Survey of Beliefs About Cancer Detection and Taking Papanicolaou Tests

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ALTHOUGH methods for preventing, detecting, or ameliorating disease in its early stages have long been sought by the health professions and the general population, there is typically a gap between medical discovery and public response. Such has been the history of public acceptance of the Papanicolaou test for detecting cervical cancer. Here is a situation in which the health professions have a procedure that is efficient and effective in detecting a disease which may be cured if treated in the early stages but fatal if allowed to continue untreated. Yet, while data collected over the years under the auspices of the American Cancer Society have revealed increasing use of the Papanicolaou smear since the first demonstrations indicated its usefulness, it is obvious that many women of the nation do not obtain the tests.

On the basis of our data, the current practice of private physicians of giving cervical examinations to women when they visit for reasons unrelated to cancer seems unlikely to increase greatly the number of women who obtain these tests. Instead, a public education program needs to be developed that will emphasize the efficacy of cervical tests and the potential benefits of early detection and treatment of cervical cancer.

Further, our data will demonstrate that the high-risk populations in cervical cancer—the less educated, those with lower incomes, the nonwhite—are the very groups that are least aware of the efficacy and benefits of cervical tests and obtain the fewest cervical examinations.

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Status of Cervical Testing

Interviews requesting information of women about cervical tests can provide only rough estimates of the true proportion that have obtained tests in the population. Two such estimates from Alameda County (*1*) and San Diego City (*2*), Calif., have been provided recently. About 50 percent of the Alameda County women failed to report having had Papanicolaou smears even after the test was described for them. Thirty-eight percent of the women in San Diego failed to report having obtained Papanicolaou tests even though the test was named and although a major effort was made to have women tested in San Diego.

In both studies, more women in the 30- to 44-year age groups reported having obtained tests than any other age group. The smallest proportion of women who reported obtaining tests was in the group over 65 years of age. Far fewer women in the lower educational, occupational, and income groups reported cervical tests. Far fewer nonwhite women reported tests than white women. In both studies, most women reported that their tests had been obtained in the offices of private physicians while there for reasons other than cancer detection.

For this study, a national probability sample of 1,493 noninstitutionalized adults, 21 years old or over, of whom 884 (59 percent) were women, was interviewed during the summer of 1963 to throw light on the relations between certain of their beliefs and the particular health practices they followed. A series of research reports con-

cerned with these findings currently is being prepared (*3, 4*). The respondents were selected through a multistage probability sample by the Survey Research Center of the University of Michigan (*5*). Detailed information on the sampling methods of the center can be found elsewhere (*6*).

Included in the interview were questions concerning the actions of the respondent in regard to detecting or preventing cancer. The respondent was asked the following question about her behavior: Have you ever had any special tests or examinations for cancer, either at your doctor's office or at some other place? To answer affirmatively the respondent had to (*a*) recall that she had a test and (*b*) define the test as a special test or examination for cancer. Thus the knowledge of the respondent was tested by recall, rather than by recognition as in both the Alameda County and San Diego studies.

The Alameda County survey used the following question: There is a test for one kind of cancer in women called the Pap test, or Papanicolaou test. Sometimes it is called a vaginal cancer smear or Pap smear. The Pap test is made by taking a sample of cells from the female organ called the cervix. Have you heard of the Pap test or a test that fits this description? The San Diego study used the question: Do you know what a Papanicolaou cancer smear is used for? Thus both of these studies supplied their respondents the name of the test and the fact that the test was for cancer.

In our study, if the respondent answered "Yes" to the original question, she was then asked the following series of questions: What tests have you had? When did you take the (specific) test? How did you happen to go for the (specific) test at that time? Where did you go to have this test? How did you happen to go to (place mentioned) for the test?

In addition to these data, information was obtained on such demographic characteristics of each respondent as sex, age, race, income, marital status, education, and occupation. Information was also obtained on certain beliefs regarding cancer.

Reported Use of Test for Cancer

Almost 40 percent of the women interviewed in the current national study reported they had obtained at least one cervical test as a special examination for cancer. Almost 8 percent of the total sample, or about one-fifth of the women who reported having the tests, reported having more than one cervical test. Eighty-six percent of all cervical cytology tests were reported to have been obtained during the 3-year period from 1960 to 1963.

