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Intentions to use hormone replacement therapy in a community sample of 45-year-old women

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Abstract

A sample of 45-year-old women from 5 general practices in South London were asked about their intentions to use hormone replacement therapy by postal questionnaire. One hundred and six women (60%) responded. Ninety women who were not taking HRT formed the study sample. Over 80% expressed an opinion when asked about future HRT use. Forty-four percent expressed an intention to use HRT, 42% expressed an intention not to, and 13% expressed a lack of knowledge on which to base a decision. Reasons given by intenders were based on general hopes to 'feel better' among others. Non-intenders gave reasons reflecting disinclination to use drugs and to interfere with a normal process, as well as concerns about side-effects. The characteristics of intenders and non-intenders were compared. There were no significant differences between groups in socio-demographic variables, or in general and gynaecological health factors. However, HRT intenders reported significantly lower self-esteem, higher levels of depressed mood, anxiety, and negative attitudes to the menopause. They also expressed stronger beliefs in their doctors' ability-as opposed to their own- to control their menopause experience. These results suggest that some women might be seeking HRT at menopause to help alleviate pre-existing emotional difficulties and this may have important implications for treatment adherence.

Keywords: HRT intentions/knowledge; Beliefs; Socio-demographic factors

1. Introduction

In spite of growing evidence attesting to the effectiveness of oestrogen therapy in the prevention of osteoporosis [1] and cardiovascular disease [2,3] in postmenopausal women, uptake of the treatment in the UK is regarded as generally low. Between 7% and 10% of 45 to 55 year old women in Britain are estimated to be currently using hormone replacement therapy (HRT) and, of those starting the treatment, a considerable proportion discontinue within the first six months [4,5,6]. However, in order to derive long-term benefits to the bones, five years of treatment is usually recommended [7]. An awareness of this discrepancy has focused research interest upon issues of compliance with HRT regimens. The term 'compliance' may be less appropriate than the terms 'uptake'

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and 'adherence' preferred here. Currently, the characteristics of HRT users, factors that influence decisions on uptake, and barriers to continued use, are now considered important topics of study in their own right.

Socio-economic status and knowledge about HRT have been found to be associated with HRT use [8,9]. In a North American study, hormone use was highest amongst white women and those who had undergone hysterectomy and oophorectomy. Level of education was associated with HRT use amongst non-surgical women [10]. There is also some evidence from studies of women seeking help from menopause clinics that those seeking treatment report more psychological distress than non-clinic attenders [11,12].

Surveys of middle-aged women and HRT users suggest that the main reason that women take HRT is to relieve vasomotor symptoms. Additional reasons given are the alleviation of psychological symptoms, such as anxiety and depression, as well as the prevention of osteoporosis [13,14]. In a study of 50-year old women in general practice [15], women believed that HRT was most effective in preventing osteoporosis and depression. In a similar survey [9], over 40% of women felt that HRT would help with emotional problems such as depression, irritability and lack of zest, as well as with hot flushes and osteoporosis. Thus beliefs about the psychological benefits of HRT appear to be fairly pervasive, despite lack of clear empirical support for the relationship between menopause and depression, and the effectiveness of HRT in alleviating emotional problems [16,17].

Using a different approach, Schmitt et al. [18] examined factors influencing decision-making about HRT by providing information about the treatment followed by various case scenarios. Two hundred and sixty five women estimated the likelihood that they would take HRT (oestrogen or oestrogen plus progestogen) to alleviate menopausal symptoms, when faced with hypothetical cases varying in their intensity of hot flushes, risks of osteoporosis and cancer. Using a cluster analysis, groups of women were identified, based on their judgement policies. For the majority ($N = 120$), the decision was based on severity of hot flushes, i.e. current symptom state. A second group, who were more highly educated, balanced the risks and benefits using a more complex decision-making process and included prevention of osteoporosis as a relevant factor. A third group ($N = 40$) were influenced by presence of hot flushes but did not want to use a progestogen, while a fourth group's primary concern was risk of cancer. Overall, those who believed that hormones would help and who had greater knowledge about the menopause and HRT were more likely to take it.

Knowledge and beliefs of current HRT users and non-users have been compared by Fergusson et al. [19]. Current users knew more about the treatment, particularly the link between oestrogen and osteoporosis, had less faith in natural treatment approaches, and were more likely to view the menopause as a medical condition than non-users. This study draws attention to the importance of health beliefs, but conclusions about cause and effect are not possible because of the retrospective design.

