

## The Midlife Women's Symptom Index: Internet Vs. Pen-and-Pencil

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Purpose: Despite the recent positive findings on the Internet research compared with the traditional research methods including Mail surveys and telephone surveys, very little is still known about differences in psychometric properties of the pen-and-pencil (PP) format and the Internet format of a same instrument. The purpose of the study was to determine and compare reliability and validity of the PP format and the Internet format of the Midlife Women's Symptom Index (MSI).

Method: This study utilized a cross-sectional comparative design with three sections: (a) a PP survey (Group 1); (b) an Internet survey (Group 2); and (c) an expert review (Group 3). A total of 158 middle-aged women (77 for Group 1 and 81 for Group 2) aged 40 to 60 years who could read and write English were recruited using a convenience sampling. Twenty experts in women's health who were faculty members of schools of nursing at 5 universities were recruited using a convenience sampling method (Group 3). Both of the PP format and the Internet format included self-administered questions on 19 sociodemographic characteristics, the Midlife Women's Symptom Index (MSI), and the Menopausal Symptom Checklist (MSC). For the expert review, only one Likert-scale question on face validity was used, and the experts were asked to provide any feedbacks related to the MSI in an open space. Data were analyzed using descriptive statistics, K-R20, and correlation coefficients.

Findings: Internal consistency reliability, convergent validity, construct validity, and face validity were supported in both the pen-and-pencil format and the Internet format of the MSI. K-R20 for the PP format was 0.94 among all participants, 0.94 among Whites, 0.88 among Asians, and 0.97 among Hispanics. K-R20 for the Internet format was 0.86 among all the participants, 0.89 among Whites, 0.78 among Hispanics, and 0.86 among Asians. Convergent validity and construct validity of the PP format and Internet format of MSI were also supported ( $0.80 < r < 0.94$ ). The expert panel supported face validity of MSI (mean=4.45, SD=1.15). Four among the 20 (20%) suggested some format changes of the MSI. Based on the item analysis and suggestions from the expert review, 15 items that had the inter-item correlations greater than 0.70 or less than 0.30 and that were found to be inappropriate were eliminated. After removing the items, K-R20 was not significantly changed (0.94 for the pen-and-pencil format and 0.87 for the Internet format), but the item-total correlations and the inter-item correlations were improved.

Discussions: The findings supported that there is no significant difference in the reliability and validity of the PP format and the Internet format of a questionnaire, and that the Internet survey generated comparable data to the PP survey.