



Characteristics associated with initiation of hormone replacement therapy among Finnish women: A register-linkage study



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ABSTRACT

Objective: To investigate which patient characteristics are associated with the initiation of hormone replacement therapy (HRT) in a cohort of Finnish women.

Study design: Responses to postal questionnaires distributed to a nationwide, randomly selected cohort of women in 1998, 2000, 2003, 2005 and 2010 were analyzed. The cohort members were aged 40–44 years at the beginning of the study. Information on hormone replacement therapy was received from the national prescription register. Women who started taking HRT between January 1, 1999 and December 31, 2011 were included and previous users were excluded from the analysis.

Main outcome measures: Initiation of HRT was the main outcome measure. The following explanatory factors for predicting the use of HRT were examined: sociodemographic factors, personality, health behavior, physiological and mental symptoms, chronic diseases and use of psychopharmaceuticals. The associations between starting HRT and the explanatory factors were analyzed with single-predictor and multi-predictor logistic regression models.

Results: Factors predicting that a woman would start taking HRT were: living with a partner, weak sense of coherence, BMI less than 30 kg/m², heavy or moderate alcohol use, symptoms of hyperactivity of the sympathetic nervous system, climacteric symptoms and use of psychopharmaceuticals.

Conclusions: Women with a good sense of coherence can cope with climacteric symptoms without resorting to HRT. Clinicians need to bear in mind the burden of menopausal symptoms on a woman's personal and working life when HRT is being considered.

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1. Introduction

Estrogen-replacement therapy has been used for over 70 years [1]. The efficacy of hormone replacement therapy (HRT) in alleviating climacteric vasomotor symptoms (hot flashes and night sweats) is well documented and widely accepted. Hot flashes affect up to 70–80% of climacteric women [2,3] and persist for 5 or more years past the menopause in up to a third of women [4,5]. In a Finnish study no less than 95% of women aged 52–56 years had climacteric symptoms to some degree [6].

In Finland, women start using HRT at a median age of 50 years and use it for a median of 10 years [7]. Women who start HRT are usually more likely to be highly educated, non-obese, to drink

more alcohol and experience more discomfort because of climacteric symptoms than their peers who do not use HRT [8]. A study from the UK showed that the main predictor of HRT use is the belief that its benefits outweigh its risks [9]. A major drawback of that study was, however, that only intention to use was studied, not the actual use of HRT itself.

The aim of the present study was to investigate whether various patient characteristics predict that a woman will start taking HRT among a population sample of Finnish women. In addition to sociodemographic and health risk behaviors, we also examined psychological factors such as hostility, sense of coherence, sleep disturbance and depression. Climacteric symptoms are the main indication for HRT [7], but we wanted to know to what extent personal traits are associated with the use of HRT.

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2. Methods

2.1. Population and questionnaires

Data were collected from the Health and Social Support (HeSSup) study. The Finnish Population Register Center established a random population sample in 1998 representative of the Finnish working-age population, stratified by age into groups aged 20–24, 30–34, 40–44 and 50–54 years. The baseline survey was based on a comprehensive questionnaire covering psychosocial, medical and behavioral variables [10]. Fig. 1 shows sample sizes, drop-out and response rates and years of survey. The response rate to the baseline questionnaire for the HeSSup study among women aged 40–44 years in 1998 was 45.5% (3013/6616) after one reminder. In 2003, the response rate was 86.8% (2453/2826) after one reminder; the HeSSup questionnaire was sent only to those who had answered in 1998. In 2000, another questionnaire, as part of the 'Quality of Life Among Middle-aged Women Study' (the QoL Study), was sent to the same women aged 42–46 years who had answered the HeSSup Study two years earlier. The QoL questionnaire focused on the respondents' gynecological background, climacteric symptoms, use of HRT and other treatments for climacteric symptoms as well as matters of sexuality [6]. After one reminder 1825 women out of 2771 answered (response rate 65.9%). Five years later in the QoL Study, in 2005, a follow-up questionnaire was sent to the same population as in 2000. At that time, 2017 women out of 2663 responded to the questionnaire after one reminder (response rate 75.7%). Finally, in 2010 in the QoL Study, a follow-up questionnaire was sent to the same population as in 2005 and 2000. At that time 1988 women out of 2740 responded to the questionnaire after one reminder (response rate 72.6%).

In the analysis of the HeSSup study in 1998, no specific health-related factors were significantly associated with non-response [10]. A similar analysis in the QoL Study in 2000 examined four factors: basic education, professional education, use of psychopharmaceuticals and employment status. Here, the responders differed from non-responders in terms of education: women with a high level of basic education and with a professional education responded more often than others [6].