Studies of the barriers to uptake and adherence suggest that the main problems are, not wanting to have menstrual periods (in association with the progestins), progestin-related side effects such as bloating and breast-tenderness, fear of cancer and other concerns about health risks [9,20].

The main recommendation resulting from these various studies has been to advocate a systematic educational approach. Understandably, women want more information about the menopause and HRT [21], but to assume if knowledge is improved that uptake and adherence would necessarily increase is overly optimistic.

More sophisticated psychological models have been developed, to try to explain and predict health behaviours in general, including decisions on and adherence to medical treatment [22,23]. These emphasize the importance of health beliefs (such as the value placed on health, perceived control of health and illness, and perceived susceptibility to particular health problems), as well as knowledge, mood and socio-demographic factors. The current study draws on these models using a community sample recruited from the age/sex registers of five general practices, and aims to:

i. Assess womens' intentions about HRT use before they have experienced menopause.
ii. Describe the main reasons for their intentions.
iii. Examine the characteristics of HRT intenders and non-intenders, focusing upon knowledge of and attitudes to menopause, health beliefs, mood state, as well as socio-demographic variables.

2. Materials and methods

As part of a larger prospective intervention study with middle-aged women, health-related beliefs and behaviours were examined in an initial baseline investigation. There were two hundred and twenty-eight women aged 45 (born in 1946) on the age-sex registers of five general practices in South London. Fifty of these women were randomly assigned to a group to be contacted at a later phase of the study. One hundred and seventy-eight women were recruited into the baseline study, between October 1991 and March 1992. There were ten male and ten female G.P.s in total at the practices, which were all situated in socially mixed districts of London, serving a total practice population of approximately 37 000.

Women were contacted by letter, signed by KL, MH and their G.P., and were asked if they would take part in a study of women's health by completing an enclosed questionnaire (entitled 'Women's Midlife Survey'. A stamped, addressed envelope was provided. Non-responders were sent a second letter asking them to return the questionnaire. Local ethical approval was granted for the project.

The questionnaire was developed following detailed pilot work and included the following groups of questions:

2.1. Socio-demographic information

Socio-economic status was coded into manual and non-manual categories according to the women's occupation or partners' if married, based on the OPCS classification [24]. Questions were asked about duration of full-time education, ethnic group, employment, marital status and parity.

2.2. Health and health-related behaviour

Questions enquired about menopausal status (classified by menstrual history into pre-, peri- and postmenopause [25]), gynaecological history, general health rating (4-point scale), past and current major illness, and visits to doctor in past month. Body mass index was calculated from reported weight and height. The health behaviours assessed were: uptake of cervical screening, dietary practice, cigarette smoking, average weekly alcohol intake and participation in regular exercise.

2.3. Intention to use HRT

This was assessed by a multiple-choice question (Table 1) followed by an open question tapping the main reason for intentions.

2.4. Knowledge about the menopause and HRT

Subjective rating of knowledge about the menopause was made on a 4-point scale (poor, fair, good, very good). A 10-item multiple-choice questionnaire was used to sample objective knowledge (Appendix). Each correct answer was scored 1 and incorrect answer 0, thus the maximum knowledge score was 10 and minimum 0. Women were also asked about their sources of knowledge about the menopause and to check any of the following sources that applied to them: mother, friends/relatives, mass media (e.g. radio, newspapers, television, magazines), books, health channels (GP, clinics, health education leaflets), others.

Table 1
Intention to use HRT
How do you think you will feel about HRT when you reach the menopause?

Percentage	*n*	Intention
44.4%	7	I definitely won't want HRT*
	33	I'd rather not have HRT but would consider it*
42.2%	28	I'd like to have HRT but have some concerns*
	9	I definitely will want HRT*
13.3%	12	I don't really know what it is/undecided

* Please state the main reason for your choice

2.5. Beliefs about the menopause

A 10-item scale was adapted from a previous study [21] (Appendix 2). Items, rated on 5-point Likert scales, included perceptions of the menopause in relation to ageing, fertility, menstruation, sexuality, health and emotional changes, and as a normal or disease process. The scale was scored by averaging responses for 5 neutral/positive beliefs and 5 negative beliefs giving 2 subscale scores.

