

The Hormone Therapy Dilemma: Women Respond

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Objective

In the wake of the premature end of the Women's Health Initiative (WHI) study, we sought to assess women's knowledge of and attitudes about hormone therapy (HT) study findings and to appraise women's responses and intentions.

Methods

Between July 26 and August 6, 2002 a national random-digit-dialing telephone survey was conducted in a sample of households that included women 40 to 79 years old.

Results

Sixty-four percent of the 819 women interviewed had heard something about HT study results from the media or from talking with others, and 74% were confused about HT use. Another 57% were worried about how the findings might affect them, and 79% were interested in obtaining additional information about HT. Only 24% of those who had heard something had actually sought additional information. Logistic regression findings suggested that women currently taking HT were most likely to be aware and informed. They also were more likely to be confused, worried, or to need or to seek additional information. Older women were less likely to be confused or worried or to need or seek additional information. More highly educated women were more likely to be aware and less likely to be confused or uninformed, but were more likely to have sought additional information.

Conclusion

The Women's Health Initiative study provided a clear message about health risks and benefits of HT use. An important next step is to continue to convey accurate information to women, health providers, and the media so that women can make informed decisions about HT. (*JAMWA*. 2003;58:32-43)

Questions about the use of hormone therapy (HT) galvanized medical and public attention in July 2002. At issue was whether the use of HT alone or in conjunction with estrogen therapy (ET) protected against or increased the risk of a range of chronic diseases associated with aging. On July 9, 2002, the results from the Women's Health Initiative (WHI) randomized controlled trial of conjugated equine estrogens plus medroxyprogesterone (Prempro) were announced and widely disseminated. The multicenter WHI clinical trial involving more than 16 000 women was stopped early when the Data and Safety Monitoring Board concluded that the risks of this combination therapy in women with uteri outweighed the benefits.

The findings included increased risks of breast cancer, coronary heart disease, stroke, and venous thromboembolism. Because these risks outnumbered the benefits (reduction in hip fracture and colorectal cancer), WHI investigators stated that this combination cannot be recommended for disease prevention.¹⁻⁴ The trial of conjugated equine estrogen (Premarin) alone in women who have had hysterectomies continues, however, because the balance of risks and benefits remains unknown. The same journal that published the WHI findings on July 17, 2002 also reported an observational study showing an association between risk of ovarian cancer and unopposed estrogen use.¹⁻⁴

For decades, there had been questions about the safety of HT for women in the menopausal transition and later.⁵⁻⁶ Although recent studies increased understanding of the benefits and risks of HT, they also stimulated a flurry of media attention. Television, radio, newspa-

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Table 1. Weighted Percentages of Women Who Were Aware of Hormone Therapy (HT) Studies, Who Were Confused About HT Use, and Who Sought Additional Information

	Total Population, n	Aware of HT Study Findings,* n (%)	Confused About HT Use, [†] n (%)	Sought Additional HT Information, [‡] n (%)
Total	819	541 (64.0)	533 (74.1)	136 (23.9)
Age				
40-54	420	280 (64.4)	298 (76.5)	76 (25.1)
55-64	181	128 (68.4)	118 (75.1)	38 (30.4)
65-79	218	133 (59.0)	117 (67.1)	22 (14.3)
Race/ethnicity				
White	682	458 (64.9)	448 (74.3)	118 (24.8)
Black	65	34 (47.6)	40 (72.0)	10 (26.8)
Hispanic	21	16 (78.1)	15 (79.5)	3 (18.0)
Other	31	20 (61.7)	20 (72.0)	3 (17.3)
Education				
High school or less	331	183 (54.9)	221 (77.5)	36 (18.1)
Some college or technical school	207	150 (72.1)	142 (74.3)	44 (31.4)
College graduate or more	267	200 (75.7)	165 (67.8)	54 (25.7)
Employment				
Not employed	374	233 (61.2)	227 (72.1)	48 (20.0)
Employed	437	303 (66.3)	305 (76.5)	87 (27.2)
Income				
<\$25 000	222	129 (56.8)	143 (74.9)	24 (17.0)
\$25 000 but <\$50 000	220	160 (71.5)	142 (72.1)	44 (27.3)
\$50 000 but <\$75 000	101	72 (70.4)	78 (84.7)	20 (29.3)
≥\$75 000	111	86 (73.9)	78 (70.4)	21 (25.0)
Place of residence				
Nonmetropolitan area	223	140 (60.7)	146 (72.4)	43 (30.7)
Metropolitan	596	401 (65.2)	387 (74.8)	93 (21.5)
Region of residence				
Northeast	154	95 (59.3)	111 (78.7)	27 (27.4)
North Central	213	149 (68.8)	138 (75.7)	38 (27.7)
South	286	182 (61.1)	182 (72.5)	45 (21.7)
West	166	115 (68.4)	102 (70.6)	26 (20.2)

*Percentage of those aware of HT findings is restricted to those who responded (n=805).

