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Attitudes, Awareness, Compliance and Preferences among Hormonal Contraception Users

A Global, Cross-Sectional, Self-Administered, Online Survey

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Abstract

Background: Healthcare professionals have a responsibility to help each woman select the most appropriate hormonal contraceptive according to her personal preferences, needs and circumstances.

Objective: To assess attitudes, awareness, compliance and preferences of hormonal contraceptive users.

Study Design: A cross-sectional survey conducted through self-administered, online questionnaires. One questionnaire was administered in the US and another was administered in the UK, France, Germany, Spain, Italy, Brazil, Australia and Russia (Eight-Country Survey questionnaire).

Participants: Current hormonal contraceptive users, aged 18–44 years, in the general community.

Results: Questionnaires were completed by 5120 women. The mean age of the respondents was approximately 31 years and over 70% were current contraceptive pill users. Many women did not plan on having children in the next 3 years (range 44% in Russia to 77% in the US and UK), but a quick return of fertility upon contraceptive discontinuation was desired by the majority of women in all countries (range 54% in the US to 91% in Russia). Rates of discontinuation or switching to a different hormonal contraceptive in the past year ranged from 30% in Germany to 81% in Brazil. Requests to switch because of side effects ranged from 24% in Spain to 57% in Brazil. Results from the Eight-Country Survey questionnaire indicated that 42% of women would consider using one of the most effective contraceptive methods even if their menstrual cycle changed, 58% would accept irregular bleeding initially if they had fewer periods over time, 53% did not want/had concerns about foreign/additional estrogen in their body, 85% would prefer a monthly option with a lower hormone dose over a daily pill, 80% would consider switching contraceptives to minimize estrogen exposure and 74% would prefer an estrogen-free/progestin (progesterone congener)-only pill to avoid potential side effects from foreign/extra estrogen. Oral contraceptive users across all

countries admitted missing (range 39% in the UK to 65% in Brazil) or taking a pill at the wrong time (range 12% in Spain to 67% in Brazil) in the previous 3 months. Approximately 81% of all respondents said they would consider using a method that did not require daily, weekly or monthly dosing. The proportion of women believing themselves well informed about their contraception options ranged from 30% in Russia to 86% in the US. Informed women were generally more aware of alternative methods than their uninformed counterparts. Responses also varied significantly among women in different age groups.

Conclusion: These findings demonstrate that a range of factors influence a woman's choice of contraceptive. This highlights the importance of individualized counselling during contraceptive selection to ensure that the option recommended is tailored to the personal preferences of each woman to improve compliance, continuance and prevention of an unwanted pregnancy.

Introduction

Hormonal contraceptives offer effective pregnancy prevention with perfect use and have good and well-defined overall safety and tolerability profiles.[1] Many newer hormonal contraceptives also offer important non-contraceptive health benefits, including reduced risks of ovarian, endometrial and colorectal cancers, benign breast disease and menstrual cycle disorders.[2-4] In addition, a wide variety of estrogen/progestin (progesterone congener) and progestin-only formulations and alternative delivery methods (e.g. implants, intrauterine devices, injections, transdermal patches and vaginal rings) have been developed in order to meet the specific needs of each woman.

While most hormonal contraceptives generally have similar efficacy and contraindication profiles, some options may be more suitable than others for different women. Faced with such a wide range of options, physicians must tailor their contraceptive recommendation to the individual.[4-8] In addition to efficacy, safety and tolerability, consideration should also be given to the woman's age, risk of sexually transmitted diseases, parity, whether she is breastfeeding, smoking status, bodyweight or body mass index, concomitant medications and co-morbidities, and risk factors for cardiovascular or neoplastic disease. Equally important are women's previous experiences and personal preferences, expectations and concerns regarding their contraceptive choice. Physicians should discuss and understand completely the woman's views on and concerns about issues such as side effects, risks, mode of administration, dosing frequency and compliance, time frame for return of fertility on discontinuation and bleeding patterns, as well as partner, social, economic and cultural pressures.[7,9-14] For example, young adults may wish to delay pregnancy, but preserve their fertility, until they plan to have children; parous women who desire further children may choose to space their pregnancies; and older women may want to prevent pregnancy until menopause but not undergo a sterilization procedure.[15] Thus, there are many factors that contribute to a woman's choice of hormonal contraception and these vary in importance among individuals.

Various estimates from the US indicate that approximately 50% of pregnancies are unintended (either mistimed or unwanted) and are mainly a consequence of incorrect or inconsistent contraceptive use.[16-22] Unplanned pregnancies have both short- and long-term healthcare repercussions. Women whose pregnancy is unintended are more likely to engage in behaviours during gestation that jeopardize their health and that of their baby, and to have an adverse birth outcome.[17,23] In addition, an unintended pregnancy can negatively affect a range of developmental parameters during

the child's early years, which may persist into adulthood.[24,25] Choosing the best contraceptive agent for each woman's needs, based on an individualized selection process, will promote correct and long-term use; choosing a less appropriate agent is likely to result in poor contraceptive practice and increase the risk of an unplanned pregnancy.

