VIEWPOINT

BREAST CANCER RISK ASSESSMENTS TO BARRIER CONTRACEPTION EXPOSURE. A NEW APPROACH

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A b s t r a c t: The risk prediction models for breast cancer remain unsatisfactory. The existing models of breast cancer risk assessment have failed to consider (calculate) the exposure to condom use, defined as the major risk factor of breast cancer. All the models, including the NCI-Gail model, are based on the so-called "known" breast cancer risk factors, such as, menarche, age at first birth, parity, OC pills, diet, physical activity, age at menopause, number of breast biopsies, family history, ethnicity (race), age and other. The commonest predictions of the models has been that "All women are at risk of breast cancer," which is deemed as a patently incorrect assessment. The risk assessments have served for identification and recruitment of women at "elevated risk" of breast cancer both for therapeutic randomized clinical trials (RCTs), and for implementing a possible clinical policy of "prophylactic" mastectomy and other prior surgical interventions. However, the models have raised questions lately about their adequacy and practical usefulness, because of the use of "weak" and inadequate risk factors. This study presents the results of a new approach and alternative model and results to the risk assessment of breast cancer, by calculating the exposure to barrier contraceptive practice (condom use and withdrawal practice) along with the factors of parity, age and other (non-barrier) birth-control methods, within a 5-year time period and the life span 20–54 years of age, by employing the Bayes' Probability Theorem.

Key words: Breast cancer, Risk Assessment, New Approach, Bayes' Theorem, Parity, Condom Risk Factor, Primary prevention.

Purpose

To present an alternative, new approach and model of breast-cancer risk assessment probabilities, for the existing models [1–4] in use of breast cancer risk assessments failed to consider (calculate) the exposure to the defined main

risk factor, the exposure to barrier contraceptive practice, i.e. the use of condom device and withdrawal practice [5, 6].

Background

The risk prediction models for breast cancer remain unsatisfactory and less than convincing. No matter what the logic and methodology, the mathe-matical models could not render the assessments of breast cancer risks effective and useful because of both the irrelevant risk factors utilized in the equation and the old concepts and theories of breast cancer etiology employed as a basis for prediction, prognosis, and prevention of the disease. The so-called "known" risk factors [7] incorporated in the used medical practice equations of breast cancer risk predictions included diet, menarche, age at first birth, parity, physical activity, age at menopause, number of breast biopsies, family history, race, religion, and certain other factors. In the aforementioned, most frequently used breast cancer risk assessment models [5–6], the parity (number of live births) was not included.

In addition, the risk-assessment models failed to consider the defined, main, and perhaps the sole most important risk factor and determinant of breast cancer [5, 6], the exposure to (use of) CONDOMS in marital relations, quan-tified according to duration ('persistency') of the exposure to condom use (in months and years) during the reproductive-age span of women, from puberty to the peri-menopausal years of 54.

Two passing conclusions in the existing risk assessment models of breast cancer would need perhaps to be highlighted at the outset, such as: "We can look forward eventually to models that both inform and reflect the emer-ging" (that is, the current) "understanding" of the biology of carcinogenesis (which) is still a long way off" and that "No prediction models for breast cancer (risks) have achieved … a level of discrimination to date."

With the "known" risk factors, the risk prediction models of breast cancer were subsequently improved either with the additions of genetic (BRCA1, BRCA2) or laboratory findings (of estrogen receptors, ER + or (-), and progesterone, PR ± status). The screening mammography results also showed deficient to change the (mis)conception of "the underlying biological… associations between the reproductive events and risk of breast cancer," as concluded in one of the articles [4]. (More than 12 years ago, at the very hope-ful launching of the *Tamoxifen* chemoprevention trials across Europe and the U.S. 'Lancet Breast Cancer Challenge Conference' which took place in Brugge, Belgium, in April 1994, a sudden anecdotal proposal hit the auditorium: "Let's make a declaration that all mathematical models about breast cancer be forbidden from now on." The proposal was acclaimed with accepting laugher.)

