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Sanitary Product Use by White, Black, and Mexican American Women

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Synopsis

In 1988-89, the use of menstrual sanitary products was surveyed among 699 white, 477 black, and 425 Mexican American women to detect age and racial or ethnic differences in product use that might explain the differences in the incidence of toxic shock syndrome (TSS) in these demographic categories. Forty percent of the women had never used tampons. Significantly more

whites used tampons alone (26 percent) or with pads (36 percent) than did blacks. Proportionately more blacks used tampons alone (16 percent) or with pads (27 percent) compared with Mexican Americans, 11 percent of whom used tampons alone and 21 percent of whom used tampons and pads. Since a substantial proportion of black women used tampons, racial-ethnic variations in use patterns alone cannot completely explain the low incidence of TSS among black women.

Tampon use started in the early teen years, but women in the age group 20-29 had the highest frequency of use of tampons either alone (26 percent) or with pads (33 percent). These percentages suggest that age-related differences in product use may not explain the age-related differences in the incidence of TSS. Fear was the most common specific reason for not using tampons in response to information about TSS. Decreased use of tampons in response to information about TSS was reported by 39 percent of whites, 50 percent of blacks, 46 percent of Mexican Americans, and by 36 percent of women less than 19 years, 41 percent of 20-29-year-olds, and 47 percent of women 30 years and older.

IN NOVEMBER 1978, Todd and coworkers reported a severe acute disease in children whose symptoms included fever, rash, vomiting, diarrhea, sore throat, headache, and myalgias, and in severe cases, hypotensive shock. They called this condition toxic shock syndrome (TSS) (1). In subsequent years, TSS was reported to occur mainly among young, white women who used tampons during menses. TSS had been reported rarely in nonwhite women, and it occurred most frequently in teenagers and young adult women (2). The syndrome was most commonly caused by genital infection with a specific strain of *Staphylococcus aureus*, which produced a specific exotoxin known as toxic shock syndrome toxin 1, (TSST-1). However, other toxins, agents, and microbial products (such as endotoxin of gram negative bacilli) may be involved. These toxins probably cause a cascade of events involving monokines, lymphokines, prostaglandins, and other endogenous toxic products to produce the clinical syndrome (3).

As research into TSS continued, and it became clear that vaginal tampons played a significant role in the pathogenesis of TSS, investigators realized that little was known about the use of sanitary products during menses. In January 1981, it was reported that 70 percent of women in the United States used tampons (4). These data were obtained in telephone interviews of manufacturers conducted in July 1980. No actual data on use were presented. It was further reported that, by November–December 1980, tampon use had dropped to 55 percent. In June 1982, a study of tampon use was reported by Gustafson and coworkers (5), who demonstrated that age and racial differences in tampon use could explain the age and racial differences in the incidence of TSS.

Our study was done to detect age and racial-ethnic differences in product use that might explain the age and racial ethnic differences in the incidence of TSS. It confirms differences in use of sanitary products among white and black women of various ages and adds data on the use of sanitary products by Mexican American women. It fails, however, to provide an explanation for age and racial-ethnic differences in TSS based on differences in usage by the various groups.

Method

An eight-item questionnaire was responded to by 1,601 women of menstruating age who personally sought care or brought their child for care to a pediatric outpatient department of the University of Texas Medical Branch. The refusal rate was less than 5 percent. The sample was composed primarily of women from

low socioeconomic backgrounds, but information about their exact socioeconomic status was not obtained. Sampling was done by quotas to obtain adequate numbers in the three racial-ethnic groups. We had less than 400 Mexican American subjects with ordinary sampling, so we recruited Mexican American women until we had at least 400 in that group. The questions asked were

- age,
- racial ethnic group,
- age of menarche,
- current use of sanitary products,
- lifetime use of tampons,
- reasons for nonuse of tampons,
- age of first use of tampons, and
- effect of information about TSS on current use of tampons.

Although this was a quota and convenience, and not a random sample, univariate statistical analyses (chi-square and the *t*-statistic) were performed. Verbal consent was obtained from all subjects, as required by the Institutional Review Board.

The study was conducted from January 1988 to December 1989. Hypotheses to be tested were (a) a larger proportion of younger women would use tampons than older women, (b) a larger proportion of white women would use tampons than black women, a larger proportion of whom would use tampons than Mexican American women, (c) information about TSS would cause all women to decrease their use of tampons, (d) fear would be the most common cause for nonuse of tampons.

Results

The age and racial-ethnic distribution of our sample is shown in table 1. There were no significant differences in the age distribution among whites, blacks, and Mexican Americans. Some of the women were menopausal or had had hysterectomies, so the totals for frequencies in other variables (such as current use of products) may not add to the totals in table 1.