The responses from the Alameda County (*1*) and San Diego City (*2*) studies on the recognition questions showed higher percentages than our study for women who reportedly took cervical tests (50 and 72 percent), as would be expected. In addition, the frequency of repeat cervical tests reported by women (slightly more than 20 percent) in our national sample is much lower than the percentage of repeat tests reported in Alameda County (*1*) and San Diego City (*2*) (58 and 73 percent). The age

Table 1. Percent of 884 Negro and white women who reported having had one or more cervical tests for cancer, by age groups

Age group (years)	Total		White		Negro	
	Number interviewed	Percent who had test	Number interviewed	Percent who had test	Number interviewed	Percent who had test
21–34	230	38. 3	202	40. 1	24	25. 0
35–44	192	57. 2	172	60. 4	17	29. 4
45–54	148	43. 9	126	47. 6	20	15. 0
55–64	130	34. 6	121	35. 6	8	25. 0
65 and over	136	5. 9	120	6. 7	10	0
Total	[1] 836	37. 8	[1] 741	39. 9	[1] 79	20. 3

[1] 42 women could not be classified as having obtained tests, and 6 could not be classified by age; 8 could not be classified by race, and 8 were both nonwhite and non-Negro.

specific data of the women in our sample who obtained cervical tests is given in table 1. Forty-two women could not be classified as having obtained tests, and 6 could not be classified by age; 8 respondents could not be classified by race, and another 8 were both nonwhite and non-Negro.

The women who recalled having cervical tests for cancer most frequently were in the 35- to 44-year age group. Fewer of those in the groups 21 to 34 years old and 55 to 64 years old reported having tests, and almost none of those in the oldest group (65 and older) reported obtaining cervical tests. The Negro population in the national sample showed the same age trend for tests as the white population but at a consistently lower rate. The only category that deviated from this pattern was the 45- to 54-year-old Negro group, with a rate far below that for white women.

It is interesting to note that few of the women over 65 years of age reported obtaining cervical tests for cancer. Breslow and Hochstim (*1*) found similar results, although they partially discount the findings because of their small sample. However, according to the San Diego City study (*2*) and personal communication from Daniel Horn, chief of special projects, Cancer Control Branch, Public Health Service, about his national studies, most older women reported having no cervical tests. Since the older population was over 50 when the first publicity concerning cervical tests appeared and since this older population is known to expose itself infrequently to medical and health news in the mass media (*5*), this finding is not surprising.

Relations between education of women, family income, and occupation of head of household (three typical criteria of social class), and recall of a cervical test or examination for cancer are given in table 2. Forty-two women could not be classified as having obtained tests nor 6 for extent of education. Data were not obtained on income for 55 women.

One of the original occupational classifications used by the Survey Research Center was farmer and farm manager; this classification included both owners of large farms and workers on very small farms and could not be included in the scale of occupations we used. Therefore, 46 women whose husbands were classified as farmers could not be included in the occupational scale (table 2). Another 222 women were classified as student, widow, divorced, retired—none of which could be included as part of the occupational scale (table 2).

Table 2. Percent of 884 respondents obtaining one or more cervical tests for cancer, by education, total family income, and occupation of head of household

Status	Number interviewed	Percent who had test
Education [1]		
Total	836	
Some college and college completed	163	52.8
Completed high school	296	44.2
Some high school	165	32.8
Grade school or less	212	21.6
Income [1]		
Total	787	
$10,000 or more	121	63.6
$6,000 to $9,999	209	51.6
$3,000 to $5,999	262	32.9
Less than $3,000	195	15.9
Occupation [2]		
Total	574	
Professional and technical	100	54.0
Proprietors, managers	103	52.4
Clerical, sales, crattsmen, foremen	196	47.0
Operatives and semiskilled workers	82	39.0
Laborers, service workers	93	26.9

[1] 42 women could not be classified as having obtained tests, nor 6 for extent of education; data were not obtained on income for 55 women.

[2] 46 women whose husbands were classified as farmers could not be included in the occupational scale used. An additional 222 women were classified as students, widows, divorced, retired—none of which could be included in the occupational scale used.

As expected, the higher the woman's education, income, or occupational class, the more likely she was to report obtaining cervical cytology tests. These data are comparable with the Breslow-Hochstim data (*1*), the San Diego data (*2*), and the data on other health practices in the population. More married than unmarried women reported obtaining tests.

Almost 80 percent of all cervical tests were

obtained at the offices of private physicians. Only 5 percent were obtained at cancer detection or other clinics. Most of the tests were obtained as part of other procedures such as those during prenatal care or in routine physical examination. These data also are quite comparable with the Alameda County and San Diego reports.

Relation of Beliefs to Taking Tests

The data from the three separate studies are similar concerning the relation of demographic characteristics to taking the Papanicolaou test. They do not, however, shed much light on the factors that differentiated women who obtained tests and those who did not within the demographic groups. With the expectation that certain beliefs about cancer and cancer detection might help us to understand these differences, respondents were asked the following questions:

1. If you were to get cancer, how do you think you would find out you had it?
2. In your opinion, would (these) checkups show that a person had cancer before the person himself could notice that something was wrong?
3. In your own case, do you think you would find out from a doctor or a clinic that you had cancer before you know yourself that something was wrong?
4. If a person found that he had cancer, would it make any difference whether he started treatment immediately or waited 6 months to a year?