Another, routine assertion is frequently made that "all women are at risk of breast cancer," [2] which is a patently incorrect assessment. Some women are predestined to developing breast cancer and/or diseases of the reproductive system, while a great majority are not. With the omission of the condom use as a main etiological risk factor of breast cancer, all risk calculation models may be considered 'correct' and 'useful' in situations of lack of knowledge of the malignant disease etiology. Such incomplete assessments missed the point anyway, and a method of verifying their predictive accuracy does not seem available.

One of the envisioned functions of breast cancer risk assessment has been identification of women at 'elevated ris' to whom chemo-prevention of breast cancer experiments (with Tamoxifen and supposedly other chemical agents) could be applied in community-based interventions, and for individually "tailored" chemotherapies of breast cancer [1–4].

Population and new methodological approach

This new approach to the assessment of the breast cancer risk calculation utilized four indicators only as factors related to breast cancer: (i) exposure to condom use (in months and years), (ii) parity (until eight), (iii) community age-specific incidence rates of the disease (from official reports), and (iv) reproductive-age period of 420 months (or 35 years), as an empirically defined period of fertile life-span of women, from adolescence to menopause. The Bayes theorem was used for computing a predictive model of assessed breast cancer risks, in percentages, of women aged from 20 years until the end of the reproductive-age period, assigned at the 50–54 year age-group (i.e. the age at which the steep increasing curve of the age-specific rates of breast cancer incidence rates breaks and level off, according to the logarithmic scale). The highest age-specific incidence rates are recorded at the time of menopause. Therefore, the highest age-specific incidence rates were recorded at the time of menopause. The computation used for the assessment was population-based, 5-year average incidence rates for the U.S. white and Afro-American women and for ethnic populations (races) in Los Angeles as well (SEER), referred from the WHO-IARC edition of "*Cancer Incidence in Five Continents Vol. VII*" (1997), for the period 1988–1992 [8].

Exposure of women to barrier methods for birth control purposes (i.e. condom devices and/or withdrawal practice) were the postulated and tested risk factors of breast cancer, which induce technical effects of absolute male sterility in marital relations and create an INVERSE environmental risk factor for breast cancer development and other tumors of the reproductive system of married women, by eliminating, reducing or making absent the purported protective seminal factors (the prostaglandins?) in the inter-human, intimate (sexual) ecosystem and micro-environment [5, 6].

It was observed by the authors of the risk-assessment models that the pattern of the distribution of age-specific rates for reproductive cancers in women differed from those of other major malignancies. In addition, the age-specific incidence rates of breast cancer have shown distinctive changes in terms of rise and differences in time and space in the past two-and-a-half decades, demonstrating a new, widespread "DEBUT PEAK" shift of the first highest incidence rates of breast cancer toward younger women, in the 34–44, 45–49, and 50–54 age groups, in many countries around the world [10–12]. The phenomenon of "debut peaks" reflected the expected adverse effects of both (i) the rise of breast cancer incidence in young age-groups of women exposed for the first time to condom use, and (ii) corroboration of the previously indicated short latent period of the disease [5]. The risk of breast cancer was assessed by employing the Bayes' Theorem of conditional probability principles and equations [13–15]. (Appendix 1)

Results

The results of the assessed risk percent of this study demonstrate a complete configurational order, confirming the rise of breast cancer risk from the younger to the older reproductive age-period, and comparable to the recorded age-specific rates, but declining risk by parity (Table 1). Apparently, parity is only a major modifying factor of the risk of breast cancer, but not a fully preventative one against the disease in the contemporary world, laden with a ʿcondom cultureʾ. The ʿNulliparaʾ category of women were not mathematically assessed for risk, because of the belief, maybe a biased one, that such a woman would have an unlimited (up to 100 percent) risk of developing breast cancer, by being exposed to ʿsemen-factor deficiencyʾ (using condoms as physiological barriers) for 35 years (420 months) in reproductive life. Practically, a woman with one child only would have a risk of more than 88 percent of developing breast cancer by menopause. Even a woman with a parity of eight is still exposed to an almost 41 percent risk of developing breast cancer at menopause, by having been exposed to sterile mating (persistent condom use) for 59 percent of the reproductive life.