[†]Percentage of those confused about HT use is restricted to those who responded (n=740).

[‡]Percentage of those seeking additional health information is restricted to those who were aware of HT studies (n=541).

[§]Perceived risk of breast, ovarian, endometrial and colorectal cancers, heart disease, blood clots, pulmonary embolisms, strokes, osteoporosis, and hip fracture. Respondent rated as above average risk if she responded as above average to any of the risk factors.

pers, magazines, books, and the Internet are the predominant venues by which women are exposed to scientific and health information.⁷ In addition to providing information about health, media messages can also have a powerful effect on women's attitudes.⁸⁻⁹ Media dissemination of scientific results frequently leaves a perplexed public to untangle the meaning and importance of health findings from rigorous empirical studies as well as less rigorous observational studies.⁹⁻¹⁰

Not surprisingly, women's responses to past medical information about HT have been mixed; some accepted study findings without hesitation and, in spite of a possible return of menopausal symptoms, ceased taking a medication once referred to as a "wonder drug."¹¹⁻¹³ Others, worried, uncertain, and confused, sought to evaluate the health information specific to them and their individual risks before making decisions.¹⁴⁻¹⁷

Table 1a. Weighted Percentages of Women Who Were Aware of Hormone Therapy (HT) Studies, Who Were Confused About HT Use, and Who Sought Additional Information

	Total Population, n	Aware of HT Study Findings,* n (%)	Confused About HT Use, [†] n (%)	Sought Additional HT Information, [‡] n (%)
Home owner				
Rented	149	73 (46.3)	105 (79.1)	13 (15.6)
Owned	657	463 (69.1)	424 (73.0)	122 (25.6)
Menopausal status				
Premenopausal	173	105 (58.4)	123 (75.5)	15 (13.6)
Perimenopausal	74	55 (70.3)	54 (79.8)	15 (24.9)
Postmenopausal	506	349 (66.8)	330 (73.4)	95 (26.1)
Hysterectomy status				
No hysterectomy	521	356 (65.8)	356 (74.6)	80 (20.8)
Hysterectomy	231	153 (64.2)	151 (74.4)	45 (28.8)
HT use				
Never	492	294 (56.6)	319 (74.6)	55 (18.4)
HT use stopped (≤1 month)	26	24 (91.9)	18 (70.9)	7 (28.8)
HT use stopped (>1 month)	102	80 (77.3)	71 (79.7)	23 (27.6)
HT use currently	167	128 (75.4)	116 (72.7)	45 (31.3)
Time on HT				
<1 year	52	45 (86.7)	37 (81.2)	13 (25.8)
1-5 years	89	67 (73.2)	60 (71.7)	26 (32.5)
>5 years	153	120 (77.4)	107 (74.5)	36 (29.7)
Perceived risk [§]				
Above average risk	420	278 (63.4)	287 (77.6)	73 (25.2)
Average or below average risk	349	240 (67.6)	218 (70.6)	53 (21.8)

*Percentage of those aware of HT findings is restricted to those who responded (n=805).

[†]Percentage of those confused about HT use is restricted to those who responded (n=740).

[‡]Percentage of those seeking additional health information is restricted to those who were aware of HT studies (n=541).

[§]Perceived risk of breast, ovarian, endometrial and colorectal cancers, heart disease, blood clots, pulmonary embolisms, strokes, osteoporosis, and hip fracture. Respondent rated as above average risk if she responded as above average to any of the risk factors.