2.6. The Multi-dimensional Health Locus of Control Scale (MHLCS) [26] and the Health Value Scale [27]

The MHLCS assesses the extent to which health outcomes in general are seen to be determined by personal (internal) factors, chance (external) factors, or powerful others (external) factors. The Health Value Scale attempts to measure the personal value placed on health and has been widely used in combination with the MHLCS.

2.7. Menopause-specific health beliefs

Six questions were posed to assess perceived control of menopause experience by internal, chance, and powerful others factors. In addition, perceived seriousness of and perceived susceptibility to hot flushes and osteoporosis were assessed (single items), also using 5-point Likert scales.

2.8. The Womens' Health Questionnaire [28] and self-esteem

The WHQ was developed to measure emotional and physical symptoms in middle-aged women. It comprises 36 items in 8 main subscales: depressed mood, anxiety/fears, sleep problems, somatic symptoms, memory/concentration, vasomotor symptoms, sexual behaviour and menstrual symptoms. The depressed mood subscale has concurrent validity with the General Health Questionnaire [29]. Test-retest reliability is above 0.75 for all subscales. An additional self-esteem scale (5 items) was developed for this study-the 5 items were drawn and modified from the WHQ attractiveness subscale and Rosenberg's self-esteem scale [30].

2.9. Analysis

The sample was divided into those who expressed an intention to use HRT and those who did not. Group differences in knowledge, attitudes, WHQ, MHLCS, Health Value, general and gynaecological health characteristics, and socio-demographic data, were assessed using chi-square statistics and Mann-Whitney *U*-tests (SPSS+1 PC). A stepwise logistic regression analysis was carried out to test which combination of factors best characterize those intending to have HRT and those not.

3. Results

3.1 Sample characteristics

One hundred and seventy-eight women were initially contacted. One hundred and six women returned questionnaires giving a response rate of 60%. Complete data sets were available for 101 women. Examination of the available case notes of non-responders indicated that 12 (18.5%) had acute or ongoing psychosocial problems, 14 (22%) had serious or chronic ill-health, and 21 (32%) were from various ethnic groups. Thus ill-health, language and cultural barriers, might partly explain non-response in these sub-groups.

Characteristics of the sample ($N = 101$) are as follows:

Socio-economic status: 67.4% non-manual, 32.6% manual. Marital status: 67% lived with partners (married or cohabiting), 10% were single, 21% were divorced or separated and 2% were widowed. The majority were employed (86%); and 70% still had at least one child at home. The majority (77%) described themselves as white British, 8% as British non-white, 13% as non-British white and 1% as non-British non-white.

3.2 Intention to use HRT

Eleven women were excluded from further analyses: 9 of whom were taking HRT and 2 were postmenopausal but not on treatment. This left a sample of 90 women. In response to the intention question (Table 1), 42.2% expressed an intention to use HRT in future, and 44.4% did not. The remaining 13.4% were undecided or felt that they did not have enough knowledge to decide- these women were excluded from further analyses exploring group differences between intenders and non-intenders.

3.3 Reasons for intentions about HRT

In total, 58.9% of the subsample ($N = 77$) who had expressed an opinion responded to an open question asking for the main reason for their choice. Only 53% of intenders gave a reason, compared with 67.5% of the non-intenders (Table 2).

The most popular reason given by intenders was a non-specific response 'to feel good' or 'better' (21%); 13% said that they had heard good reports about HRT. A small proportion thought that HRT could help prevent or slow down the ageing process. Only 13% based their intentions on the prophylactic benefits of HRT for longer-term health risks, and 2.6% mentioned control of specific menopausal symptoms such as hot flushes, as reasons for intending to have HRT.

The most popular reason given by non-intenders was that they did not need treatment or prefer not to interfere with a normal process (25%). A similar proportion expressed a general disinclination to take medication (22.5%). Concerns about side-effects (7.5%), health risks and contra-indications (7.5%), and views that too much about HRT is still unknown (5%), were also expressed.