The period of non-exposure to absolute technical male sterility (the use of condoms) during the assumed 16 months of pregnancy and (a supposedly brief) breast-feeding period of 6–7 months in average, for eight children (= 128 months, or 30.5% of reproductive life of non-use of barrier birth-control methods) is much smaller than the rest of the reproductive-age exposure to condom devices (292 months, or 69.5%). The results may help explain the contemporary frustration of the health authorities and authors of the technical breast-cancer risk assessment as to why the high parity or parity at all is not a reliable factor of prediction or protection against breast cancer any more, as used to be the case before.

Table 1 – Табела 1

*Breast cancer risk assessment in white American women of reproductive-age
(20–54 years), using condoms for contraceptive purposes, according to age-specific
incidence rates, 1988–1992, adjusted by parity and age groups, in percentages*

*Проценка на ризикот за рак на дојка кај американски жени (бела раса)
во репродуктивна возраст (20–54 години), коишто употребуваат кондоми
за контрацептивни намери, според возрасно-специфични стапки
на инциденција,1988–1992, стандардизирани според бројот на породувања
и возрасни групи, во проценти*

Age group	Rate, 100,000, (SEER)	Months of reproductive life	Parity (Number of Live-born Children)							
			1	2	3	4	5	6	7	8
20–24	0.9	60	.025	.008	.002	-	-	-	-	-
25–29	7.0	120	1.9	1.05	.6	.4	.2	.05	-	-
30–34	23.8	180	20.0	10.1	8.3	4.0	3.0	2.1	1.5	.001
35–39	61.0	240	47.5	29.8	20.6	15.1	11.5	8.9	6.9	5.4
40–44	121.2	300	71.1	53.5	42.0	33.8	28.5	22.7	18.8	15.6
45–49	194.5	360	84.0	71.2	61.2	52.7	45.8	39.9	34.8	30.4
50–54	231.5	420	88.4	78.6	70.1	62.7	56.2	50.4	41.4	40.7

The results indicate that the lifetime breast cancer risk percent declines in postmenopausal women, after age 50–54, with a lower risk estimate than the recorded incidence rates for both white and Afro-American women in the U.S., confirming the notion that the reproductive age of a woman, 20–54, is the period of the greatest and cumulatively increasing risk of breast cancer as an epidemic disease, as shown by all the studies [5, 6], the logarithm of breast cancer curves and figures, and current developments (Table 2).

Table 2 – Табела 2

*Breast cancer risk assessment of white and Afro-American women, U.S., 1988–1992,
using condoms for contraceptive purposes, during both lifetime and the age at
menopause (at 50–54 years), according to crude (lifetime) and age-specific incidence
rates (age 50–54) (SEER), adjusted by parity, in percentages*

*Проценка на ризикот за рак на дојка кај американски жени (од бела
и афро-американска раса), 1988–1992, коишто употребуваат кондоми
за контрацептивни намери, за време на репродуктивниот живот и возраста
до менопауза (50–54 години), според стапките на општата инциденција во
целиот живот и возрасно-специфичните стапки на инциденција (до возраста
50–54), според SEER*, стандардизирани според бројот на породувања, во проценти*

Race	Rates at age	(Crude) rates	Parity (Number of Live-born Children)							
			1	2	3	4	5	6	7	8
White	**50–54**	**231.5**	**88.4**	**78.6**	**70.1**	**62.7**	**56.2**	**50.4**	**41.4**	**40.7**
White	Lifetime	129.6	79.0	64.4	53.6	45.4	38.8	33.4	29.0	25.3
Black	**50–54**	**203.4**	**86.5**	**76.1**	**66.5**	**58.8**	**52.1**	**46.2**	**41.2**	**36.8**
Black	Lifetime	81.1	69.1	51.8	40.7	32.8	27.4	22.9	19.5	16.7

The significant inter-ethnic differences and unequal breast cancer incidence rates in the United States and beyond may be interpreted by the levels of condom acculturation, that is, the prevalence and duration of condom use, rather than race characteristics, among the members of the racial and/or ethnic communities [16, 17]. The assessments of the breast cancer risk in American women of all race/ethnic populations seem consistent with the other results of the analysis (Table 3). (Appendix 2)

