

sound, smell, and taste...requiring a resident-oriented attitude... allowing caregivers to incorporate personal circumstances such as lifestyle, preferences, desires, and cultural diversity to achieve or maintain...well-being" (Van Weert et al., 2005, p. 25). Caregivers were assigned to subjects in the study on a one-to-one basis. They were trained in methods of assessment that allowed them to determine the most appropriate and personalized interventions. These interventions were then employed in an attempt to reduce behavioral disturbances in patients.

The researchers describe their study as a quasiexperimental pre- and posttest design. The independent variable in the study was the personalized intervention chosen by the caregivers. The dependent variable was the behavior and mood of the subjects.

For subject selection, the researchers do not state the specific method used. They chose six nursing homes out of nineteen eligible sites in different parts of the Netherlands. Within each facility, two wards were selected based upon their similarity in "capacity, staff-client ratio, system of resident allocation, service types, care plans used and level of assistance" (Van Weert et al., 2005, p. 25). Within each facility, by drawing lots from a sealed container, one ward was designated as a control unit and the other as an experimental unit. Verification was made to ensure that snoezelen was not

already in use at the homes and that the wards selected were comparable in number of patients and nursing assistants.

Inclusion of subjects was based upon their diagnosis of dementia and the degree of nursing care required. Exclusions were made based upon additional psychiatric diagnoses, sensory impairments such as hearing or sight loss, and lack of mobility.

Caregivers used the Cohen-Mansfield Agitation Inventory (CMAI) to measure the level of agitation in the subjects. Data analysis was accomplished by comparing mean measurements on the pretest and posttest of the experimental groups with that of the control groups. The research team utilized a mixed model of multilevel analysis for repeated measurements looking at the measurement and resident as the two levels.

The final result of this study found that "residents receiving a snoezel approach...demonstrated significantly more improvements with respect to their level of...rebellious behavior and aggressive behavior than the control group who received usual care" (Van Weert et al., 2005, p. 30). The researchers state that the study supports to use of snoezelen in dementia care.

There are conflicting findings in the patterns of deterioration and improvement in both the control and experimental groups which may point to a possible weakness in

the method of study utilized. Another weakness, by the author's own admission is that "the actual effective ingredient(s) of the snoezelen intervention still remain indeterminate" (Van Weert et al., 2005, p. 31), thus requiring additional research to determine the true source of this study's success. Another weakness is the use of unblinded observations in the data analysis process. The assessments of the nursing staff may be biased by the simple fact that they were involved in the study despite follow-up blinded observations of video tapes by other nursing staff that gave similar results.

The strength of the study is its potential for generalizability which the authors state is not apparent in other studies. This study also allowed for stimulus-preference screening ensuring that participants were able to receive stimuli they found more preferable which did not occur in other studies of this method.

Overall, the study showed positive outcomes from the use of snoezelen as a non-pharmacological intervention for treating agitation in demented patients. The usefulness of the method may be hampered in wide use due to the fact that greater success is believed to be tied to stimulus-preference screening which requires greater resources than are usually available in a typical hospital unit.

Therapeutic Touch

Woods, Craven, and Whitney (2005) performed a double-blind, three-group experimental pre-test/post-test study to determine if the use of therapeutic touch would be effective in reducing the behavioral symptoms experienced by dementia patients. The independent variable studied was the use of therapeutic touch with a dependent variable of "overall behavioral symptoms of dementia and six categories of behavioral symptoms of dementia exhibited by the person with dementia" (Woods et al., 2005, p. 68).

Sample selection was accomplished by taking a convenience sample from three Special Care Units and three Long Term Care facilities. After all selection was completed, there were 57 participants that were assigned to one of three groups using a random-number table. The three groups consisted of "the experimental group that received therapeutic touch...; the placebo group who received a mimic treatment..., and a control group that received routine care" (Woods et al., 2005, p. 68).

Data analysis was conducted using a one-way analysis of variance (ANOVA) method on the mean percent of behavioral symptoms of dementia. The data was largely collected by using trained observers to evaluate the patient's behavior, therefore

the researchers also utilized a Cohen's kappa calculation to determine interrater reliability.

The findings in this study suggest that therapeutic touch is an effective intervention for treating behavioral symptoms associated with dementia. The authors make no reference to similar studies done in this particular area, but recommend enhancements for future studies to include research into the physiological aspects of a patient's condition and the effect that may have on the treatment.

A major weakness of this particular study is the lack of generalizability based upon the small sample size selected. Also, based upon the demographic data, the majority of the subjects, forty-six out of the total fifty-seven, were female and there was only one non-Caucasian subject pointing to a lack of representativeness. Finally, in the varied settings the researchers state that it was difficult to ensure consistency in staff working with the patients which could skew the results.

The strength of the study is in the choice of an experimental design. Subjects were randomly assigned to the groups and care was taken to ensure proper control of a variety of interfering factors. The use of not just a placebo group, but also a control group allowed for the reader to be aware of what was placebo effect and what was therapeutic effect from the

intervention employed. Also, interrater reliability was verified to determine the level of observer bias.

Overall, the study supports therapeutic touch as another non-pharmacological intervention that is useful with patients suffering from behavioral disturbances as a result of dementia. Patients showed a reduction in agitated behaviors while receiving the treatment.