The current global survey was designed to assess the attitudes of a population of hormonal contraceptive users towards contraception and the factors that influence their choices. This international survey was conducted through self-administered, online questionnaires. Questions focused on specific contraceptive attributes (efficacy, return of fertility, menstrual cycle changes and side effects), compliance with treatment, previous contraceptive experience and awareness of other available methods of contraception. By communicating the results of this survey to healthcare providers, we aim to increase awareness of the range and significance of women's birth control needs and to emphasize the importance of individualized counselling sessions during contraception selection.

Methods

Participants

Women eligible for this survey were between 18 and 44 years of age and were current users of a hormonal method of contraception (including pills, implants, injections, patches, vaginal rings or intrauterine delivery systems) for pregnancy prevention. Nationally representative samples of this female demographic subgroup were selected in each participating country using the Synovate (a global market research company) internet panel (ePanel) and partner agency panels.

Consumers were recruited to the panel through select websites, portals and target email campaigns. For this study, census data on females 18–44 years of age were obtained for each country and were used for balancing purposes to ensure the returns would be nationally representative. A standard invitation was emailed to a starting sample of women based on the desired age range. Their use of hormonal contraception was not known and did not affect their invitation. The invitation wording was "With your permission, we are requesting the participation of the [age]-year-old female in your household. I would appreciate it if this survey could be completed by [date]." After clicking on a link in the invitation, the following was shown to the respondent: "Some questions are personal and may be considered sensitive in nature. Please remember that your participation is completely voluntary. As always please be assured that all of your responses are confidential and strictly follow the guidelines set forth in the Privacy Policy." This was the only description of the survey subject matter shown to respondents prior to commencing the survey. Only women who selected hormonal contraception as their current method during the screening phase of the questionnaire were allowed to continue. Surveys from women using other types of contraception were terminated.

Balancing to the percentages found from census information for each factor (e.g. age, region, population density, etc.) for the specific demographic allows the sample to then be considered a nationally representative sample. The US sample was balanced on age, sex, region, population density, household size and income. Alaska and Hawaii were excluded from the sample. In the UK, France and Germany, the sample was balanced to age, sex and region. In Spain and Italy, the sample was balanced to census for age and region. In Australia, Brazil and Russia, the sample was balanced to census for age.

Members of these panels are awarded points that can be redeemed for cash or gifts as an incentive for completing surveys.

Survey Procedure

This multinational, cross-sectional survey was conducted in nine countries in North and South America, Europe and the Asia-Pacific region. Two questionnaires were developed, which differed slightly in wording and question content for legal/regulatory reasons. One was administered in the US (33 questions) and the other was administered in the UK, France, Germany, Spain,

Italy, Brazil, Australia and Russia (39 questions; the Eight-Country Survey). Participants completed these confidential, online questionnaires between 4 and 12 December 2008 in the US and between 19 March and 10 April 2009 in the other countries.

The questionnaires were designed to capture demographic characteristics, past and current contraceptive use, pregnancy plans and acceptability of an unplanned pregnancy, desire for a rapid return of fertility after hormonal contraceptive discontinuation, acceptability of menstrual cycle changes and side effects, compliance with the contraceptive method and frequency of noncompliant behaviour, and awareness of alternative methods of birth control.

Statistical Analyses

Arithmetic mean values were generated for each response frequency and a standard t-test at the 95% confidence level was used to compare results stratified according to country, age and other demographic data. The results of the US and Eight-Country Survey questionnaires are reported separately due to the differences between them. The data analysis was carried out in Quantum version 5.7 (SPSS, Inc., Chicago, IL, USA) and tables generated as per the analysis plan.

The size of the invited sample was determined by the incidence of hormonal contraceptive users (assumed to be 22%), expected response rate and expected cooperation rate. Only fully completed questionnaires were analysed; there were no missing data.

Results

Study Population and Patterns of Contraception Use

A total of 89 023 invitations were dispatched (excludes number dispatched in Brazil – data not available) and 5120 questionnaires were completed (5.8%). Although the total number of invitations sent for Brazil is not known, the number of Brazilian women entering/completing the survey was 866/315 (36.4%). This number compares favourably with the UK (1095/329, 30.0%), Spain (1707/318, 18.6%), France (684/333, 48.7%), Germany (988/327, 33.1%), Australia (1106/316, 28.6%) and Russia (3192/328, 10.3%).

The demographic profiles of the participating women are summarized in table I. Their mean age varied from 28.6 years in Brazil to 32.6 years in France and approximately two-thirds were employed. Married women accounted for 61% of respondents in the US, but only 31% in the eight countries outside the US.

Contraceptive use patterns are also shown in table I. Birth control pills, including progestin-only pills, were the most commonly used method of hormonal contraception. Across all countries, over 90% of women had taken the contraceptive pill at some time and over 70% were current pill users. High rates of discontinuation (stopping for any period of time) or switching to a different hormonal contraceptive in the past year were reported; this was highest in Brazil (81%) and lowest in Germany (30%). Discontinuation or switching tended to be higher (except in Brazil) among women aged 18–29 years (range 32% in Germany to 77% in Brazil) compared with those aged 40–44 years (range 18% in Germany to 93% in Brazil). Switching had occurred an average of 1.2 times among women who had switched to a different hormonal contraceptive in the past year, and discontinuation had occurred an average of 1.5 times among women who had discontinued in the previous year.