Women are continuously being presented with new scientific studies that update previous knowledge, present findings that contradict prior knowledge, or provide definitive answers to previously unanswered questions.^{1-4, 18} Sorting through the facts can be challenging for those with and without scientific training, and women remain divided in their views of menopause. Some see it as a medical condition requiring medical treatment and others a “life” transition to be managed by natural means.^{7, 19} The trade-off is equally apparent in how cancer-related risks and benefits are assessed by women. And also, how the public seeks and manages information, to make health decisions.¹⁹⁻²¹

New information about HT affects not only the 14 million US women estimated to be taking these hormones,²² but also the much larger number of women who might consider the value of HT for relief of menopausal symptoms and to prevent

negative sequelae associated with aging. Also affected are physicians who have to unravel the complex biomedical information and respond to patients’ questions.^{20, 23-25}

In addition to their physicians and the media, women’s responses to emerging controversial health studies are influenced by whether the issue affects them individually, the way information is presented, and how health topics cycle over time. To understand women’s knowledge of the new scientific data and their responses to the WHI and ovarian cancer study findings and to inquire about their intentions, we conducted a national telephone survey of women of menopausal age.

Methods

From July 26 to August 6, 2002, the National Cancer

Table 2. Predictors of Women's Awareness, Confusion, and Information Seeking Resulting From Hormone Therapy (HT) Study Findings, Odds Ratios (95% Confidence Intervals)

	Aware of HT Study Findings*	Confused About HT Study Findings*	Sought Additional HT Information*
Age			
40-54		1	1
55-64		0.72 (0.47, 1.12)	0.74 (0.42, 1.30)
65-79		0.42 (0.28, 0.63)	0.37 (0.19, 0.71)
Education			
High school or less	1	1	1
Some college or technical school	2.12 (1.40, 3.21)	0.96 (0.62, 1.44)	2.40 (1.37, 4.19)
College graduate or more	2.40 (1.61, 3.56)	0.68 (0.46, 0.99)	1.90 (1.12, 3.22)
Region of residence			
Northeast			1.93 (0.93, 4.00)
North Central			2.11 (1.08, 4.14)
South			1.20 (0.63, 2.29)
West			1
Home owner			
Owned	1		1
Rented	0.46 (0.31, 0.69)		0.45 (0.23, 0.90)
Menopausal status			
Premenopausal			1
Perimenopausal			2.40 (1.02, 5.64)
Postmenopausal			2.62 (1.24, 5.55)
HT use			
Never	1	1	1
Ever	3.08 (2.08, 4.55)	1.54 (1.08, 2.21)	2.45 (1.51, 3.97)

*Results from logistic regression analyses; values for significant findings ($p = .05$) only are shown.

Institute and the National Heart Lung and Blood Institute, both part of the National Institutes of Health, conducted a national telephone omnibus survey in a sample of households including women 40 to 79 years old. An omnibus survey is a shared-cost study in which different organizations add questions to a single questionnaire.

On August 12, 2002, the US Food and Drug Administration revised the nomenclature used to describe hormone replacement therapy and estrogen replacement therapy to exclude the word "replacement."²⁶ Because our study predated the change, we used the old terminology in our questionnaire.

Survey Methods

Responses were collected over 3 waves of the twice-weekly surveys to obtain data from 819 women. Each survey wave used a fully replicated, stratified, single-stage, random-digit-dialing sample of telephone households. Up to 4 attempts were made to reach a telephone number, which included calls on different days and at different times. One

adult respondent was randomly selected in each household using a computerized procedure based on the "most recent birthday method" of respondent selection. If the household respondent was a woman 40 to 79 years old, she was then asked to respond to the survey questions. No other criteria were used to include or exclude respondents.

Data were weighted based on the national distribution of women 40 to 79 years old by Census region, age, race, ethnicity, and educational attainment.²⁷ The response rate was 25%, which is typical for a quick-turnaround survey conducted by random digit-dial telephone interview over a several-day period.²⁸

Measures

Fourteen questions assessed women's reactions and responses to learning about scientific findings from the HT studies. Questions considered risk of various health conditions, HT use, awareness of and response to HT study findings, health information sources, satisfaction with

information seeking, intentions regarding HT use, attitudes toward health studies, personal health risk, informationseeking on health topics, current menopause and ovary status, and sociodemographic characteristics. The questionnaire is available from the authors. Women were also asked about whether they had been diagnosed with any cardiovascular disease (heart disease, stroke, or blood clots), cancer (breast, ovarian, or colorectal), or osteoporosis.

Statistical Analysis

To reduce the large number of individual items, principal factor analysis with promax rotation was performed to condense the 9 “attitudes toward health studies” questions and 10 “information-seeking” questions. Factors with eigenvalues over 1 were retained. The following 3 factors were identified: “worried about the effect of HT use,” “feeling uninformed about HT,” and “helpful to have additional information about HT.” An individual’s factor score was obtained by averaging the factor items scores using a 4-point Likert scale. A binary outcome was created comparing the individual’s factor score with the average scale score of 2.5 (for a 4-point scale). The percentage of the population with above average scores on the factor was calculated and was related to independent variables.

