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The Women's Health Questionnaire (WHQ): The development, standardization and application of a measure of mid-aged women's emotional and physical health

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Abstract

The development and standardization of the Women's Health Questionnaire (WHQ) is described. The questionnaire is reliable and has reasonable concurrent validity. It is sensitive to detecting change; this has been evaluated in both hormone replacement therapy studies and studies of non medical treatments. The WHQ is currently being used in a wide range of studies in Europe and North America. It is available in several European languages. Current applications include the evaluation of a health education intervention, evaluation of prospective hormone replacement therapy trials and a psychometric and cultural comparison of responses to the WHQ in several European countries.

Key words: Menopause, Physical, Psychological, Symptoms, Women's Health Questionnaire

Introduction

The Women's Health Questionnaire (WHQ) was developed to measure mid-aged women's perceptions of a range of physical and emotional symptoms [1]. The term symptoms is used here as a shorthand for emotional states, or bodily sensations or experiences. The WHQ was designed to assess symptom perceptions during the menopause transition and for older postmenopausal women, in response to the lack of available instruments standardized for this age group. It is within this age range (45–65 years) that hormonally mediated changes, such as vasomotor symptoms and vaginal dryness, menstrual changes and age-related bodily changes, such as changes in sleep patterns, sexual behaviour and physical health, are prevalent. These changes can confound results derived from traditional scales. By sampling a range of symptoms, the development of the WHQ enabled examination of the relationships between these symptom clusters. The questionnaire does not measure the presence of specific diseases nor the impact of health problems

upon functioning, and by being entitled women's health questionnaire, it does not make assumptions about the nature of menopausal symptoms. It can be used as part of a quality of life assessment and in the evaluation of interventions and preventative strategies for mid-aged and older women.

Development of the WHQ

Item reflecting mood states, physical sensations, vaginal dryness, sexual interest and satisfaction, vasomotor and menstrual symptoms were included, as well as sleep problems and other generally reported physical symptoms, such as tiredness, headaches and dizziness. The mood items were drawn from the Leeds' Scales for depression and anxiety [2], because they were developed to assess mood in general population samples, but normative data for older women were not available. Following pilot work 36 items were selected (see Appendix 1). These were rated on four point scales to reflect frequency – Yes, definitely; Yes,

sometimes; No, not much; No, not at all. A time frame of the past few days was chosen to elicit current symptom and mood states. Items were phrased both positively and negatively.

Factor analysis (principal components with varimax rotation) was used to explore the relationships between symptoms and to enable the development of meaningful summary scores. Factors were extracted having eigenvalues greater than one. Concurrent validity of the mood items was assessed by comparison with the General Health Questionnaire (GHQ) [3]. The 30-item version was used as this was devised leaving out items that are frequently responded to by people with physical illnesses [4]. Test-retest reliability was measured across a 2-week time period.

Standardisation sample

Women aged 45–65 years were recruited from a large ovarian screening programme at King's College Hospital, a large teaching hospital in south London serving a socially mixed catchment area. Those who had undergone surgical menopause or who were taking hormone replacement therapy (HRT) were excluded.

A total of 1090 women were approached by letter to complete the questionnaire as part of a survey of women's health. Of this, 850 returned completed questionnaires (78% response rate) and 682 met the inclusion criteria. The mean age was 52.32 (4.92), range 45–65, 82% were married and 66% employed outside the home. The proportions in different socioeconomic groups (I & II 26%, III 53.6%, IV & V 18.6%) were similar to the general population statistics for women living in South East England, based on figures taken from the 1981 Office of Population Censuses and Surveys. The Whitley Index [5] was included because the sample, being voluntary screening attenders, might have evidenced more health concerns or preoccupations than others. The scores on this scale (mean = 2.63, SD = 2.53) were well within the non-hypochondriacal range, suggesting that the sample were not overly preoccupied by health worries. The WHQ was subsequently used in a study of 106 women drawn from the age-sex registers of five general practices in South London. The means were very similar to the norms [6, 7].

Psychometric properties

Factor analysis. This revealed nine factors that accounted for 55.7% of the variance; these are listed as follows with the number of items in parentheses: Depressed mood (6), somatic symptoms (7), anxiety/fears (4), vasomotor symptoms (2), sleep problems (3), sexual behaviour (3), menstrual symptoms (4) and memory/concentration (3). The 'attractiveness' scale (2) accounted for a small proportion of the variance and is now generally omitted.