Attitudes towards Pregnancy

Eight-Country Survey Findings

Many women had long-term birth control plans, although this varied widely among countries. For example, 77% of women in the UK indicated that they did not plan on having children in the next 3 years compared with only 44% in Russia (table II). Differences were also observed among age groups, with significantly more women aged 40–44 years (94%) not intending to have children in the next 3 years compared with all other age groups ($p < 0.05$; table III).

When asked how an unplanned pregnancy would affect them, 72% of women felt that getting pregnant at that time would disrupt their lives (table II).

Table I. Demographic profiles and contraceptive use patterns of respondents

Demographic/use of contraceptive	Country								
	US (n=2537)	UK (n=329)[a]	France (n=333)[b]	Germany (n=327)[c]	Spain (n=318)[d]	Italy (n=317)[e]	Brazil (n=315)[f]	Australia (n=316)[g]	Russia (n=328)[h]
Mean age (y)	32.2	30.5	32.6	31.3	29.8	30.3	28.6	29.9	29.2
Age group (%)[i]									
18–29 y	36	47	37	46	53	51	60	51	59
30–39 y	49	42	46	35	34	34	31	34	29
40–44 y	16	12	17	20	13	15	9	16	12
Employed (%)	70	66	76	70	64	59	67	59	72
Married (%)	61	29	41	29	25	22	24	32	41
Annual income, mean ($\times 10^3$)	$US76.1	£32.9	€29.5	€34.3	€31.4	€32.4	$Brz6.2	$A76.4	R37.6
Hormonal contraception currently used (%)[i]									
birth control pill	72	74	77	82[a]	77	86[abdg]	86[abdg]	78	87[abdg]
birth control injection	8	9[bcdegh]		2[beh]	1		9[bcdegh]	5[bdeh]	
birth control patch	2	1			4[abcfgh]	6[abcfgh]	1		2[g]
intrauterine device	11	8[def]	18[acdefgh]	9[def]	3[e]	1	2	6[ef]	5[ef]
birth control vaginal ring	5		1	3[ab]	15[abcefgh]	6[abfg]	2	2	5[abfg]
birth control implant	2	9[bcdefh]	4[df]	4[df]	1	2	1	10[bcdefh]	2
Hormonal contraception ever used (%)									
birth control pill	91	98[d]	99[deg]	98[d]	93	97	99[deg]	96	98[d]
birth control injection	19	23[bcdegh]		5[bde]	2[b]		33[abcdegh]	13[bcdeh]	3[be]
birth control patch	12	2[g]	1	1[g]	9[abcg]	12[abcgh]	9[abcg]		7[abcg]
intrauterine device	12	10[deg]	24[acdefg]	14[defg]	5[e]	1	7[e]	6[e]	25[acdefg]
birth control vaginal ring	8		2	6[ab]	23[abcefgh]	9[abfg]	4[a]	3[a]	13[abcfg]
birth control implant	4	12[bcdefh]	7[defh]	5[df]	1	3	2	17[bcdefh]	4
Discontinued or switched from one hormonal contraceptive to another in past year									
discontinued or switched (%)	35	37[c]	32	30	41[bc]	51[abcdg]	81[abcdegh]	42[bc]	68[abcdeg]
discontinued (%)	23	30[c]	25	22	32[c]	44[abcdg]	79[abcdegh]	34[bc]	62[abcdeg]
mean no. of times discontinued[j]	1.3 (n=585)	1.4 (n=97)	1.5 (n=83)[c]	1.2 (n=71)	1.7 (n=101)[ace]	1.3 (n=139)	1.6 (n=248)[ace]	1.6 (n=109)[ace]	1.7 (n=203)[ace]
switched (%)	20	16	12	16	17[b]	21[b]	25[abcdg]	18[b]	28[abcdeg]
mean no. of times switched[k]	1.2 (n=513)	1.1 (n=53)	1.1 (n=39)	1.1 (n=51)	1.1 (n=55)	1.2 (n=67)	1.5 (n=80)[abcde]	1.3 (n=58)	1.4 (n=93)[abcde]

a,b,c,d,e,f,g,h Value is significantly greater ($p < 0.05$) than that for the country corresponding to the superscript letter; comparisons were not made between the US and other countries.

i Percentage values may not total 100 due to rounding.

j n = women who discontinued in past year.

k n = women who switched in past year.