Age of menarche was 12.73 ± 1.88 for whites (mean \pm standard deviation), 12.39 ± 1.72 for blacks, and 12.40 ± 1.66 for Mexican Americans. The differences were not significant.

Use of sanitary products, at the time of the study, by race is shown in table 2. Twenty-six percent of whites, 16 percent of blacks, and 11 percent of Mexican Americans used only tampons during menses. Thirty-six percent of whites, 27 percent of blacks, and 21 percent of

Table 1. Characteristics of sample by racial-ethnic group and age

Age group (years)	White	Black	Mexican American	Total
10-14	51	31	31	113
15-19	95	86	72	253
20-29	259	187	154	600
30-39	184	116	119	419
40 and older	110	57	49	216
Total	699	477	425	1,601

Table 2. Current use of sanitary products by racial-ethnic group, 1988-89

Product used	White		Blacks		Mexican American	
	Number	Percent	Number	Percent	Number	Percent
Tampons only	178	25.9	75	16.1	44	10.7
Pads only	259	37.8	265	56.9	280	68.3
Both	249	36.3	126	27.0	86	21.0
Total	686	...	466	...	410	...

Table 3. Current use of sanitary products by age group (years), 1988-89

Product use	10-14		15-19		20-29		30-39		40 and older	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Tampons only	17	10.1	41	15.8	158	26.1	69	16.4	21	10.3
Pads only	122	72.6	138	53.3	250	41.3	221	52.6	129	63.2
Both	29	17.3	80	30.9	198	32.7	130	31.0	54	26.5
Total	168	...	259	...	606	...	420	...	204	...

NOTE: The age group totals differ among these tables because not all subjects answered all questions, and some responded to more than one category.

Mexican Americans used tampons and pads during menses. Thirty-eight percent of white, 57 percent of black, and 68 percent of Mexican American women used pads only. These differences between racial-ethnic groups in all three categories of sanitary product use are highly significant ($P < .001$).

The use of sanitary products by age is shown in table 3. There were significantly ($P < .001$) fewer users of tampons either as the only method or with pads and significantly more users of pads alone among those ages 10 through 19 years. Use of tampons as the only method or in conjunction with pads peaked at ages 20-29 years. Use of pads alone was greatest at ages less than 15 years, and at ages 40 and older.

When use of a method is controlled, significant differences in current use by racial-ethnic group and age appear only for those who used pads alone (table 4). In the 10-14 age range, a significant proportion of whites (46 percent) used pads alone compared with the other groups ($P < .001$). Between 15 and 19 years, blacks and Mexican Americans used pads alone significantly more than whites (24 percent; $P < .05$). This difference was maintained through age 29; after that age, a significantly greater proportion of Mexican Americans ($P < .05$) than blacks and whites used only pads. At age 40 or older, the pattern of pad use was the same as in the 10-14-year group.

For those women who had ever used tampons, the first use occurred before age 15 in 89 percent of whites, 88 percent of blacks, and 95 percent of Mexican Americans. Use of tampons at some point in their life was reported by 87 percent of the whites, 88 percent of the blacks, and 86 percent of the Mexican Americans. Of

Table 4. Use of pads only by age and racial-ethnic group, 1988-89

Age (years)	White		Black		Mexican American	
	Number	Percent	Number	Percent	Number	Percent
10-14	40	45.9	23	26.5	24	27.6
15-19	32	23.7	56	41.4	47	34.9
20-29	70	28.9	85	35.1	87	36.0
30-39	63	29.6	64	30.0	86	40.4
40 or older	54	42.5	37	29.1	36	28.4
Total	259	...	265	...	280	...

Table 5. Distribution of 633 nonusers of tampons by age and racial-ethnic group

Age and racial-ethnic group	Number of nonusers	Percent of all nonusers	Percent of racial-ethnic group
19 years and younger, total	179	99.1	128.3
White	65	36.3	30.5
Black	56	31.3	28.7
Mexican American	58	32.4	25.8
20-29 years, total	201	97.1	131.8
White	55	27.4	25.8
Black	68	33.8	34.9
Mexican American	76	34.9	34.7
30-39 years, total	150	99.9	123.7
White	47	31.3	22.1
Black	41	27.3	21.0
Mexican American	62	41.3	27.6
40 and older years, total	103	100.0	116.3
White	46	44.7	21.6
Black	30	29.1	15.4
Mexican American	27	26.2	12.0
Grand total:			
White	213	33.6	...
Black	195	30.8	...
Mexican American	225	35.5	...

¹Within the specific age group.