Table 3 – Табела 3

Risk assessment of breast cancer risks in American women of all ethnicities (races) of reproductive age (20–54 years), exposed to condom use for contraceptive purposes, according to the crude incidence rate at menopause (50–54 years), 1988–1992, and adjusted by parity, in percentages

Проценка на ризикот за рак на дојка кај американски жени од сите етнички групи (и раси) на репродуктивна возраст (20–54 години), изложени на употребата на кондоми за контрацептивни намери, според општата стапка на инциденција на болеста во менопауза (50–54 години), 1988–1992, стандардизирани според бројот на породувања, во проценти

Race / ethnicity	Source & place	Incidence at 50–54 y/a	Parity (Number of Live-born Children)							
			1	2	3	4	5	6	7	8
White	SEER*	231.5	88.4	78.6	70.1	62.7	56.2	50.4	41.4	40.7
Black	SEER	203.4	86.5	76.1	66.5	58.8	52.1	46.2	41.2	36.8
Hispanics	LA, Ca^{+}	160.9	79.8	70.0	59.8	51.7	45.0	39.2	34.5	30.4
Japanese	LA, Ca	198.6	86.3	76.1	65.8	58.0	51.4	45.5	40.5	36.1
Filipino	LA, Ca	236.2	91.7	79.0	70.6	63.3	56.9	51.0	45.9	41.3
Chinese	LA, Ca	100.5	73.9	57.6	46.6	38.5	32.4	27.4	23.6	20.4
Koreans	LA, Ca	96.2	65.6	47.8	36.9	29.6	24.3	20.2	17.1	14.6

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The breast cancer risk percent assessed by the new approach may seem high. However, the basic assumption is that a persistent, exclusive or high prevalence of condom use is taking place in women with breast cancer, perhaps up to 100%. A shortcoming of the presented breast cancer risk percent results is the detail that the equation neither discriminates nor incorporates the 'density' factor in terms of 'timing' of exposure, in younger or 'older' age. Namely, the latent period of breast cancer development has been defined in the hypothesis-testing study [2] to be between 2½ to five years of condom use in marriage, rather than 5 or 10 years, as mentioned in the article [1]. It was concluded that breast cancer could theoretically develop within each 5-year age period, if the

consistent exposure to condom devices is not interrupted by the use of non-barrier contraceptive methods (OC pills, diaphragm, IUDs, rhythm, tubal ligation), or by pregnancy, breast-feeding, or hysterectomy (a simple one, or with one-sided or two sided oophorectomy).

Table 4 – Табела 4

Relative increase of the assessed breast cancer risk, in percentages, in white women, U.S., 1988–1992, of reproductive age (20–54 years), with exposure to condom use for contraceptive purposes, Age-specific incidence rates, adjusted by age groups and parity

Релативен йораст на проценетите ризици за рак на дојка, во проценти, кај женитe од бела раса во САД, 1988–1992, во рейродуктивна возраст (20–54 години), со изложеност кон уйотреба на кондоми за контрацейтивна намера, сйоред возрасно-сйецифични стайки на инциденција, стандардизирани сйоред возрасни груйи и бројот на йородувања

Rate,* 100,000, (SEER)	Age groups	Parity (Number of Live-born Children)							
		1	2	3	4	5	6	7	8
0.9	20–24	.01	01	01	-	-	-	-	-
7.0	25–29	76.0	131.5	300.0	-	-	-	-	-
23.8	30–34	10.5	9.6	13.8	10.0	15.0	42.0	0	0
61.0	35–39	2.4	3.0	2.5	3.8	3.8	4.2	4.6	4.6
121.2	40–44	1.5	1.8	2.0	2.2	2.5	2.6	2.6	2.9
194.5	45–49	1.2	1.3	1.4	1.6	1.6	1.8	1.8	1.9
231.5	50–54	1.0	1.1	1.1	1.2	1.2	1.3	1.2	1.3

The highest increase in the breast cancer risk in women exposed to condomized sex relations appeared to be in the younger age groups, particularly at 25–29 years of age. The results of increase in percentages indicate that the greater increase of the risk is to be found in young women (20–25 y/a) and parity three. Contrary to the steady absolute increase of the breast cancer risk by age (Table 1), there is a steady, almost configurational decrease of the assessed breast cancer risk when controlled for parity. The lowest relative risk is for older women, particularly of 50–54 years of age, exposed to condom use, for which the parity does not seem to extend any further protection.