Table II. Women's pregnancy plans by individual country

Plan	Country								
	US (n = 2537)	UK (n = 329)[a]	France (n = 333)[b]	Germany (n = 327)[c]	Spain (n = 318)[d]	Italy (n = 317)[e]	Brazil (n = 315)[f]	Australia (n = 316)[g]	Russia (n = 328)[h]
Not planning on having children in the next 3 years (%)	77	77[bdefh]	65[h]	74[bdefh]	66[h]	66[h]	66[h]	71[h]	44
An unplanned pregnancy right now would be highly unacceptable/unacceptable or disrupt life (%)[i]	60	78[efh]	73[f]	74[f]	73[f]	70[f]	62	76[f]	71[f]

a,b,c,d,e,f,g,h Value is significantly greater ($p < 0.05$) than that for the country corresponding to the superscript letter; comparisons were not made between the US and other countries.

i Women in the US were asked whether an unplanned pregnancy right now would be highly unacceptable, unacceptable, acceptable or highly acceptable; those in countries outside the US were asked whether getting pregnant right now would disrupt their life.

Significantly more women aged 18–24 or 40–44 years (79% and 76%, respectively) considered that an unplanned pregnancy would be disruptive compared with the other age groups (table III).

US Findings

Among women in the US, 77% did not plan to have children in the next 3 years and 60% overall indicated that an unplanned pregnancy now would be highly unacceptable (29%) or unacceptable (31%) [table II]. Those aged 18–24 and 40–44 years were most likely to rate an unplanned pregnancy as highly unacceptable (36% and 39%, respectively).

Attitudes towards Return of Fertility

The majority of women in all countries stated that they wanted fertility to return quickly after discontinuing hormonal contraception (table IV). This was also true for 72% of the subset of women (Eight-Country Survey only) who said they would consider using a long-acting contraceptive (effective for ≥3 months). The desire for fertility to return quickly after discontinuation was highest among younger women (table V).

Attitudes towards Side Effects and Contraceptive Estrogen Content

Eight-Country Survey Findings

One-third of participants from countries outside the US had asked to be switched from one hormonal contraceptive to another because of side effects such as cramps, nausea, headaches, acne, bloating, breast tenderness and irritability (table VI and table VII). Among oral contraceptive users

Table III. Women's pregnancy plans by age group

Plan	Age group (y)				
	18–24[a]	25–29[b]	30–34[c]	35–39[d]	40–44[e]
No. of respondents (n)					
US	351	551	707	528	400
countries outside the US (total)	799	501	404	514	365
Not planning on having children in the next 3 years (%)					
US	73[b]	64	71[b]	88[abc]	98[abcd]
countries outside the US (total)	62[b]	47	59[b]	75[abc]	94[abcd]
An unplanned pregnancy right now would be highly unacceptable/unacceptable or disrupt life (%)[f]					
US	71[bcd]	58	55	58	68[bcd]
countries outside the US (total)	79[bcd]	69	65	68	76[bcd]

a,b,c,d,e Value is significantly greater ($p < 0.05$) than that for the age group corresponding to the superscript letter.

f Women in the US were asked whether an unplanned pregnancy right now would be highly unacceptable, unacceptable, acceptable or highly acceptable; those in countries outside the US were asked whether getting pregnant right now would disrupt their life.

Table IV. Women's attitudes and preferences regarding return of fertility and menstrual cycle changes by individual country

Attitude/preference	Country									
	US (n = 2537)	UK (n = 329)[a]	France (n = 333)[b]	Germany (n = 327)[c]	Spain (n = 318)[d]	Italy (n = 317)[e]	Brazil (n = 315)[f]	Australia (n = 316)[g]	Russia (n = 328)[h]
Want fertility to return quickly after discontinuing hormonal contraception (%)	54	61	71[ac]	60	74[ac]	69[ac]	73[ac]	71[ac]	91[abcdefg]
Would consider using one of the most effective contraception methods even if associated with menstrual cycle changes (%)[i]		53[bdegh]	38[e]	50[bdeh]	35[e]	24	53[bdeh]	46[bdeh]	33[e]
Would accept irregular bleeding initially if it meant fewer or no periods over time (%)[i]		75[bdegh]	59[deh]	74[bdegh]	44[h]	37	76[bdegh]	67[bdeh]	34
Have asked to be switched to another hormonal contraceptive due to bleeding/spotting (%)	18	16	16	21[d]	14	18	24[abd]	20[d]	19
Have discussed bleeding/spotting issues with their physician (%)[j]	31								

a,b,c,d,e,f,g,h Value is significantly greater ($p < 0.05$) than that for the country corresponding to the superscript letter; comparisons were not made between the US and other countries.

i Not part of the US questionnaire.

j Not part of the non-US (Eight-Country Survey) questionnaire.

only, 31% had asked to be switched from one oral contraceptive to another because of breast tenderness (13%), nausea (12%), oedema (12%) and/or headaches (20%) [data are for all Eight-Country Survey countries combined; individual country data are shown in table VI]. Of those women who had experienced breast tenderness, nausea, oedema and/or headaches while using an oral contraceptive, 46% overall (range 38% in France and Brazil to 60% in Italy) attributed these side effects to their pill in general, while 16% (range 12% in Spain to 25% in Russia) specifically attributed them to the pill's estrogen content. Respondents aged 18–24 years (49%) were more likely than the other age groups to blame their pill in general.