Table 2
Main reasons for decision about HRT

N	Reason
Intenders ($N = 37$)	
17 (47.4%)	No answer
8 (21.1%)	Non-specific hopes (eg 'to feel good', 'it helps')
5 (13.2%)	HRT as prophylaxis (eg 'my mother has osteoporosis')
5 (13.2%)	Heard good reports about it
1 (2.6%)	Ageing (eg 'helps me stay young')
1 (2.6%)	Symptom control (eg to cope with hot flushes)
Non-intenders ($N = 40$)	
13 (32.5%)	No answer
3 (7.5%)	Side-effects (eg periods, weight gain)
10 (25.0%)	Unnecessary/unnatural (eg 'prefer not to interfere with a normal process', 'not necessary for me')
9 (22.5%)	Disinclination (eg 'hate taking anything', 'try not to take anything unless absolutely necessary')
2 (5.0%)	Not enough known (eg 'too much uncertainty)
3 (7.5%)	Risks/contra-indications (eg fibroids, breast cancer)

3.4 Characteristics of HRT intenders and non-intenders' socio-demographic variables

There were no significant differences between those intending to use HRT ($N = 37$) and non-intenders ($N = 40$) in terms of socio-economic status, age at leaving full-time education, ethnic group, marital status, employment status or parity (Table 3).

3.5 General health, gynaecological history

The two groups did not differ in their ratings of their general health, or in the proportion experien-

Table 3
Characteristics of HRT intenders versus non-intenders

	Intenders ($N = 37$)	Non-intenders ($N = 40$)	Sign level
Socio-economic status			
Non-manual	68.4%	75.0%	NS
Manual	31.6%	25.0%	NS
Years of education			
13–16 years	52.7%	32.4%	NS
17+ years	47.2%	67.6%	NS
Ethnic group			
White British	76.3%	82.5%	
Non-white British	7.9%	7.5%	
White non-British	13.2%	10.0%	NS
Non-white non-British	2.6%	0.0%	
Employment Status			
Full-time	60.5%	72.5%	NS
Part-time	26.3%	20.0%	
Marital status			
Married/cohabiting	68.4%	67.5%	
Single	2.6%	15.0%	
Widowed	0.0%	5.0%	NS
Divorced/separated	29.0%	12.5%	
Relationship with partner			
Good/very good	65.5%	84.2%	
Fair/poor	34.5%	15.8%	NS
Parity			
% one or more children	81.6%	75.0%	
% children still at home	70.3%	70.5%	NS

Table 4
General health, health-related behaviours and gynaecological history of HRT intenders and non-intenders

	Intenders ($N = 37$)	Non-intenders ($N = 40$)	Sign level
General health:			
Good/very good	92%	95%	N.S.
Poor/fair	8%	5%	
Current major illness	8%	5%	N.S.
Major illness in past	21%	10%	N.S.
Consulted doctor in past month (1 or more times)	42%	30%	N.S.
Regular cervical smear tests (in past 3 years)	84%	80%	N.S.
Regular breast self-examination	45%	47%	N.S.
Past gynaecological surgery (hysterectomy, laparoscopy & Caesarian, sterilisation)	42%	35%	N.S.
Oral contraceptive ever used	71%	60%	N.S.
Body mass index > 25	38%	45%	N.S.
Cigarette smokers	34%	25%	N.S.
Weekly alcohol units >14	16%	10%	N.S.
Regular exercise	42%	45%	N.S.

cing a major illness in the past or currently (Table 4). No significant group differences were found for the following health-related variables: number of visits to the doctor in the past month, uptake of cervical screening, breast self-examination, use of oral contraceptives, having had gynaecological surgery, body mass index, cigarette smoking, alcohol intake or participation in regular exercise.

3.6 Womens' Health Questionnaire (WHQ) and Self-esteem

Means and standard deviations for HRT intenders and non-intenders on the WHQ subscales and self-esteem scale are shown in Table 5. HRT intenders had significantly higher scores on depressed mood, anxiety and lower scores on self-esteem, compared to non-intenders. There were no differences between groups in reports of somatic symptoms, sexual behaviour, menstrual or sleep problems.

3.7 Health beliefs and knowledge

The range of health beliefs assessed, as well as knowledge and source of knowledge about the menopause and HRT are presented in Table 6 (Details of the individual responses will be published elsewhere). There were no group differences in scores on the Multidimensional Health Locus of Control Scales or the Health Value Scale. However, those intending to use HRT differed from non-intenders in certain specific beliefs about the menopause. Intenders expressed significantly

Table 5
Women's health questionnaire and self-esteem scores of HRT intenders and non-intenders (Means and standard deviations of subscales)

	Intenders ($N = 37$)	Non-intenders ($N = 40$)	Mann-Whitney U-Test (Sign level)
Self-esteem	0.37 (0.12)	0.44 (0.09)	$U = 532.5$ $P < .01$
WHQ Subscales			
Depressed mood	0.32 (0.28)	0.16 (0.16)	$U = 503.$ $P < 0.008$
Somatic symptoms	0.36 (0.26)	0.37 (0.23)	N.S.
Memory/concentration	0.41 (0.37)	0.28 (0.28)	N.S.
Vasomotor symptoms	0.19 (0.33)	0.15 (0.30)	N.S.
Anxiety/fears	0.34 (0.28)	0.22 (0.21)	$U = 572.5$ $P < 0.04$
Sexual behaviours	0.27 (0.29)	0.21 (0.28)	N.S.
Sleep	0.38 (0.34)	0.30 (0.31)	N.S.
Menstrual problems	0.46 (0.39)	0.43 (0.32)	N.S.