Additionally, it seems that Table 4 may support the possibility of a preventive protection against breast cancer and other accompanying diseases of the female reproductive system, by indicating that prevention should begin quite early in a woman's life, in the young 20s of their fertile lives. For that reason, the primary prevention of breast cancer should aim at the protection of the woman's and the couple's sexuality and fertility, rather than attack the natural functions of their reproductive organs.

Example 1: The reproductive life-span of a 54-year-old, white married woman is presented in a bar diagram (Figure 1). The entire reproductive / contraceptive history is charted in seven age-group sections, each containing five years (rows), pragmatically defined, of 35-year fertility life-span in women, or 420 months. The birth-age history was as follows: parity of four (9 + 7 = 16 months of pregnancy together with average breast feeding of 6–7 months); two children were born before 25 years of age, one was born before the age of 30, and the fourth child was born before age 35, covering 64 months of maternity, or 15.2 percent of the total of 420 months of the fertile life-span. Differing from the reproductive experience of four births, the remaining, "free" from pregnancy periods of time were covered with understandable fertility-control efforts, by using a "safe" barrier contraceptive device, the condom, for the remaining 356 months, or 84.8 percent of the ˈallottedˈ reproductive / fertile period. Accordingly, for this 54-year woman, with four children at the younger age, and subsequent use of a condom device, the breast cancer risk has been assessed to be 62.7 percent (the same as in Table 1). In comparison with the on-going breast-cancer epidemic situation, as well as for validation of the risk assessment approach, the assessed risk of breast cancer in condom-exposed women is indicated to be considerably higher than the average risk of 12.5% (or, ˈ1 in 8ˈ) in the American general population. (One question remains, however, as to whether the breast cancer risk of 62.7 percent would be the same to a woman of the same age 54 and parity four, but who had the four childbirths later in the (remaining four) age periods after age 30–34, and with intermittent condom use of the same duration of 356 months.)

Example 2: The reproductive profile of a white, married woman, aged 54, consisted of two pregnancies (with average breast feeding) = 32 months, or 7.62 percent of the reproductive life-span, with following contraceptive history: usage of oral contraceptive pills in total duration of 60 months (before and after the first child at 20 years of age), or 14.3 percent of the fertile life-span of 420 months; condom use of 68 months (16.2 percent), after the second child (at age 32–33); had IUD device repeatedly installed for 11 years, or 140 months (33.3 percent), and tubal ligation for 10 years, or 120 months (28.6 percent). In summary, barrier birth control (condom use) for 16.2 percent of the reproductive life-span of 420 months, while the exposure to non-barrier contraceptive methods (OC pills, IUDs and tubal ligation) extended to 320 months, or 76.2 percent. The period 32 months of two pregnancies (plus breast-feeding), or 7.6 percent, is also included in the period of non-barrier sexual relations of 352 months, adding up to 83.8 percent versus 16.2 percent condomized marital sexual relations. The assessed risk of getting breast cancer at menopause (54 years of age) was 5.5 percent (or, 1 in 18.2 women), which risk was lower by more than eleven times than the estimated risk of 62.7 to women of the same age with condom exposure.

Example 3: An immigrant woman, age 34, with parity two (with breast-feeding), at age 20 and 24 (32 months of pregnancies / breast feeding, or 7.8 percent

Example 1:	Example 2:	Example 3:
54 y/a woman: 4 pregnancies→ 64 months = 15.2% Condom use → 356 mns = 84.8%	54 y/a woman: 2 pregnancies→32 months = 7.6% OC pills 60 mos = 14.3% IUDs→140 mos = 33.3% Tubal ligation→ 120 mos = 28.6 Condom use → 68 mos = 16.2%	34 y/a woman: 2 pregnancies→ 32 mos = 7.6% Rhythm →28 mos = 6.7% Condom use → 120 mos = 28.6% Hysterectomy → 240 mos = 57.7% (out of 420 mos)
AGE: 35 years = 420 months	AGE	AGE