The Eight-Country Survey questionnaire also asked women about issues associated with the estrogen content of their contraceptive. The responses indicated that 53% of total participants from all eight countries did not want or had concerns about foreign/additional estrogen in their body, 85% would prefer to have a monthly option containing a lower dose of hormones (i.e. minimal estrogen exposure) over a daily pill, 80% would consider switching to a different contraceptive with a lower dose of estrogen to minimize estrogen exposure, and 74% would prefer to take an estrogen-free/progestin-only pill to avoid the potential side effects caused by foreign/extra estrogen. Ninety percent were aware of such estrogen-free/progestin-only pills.

When asked about menstrual cycle changes, 42% of women indicated that they would consider using one of the most effective methods of contraception (not specified), even when informed that their menstrual cycle would change and may become irregular (table IV). This was lowest among women aged 18–24 years (33%) [table V]. A greater proportion of women (58%) responded that they would be willing to accept irregular bleeding initially if it meant they would have fewer periods or became amenorrhoeic with time (table IV). This compromise appeared more acceptable to women aged 35–44 years (table V). In addition, 19% of women had asked to be switched from one hormonal contraceptive to another because of bleeding or spotting issues (table IV); this request was least likely among women aged 18–24 years (table V).

Table V. Women's attitudes and preferences regarding return of fertility and menstrual cycle changes by age group

Attitude/preference	Age group (y)				
	18–24[a]	25–29[b]	30–34[c]	35–39[d]	40–44[e]
No. of respondents (n)					
US	351	551	707	528	400
countries outside the US	799	501	404	514	365
Want fertility to return quickly after discontinuing hormonal contraception (%)					
US	67[de]	72[cde]	64[de]	39[e]	22
countries outside the US	84[cde]	83[cde]	76[de]	62[e]	36
Would consider using one of the most effective methods of contraception even if associated with menstrual cycle changes (%)[f]					
countries outside the US	33	40[a]	46[ab]	49[ab]	46[a]
Would accept irregular bleeding initially if it meant fewer or no periods over time (%)[f]					
countries outside the US	53	57	59	63[ab]	64[ab]
Have asked to be switched to another hormonal contraceptive due to bleeding/spotting (%)					
US	16	20	20	16	19
countries outside the US	14	19[a]	19[a]	24[a]	22[a]
Have discussed bleeding/spotting issues with their physician (%)[g]					
US	29	35[ad]	32	29	30

a,b,c,d,e Value is significantly greater ($p < 0.05$) than that for the age group corresponding to the superscript letter.

f Not part of the US questionnaire.

g Not part of the non-US (Eight-Country Survey) questionnaire.

US Findings

Of all women surveyed, 35% reported having spoken to their healthcare provider about side effects. In addition, of the 55% who had asked to be switched from one hormonal contraceptive to another, 48% did so because of side effects (i.e. 26% of all respondents).

Thirty-one percent of women in the US had ever consulted their physician about bleeding/spotting issues (table IV). In addition, 18% of women had asked to be switched from one hormonal contraceptive to another due to these concerns (representing 34% of all women who had ever requested a switch; table IV).

Compliance with Hormonal Contraception

Eight-Country Survey Findings

A high proportion of current oral contraceptive users reported noncompliant behaviour (see table VIII for individual country data). Forty-eight percent had missed a pill during the previous 3 months; these women reported missing an average of 1.9 pills in the past month. In addition, 34% of current pill users reported taking their pill at the wrong time during the previous 3 months; among these women, an average of 2.9 pills had been taken at the wrong time in the past month. Noncompliance was greatest among younger women (table IX). Furthermore, 24% of all respondents (not only current pill users) had asked to be switched from one hormonal contraceptive to another because of issues associated with the daily regimen of taking a pill.

When asked for their views on alternative contraceptive dosing regimens, 84% of respondents expressed a preference for a method that required monthly rather than daily administration and 87% believed that a method that did not require daily, weekly or monthly dosing would make things easier for them (see table VIII for individual country data). In addition, 81% said that they would consider using a hormonal contraceptive method that did not require daily, weekly or monthly dosing (table VIII).

US Findings

Inconsistent oral contraceptive pill use was also common in the US. In the preceding 3 months,

Table VI. Women's attitudes and preferences regarding side effects (excluding menstrual cycle changes) of hormonal contraception by individual country

Attitude/preference	Country									
	US (n = 2537)	UK (n = 329)[a]	France (n = 333)[b]	Germany (n = 327)[c]	Spain (n = 318)[d]	Italy (n = 317)[e]	Brazil (n = 315)[f]	Australia (n = 316)[g]	Russia (n = 328)[h]
Have asked to be switched to another hormonal contraceptive due to side effects (%)	26	29	27	33[d]	24	31	57[abcdegh]	29	32[d]
Have asked to be switched from one pill to another due to the following side effects (%)[i]:									
No. of respondents	321	330	321	297	306	312	302	320	
breast tenderness	7	11	8	9	11	31[abcdegh]	8	18[abcdeg]	
nausea	6	5	6	5	7	30[abcdeg]	12[abcde]	25[abcdeg]	
oedema	5	3	6	13[abc]	15[abcgh]	36[abcdegh]	8[b]	9[b]	
headaches	16	18	16	15	19[g]	43[abcdegh]	13	22[dg]	
overall	20	23	23	26	32[abcg]	63[abcdegh]	24	40[abcdeg]	

a,b,c,d,e,f,g,h Value is significantly greater ($p < 0.05$) than that for the country corresponding to the superscript letter; comparisons were not made between the US and other countries.

i n = women using the pill.

j Not part of the US questionnaire.

