

Nursing Research fax #: 919/966-9736

NURSING RESEARCH REVIEW FORM

1st Review – STAT REVIEW ONLY

Manuscript # 2005/245
Manuscript title: Structural model for osteoporosis preventing behavior in postmenopausal women
Manuscript type: Regular
Number of text pgs.: 16
Number of figures: 7
Number of tables: 2
Reviewer: Nancy Perrin
Stat reviewer assigned?: Yes, you are the stat reviewer

Please evaluate the following with these choices: (1) adequate, (2) inadequate (describe in written review) or (3) not appropriate (describe in written review)

Problem statement: 1
Attention to relevant literature: 2
Theoretical framework: 2
Research design: 2
Data analysis: 2
Discussion of results: 1
Organization: 1
Writing style: 1

Please rate the following topics 1-5 (with 5 being the highest rating):

Value of topic: 4
Probable reader interest in topic: 4
Importance of present contribution to nursing: 3
Priority of topic for publication: 4
Rank this manuscript for its value: 3

Reviewer's Recommendation (please type "X" after your choice):

Maybe accept with revisions X

This well written paper uses structural equation modeling to test the effectiveness of providing DXA results as an intervention to increase calcium intake and exercise for postmenopausal women with osteoporosis. The paper is easy to follow and provides support for this type of intervention. The paper could be greatly strengthened by addressing the issues outlined below.

There is some controversy in the literature over the effectiveness of calcium in the prevention of osteoporosis. This should be briefly discussed.

Page 3 line 6: Please provide references for the effectiveness of the prevention behaviors listed

The paper does not provide a basis for the theoretical model underlying the research hypotheses. Why was knowledge and health beliefs conceptualized as a mediator of the effect of the intervention? A mediation model says that presenting people with the results of the DXA will change their knowledge and health beliefs and that this change will in turn increase OPBs. Please explain the mechanism and rationale behind this hypothesis. I wonder if moderation is more appropriate in this context. Moderation would hypothesize that providing women with the results of the DXA will lead to a greater increase in OPBs for those with high knowledge and certain health beliefs but a no or smaller increase for those with low knowledge and/or other health beliefs.

The rationale for the design is not provided. An overview of the design is needed in the methods section. The method is described by the analysis which is somewhat worrisome. The analyses should fit the research questions and design not vice-a-versa.

Several results are reported in the methods section. Results (with the exception of reliability) should be reported in the results section.

Confirmatory factor analysis, not principal components analysis for the OKT should be used to test if a pre-specified factor structure fits the data. Also please explain how the convergent and discriminant validity of this instrument has been supported.

A cutoff value of .09 is used for SRMR. This is a different value than what is normally used. Please provide the rationale and references for selecting .09 rather than the more standard values.

It appears that the same data was used to do exploratory and confirmatory analyses of the measurement model. The measurement model should be specified prior to the analysis and tested within the SEM framework. Using the data to determine the measurement model and then testing it within the SEM framework does not confirm the measurement model. A rationale for the measurement model that is not data driven is needed.

The measurement model is problematic for the exercise condition as benefits of exercise loads on more than one factor. The claim that the constructs are largely unrelated is not supported (pg 14, line 5) when two of the constructs share a measured variable. This

means that motivation and general knowledge are not unique concepts as specified by the model. Theoretically this path needs to be justified. Also, given the low loading of benefits on motivation, it is not clear why it was retained in the model.

Please clearly specify what the measured variables for susceptibility are, not simply item numbers.

It seems to me that a critical path is missing from the model; one from group assignment to Daily Calcium (or Exercise) at time 1. The effect of the intervention at time 2 needs to be tested controlling for any differences on the outcome at time 1. Even if the differences at time 1 are not significant this path should be in the model. This would allow you to establish that the path from group assignment to time 2 does not disappear like the path from group assignment to time 3 when controlling for initial differences.

I have concerns about the conclusions drawn around mediation. The analyses as described do not support mediation as critical paths are non-significant. Susceptibility at time 1 should be included in the model to establish that group assignment was predictive of the change in susceptibility, not just time 2 values. In addition, the full test of mediation was not conducted (see Baron & Kenny 1986 and McKinnon et al 2002) so no conclusions can be drawn. Given this and the lack of a theoretical justification for mediation, the authors may want to consider dropping the mediated model from the paper.

On the figures, please include paths and coefficients for the correlations among the exogenous variables rather than the note.

Please indicate what * and + mean on the figures themselves.