20–24	Condom / Condom	**20–24**	OC pills	**20–24**	Rhythm
25–29	Condom	**25–29**	Condom	**25–29**	Condom
30–34	Condom / Condom	**30–34**	Condom / IUDs	**30–34**	Condom
35–39	Condom	**35–39**	IUDs	**35–39**	Hyste-rectomy
40–44	↓	**40–44**	IUDs	**40–44**	↓
45–49	↓	**45–49**	Tubal ligation	**45–49**	↓
50–54	↓	**50–54**	↓	**50–54**	↓
Estimated BC Risk → 62.7%	Estimated BC Risk → 5.5%	Estimated BC Risk → 12.7%

Figure 1 – Estimated Breast Cancer Risk, Until Menopause,
According to Reproductive Life-Span and Contraceptive Practices, 50–54

Слика 1 – Проценка на ризикот за рак на дојка, до менопауза,
според репродуктивниот живот и контрацептивни практики,
од 50–54 години

of the 420 months of reproductive life), has been practicing the rhythm method for 28 months (6.7%), between the two live births. After completing the desired family size, the condom has been the method of choice for birth control, used partially (perhaps 50% in frequency, around the phases of ovulation, along with rhythm method, practiced alternatively, for one week, in the middle between the menstrual circles), for a duration of 120 months (28.6 percent). At age 34, hysterectomy (with one-sided oophorectomy) was performed because of a huge endometrial tumor. For the remaining 240 months (57.7%) after the operation neither contraception nor steroid therapy was used. The 12.2 percent breast cancer risk assessment until menopause for this 34-year woman was computed according to the population age-specific incidence rate of 231.5, per 100,000 American white women at age 50–54 (in 1988–1992). (Alternative risk assessment, based on the age-specific incidence rate of 23.8 per 100,000 American white women aged 30–34 (Table 1), yielded a lower risk of 9.7 percent, consistent with the assessed risk of 10.1 in Table 1.)

Discussion and conclusions

The new approach to the assessment of the probability of developing breast cancer has been an attempt to better predict and revise the existing risk prediction models for breast cancer, which have been shown to be unsatisfactory (18–20). The new approach to breast cancer risk assessment, by including parity in the model and excluding most of the reproductive factors in the previous risk assessment models, and by employing the Bayes' probability principles, seems to have yielded more realistic predictions, at somewhat higher risk assessments, in percentages, than the assessed risk levels of the existing models.

The existing breast cancer risk models, including the NCI-Gail model, which are based on the so-called "known" breast cancer risk factors, such as menarche, age at first birth, parity, OC pills, diet, physical activity, age at menopause, number of breast biopsies, family history, ethnicity (race), age and other, have been challenged. The limited risk factors, on which the existing models are based, are deemed as "weak risk factors". The commonest prediction of the risk assessment models have been that "all women are at risk of breast cancer", which seems a patently incorrect assessment. The risk assessment equations still serve mainly for identification and recruitment of women at presumed 'elevated' or 'high' risk of breast cancer for both participation in therapeutic randomized clinical trials (RCTs), and assessment of another clinical strategy of "prophylactic" mastectomy and other heavy surgical interventions. Also, assessments of the disease risks were used as cut-off points in community chemo-prevention trials (with Tamoxifen and other chemicals) to (unsuc-

cessfully) halt the breast cancer epidemic in many European countries and the United States, before 2001.

Whether the new approach and the achieved results of higher risk percentages reflect, inform and predict the real breast cancer incidence in American women needs verification, though. As already emphasized, a weakness of the presented breast cancer risk percent results might be the detail that the equation of the variables neither discriminates nor incorporates a ʿdensityʾ factor of the events, in terms of ʿtimingʾ of the exposure, or the risk, in the ʿyoungerʾ or ʿolderʾ age of a woman. As it was indicated, the expression of the highest increase of the breast cancer risk assessment was found in the initial contraceptive (condom) users, that is, the young age groups of 20–29 years of age. On the other hand, while it was assumed that persistent condom use is significantly associated with the risk of developing breast cancer (perhaps up to 100 percent), the historical evidence suggests that there is no zero risk of breast cancer in women.