Table 6
General health beliefs and beliefs and knowledge about the menopause and HRT. (Means and standard deviations)

	Intenders ($N = 37$)	Non-intenders ($N = 40$)	Sign level
General Health Beliefs			
MHLCS			
Internal	25.10 (4.93)	25.30 (3.70)	N.S.
Chance	15.45 (6.17)	16.76 (4.81)	N.S.
Powerful	15.68 (5.96)	14.40 (5.19)	N.S.
Others			
Health Value	5.50 (1.3)	5.11 (1.40)	N.S.
Beliefs about menopause and HRT			
Beliefs about menopause			
Neutral/positive (0–5)	3.51 (0.68)	3.60 (0.76)	N.S.
Negative (0–5)	2.99 (0.69)	2.61 (0.70)	$U = 531.5$ $P < 0.02$
Menopause locus of control			
Internal	3.27 (0.72)	3.75 (0.76)	$U = 509.5$ $P < 0.01$
Chance	1.94 (1.07)	1.88 (0.89)	N.S.
Powerful	3.82 (1.04)	2.80 (1.10)	$U = 373.7$ $P < 0.0001$
Others			
Perceived seriousness of:			
Hot flushes (0–5)	3.28 (1.03)	3.20 (1.11)	
Osteoporosis (0–5)	4.81 (0.45)	4.77 (0.47)	N.S.
Perceived susceptibility to:			
Hot flushes (0–5)	3.44 (0.79)	3.17 (1.00)	N.S.
Osteoporosis (0–5)	3.07 (1.28)	2.32 (1.14)	$U = 562$ $P < 0.01$
Knowledge			
Knowledge about menopause (0–10)	2.50 (2.06)	2.97 (1.73)	N.S.
Sources of knowledge (percentages)			
Mother	26.6%	37.5%	N.S.
Peers	42.1%	67.5%	χ^2-test = 5.08 (1) $P < 0.02$
Mass media	78.9%	57.5%	χ^2-test = 4.11 (1) $P < 0.04$
Books	23.6%	27.5%	N.S.
Health Channels	31.5%	35.0%	N.S.
Others	5.25%	7.5%	N.S.

more negative beliefs about the menopause. They also viewed their doctors (powerful others) as having more control over their experience of menopause. On the other hand, non-intenders saw themselves as having significantly more control (internal locus of control) over their own menopause. In addition, HRT intenders considered themselves to be at greater risk of developing osteoporosis in the future, compared to non-intenders.

The two groups did not differ in accuracy of knowledge about the menopause and HRT; both groups' average scores being between 2 and 3 out of a possible total of 10. The most commonly reported sources of knowledge about HRT were the media sources and peers (friends and relatives).

Table 7
Characteristics of HRT intenders and non-intenders. Stepwise logistic regression analysis ($N = 77$)

Variable	B	S.E.	Wald	D.F.	Sign	R	(exp B)
Depressed mood	3.76	1.38	7.44	1	0.006	0.22	43.16
MLC/Powerful others	0.81	0.26	9.38	1	0.002	0.26	2.25
Knowledge friends/relatives	−1.30	0.58	4.98	1	0.02	−0.16	0.27
Constant	−3.00	1.04	8.21	1	0.004		

Correctly classifies 76.62% of subjects

Intenders were significantly more likely to have been informed by the mass media, while non-intenders were more likely to have been informed by their peers.

3.8 Stepwise logistic regression analysis

A forward stepwise regression analysis was used to ascertain which variables best characterised HRT intenders and non-intenders. Based on the results of the above analyses, 9 variables were entered into the equation: depressed mood, anxiety, self-esteem, negative beliefs about the menopause, menopause locus of control (MLC-internal, MLC-powerful others), susceptibility to osteoporosis, sources of knowledge (friends/relatives, media). The results are presented in Table 8 with *B* values, Wald, *R* and significance levels. Menopause locus of control (powerful others), depressed mood and source of knowledge from friends/relatives together correctly classified 76.62% of women into intenders and non-intenders.