Table 6. Reasons for nonuse of tampons by race, 1988–89

Reason for nonuse	White		Blacks		Mexican American	
	Number	Percent	Number	Percent	Number	Percent
I'm single	4	1.6	20	7.8	15	14.4
I'm not old enough	16	6.3	9	3.5	6	2.2
I'm afraid	44	17.3	89	34.6	96	35.7
Toxic shock syndrome	43	16.9	27	10.5	31	11.5
Other	147	57.8	112	43.6	121	44.9
Total	254	...	257	...	269	...

Table 7. Reasons for nonuse of tampons by age (years), 1988–89

Reason for nonuse	10–14		15–19		20–29		30–39		40 and older	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
I'm single	15	11.7	8	5.9	14	5.9	5	2.5	4	3.0
I'm not old enough	22	17.2	6	4.4	3	1.3	3	1.5	1	0.75
I'm afraid	51	39.8	59	43.4	69	29.0	49	24.3	22	16.4
Toxic shock syndrome	6	4.7	13	9.6	34	14.3	39	19.3	14	10.4
Other	34	26.6	50	36.8	118	49.6	106	52.5	93	69.4
Total	128	...	136	...	238	...	202	...	134	...

Table 8. Change in use of tampons based on knowledge of toxic shock syndrome by racial-ethnic group

Change in use	White		Blacks		Mexican American	
	Number	Percent	Number	Percent	Number	Percent
Increase	9	1.6	19	6.0	11	5.2
Decrease	211	38.6	159	49.8	97	45.8
No change	326	59.8	141	44.2	104	49.0
Total	546	...	319	...	212	...

those who had used tampons at some point in their life, 28 percent were currently age 19 or younger, 32 percent were 20–29, 24 percent were 30–39, and 16 percent were older than 40. These differences are not significant.

Of the women, 39.5 percent had never used tampons. Of these (table 5), 34 percent were white, 31 percent were black, and 36 percent were Mexican American. These differences are not significant. For those who had never used tampons, 28 percent were currently younger than 19 years, 32 percent were 20–29 years, 24 percent were 30–39 years, and 16 percent were 40 or older. There are no significant differences.

The questionnaire listed the following reasons for never having used tampons: "I'm not married," "I'm not old enough," "I'm afraid," "I might get TSS," and "other." The most common reason was "other" accounting for between 57.8 percent (whites) to 43.6 percent (blacks). The reason "I'm afraid" ranked next in importance followed by fear of TSS (table 6).

There were also differences in reasons for not ever using tampons according to age. These data are shown in table 7. "I'm afraid" was the most common reason for those under age 19. The proportion of respondents in this category decreased with increasing age. The next largest category was "other," which was lowest (27 percent) in the less than 15-year age group and was highest (69 percent) in the 40 and older age group. Fear of TSS was lowest (5 percent) in the youngest group and highest (19 percent) in the 30–39 years group.

Information about TSS caused a significant decrease in use of tampons in all racial-ethnic groups. However, significantly greater proportions of blacks and Mexican Americans than whites decreased use ($P < .001$, table 8). Information about TSS was also associated with a significant decrease ($P < .002$) in use of tampons with increasing age (table 9) up to age 40 and older. This was determined using a general chi-square test and a test for trend. In both analyses, between 35 and 51 percent of women decreased tampon use in response to information about the risks of TSS.

Discussion

At the time of this study, a significant proportion of white women (62 percent) used tampons either as their only method or with pads compared with black women (43 percent) and Mexican American women (32 percent). The difference is less than that reported by Gustafson and coworkers (5)—85 percent for white women and 50 percent for black women. These dif-

Table 9. Change in use of tampons based on knowledge of toxic shock syndrome by age (years)

Change in use	10-14		15-19		20-29		30-39		40 and older	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Increase	6	8.1	9	5.6	16	3.2	8	2.7	4	4.2
Decrease	26	35.1	59	36.4	209	41.4	151	51.4	41	43.2
No change	42	56.8	94	58.0	280	55.4	135	45.9	50	52.6
Total	74	...	162	...	505	...	294	...	95	...

ferences in tampon use by the different racial-ethnic groups may explain why TSS is reported more frequently among whites and almost not at all among blacks (2). However, 43 percent of black women did report using tampons, and 16 percent reported tampon use as their only method. It would seem highly unlikely that this somewhat lower use of tampons by blacks would be the only explanation for the paucity of cases of TSS in blacks. Other explanations might include differences in reporting by health care providers for blacks and whites and differences in making the diagnosis for blacks and whites.

It may be more difficult to see the rash on patients with darkly pigmented skin, and thus one of the major criteria may be missed (2). However, there may be other differences between black and white women that would account for the difference in incidence. Other risk factors for TSS such as marital status, parity, contraceptive methods used, frequency of sexual intercourse, frequency of sexual intercourse during menstruation have been eliminated (6), but it is not clear if these factors have been examined separately for black women. The hypothesis that a significant proportion of white women would use tampons compared with black women and Mexican American women was substantiated.