After the menopause, empirically assigned at the age of 54, the 'lifetime risk' risk assessments of breast cancer in postmenopausal women might not be very accurate because of nonexistent current reproduction and contraception concerns, burdened by other unknown or harmful risk factors such as HRT (hormone replacement therapy), osteoporosis management, fractures, and other health interventions. On the other hand, the breast cancer risk assessment perhaps cannot be extended to girls and other young women of teenage period (15–19 years of age) either. The age-specific rate of breast cancer in girls below 19 years of age is practically zero, and the fact that the teenage period of adolescence is usually dominated by other burdens, such as anorexia / bulimia disorders, conveniently called ʿeating-disordersʾ behavior.

The flawed instrument for risk assessment computation, incorporating in the equation the so-called "known" risk factors of breast cancer, is certain to produce ineffective and futile guidelines for further protective or clinical interventions. Furthermore, the same flawed instrument is being used in assessing the risk probability of developing ovarian cancer as well [21], giving consequent poor clinical risk assessment, absent early-detection strategy, and non-existent preventive policy. The incorporation of the exposure to (use of) barrier methods of contraception (condom devices and withdrawal practice) in the breast cancer risk assessment calculation tools, as presented in this study, may offer a better model that both reflects and predicts the risk of developing the disease to a personal level, as expected [9, 10].

Although most women seem to be attached to one contraceptive method, including the condom, changes in family-planning practice are quite possible and are to be expected and encouraged The changes in this regard seem to occur spontaneously, either because of discomfort or feelings of harm, so-

matic diseases of the reproductive system, ill health, or because of being chosen as modern and 'safe' family-planning device / method by persuasion.

The highest increase in the estimated risk of breast cancer in the younger age groups of women, particularly at 25–29 years of age (Table 4), seems to lend support to the observed "debut peaks" due to the early exposure to condomized sex relations. The age-specific incidence rates of the "debut peak" phenomenon, meaning a first peak of highest rate before the postmenopausal rates, was rarely recorded, if at all, before the current breast cancer epidemic. The "debut peak," similar but not the same as the 'Clemmesen's hook' at the age of menopause, according to the older literature of breast cancer, may indicate both the early age of (young) women at an initial, or highest, use of condom devices, and the later, or rare condom use, of (older) women (during the first half of the 20th Century), respectively. Nowadays, the 'debut peaks' have been observed in many countries of the developing world [8], and are being observed worldwide, in the U.S. Japanese, Filipino, Chinese, and Korean women of Los Angeles, California.

To conclude, the instrument of breast cancer risk assessment, based on the so-called "known" risk factors, seems incorrect and utterly biased, because of the omission of the main and perhaps the most important sole risk factor of the current breast cancer epidemic, the (marital and other) condomization of women's sexuality in the mainstream population(s) for fertility-control and family-planning purposes. Against the backdrop of the current breast cancer crisis, a new approach to breast cancer risk assessment, until the age of menopause (assigned empirically at 50–54 years), was attempted by the inclusion of exposure to the male fertility factor, and its barriers, i.e. the condom factor. The new approach included four only breast cancer related risk factors: (i) the use and duration of barrier contraceptives (condom use and/or withdrawal practice) in marriages (in months and years), parity up to eight along with short-term breast-feeding, age (from 20 to 54), and age-specific incidence rates of breast cancer in the United States female population. By employing the Bayes theorem, the assessed breast cancer risk percent showed elevated risks for women who have been consistently exposed to sterile mating (use of condoms) in marriages.