In addition to the 3 factor outcomes, 3 independent binary variables were developed from individual items: “awareness of HT study findings,” “confusion about HT study findings,” and “sought additional HT information.” These formed the 6 study outcomes and were related to other variables.

Logistic regression equations were developed for the 6 binary outcomes. Backward elimination was used to select significant independent variables; 2-sided tests at the 0.05-level were conducted. Regressions were performed using the SUDAAN statistical computing package, which calculates the standard errors for the stratified survey design.²⁹ All independent variables were categorical. Odds ratios (OR) and 95% confidence intervals (CI) were used to summarize logistic regression results. Categories were pooled for logistic regression modeling if some of the categories had small numbers of women; in particular, race/ethnicity was reduced to 2 categories (white and nonwhite) and HT use status was reduced to 2 categories (“never used” and “ever used”).

Education was used in modeling instead of income because of the larger percentage (15%) of nonresponse for

income. None of the variables used in the logistic regression modeling had significant nonresponse; thus, imputation of missing values was not necessary.

Results

Description of Respondents

The sample included 819 women between the ages of 40 and 79. It was weighted to the US population for Census region, age, race, ethnicity, and educational attainment. Respondents were well distributed in terms of household income: 34% earned \$25 000 or less, 34% earned between \$25 000 and \$49 999, 15% earned between \$50 000 and \$74 999, and 17% earned more than \$75 000. Seventy-three

percent resided in metropolitan areas. Comparison of the weighted and unweighted percentages indicated that minorities and women with less education were slightly underrepresented in the sample; weighting on race/ethnicity and educational attainment adjusts for these differences. The sample included 193 women (25%) who reported current or recent (within 1 month) use of HT, 88 (12%) who had used HT in the past, and 492 (63%) who had never used HT

**More than three-quarters
of the respondents felt that
it would be useful to have
additional information
about HT use
and its consequences.**

Awareness of Recent HT Findings

Slightly less than two-thirds said that they had heard something recently about the HT study findings (Table 1). Awareness of the recent results increased with socioeconomic status. Awareness was also related to previous use of HT; more HT users were aware of results than were nonusers.

Table 2 shows that education, home owner status, and previous HT use were significant predictors of awareness. Women with at least a college degree (OR 2.40; 95% CI 1.61, 3.56) were significantly more likely to be aware of recent results than were women with a high school education or less. Renters were less likely to be aware than home owners were, and those who had ever used HT were more likely to be aware (OR 3.08; 95% CI 2.08, 4.55) than were those who had never used HT.

Confusion About HT Use

Almost three-fourths of respondents agreed that it was confusing for women to know what to do about HT (Table 1), although confusion decreased somewhat with increased socioeconomic status.

Table 2 shows that age, education, and previous HT use were significant predictors of confusion about HT use.

Table 3. Weighted Percentages From Factor Analysis of Women Who Worried, Felt Uninformed, and Wanted Additional Information on Hormone Therapy (HT)

	Total Population, n	Worried About Effects of HT* n (%)	Felt Uninformed About HT Study Findings* n (%)	Helpful to Have Additional HT Information* n (%)
Total	819	464 (56.5)	426 (55.9)	634 (78.7)
Age				
40-54	420	270 (64.5)	234 (59.4)	351 (84.1)
55-64	181	104 (54.4)	89 (53.4)	132 (73.1)
65-79	218	90 (40.7)	103 (50.7)	151 (71.7)
Race/ethnicity				
White	682	390 (56.1)	347 (53.0)	523 (77.9)
Black	65	36 (53.9)	44 (71.2)	55 (83.5)
Hispanic	21	14 (67.2)	16 (78.1)	17 (80.4)
Other	31	13 (48.8)	10 (32.8)	25 (81.6)
Education				
High school or less	331	170 (53.0)	191 (60.9)	255 (79.0)
Some college or technical school	207	119 (58.2)	98 (50.9)	159 (78.5)
College graduate or more	267	171 (64.9)	128 (49.4)	210 (78.9)
Employment				
Not employed	374	192 (61.0)	185 (57.7)	278 (80.1)
Employed	437	271 (52.3)	237 (54.0)	350 (77.2)
Income				
<\$25 000	222	114 (54.0)	126 (60.3)	168 (77.9)
\$25 000 but <\$50 000	220	140 (64.2)	94 (46.6)	167 (77.6)
\$50 000 but <\$75 000	101	67 (67.2)	57 (59.8)	84 (83.3)
≥\$75 000	111	72 (62.2)	55 (51.9)	94 (83.1)
Place of residence				
Nonmetropolitan area	223	128 (56.4)	105 (58.5)	163 (80.0)
Metropolitan	596	336 (56.5)	321 (49.2)	471 (75.3)
Region of residence				
Northeast	154	98 (63.6)	76 (53.7)	110 (74.5)
North Central	213	117 (54.5)	108 (53.5)	160 (76.2)
South	286	162 (55.2)	160 (60.1)	230 (81.6)
West	166	87 (53.8)	82 (53.4)	134 (80.4)