4. Discussion

This paper describes intentions about HRT use in a community sample of 45-year old women. Selection of this age group helped to prevent contamination of intention with experience of menopause. A small proportion had experienced some change in their menstrual cycles, but those who were already menopausal or already having HRT were excluded. The overall response rate of 60%, although not ideal, is not considered unduly low given that these were general population women who were not recruited because of any particular health problem. Non-responders included women from various ethnic groups who might not have used English as a first language, as well as women who had major psychosocial or physical problems which might have rendered participation difficult. Attempts to maximise response rates included co-signed letters with the General Practitioner, the offer of assistance with literacy/language problems, and reminders. The sample has a slight middle-class bias when partners' occupation was assessed, compared to general population statistics for women living in South East England [25]. However, in terms of years of education, the proportions of those falling above or below 16 years of education were evenly distributed.

Over 80% of 45-year-old women had already formed an opinion about future use of HRT when asked about their intentions. Eighteen percent felt sure about their intention, while the majority expressed a preference with some qualification. Only 13% said that they did not know enough about HRT or were undecided. The subjects were divided into two broad groups (intenders and non-intenders), reflecting a general intention about future HRT use. It is understandable that such expressed preferences are likely to be conditional given that the women have not yet experienced the menopause.

The most common reason given for the decisions were based on rather non-specific hopes that HRT might improve well-being, or that 'it was a good thing' (from media reports). A smaller proportion mentioned future health risks as a reason. Surprisingly, only 2.6% mentioned relief from vasomotor symptoms as a reason, possibly because these women had not yet experienced such changes.

Reasons for not intending to have HRT were predominantly based on beliefs or values about health, for example, a general preference not to take medications and a belief that the treatment is unnatural or unnecessary for them. Side effects, fears about cancer and concerns about the long-term safety of HRT were also mentioned as barriers to its use.

Examination of the characteristics of HRT intenders and those not intending to use the treatment revealed fewer group differences than expected. No group differences were evident for gynaecological history including oral contraceptive use, nor for general health beliefs (MHLC, Health Value Scale). Thus, there was no relationship between socio-economic status and HRT intention, nor was intention associated with use of other preventative health behaviours, such as use of cervical screening, smoking, or exercise. These results support the findings of Calnan [31] who, in a study of middle-aged women, also found a low correlation between participation in several different kind of preventative health behaviours.

The main ways in which the two groups differed were in depressed mood, anxiety, self-esteem, and in specific health beliefs about the menopause. HRT intenders were significantly more depressed, anxious and had lower self-esteem. Coupled with the reasons given for their choices above, it seems plausible that some women who are feeling low or distressed might look to HRT to make them feel generally better. HRT intenders also viewed the menopause as being largely under medical control (powerful others), while non-intenders saw themselves as able to deal with changes that might occur. When depressed, people often tend to feel helpless and less in control of events, including their health. Conversely, internal locus of control and a sense of personal mastery over life changes are associated with well-being [32,33].

Knowledge about menopause and HRT, as assessed subjectively by a rating scale and objectively by a multiple-choice scale, was low. Information was derived mainly from the media and friends and relatives, a finding which is consistent with the results of other studies [13]. The intenders' belief about HRT, as being somewhat akin to a general panacea, may be the result of media representations of the treatment or over zealous marketing [34].

The logistic regression analysis correctly classified 76% of women intenders and non-intenders (Table 7). The main variables associated with intention were (i) depressed mood, (ii) beliefs in the importance of doctors' role in their experience of menopause (powerful others) and (iii) source of knowledge about the menopause being from friends or relatives (negative association), when all the relevant variables were considered together in this analysis. Therefore the likelihood of intending to have HRT is increased if a woman is depressed, or if she believes that her doctor is the best person to deal with her menopausal changes. The likelihood decreases if her knowledge about the menopause and HRT are derived from friends and/or relatives.

The data reported here have been drawn from the baseline assessment of a prospective intervention study of health promotion (including provision of information about the menopause and HRT, discussion of beliefs and lifestyle changes). In future analyses, it will be possible to examine the effects of increasing knowledge upon womens' intentions, as well as whether their intentions match their behaviours when they reach the menopause. Given the relatively small sample size in this study, it is hoped that these findings will be replicated in larger prospective studies.