Theory-based Activities

Kowlanowski, Litaker, and Buettner (2005, p. 219) performed a study to test the "efficacy of recreational activities derived from the Need-driven Dementia-compromised Behavior (NDB) model". The researchers used a crossover experimental design with repeated measures of dependent variables to determine if targeted treatments applied to subjects would aid in reducing the behavioral symptoms of dementia.

Thirty subjects were selected from four nursing homes based on specific inclusion and exclusion criteria. They were then assigned to one of six possible groups using a permuted blocked randomization scheme. Each subject served as their own control.

After baseline observations were completed, targeted interventions were prescribed by the researchers for each participant. The implementation and measurement of the intervention occurred for a period of twelve consecutive days

followed by a two-day washout period before implementing a new intervention. There were three independent variables based upon the specific treatment chosen for the individual subject. As well, there were five dependent variables consisting of engagement, affect, mood, behavior, and passivity in dementia scale (PDS). For the purpose of this paper, the focus will be on the dependent variable of behavior.

Data analysis was completed using a mixed-model analysis of variance (ANOVA). Also, a "post-hoc pair-wise comparison of treatment means was performed using Tukey's test...to account for unequal replication due to missing values" (Kowlanowski et al., 2005, p. 224).

The findings in this research indicate that the interventions prescribed for the participants aided in reducing the negative behaviors associated with dementia. While five different variables were measured, behavior was favorably impacted by all three interventions applied. The authors refer to a variety of different studies researching similar phenomenon that support the findings in this particular area.

This study shows a weakness in its generalizability and representativeness. A sample size of thirty participants using convenience sampling reduces the studies applicability to the general dementia-suffering population. The majority of the

subjects chosen were female, widowed and white which does not represent a holistic view of the population with dementia. Finally, using the participants as their own controls presents an issue when the length of the study is considered. If the subjects are aware of the on-going study, they may tire after repeated new applications of interventions thus skewing the data toward the end of the study.

A strength of this study is the control provided by implementing the treatments at peak times of disturbance as observed during the pre-treatment phase. The researchers were also careful to ensure that the prescribed treatments were carried out as expected and protocol maintained by performing random manipulation checks during the treatment phase. The personnel utilized as trained interventionists, were blind to the condition being measured by the researchers to eliminate bias.

The findings in this study indicate that the interventions prescribed are helpful in reducing negative behaviors associated with dementia. In a hospital setting implementation may be difficult because of the need for extended observation to determine the peak time and type of disturbance before choosing the appropriate treatment, but it does support the hypothesis

that there are non-pharmacological means of managing agitation in dementia patients.

Aromatherapy

In a study conducted by Snow, Hovanec, and Brandt (2004), researchers attempted to determine if the use of aromatherapy, specifically lavender oil, was effective in reducing agitation in patients with dementia. The independent variable in the study was the scented oils used and the dependent variable was agitated behaviors.

The sample selection process consisted of asking "nursing staff to nominate residents with probably Alzheimer's disease who displayed 'marked agitation'" (Snow et al., 2004, p. 433). Using a within-subjects ABCBA design, the subject's level of agitation was measured at baseline for four weeks, two weeks for each phase of intervention (A = lavender oil, B = thyme oil, and C = grapeseed oil) and a final two weeks of post-intervention.

Data analysis was conducted using a split-middle analysis for single case evaluation which entails plotting a linear trend for each treatment phase for each subject. Each plot line is compared to the others to determine similarities in their slope possibly indicating a behavior change over time.

The findings in this study indicate that there is no relationship between the use of scented oils and a reduction in

agitation in dementia patients. In fact, a component of the study included measuring olfactory abilities and it indicated that some of the participants did not have a reliable olfactory sense to begin with. The researchers refer to other studies that state that scented oils were used with positive effect, but point out that those studies included a form of massage or cutaneous stimulation that may be the contributing factor to their success.

This study has a variety of weaknesses. The study is not generalizable as the sample size is very small. Representativeness can not be ascertained due to weak selection criteria. Having nurses nominate subjects based on a belief that the subject has Alzheimer's is not reliable selection method. Finally, the use of trend charting and the comparison of the slopes is not very reliable. While the authors believe that the trend charting method allowed them to see changes that might be missed with other methods, the method chosen does not appear to be very sensitive.

The strengths of this study are limited, but would have to include the use of control oils to ensure that it was not simply interaction with the researchers that the subjects might have responded to. Also, testing the olfactory sense of the subjects to be sure that they could smell the oils in the first place was

an important step. The oils may be quite soothing to some, but if a subject is unable to smell it, the fault is not in the oil.

This study, based upon the weakness of the design and sample selection, is not representative of other non-pharmacological interventions for agitated dementia patients. It does indicate though, that scented oils are not an effective intervention due to the reduced olfactory sense in elderly patients.

Conclusions

The proposed hypothesis of this research is there are non-pharmacological treatments for agitation in patients with dementia. Four out of the five literature reviews above indicate that there is research-based support for this hypothesis. The studies chosen each looked at a different intervention and all but one, the use of aromatherapy, effected a decrease in agitated behavior.

The successful methods reviewed require a significant time investment on the part of the healthcare team. Extensive preparation is required to select an appropriate, individualized program or each individual is to receive a significant amount of dedicated treatment time on a daily basis. These interventions are better suited to a specialized care unit. In the hospital setting, the methods reviewed may add burden to an already over-

stressed situation. Careful consideration should be given though, to thoughtful practice changes that will incorporate the notion of personalization of care for improved behaviors in the dementia patient population. A discussion of a proposed practice change follows.

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