*The population for all 3 factors is n=819 because a woman's score was calculated as the average of all nonmissing items. Thus a 3-item factor has a missing value only if all 3 items were not answered.

†Perceived risk of breast, ovarian, endometrial and colorectal cancers, heart disease, blood clots, pulmonary embolisms, strokes, osteoporosis, and hip fracture. Respondent rated as above average risk if she responded as above average to any of the risk factors.

Women age 65 to 79 felt less confused about HT (OR 0.42; 95% CI 0.28, 0.63) than women age 40 to 54 did. Women who had ever used HT were more likely to feel confused (OR 1.54; 95% CI 1.08, 2.21) than were those who had never used HT.

Actions in Response to HT Findings

Less than a quarter of women who reported hearing anything recently about HT reported seeking additional information (Table 1). Premenopausal women had a lower rate of information seeking than perimenopausal and

postmenopausal women did, and nonusers had a lower rate of seeking information than current or former users did. Those who planned to obtain or had obtained additional health information used multiple sources (data not shown): health care professionals (48%), print media (33%), Internet (29%), social networks (8%), and broadcast media (5%).

Table 2 shows that age, education, home owner status, region, menopausal status, and previous HT use were significant predictors of information seeking about HT. Women age 65 to 79 were less likely to have sought informa-

Table 3a. Weighted Percentages From Factor Analysis of Women Who Worried, Felt Uninformed, and Wanted Additional Information on Hormone Therapy (HT)

	Total Population, n	Worried About Effects of HT* n (%)	Felt Uninformed About HT Study Findings* n (%)	Helpful to Have Additional HT Information* n (%)
Home owner				
Rented	149	83 (57.1)	88 (53.2)	112 (78.6)
Owned	657	379 (57.0)	328 (63.9)	514 (79.8)
Menopausal status				
Premenopausal	173	106 (62.0)	106 (65.1)	152 (88.3)
Perimenopausal	74	48 (66.8)	40 (58.0)	60 (84.5)
Postmenopausal	506	291 (56.8)	231 (49.9)	37 (74.8)
Hysterectomy status				
No hysterectomy	521	315 (56.3)	260 (54.9)	401 (79.9)
Hysterectomy	231	130 (60.3)	117 (53.9)	182 (78.4)
HT use				
Never on HT	492	268 (61.2)	281 (45.6)	370 (87.6)
HT use stopped (≤1 month)	26	18 (70.6)	10 (37.3)	18 (71.4)
HT use stopped (>1 month)	102	66 (66.3)	37 (43.9)	75 (76.9)
HT use currently	167	102 (54.0)	76 (61.4)	144 (76.6)
Time on HT				
<1 year	52	33 (67.5)	22 (46.7)	42 (85.0)
1-5 years	89	60 (59.9)	39 (40.7)	73 (79.9)
>5 years	153	93 (54.0)	61 (61.4)	121 (76.6)
Perceived risk [†]				
Above average risk	420	208 (58.5)	174 (51.6)	288 (78.9)
Average or below average risk	349	248 (57.5)	233 (59.0)	320 (78.2)

*The population for all 3 factors is n=819 because a woman's score was calculated as the average of all nonmissing items. Thus a 3-item factor has a missing value only if all 3 items were not answered.