Women whose answers indicated a belief in professional judgment rather than in self-diagnosis of symptoms for discovering cancer and in the importance of early detection and treatment were classified as believing in the benefits of early detection. Those who answered any of the four questions in ways that indicated they could diagnose their own symptoms or that early treatment would make no difference were scored as not believing in the benefits of early detection.

It should be noted that these questions were not directed explicitly at cervical cancer. Instead, women answered the questions with regard to their general beliefs about the benefits of early detection for cancer. Thus a woman could have believed in the benefits of early detection of skin cancer but not in the benefits of early detection of cervical cancer. She might have thought of leukemia and decided that early detection was not relevant. Thus we expected a general correspondence and not a perfect relationship between beliefs in early professional detection and treatment and obtaining any available cancer screening test.

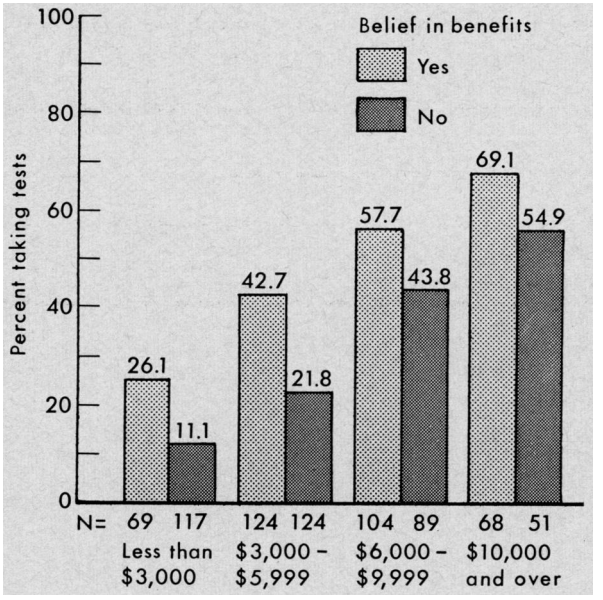
Of the 392 women who believed in the benefits of early detection, as defined, 48.2 percent, or 189, reported obtaining cervical tests. A large number (296, or 72.5 percent) of the 408 women who did not believe in the benefits of early detection failed to obtain cervical tests. However, 27.5 percent, or 112 of the 408 women, reported obtaining the tests. It is possible, although data are not available, that many of the 112 women went to the offices of physicians for other purposes but while there were given cervical tests and told they were tests for cancer.

Many health professionals believe it to be important that people take health actions on the basis of knowledge and understanding rather than on the basis of fortuitous circumstances. It is preferred that women obtain cervical tests because they believe such tests will help their prognosis rather than because a physician chooses to give them tests. But does having such knowledge and understanding make a practical difference in the number and type of women who have tests?

It is difficult to establish a causal relationship from information obtained retrospectively. Our data do seem to indicate, however, that women who believe in early detection behave differently from women without these beliefs. It has already been shown that women in higher socioeconomic status obtain a greater number of Papanicolaou tests (table 2). Figures 1, 2, and 3 indicate that women who believe in early detection obtain more cervical tests than women without these beliefs within all income (fig. 1), educational (fig. 2), and occupational groups (fig. 3).

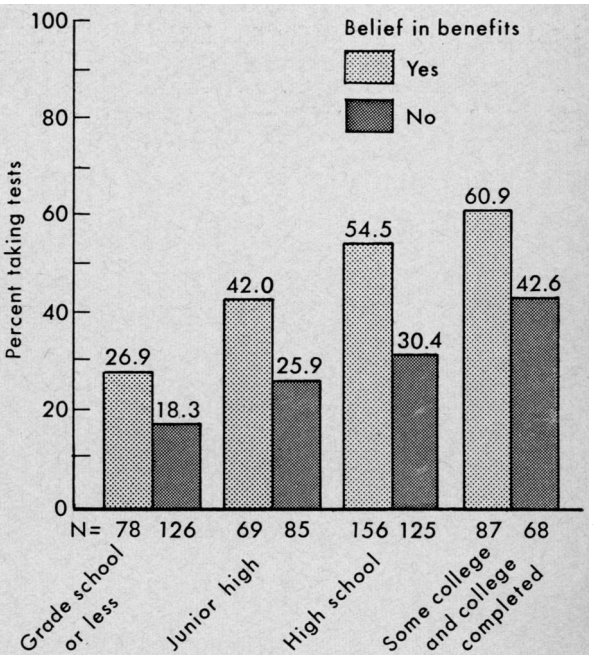
Thus there exists an independent relationship between belief in early detection and treatment and obtaining Papanicolaou tests as well as a relationship between socioeconomic status and obtaining such tests. Many women seem able