The memory/concentration subscale assesses subjective appraisal of memory; objective methods of assessment would be needed for clear statements about cognitive function to be made. The sexual subscale includes items relating to vaginal dryness (causing sexual discomfort), sexual interest and sexual satisfaction. Items concerning vaginal dryness and satisfaction were framed in the context of a current sexual relationship, i.e. women who were not currently sexually active were asked to omit the item. The item relating to changes in sexual interest, however, was responded to by all the participants. As a result the proportions of sexually active women can be ascertained, as well as those experiencing vaginal dryness and loss of sexual interest. The sexual satisfaction item reflects a more global appraisal of the woman's sexual relationship regardless of her sexuality.

The WHQ samples a range of physical and emotional symptoms and the subscales reflect a breakdown of relatively independent symptoms clusters. Moreover, sexual and sleep problems are not subsumed under depressed mood but instead can be assessed separately. Similarly, the relative effects of interventions upon vasomotor symptoms, sleep and mood can be measured in detail. The questionnaire takes approximately 5–10 min to complete and can be used by the participant alone.

Scoring. Scoring of the WHQ is simple; the four point scales are reduced to binary options (0/1) and the subscale items are summated and divided by the number of items in each subscale. Norms are available for the 45–65 age range ($n = 682$), the 45–54 age range ($n = 474$) and the 55–65 age range ($n = 179$), as well as for a younger sample, aged 23–38 ($n = 55$) [1].

Test-retest reliability. This was conducted on a sample of 48 women who completed the WHQ on two occasions. All correlations were above 0.75, ranging from 0.96 to 0.78, suggesting that the WHQ is reliable across a 2-week time interval.

Concurrent validity. It was assessed by comparison with the GHQ for the depressed mood subscale ($n = 50$). The GHQ correlated 0.86 with depressed mood (WHQ). Using a cut-off point of above 0.43 (depressed mood scale), 87.5% of the cases were correctly classified into those considered at risk versus those not considered at risk of clinical depression ($\text{GHQ} > 5$). Using the depressed mood cut-off point, 13.6% of the standardisation sample would be classified as cases. These figures are consistent with British community surveys of psychological morbidity, for example 14.9% of women in Camberwell, which is the location of the teaching hospital involved in the standardisation of the WHQ [8].

In a comparison of the standardisation sample with new attenders at a menopause clinic, women seeking medical help for menopausal problems, the WHQ subscale scores discriminated between clinic attendees and non-attendees [9]. Those seeking help obtained significantly higher scores on the vasomotor, depressed mood, anxiety, somatic symptoms, sexual and sleep problem subscales. Using the above cut-off point for the depressed mood subscale, 47.1% of the clinic sample were classified as being at risk for clinical depression compared with 12.8% of the general sample (using age range 45–54 years). Depressed mood, anxiety, vasomotor WHQ subscale scores, plus items assessing disease conviction and difficulty coping, together correctly classified 75% of the samples into clinic and non-clinic groups.

Available languages

The WHQ has been translated into the following languages [by MAPI Research Institute (27, rue de la Villette, 69003 Lyon, France who can be contacted to obtain translated questionnaires)]: Polish, Spanish, Australian English, US English, Italian, French, Belgian (French and Dutch), Danish, German and Portuguese.

Sensitivity – assessing change

The WHQ has been used to evaluate HRT trials, psychological interventions and preventative initiatives for mid-aged and older women. For example, Wiklund and colleagues [10] demonstrated that the WHQ was sensitive to detecting change in response to HRT across all subscales, in a 1 year prospective study of 110 women, and in a randomised placebo controlled trial [11]. Similarly, in a randomised comparison of transdermal oestrogen and a symptomatic treatment (veralipride) all subscales, except the menstruation subscale, significantly discriminated between treatments [12]. For a comparison of measures including the WHQ, see Wiklund [13]. There are many studies in Europe and North America currently using the WHQ in HRT trials. As well as detecting benefits of treatments, some items of the WHQ, such as breast tenderness and nausea, are those reported as side effects of some treatment regimes.

The WHQ has been used to evaluate a cognitive-behavioural treatment (CBT) for menopausal hot flushes using a patient-preference design [14]. Other options offered to the women were no treatment or HRT. Both active treatments significantly reduced hot flush frequency, but for the CBT group ($n = 24$) depressed mood (WHQ) and anxiety (WHQ) also significantly reduced – thus the WHQ discriminated between treatment effects. Improvements were maintained at three month follow-up for anxiety but not depressed mood.