49% of women taking oral contraceptives reported missing a pill (with a mean of 1.8 pills being missed in the previous month) and 44% reported taking a pill at the wrong time (with a mean of 3.1 being taken at the wrong time in the preceding month). Noncompliant behaviour was highest in women aged 18–24 years (table IX). Regarding alternative methods of contraceptive delivery, 81% of participants indicated that they would consider using a hormonal contraceptive method that did not require daily, weekly or monthly dosing, or quarterly injections.

Awareness and Preferences for Alternative Methods of Contraception

Eight-Country Survey Findings

The proportion of women who considered themselves well informed about their birth control options ranged from only 30% in Russia to 74% in the UK, and was higher among older age groups. Not surprisingly, women who felt uninformed about their options typically had lower rates of awareness of most forms of hormonal contraceptives than those who felt well informed (figure 1). This finding was consistent across all countries. Additionally, 73% of women showed an interest in learning more about alternative contraception delivery methods in general, while 76% showed an interest in learning more about a monthly administered option.

Participants in the Eight-Country Survey were also asked to express a preference for one type of contraceptive delivery method over another. Overall, 73% of women completing the Eight-Country Survey indicated that they would opt for a long-acting contraceptive method that is inserted in their arm rather than their uterus (range by country: 63% in France and Germany to 87% in Russia; range by age group: 68% of 35- to 39-year-olds to 77% of 25- to 29-year-olds) and 61% would opt for a hormonal contraceptive that is inserted in the arm and lasts for up to 3 years rather than having injections every 3 months (range by country: 54% in Russia to 71% in France; range by age group: 54% of 25- to 29-year-olds to 70% of 40- to 44-year-olds).

Table VII. Women's attitudes and preferences regarding side effects (excluding menstrual cycle changes) of hormonal contraception by age group

Attitude/preference	Age group (y)				
	18–24[a]	25–29[b]	30–34[c]	35–39[d]	40–44[e]
Have asked to be switched to another hormonal contraceptive due to side effects (%)					
US[f]	46 (n = 188)	51 (n = 336)[e]	52 (n = 412)[de]	44 (n = 278)	40 (n = 173)
countries outside the US	30 (n = 799)	33 (n = 501)	33 (n = 404)	35 (n = 514)	35 (n = 365)
Have asked to be switched from one pill to another due to the following side effects (Eight-Country Survey only) [%][gh]:					
No. of responders	764	495	393	501	356
breast tenderness	10	12	12	15[a]	18[abc]
nausea	11	13	10	14	13
oedema	10	11	11	14	14[a]
headaches	16	18	21	25[ab]	24[ab]
overall	27	30	31	36[a]	36[a]

a,b,c,d,e Value is significantly greater ($p < 0.05$) than that for the age group corresponding to the superscript letter.

f n = women who asked to be switched.

g n = women using the pill.

h Not part of the US questionnaire.

US Findings

Overall, 86% of women in the US considered themselves well informed about their contraception choices. Nevertheless, 58% indicated that they would like to learn more about other delivery methods and 53% would like to learn more about contraceptives that are administered on a monthly basis. Although women in the US were not asked to indicate a preference for one method over another, questions relating to the method of delivery indicated that 42% of women would consider using a hormonal contraceptive that is placed in their uterus (32% of 40- to 44-year-olds vs 44% of 30- to 39-year-olds) and 32% would consider using a hormonal contraceptive in the form of an implant inserted just beneath the skin on the inner side of the upper arm and that lasts for up to 3 years (26% of 40- to 44-year-olds vs 34% of 18- to 29-year-olds).

Discussion

The fundamental purpose of contraception is to allow women to plan when or whether they have children. Not only will an unplanned pregnancy disrupt the mother's life, but it may also adversely affect the health of the child.[22-25] It is essential to individualize the contraceptive recommendation to decrease the rate of unintended pregnancies, since the majority are believed to result from errors in birth control use.[17,21,22] Indeed, the range of contraception options available has increased in recent years in an attempt to meet the personal preferences of each woman according to her needs and lifestyle. Many factors influence contraceptive choice, compliance and continuance; the surveys reported here indicate that these factors can vary significantly among countries and age groups.