[†]Perceived risk of breast, ovarian, endometrial and colorectal cancers, heart disease, blood clots, pulmonary embolisms, strokes, osteoporosis, and hip fracture. Respondent rated as above average risk if she responded as above average to any of the risk factors.

tion (OR 0.37; 95% CI 0.19, 0.71) than younger women (age 40-54) were. Women with at least a college degree were more likely to be have sought information than were women with a high school education or less. Postmenopausal women were more likely to have sought information (OR 2.62; 95% CI 1.24, 5.55) than were premenopausal women; women who had ever used HT were more likely to have sought information (OR 2.45; 95% CI 1.51, 3.97) than were those who had never used HT.

Worried About Effects of HT Use

More than half of respondents were worried about the effects of HT use (Table 3). Worry about HT decreased with age and increased with education. The Northeast had the largest percentage of women who were worried about HT.

Table 4 shows that age, region, and previous HT use were significant predictors of worry about the effect of HT use.

Women age 65 to 79 were less likely to be worried (OR 0.34; 95% CI 0.23, 0.49) than were younger women (age 40-54). Women who had ever used HT were more likely to be worried (OR 1.57; 95% CI 1.04, 2.37) than were those who had never used HT.

Feeling Uninformed About HT Findings

More than half of respondents considered themselves uninformed about HT (Table 3). Women with a high school education or less, premenopausal women, and women who had not used HT were more likely to feel uninformed.

Table 4 shows that race/ethnicity, education, menopausal status, hysterectomy status, and previous HT use were significant predictors of feeling uninformed about the possible consequences of using HT. White women, women with a college degree, and postmenopausal women felt less uninformed. Women who had ever used HT were less

Table 4. Predictors of Women's Concerns, Level of Information, and Need for Additional Information on Hormone Therapy (HT), Odds Ratios (95% Confidence Intervals)

	Worried About Effects of HT ^a	Felt Uninformed About HT Study Findings ^a	Helpful to Have Additional HT Information ^a
Age			
40-54	1		1
55-64	0.57 (0.38, 0.85)		0.46 (0.28, 0.74)
65-79	0.34 (0.23, 0.49)		0.45 (0.29, 0.70)
Race/ethnicity			
White		1	
Nonwhite		1.64 (1.04, 2.58)	
Education			
High school or less		1	
Some college or technical school		0.69 (0.46, 1.02)	
College graduate or more		0.55 (0.37, 0.81)	
Region of residence			
Northeast	1.83 (1.07, 3.14)		
North Central	1.15 (0.70, 1.87)		
South	1.12 (0.71, 1.79)		
West	1		
Menopausal status			
Premenopausal		1	
Perimenopausal		0.70 (0.38, 1.27)	
Postmenopausal		0.47 (0.30, 0.75)	
HT use			
Never	1	1	1
Ever	1.93 (1.36, 2.75)	0.53 (0.37, 0.77)	1.64 (1.10, 2.46)
Hysterectomy status			
No hysterectomy		1	
Hysterectomy		1.57 (1.04, 2.37)	

^aResults from logistic regression analyses; values for significant findings ($p = .05$) only are shown.

uninformed (OR 0.53; 95% CI 0.37, 0.77) than were those who had never used HT. Finally, women who had had hysterectomies were more uninformed (OR 1.57; 95% CI 1.04, 2.37) than were those who had not.

Helpful to Have Additional HT Information

More than three-quarters of respondents felt that it would be useful to have additional information about HT use and its consequences (Tables 3 and 4). More younger women, premenopausal women, and women who had never used HT wanted additional information.

Table 4 shows that age and previous HT use were significant predictors of the desire to have additional information about HT. Women 65 and older did not want additional information compared to women 54 and younger (OR 0.45;

more likely to want additional information than were those who had never used HT (OR 1.64; 95% CI 1.10, 2.46).

Discussion

We conducted a national population-based survey of women to elicit knowledge, attitudes, and behavioral intentions associated with new scientific information related to the risks and benefits of HT. The majority (64%) of women were aware of study findings, particularly if they had ever used HT.