As the result and the episodes of the community-based "chemo-prevention" campaigns (with Tamoxifen and other drugs/chemicals) against breast cancer as an epidemic disease showed, focusing for success on primary, non-chemical prevention of the current, excess breast cancer epidemic, may prove to be a better health-care policy. That is, to reduce the current, excess breast cancer epidemic to levels of sporadic cases, by elimination of the main etiologic risk factor of the malignant disease(s), the condom device, and its replacement with other, non-barrier methods for contraceptive purposes in the

mainstream population of the United States and beyond [10, 22, 23]. The tested evidence of the potential for primary, natural and sustainable prevention of breast cancer at personal, familial and community levels may prove to be necessary to first shift the prevailing, barren conceptual framework into the realms of new paradigms of breast cancer etiology and risk-factor epidemiology.

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Appendix 1

Bayes Theorem (for exposed population):

$$P(D|S) = \frac{P(D) \times P(S\,|\,D)}{P(D) \times P(S\,|\,D) + P(D^-) \times P(S\,|\,D^-)}$$

P(D⎸S) denotes the lifetime probability of developing disease (breast cancer) given the proportion of exposure to barrier contraceptive methods or tested causal factor in affected cases (with breast cancer).

P(D) is the estimated probability of developing the disease (breast cancer) in the lifetime of an individual (woman) in the general population (defined / quantified in another, descriptive, or comparative population-based study or report.

P(D⁻) = 1 - P(D).

P(S⎸D) denotes the proportion of exposure time (in percentages) to the tested causal factor (condoms) in affected individuals (women with breast cancer) (*true positives*).

P(S⎸D⁻) = 1- P(S⎸D) > proportion of non-exposure time to tested causal factor (*false positives*).

Appendix 1

Racial different of breast cancer incidence rates per 100,000 women, in the U.S., 1998–2002.

	Crude rates	Age-adjusted* rates
White women	129.6	90.7
Black	81.1	79.3
Hispanic	59.7	61.3
Chinese, LA,	42.8	36.8
Japanese	94.8	63.0
Filipino	82.2	69.3
Korean	25.8	21.4

*According to the WHO-IARC, World Standard Population, 1960.

Source (8): WHO-IARC, "Cancer Incidence in Five Continents, VII Edition" 1997, Lyon, France

Р е з и м е

ПРОЦЕНА НА РИЗИКОТ ЗА РАК НА ДОЈКАТА СО ИЗЛОЖЕНОСТ КОН БАРИЕРНАТА КОНТРАЦЕПЦИЈА. НОВ ПРИОД

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А п с т р а к т: Моделите за предвидување на ракот на дојката се покажаа незадоволувачки. Постојните модели за процена на ризикот пропуштија да ја земат во разгледување (и пресметување) изложеноста кон употребата на кондомите, како значаен фактор на ризик за рак на дојката. Сите постојни модели, вклучувајќи го и NCI-Gail моделот, се базирани на таканаречените „познати" ризик-фактори на ракот на дојката, како што се: менарха, возраст при првиот пород, број на живородени деца (parity), употреба на орални контрацептивни пилули, возраст при менопауза, број на биопсии на дојката, фамилијарна историја, раса и етницитет, возраст и други. Најчестото предвидување во моделите беше заклучокот дека „сите жени се со ризик за рак на дојката", на кое се гледа како на неточна процена. Процените за ризик служеа и служат за идентификација и регрутирање на жените со „покачен ризик" на рак на дојка за две намери, за учество во терапевтските, рандомизирани клинички опити (RCT), како и за процена за можната примена на клиничка политика за „профилактична" мастектомија и на други предвремени хируршки интервенции. Меѓутоа, премисите на моделите за процена на ризикот од рак на дојка од неодамна го покренаа прашањето за нивната подобност и практична полза, меѓу другото и поради употребата на „слаби" и неадекватни ризик-фактори за болеста. Оваа студија ги презентира резултатите од новиот пристап и алтернативен модел на процентите за ризик од рак на дојка, со пресменување на експонираноста кон бариерната контрацептивна практика (употреба на кондоми и практика на koitus interuptus), покрај факторите на бројот на живородени деца (parity), возраста, и другите (не-бариерни) методи за контрола на породите, во 5-годишни периоди во репродуктивниот период од 20–54 години од животот на жената, со примена на теоремата за веројатност на Бајес.

Клучни зборови: рак на дојка, процена на ризик, нов приод, теорема на Бајес, кондом, ризик-фактори, примарна превенција.

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