Consistent with data from previous surveys,[26-28] the current study shows that oral contraceptives (including progestin-only pills) are the most widely used method of contraception in women already using a hormonal method. Across all countries, 72–87% of participants were current pill users and 91–99% had taken the pill at some time. The frequency with which the women in our survey had discontinued or switched their contraceptive in the previous year possibly highlights a level of dissatisfaction with their previous choice. Discontinuation or switching from one hormonal contraceptive to another was highest among younger women (aged 18–24 years), possibly because they were new users who were trying to find

Table VIII. Self-reported contraceptive pill noncompliance and preferences regarding alternative methods of contraceptive delivery by individual country

Noncompliance/ preference	Country								
	US (n = 2537)	UK (n = 329)[a]	France (n = 333)[b]	Germany (n = 327)[c]	Spain (n = 318)[d]	Italy (n = 317)[e]	Brazil (n = 315)[f]	Australia (n = 316)[g]	Russia (n = 328)[h]
Missed ≥1 pill in previous 3 months (%)[i]	49 (n = 1822)	39 (n = 321)	44 (n = 330)	49 (n = 321)[a]	44 (n = 297)	43 (n = 306)	65 (n = 312)[abcdegh]	50 (n = 302)[a]	51 (n = 320)[a]
Took pill at wrong time in previous 3 months (%)[i]	44 (n = 1822)	25 (n = 321)[d]	23 (n = 330)[d]	26 (n = 321)[d]	12 (n = 297)	28 (n = 306)[d]	67 (n = 312)[abcdegh]	42 (n = 302)[abcde]	50 (n = 320)[abcdeg]
Have asked to be switched to another hormonal contraceptive due to daily dosing regimen (%)	15	20[e]	35[acdeg]	24[de]	17	14	32[acdeg]	19	30[adeg]
Would prefer a hormonal contraceptive that is taken monthly rather than daily (%)[j]		83[g]	89[afg]	84[fg]	92[acefg]	86[fg]	77	75	87[fg]
A method not requiring daily, weekly or monthly dosing would make things easier (%)[j]		80	87[a]	87[a]	89[a]	87[a]	88[a]	87[a]	91[a]
Would consider using a hormonal contraceptive not requiring daily, weekly or monthly dosing (%)[k]	81	82[b]	68	87[bdfg]	81[b]	87[bdfg]	77[b]	80[b]	88[bdfg]

a,b,c,d,e,f,g,h Value is significantly greater ($p < 0.05$) than that for the country corresponding to the superscript letter; comparisons were not made between the US and other countries.

i n = women using the pill.

j Not part of the US questionnaire.

k Or quarterly injections in the US questionnaire.

Table IX. Self-reported contraceptive pill noncompliance and preferences regarding alternative methods of contraceptive delivery by age group

Noncompliance/preference	Age group (y)				
	18–24[a]	25–29[b]	30–34[c]	35–39[d]	40–44[e]
No. of respondents					
US	351	551	707	528	400
countries outside the US	799	501	404	514	365
Missed ≥1 pill in previous 3 months (%)[f]					
US	57 (n = 257)[de]	56 (n = 370)[de]	51 (n = 525)[e]	44 (n = 369)	39 (n = 301)
countries outside the US	57 (n = 764)[cde]	51 (n = 495)[de]	46 (n = 393)[e]	43 (n = 501)[e]	35 (n = 356)
Took pill at wrong time in previous 3 months (%)[f]					
US	55 (n = 257)[cde]	49 (n = 370)[de]	44 (n = 525)[e]	38 (n = 369)	33 (n = 301)
countries outside the US	40 (n = 764)[cde]	38 (n = 495)[de]	33 (n = 393)[e]	28 (n = 501)	26 (n = 356)
Have asked to be switched to another hormonal contraceptive due to daily dosing regimen (%)					
US[g]	29 (n = 188)	31 (n = 33)[e]	26 (n = 412)	24 (n = 278)	22 (n = 173)
countries outside the US	19 (n = 799)	25[a] (n = 501)	23 (n = 404)	30[ac] (n = 514)	28[a] (n = 365)
Would prefer a hormonal contraceptive that is taken monthly rather than daily (%)[h]					
countries outside the US	78	84[a]	85[a]	89[abc]	90[ab]
A method not requiring daily, weekly or monthly dosing would make things easier (%)[h]					
countries outside the US	85	86	88	89	89
Would consider using a hormonal contraceptive not requiring daily, weekly or monthly dosing (%)[i]					
US	81	82	83	79	79
countries outside the US	80	82	82	83	79

a,b,c,d,e Value is significantly greater ($p < 0.05$) than that for the age group corresponding to the superscript letter.

f n = women using the pill.

g n = women who asked to be switched.

h Not part of the US questionnaire.

i Or quarterly injections in the US questionnaire.

the most appropriate method for themselves. Rates of discontinuation and switching also varied widely among countries, with women in Brazil being especially likely to have discontinued or switched their contraceptive in the previous year.