Current applications

The WHQ has been used in a series of cross-sectional and prospective studies by the author and co-workers [7, 15, 16]. For example, a health education intervention in primary care was implemented with the aim of providing health education with relevance to the menopause to 45-year-old women. The WHQ was given before and after the intervention and then again 5 years later when the sample were aged 50 years. At baseline, WHQ scores were similar to the norms except that the vasomotor scores were lower for this younger sample ($n = 106$). However, at 50 years the subscale scores were all similar to the normative data

[7, 16]. A comparison of the WHQ and SF36 subscales was carried out using the 50-year-old sample. The Depressed mood subscale significantly correlated with the Mental Health SF36 scale (-0.70) and with the Vitality scale (-0.65) in the expected direction. Currently, variables at baseline (participants aged 45) are being used to predict depressed mood (WHQ) during the menopause (MS. Hunter & I. O'Dea, unpublished data).

In an Australian study, Slaven and Lee [17] found that women who exercised obtained lower depressed mood and anxiety (WHQ) scores than non-exercisers, regardless of menopausal status. Exercising women also obtained lower scores on the somatic symptoms and memory and concentration subscales. In a prospective phase of this study the acute effects of aerobic exercise were examined; significant enhancements in mood and reductions in reported somatic and vasomotor symptom subscales were evident immediately following an aerobic exercise class.

The WHQ is currently being used to evaluate a number of clinical trials of hormone replacement therapies for menopausal and postmenopausal women in Europe and North America. For example, in the UK the Medical Research Council have initiated a large randomised controlled trial of transdermal oestrogen therapy [18] and are including the WHQ in part of a detailed evaluation of quality of life changes. The scale is also being used to evaluate the effects of hormone replacement therapy in a large randomised controlled trial of breast cancer patients in the UK, as well as in a study of the impact of Tamoxifen.

European comparative study

The WHQ is available in eight European languages. In collaboration with MAPI Research Institute a study of the psychometric properties of the WHQ is being conducted using a large data base, which include the following language translations: UK (English), USA (English), Polish, Italian, German and French. WHQ data has been examined to provide information about the psychometric properties of the translated versions of the scales. Provisional multi-trait analysis suggests that the internal reliability of the subscales is reasonable. Cronbach's α levels were as follows: depressed mood (0.7), anxiety (0.77), somatic symptoms (0.76), vasomotor symptoms (0.84), sleep problems (0.73); for menstrual problems and sexual problems the coefficients were lower, being 0.64 and 0.59 respectively. Further analyses will include an examination of the relationships between items of the WHQ for the different samples, in order to develop a revised version of the WHQ that is up to date and can be used in multi-centre studies.

Conclusions

The WHQ is a reliable and valid measure of women's perceptions of emotional and physical health. It is being widely used in evaluations of medical and non-medical treatment regimes and preventative interventions for peri- and postmenopausal women in Europe, Australia and North America, and is sensitive in detecting treatment effects and side effects.

Appendix 1. The Women's Health Questionnaire

Please indicate how you are feeling now, or how you have been feeling THE LAST FEW DAYS, by putting a tick in the correct box in the answer to each of the following items:

	Yes, definitely	Yes, sometimes	No, not much	No, not at all
1. I wake early and then sleep badly for the rest of the night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I get very frightened or panic feelings for apparently no reason at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I feel miserable and sad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I feel anxious when I go out of the house on my own.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I have lost interest in things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 1. (Continued)

	Yes, definitely	Yes, sometimes	No, not much	No, not at all
6. I get palpitations or a sensation of 'butterflies' in my stomach or chest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I still enjoy the things I used to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I feel life is not worth living	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I feel tense or 'wound up'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I have a good appetite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I am restless and can't keep still	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I am more irritable than usual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I worry about growing old	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I have headaches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. I feel more tired than usual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I have dizzy spells	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. My breasts feel tender or uncomfortable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I suffer from backache or pain in my limbs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I have hot flushes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I am more clumsy than usual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. I feel rather lively and excitable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. I have abdominal cramps or discomfort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. I feel sick or nauseous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. I have lost interest in sexual activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. I have feelings of well-being	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. I have heavy periods (please omit if no periods at all)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. I suffer from night sweats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. My stomach feels bloated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. I have difficulty in getting off to sleep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. I often notice pins and needles in my hands and feet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. I am satisfied with my current sexual relationship (please omit if not sexually active)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. I feel physically attractive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. I have difficulty in concentrating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. As a result of vaginal dryness sexual intercourse has become uncomfortable (please omit if not sexually active)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. I need to pass urine/water more frequently than usual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. My memory is poor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Is it very difficult for you to cope with any of the above symptoms? YES/NO. If so, which ones:				

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