As expected, education and home ownership were important factors in knowledge, suggesting that socioeconomic status is central to who pays attention to certain types of health information. We found, as others have, that

physicians and the news media were the primary sources of information about menopause, HT, and women's health issues in general.^{11, 30-31}

The latest HT findings have many women worried (57%) and confused (74%) about immediate and long-term health decisions. Older women were less ambivalent about and less interested in the findings than younger women were, perhaps because they are taking HT to prevent fractures associated with osteoporosis, rather than for other health reasons.³² Women who are current users or who had ever taken HT were most likely than nonusers to be troubled by the study findings – a logical consequence because the potential risks are more threatening for them. Among current and former hormone users, worry and confusion are not surprising because Western cultural ideals about aging and “eternal youth” have undoubtedly led many women to believe that hormones are an older woman's salvation, in addition to being a therapy for disease prevention.^{15, 17, 33}

Younger women, especially those in the pre- or perimenopausal groups (ages 40-54) were more likely to feel confused about possible negative effects of HT generally and more inclined to be upset with the lack of protection hormones afforded. Understanding why younger women felt confused and uncertain may provide insight into their decision-making processes in an age when medical therapy frequently involves hazards as well as benefits.^{34, 35} As younger women continue to think about menopausal issues in an environment in which clear options are not well defined, health professionals have an increased opportunity and responsibility to promote informed decision making as new possibilities become available.^{25, 36-38}

The decision to stop or to remain on HT continues to be a difficult choice.³⁰ For those women who halted HT when they heard the study findings (13%), their decision to do so may result from a context of uncertainty about changing health status, an individual issue. As Bond and Bywaters¹⁴ suggest, women concerned about their health are making informed decisions with or without their physicians to guide them.

What is not known is whether those women who discontinued HT did so temporarily or permanently. Further, it is not known whether women in our sample ceased HT because they weighed the actual and potential risks associated with it or because they were puzzled by recent reports. It is unknown if they were users of Prempro, Premarin, or other brands of HT.³⁹ The literature suggests that among users who stopped on their own, stopping was more common among younger women than among women age 70 and older.³² Reasons for quitting included fears about cancer risk,^{23, 31, 40-44} presence or fear of side effects,^{5, 14, 23, 32, 45} the controversial nature of HT,^{5, 14, 17, 30} and the intention to use HT

on a short-term basis.^{21, 32}

It is a particular concern that some women seem to be especially disadvantaged with regard to information seeking: nonwhite women, those with a high school education or less, and those with family incomes of less than \$25 000 a year.⁴⁶ These women were less informed about HT, more likely to be confused, and less likely to have sought HT information. At the same time, nearly 80% of women said they wanted additional information. However, a gap exists in women's desire for HT information and what is available from health providers.²¹ Physicians cannot do the job alone; educating women about the risks and benefits of HT use is a major challenge. As O'Connor et al⁴⁷ and Bastian et al^{21, 23} have shown, decision aids can be used to augment information from providers to help women become active partners in decision making. Providers should make special efforts to reach out to the women we have identified as at risk for being uninformed, feeling confused, and desiring more information.

Although this study provided a first glimpse of women's immediate reactions to the recent findings on the long-term use of HT, it was limited by the survey methodology used. The methodology presented an opportunity to obtain rapid and timely insight into women's perceptions while the topic was in the media. Even though the data were custom weighted and study results were nationally representative and projectable to the US population of women in all age, race, and ethnicity groups, a margin of error of ± 3.6 percentage points remains.

The declining participation rate in surveys in recent years, particularly telephone surveys,²⁸ is making it increasingly difficult to assess and track public opinion. We made 4 attempts to reach each telephone number on various days, including weekends, and at different times of day; the national average for custom surveys is 9 attempts.²⁸ This may have contributed to our response rate, which was low (25%), although typical for such quick turn-around surveys. It is impossible to know how much bias this introduced in our results.⁴⁸

A second nonresponse issue concerns the inaccessibility of certain groups and those not amenable to cooperating once contacted, or both. This sample may not represent all women across menopausal status, especially low-income women and women of color. Low-income women may not have telephone access or if they do, may not want to participate. Responses from women of color, including women of Asian backgrounds, were low, and we were forced to reduce analyses to the categories of white versus nonwhite. Consequently, care is required in the interpretation of findings, which may be

biased, particularly for these women.

Conclusion

Now that findings from the Women's Health Initiative have provided a clear message about the health risks and benefits of HT use, an important next step will be to continue to convey accurate information to women, their health care providers, and the media. A challenge as additional WHI study findings are released will be to craft health messages that provide support for women and that do not overpromise results. Ideally, information should be tailored to the health status, interest, and information needs of individual women. The biomedical community must help the public understand

that clinical studies are long journeys, sometimes taking decades, and that advances in science are communicated in a series of small steps. Communicating new health information will be especially valuable if scientific results are made relevant to the subset of underrepresented women who do not have sufficient information to make informed decisions about their own health care.

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