When recommending a method of contraception, the healthcare professional should consider and discuss the woman's pregnancy plans. The majority of participants in our surveys, especially older women (aged 40–44 years), did not plan on having children in the next 3 years and indicated that an unplanned pregnancy at the time the survey was conducted would disrupt their life or be unacceptable. Since inconsistent or inappropriate contraceptive use is associated with a higher risk of an unintended pregnancy,[17,21,22] a method that provides reliable, long-term protection against pregnancy would be suitable for this group of women. However, it is important to recognize that women's birth control plans may change throughout their lifetime, sometimes quickly. The time to return to fertility following the withdrawal of reversible contraception is, therefore, a further important consideration that should be addressed during the family planning consultation so that the return-to-fertility profile of the recommended contraceptive method can be aligned with the woman's childbearing goals. Not surprisingly, the preference for a contraceptive from which fertility returns rapidly after discontinuation was highest among women aged 18–34 years.

The side-effect profile of a contraceptive is another important determinant governing selection, as this may negatively influence compliance and persistence with the prescribed regimen.[13,29-31] The questionnaire responses suggest that women

(especially those in the older age groups) are willing to compromise between effects on the menstrual cycle and other contraceptive attributes when selecting the method that is right for them. For example, over 40% of participants in the Eight-Country Survey indicated that they would consider using a highly effective contraceptive even if it might cause bleeding irregularities, and over 50% indicated that they would be willing to tolerate irregular bleeding initially if they could have fewer or no periods over time. Nevertheless, the reasons given for requesting a switch from one hormonal contraceptive to another indicate that bleeding/spotting issues and other hormone-related side effects remain a potential barrier to hormonal contraceptive continuance. Particular concern over estrogen-related side effects is reflected by the high proportions of women who said they would consider switching to a different contraceptive with a lower dose of estrogen, to a monthly option with a lower dose of hormone or to an estrogen-free/progestin-only pill.

In common with findings from other studies,[13,29,31,32] many of the oral contraceptive pill users participating in our survey demonstrated noncompliant behaviour. Significant subsets of women admitted missing or taking their contraceptive pill at the wrong time in the previous 3 months; among these subsets, an average of two pills had been missed and three had been taken at the wrong time in the previous month. Compliance appeared to be poorer among younger women (18–24 years of age), exposing them to the risk of an unplanned pregnancy. The problem of noncompliance among pill takers may be addressed, at least in part, by switching to an alternative contraceptive with a simplified dosing regimen. Indeed, women responded positively to questions regarding the use of long-acting methods requiring less frequent administration.

This survey has also revealed gaps in women's knowledge about the range of available hormonal contraception options even in those already using hormonal contraceptives. For example, even among those who considered themselves well informed about birth control methods, awareness of the contraceptive patch and injections was less than 60%. This highlights the need for comprehensive counselling, when all formulations and delivery methods are clearly explained to help each patient make an informed decision.

Several methodological limitations should be taken into account when considering the general applicability of the results of this survey. First, selection of participants was not based on rigid enrolment/screening criteria, which means the participants represented a less well-defined population than would be included in a clinical trial.

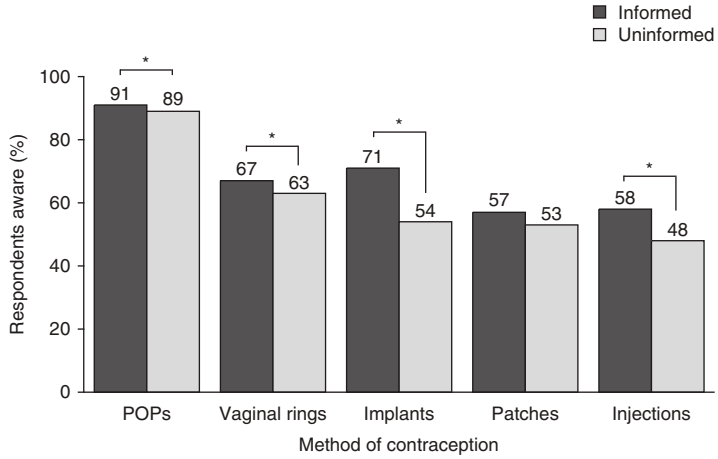

Fig. 1. Awareness of progestin (progesterone congener)-only pills (POPs), vaginal rings, implants, patches and injections among women in the Eight-Country Survey who considered themselves well informed or uninformed about their contraception options. * $p < 0.05$.

Second, the survey may be subject to selection bias, as it may have captured women who were more engaged with their treatment and thus were interested in responding to the questions. Third, a non-validated questionnaire was employed to collect data. Fourth, hormonal contraceptive use was self-reported and not substantiated from medical records. Fifth, the survey did not capture information on which specific contraceptive product was used. Finally, the data were collected using online interviews, which may have favoured women in higher socioeconomic groups in certain countries, such as Russia and Brazil.

Conclusion

The results of these surveys of women who were current users of hormonal contraceptive methods highlight the wide variations in women's birth control needs. Such complexity in the contraceptive decision-making process emphasizes the importance of individualized counselling, not only to make women aware of the attributes (both positive and negative) of all their options, but also to make healthcare professionals understand each woman's preferences and concerns so that they can make a specific, tailored recommendation. Physicians and patients must work together towards a shared goal of minimizing the barriers to initiation, compliance and continuance of contraception and, ultimately, of appropriate family planning and prevention of unwanted pregnancies.

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