In conclusion, the majority of women expressed opinions and intentions concerning HRT use when asked in their mid-forties. While some women are motivated by their perceived susceptibility to developing osteoporosis and intend to have HRT to prevent long-term health problems (13%), many appear to be basing their decisions upon beliefs that HRT will make them feel better in a general way. Given that HRT intenders were more depressed, anxious and have lower self-esteem, and given that many women believe that HRT helps emotional problems [9], these women might be seeking HRT to alleviate pre-existing or life problems. Prospective studies of experience of the menopause have demonstrated that depression in middle-aged women is primarily associated with psychosocial factors rather than the menopause per se [17,35]. If women approaching the meno-

pause expect HRT to alleviate their life problems they might well be disappointed and discontinue treatment. This process might partly explain low adherence rates with HRT regimens for a subgroup of women.

Finally, it is important to acknowledge the values and beliefs of women who do not wish to use HRT. Their opinions appear to be based upon general beliefs about the menopause, health, and the use of medications. Promotion of HRT might best be focused upon the specific health benefits of HRT for certain groups of women. Active attempts should be made to make psychological support available to women who are depressed in mid-life, in order to help them clarify the causes of their problems and to seek appropriate solutions.

Appendix 1

Menopause knowledge scale

1. On average it takes: several months/ four years*/ a couple of years/ don't know for menstrual periods to change from being regular to stopping completely.
2. It is estimated that: 15%/ 25%*/ 40%/ don't know of women in Britain are at risk of osteoporosis (brittle bones).
3. A hot flush *typically* lasts for: a few seconds/ a few minutes*/ half an hour or more/ don't know.
4. After menopause, womens' risk from heart disease is: decreased/ increased*/ unchanged/ don't know.
5. The risk of breast cancer is: slightly decreased/ slightly increased*/ unchanged/ don't know after long-term use of hormone replacement therapy.
6. A high-fibre diet: helps reverse osteoporosis/ helps prevent osteoporosis/ makes no difference to osteoporosis*/ don't know.
7. Hot flushes are associated with: changes in progesterone levels/ endorphin activity/ decreasing oestrogen levels*/ don't know.
8. To avoid pregnancy, women in their forties are *generally* recommended to continue contraception after the last period: for one year/ for two years*/ until aged-54/ don't know.
9. Compared to non-smokers, women who smoke on average have: an earlier menopause*/ a later menopause/ the same menopause/ don't know.
10. At present it is estimated that: 7–10%*/ 17–20%/ 27–30%/ don't know of menopausal women in Britain are on Hormone replacement therapy.

* Correct responses scored 1; other responses scored 0.

Appendix 2

Menopause beliefs scale

Each item is rated on a 5-point Likert scale ranging from 1 for disagree to 5 for agree:

1. Physical attractiveness declines noticeably after menopause.
2. It is good to be free from menstrual periods after menopause.
3. Menopause is part of normal life which most women can deal with themselves.
4. Menopause is an unpleasant reminder of aging and death.
5. It is a relief to be free from the risk of pregnancy after menopause.
6. Hormonal changes at menopause cause depression or irritability.
7. Menopause can mark the beginning of a new and fulfilling stage of a woman's life.
8. Menopause brings problems with physical health.
9. Enjoyment of sexual activities increases after menopause.
10. Menopause is a deficiency disease which requires medical treatment in most cases.

References

[1] Smith R. Osteoporosis 1990. London: Royal College of Physicians, 1990.

[2] Stampfer MJ, Graham A, Colditz MB, et al. Postmenopausal oestrogen therapy and cardiovascular disease: ten-year follow-up from the nurses health study. New Engl J Med 1991; 325(1): 756–762.

[3] Paganini-Hill A, Ross RK, Henderson BE. Postnopausal oestrogen treatment and stroke: a prospective study. Br Med J 1988; 297 519–522.