We found, as did Gustafson, that use of tampons peaked in the age range of the twenties. Thereafter, use of tampons declined and the use of pads increased. Of those who used tampons at some point in their life, 88-95 percent tried them for the first time before age 15. Whisnant and coworkers (7) reported that girls who used tampons began use within a "year or two" after menarche. For those women who currently used tampons, or who used both tampons and pads, there were no significant differences in use related to either age or racial-ethnic group. However, for those women who currently used pads only, there were both age related and racial-ethnic differences. Pads alone were used by a significant proportion of whites until age 15 when a larger percentage of blacks used them. From ages 20 to 39, large proportions of Mexican American women, compared with the other two groups, used pads alone. After age 40, a greater proportion of whites used pads alone than did the other groups. The hypothesis that

more women under 20 years would use tampons than older women can be rejected (table 4). This finding is not consistent with the hypothesis that women in this age range have the highest incidence of TSS because they use tampons more frequently than women in the other age groups.

Forty percent of this sample have never used tampons and 49-55 percent of women were not using tampons at the time of this study. In 1965, Wheatley and coworkers (8) reported that 32.3 percent of 903 women in their practice used only tampons, 49.5 percent used only pads, and 18.2 percent used both. Thus, there seems to be a decrease in the use of pads as the sole method of protection over time.

Industry has reported figures of 30 percent for lifetime nonuse of tampons and 45 percent for current nonuse in 1981 (4). The differences between these statistics and the ones in this report are small and, if real, may be due to the decrease in use of tampons after the publicity generated by the media coverage of TSS and its relation to tampon use as well as by the package inserts in tampon products that warn about the increased risk for TSS among users of tampons. A substantial decrease (35.1-51.4 percent) in use of tampons was found in this sample, which seems to be associated with information related to TSS. These declines in tampon use are similar to the decreases reported by Gustafson and coworkers (5), which ranged from 30 to 44 percent. In this sample, 50 percent of blacks decreased use, while in Gustafson's sample 39 percent of younger and 44 percent of older blacks decreased tampon use. In Gustafson's series, 30 percent younger and 37 percent of older white women decreased use in response to information about TSS. For our respondents, there was a significant trend of decreasing tampon use related to TSS from 35 percent for women below age 14 to 51 percent for women ages 30-39 years. It would seem that the proportion of women who decreased use of tampons because of the risk of TSS is about the same today as it was in 1980-81 (5). This confirms the hypothesis that information about TSS would cause women to decrease their use of tampons.

This paper is the first report on product use by Mexican American women. Significantly fewer Mexican American women than the other groups cur-

rently use tampons either as the only method (11 percent) or with pads (21 percent). However, they were no different in age at first use of tampons (less than 15 years), lifetime use of tampons (86 percent), nor are they overrepresented among those who had never used tampons (36 percent). They are significantly more likely (14 percent) to not use tampons because of being unmarried than either black or white women. This confirms the hypothesis that this group would use tampons less frequently than other women.

Thus, age-related use of tampons does not explain the higher incidence of TSS in younger women, and differences in racial-ethnic use of tampons seem insufficient to explain the rarity of TSS among black women.

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AIDS-Related Knowledge, Attitudes, and Precautionary Behaviors Among Emergency Medical Professionals

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Synopsis

AIDS-related knowledge, attitudes, and precautionary behaviors were assessed among a random sample

of Michigan-licensed emergency medical service (EMS) professionals between June and August 1988. Of 2,000 mailed questionnaires, 1,020 were returned (51 percent response), and 997 of the returned questionnaires were used in the final analysis.

Survey results indicated that most respondents were able to correctly identify the transmission routes of the human immunodeficiency virus (HIV), but many respondents had misconceptions about nonviable routes, the incidence of HIV infection among health care workers, and some aspects of the natural history of HIV. More than half of the respondents (56.6 percent) believed that their chances of becoming infected with HIV were "somewhat high" or "very high," although the number of documented HIV seroconversions due to occupational HIV exposures in health care settings is low. Although only six respondents (0.6 percent) reported that they had refused treatment to patients known or suspected to be infected with HIV, 25 percent felt that EMS professionals should be allowed to refuse treatment under such circumstances.

Potential exposures to HIV were assessed through respondents' reports of three activities in the 6 months prior to the survey. For each activity, use of universal precautions recommended by the Centers for Disease Control was also assessed. In general, few respondents reported the consistent use of precautions. While the majority of those attempting resuscitations (86.9 percent) reported that they always use a protective device, only 36.7 percent of those treating bleeding patients reported that they always wear gloves, and only 21.9