The Turku University Hospital Ethics Committee considered that a statement of approval was not legally required for this questionnaire study, which dealt with a normal population cohort. The subjects in the HeSSup study originated from a random population sample drawn by the Finnish Population Register Center. When agreeing to participate in the study, the subjects signed an informed consent form that permitted subsequent studies to draw on the same data.

The primary outcome variable was the initiation of HRT. Information on the use of HRT within the study cohort was received from the prescription registers in Finland (managed by the Social Insurance Institution of Finland) and we were able to use these prescription data to determine whether a participant started HRT. The drugs were classified by the ATC-system (Anatomical Therapeutic Chemical Classification). The sales figures for HRT preparations were retrieved for estrogens (ATC G03C), progesterones (ATC G03D) and progesterones and estrogens in combination (ATC G03F). Data on the use of antidepressants (ATC N06A, ATC N06C), tranquilizers (ATC N05B) and hypnotics (ATC N05C) were collected from the same register. The data on medication were collected for the years 1994–2011. For a woman to be classified as having started HRT, the criterion was that one HRT prescription had been dispensed for her from a pharmacy. This was deemed sufficient, as we wanted to evaluate factors that might predict only whether a woman would start to use HRT (and not, say, length of use); we included all women who had bought at least one package of HRT

(i.e. the purchase of the drug was equated with starting HRT – an assumption that is bolstered by the cost of the preparations).

2.2. Explanatory factors

The explanatory factors—participants' characteristics that might predict that she would start taking HRT after 1998—were derived from the HeSSup and the QoL questionnaires. The information from the HeSSup questionnaire of 1998 and the QoL Study of 2000 was used for women who started HRT in 1999–2003. For those who started HRT in 2004–2011, the information was collected from the identical HeSSup questionnaire of 2003 and the QoL Study of 2005. The information on women who did not start HRT at all was collected from the HeSSup Questionnaire of 2003 and QoL Study of 2005. The severity of climacteric symptoms of both HRT initiators and HRT non-initiators were assessed by the responses to the QoL questionnaires from the years 2000, 2005 and 2010. The highest severity score from these responses was used in the analysis, irrespective of the year of the questionnaire.

We evaluated the following five groups of explanatory factors: (1) sociodemographic factors, (2) personality, (3) health behavior, (4) physiological and mental symptoms and (5) chronic illnesses and use of psychopharmaceuticals.

2.2.1. Sociodemographic factors

The following sociodemographic variables were included in the analysis: **living alone or with a partner**, **educational status** (none/vocational/college/university or high school), **working status** (employed/unemployed), **number of children** (none/one or more) and **age** (year of birth).

2.2.2. Personality and sexual satisfaction

Two characteristics of personality were evaluated: **sense of coherence** (SOC) and **hostility**. According to Antonovsky's [11] SOC model, persons with a high SOC have the ability to benefit from their general defense mechanisms to overcome stressful situations. Assessment of a subject's SOC was based on the 13-item scale of Antonovsky's Orientation to Life Questionnaire (OLQ), which formed part of the HeSSup questionnaire and were classified into three groups with lower and upper quartiles as cut-off values.

The health of hostile individuals is at greater risk than that of non-hostile individuals, due partly to a lesser ability of the former to cope with psychosocial stress [12]. Hostility was measured with three questions: 'Do you get angry easily?' (scale 1–7/easily–not easily), 'How easily do you become irritated?' (scale 1–7/very easily–not easily) and 'How often do you quarrel?' (scale 1–7/very often–very seldom or never). Hostility was measured as the sum of the scores for these three items and was dichotomized as low (values 0–12) and high (≥ 13) hostility.

Sexual satisfaction was ascertained with the question 'Are you satisfied with your sex life?', responses to which were on a scale of 1–7, which in turn were categorized as 'very satisfied' (values 1–2), 'quite satisfied' (values 3–5) and 'not satisfied' (values 6–7). It is known that HRT significantly improves sexual function in the domains of orgasm, lubrication and pain. The level of sexual satisfaction is greater among postmenopausal women taking HRT than among those not taking it [13].

2.2.3. Health behavior

Physical activity was measured with the Metabolic Equivalent Task (MET) index and respondents were classified as: less than 14 MET, 14–30 MET and more than 30 MET per week [14]. Height and weight were used to calculate the body mass index (BMI) to identify underweight or normal weight (BMI $< 25.0 \text{ kg/m}^2$), overweight (BMI 25 to $< 30 \text{ kg/m}^2$) and obese (BMI $\geq 30 \text{ kg/m}^2$) subjects. Perceived health status was assessed using the question 'How is your

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