[4] Spector TD. Use of oestrogen replacement therapy in high risk groups in the United Kingdom. Br Med J 1989; 299: 1434–1435.
[5] Bryce FC, Lilford RJ. General practitioners use of hormone-replacement therapy in Yorkshire. Eur J Obstet Gynaecol 1990; 37: 55–61.
[6] Wilkes HC, Meade TW. Hormone replacement therapy in general practice: a survey of doctors in the MRC's general practice research framework. Br Med J 1991; 302: 1317–1320.
[7] Coope J. Hormone replacement therapy. London: Royal College of General Practictioners, 1989.
[8] Coope J, Roberts DA. Clinic for the prevention of osteoporosis in general practice. Br J Gen Pract 1990; 40: 295–299.
[9] Kadri AZ. Hormone replacement therapy — survey of perimenopausal women in community setting. Br J Gen Pract 1991; 41: 109–112.
[10] Egeland GM, Matthews KA, Kuller LH. et al. Characteristics of noncontraceptive hormone users. Prev Med 1988; 17: 403–411.
[11] Ballinger S. Psychosocial stress and symptoms of the menopause: a comparative study of menopause clinic patients and non-patients. Maturitas 1985; 7: 313–327.
[12] Hunter MS. Gynaecological complaints. In Somatisation: physical symptoms and psychological complaints, (Bass C.Ed). London: Blackwell Scientific, 1990.
[13] Hunt K. Perceived value of treatment among a group of long-term users of hormone replacement therapy. J R Coll Gen Pract 1988; 1988: 398–401.
[14] Barlow DH, Brockie JA, Rees CMP. Study of general practice consultations and menopausal problems. Br Med J 1991; 302: 274–276.
[15] Draper J, Roland M. Perimenopausal women's views on taking hormone replacement therapy to prevent osteoporosis. Br Med J 1990; 300: 768–788.
[16] Ballinger CB. Psychiatric aspects of the menopause. Br J Psychiatr 1990; 156: 773–781.
[17] Hunter MS. Emotional well-being, sexual behaviour and hormone replacement therapy. Maturitas 1990; 12: 299–314.
[18] Schmitt N, Gogate J, Rothert M, et al. Capturing and clustering women's judgement policies: the case of hormone therapy for menopause. J Gerontol 1991; 46: 92–101.
[19] Fergusson KJ, Hoegh C, Johnson S. Oestrogen replacement therapy. A survey of women's knowledge and attitudes. Arch Intern Med 1989; 149: 133–136.
[20] Wren BG, Braun L. Compliance with hormone replacement therapy. Maturitas 1990; 13: 17–21.
[21] Roberts PJ. The menopause and hormone replacement therapy: views of women in general practice receiving hormone replacement therapy. Br J Gen Pract 1991; 41: 421–424.
[22] Janz NK, Becker MH. The health belief model: A decade late. Health Educ Quart 1984; 11: 1–47.
[23] Ajzen I, Madden M. Prediction of goal-directed behaviour: attitudes, intentions and perceived behavioural control. J Exp Soc Psychol 1986; 22: 453–474.
[24] Office of Population Censuses and Surveys. Classification of occupations. London: HMSO, 1970.
[25] Hunter MS, Battersby R, Whitehead M. Relationships between psychological symptoms, somatic complaints and menopausal studies. Maturitas 1986; 8: 217–228.
[26] Wallston KA, Wallston BS, Devellis R. Development of the multidimensional health locus of control (MHLC) scales. Health Educ Monographs 1978; 6: 1960–1970.
[27] Lau RR, Hartman KA, Ware JE. Health as a value: methodological and theoretical considerations. Health Psychol 1986; 5: 25–43.
[28] Hunter MS. The Womens Health Questionnaire: a measure of mid-age women's perceptions of their emotional and physical health. Psychol Health 1992; 7: 45–54.
[29] Goldberg D. The detection of psychiatric illness by questionnaire. London: Oxford University Press, 1972.
[30] Rosenberg M. Society and the adolescent self-image. New Jersey: Princeton University Press, 1965.
[31] Calnan M. Patterns of preventive behaviour: a study of women in middle age. Soc Sci Med 1985; 20: 263–268.
[32] Abramson LY, Seligman MEP, Teesdale JD. Learned helplessness in humans: critique and reformation. J Abn Psychol 1978; 87: 49–74.
[33] Gatchel RJ. Perceived control: a review and evaluation of therapeutic implications. In: Baum A. Singer JE, eds. Advances in environmental psychology Vol. 2. Applications of personal control. New Jersey: Lawrence Erlbaum Ass. Inc, 1980.
[34] Worcester N, Whatley MH. The selling of HRT: playing on the fear factor. Feminist Rev. 1992; 41.
[35] Kaufert PA, Gilbert P, Tate R. The Manitoba project: A re-examination of the link between menopause and depression. Maturitas 1992; 14: 143–156.