Figure 1. Percent of 884 respondents who reported having obtained at least one Papanicolaou test, by belief in benefits and income



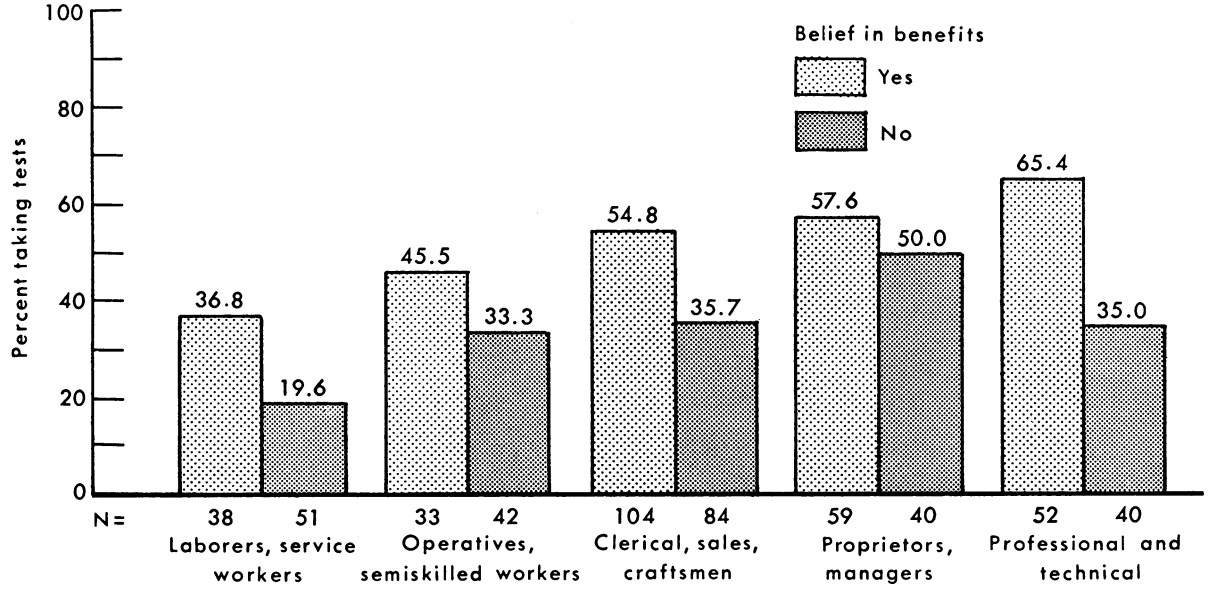
NOTE: Excludes 138 respondents: 42 for lack of data on tests, 42 for lack of data on beliefs, and 54 for lack of data on income.

Figure 2. Percent of 884 respondents who reported having obtained at least one Papanicolaou test, by belief in benefits and education



NOTE: Excludes 90 respondents: 42 for lack of data on tests, 42 for lack of data on beliefs, and 6 for lack of data on education.

Figure 3. Percent of 884 respondents who reported having obtained at least one Papanicolao test, by belief in benefits and occupations



NOTE: Excludes 341 respondents: 42 for lack of data on tests, 42 for lack of data on beliefs, 222 unclassifiable on occupational scale used, and 35 with husbands in a farmer category who could not be classified in scale used.

to recall having cervical tests without knowing that such tests were for the purpose of early detection of cervical cancer. It may be that the finding that more women in higher social strata report having obtained tests indicates only that such women make more frequent visits to physicians (7).

The parallel effects of belief and social characteristics on obtaining Papanicolaou tests is even more pronounced in figures 4, 5, and 6. As seen in table 1, a higher proportion of white women reported obtaining tests than Negro women. However, a higher percentage of white and nonwhite women with these beliefs reported obtaining tests than either group without these beliefs (fig. 4).

As stated, more married women reported obtaining tests than either single, widowed, or divorced women. However, when one adds the factor of belief in professional detection, it is seen that a higher proportion of single women who believed in early detection reported taking tests than the proportion of married or once-married women. For each group, a higher proportion of women with these beliefs reported obtaining tests than their counterparts. Although women who are widowed and those who are divorced might differ in their frequency of having cervical tests, the marital-status grouping used by the Survey Research Center combined widowed and divorced into a single category, and the two cannot now be separated (fig. 5).

More women in the 35- to 44-year age group reported obtaining tests than either the younger or older groups. However, a higher proportion of women 21 to 34, 45 to 54, and 55 to 64 years old with these beliefs reported taking tests than the proportion of women without these beliefs who were 35 to 44 years old (fig. 6). Within each age group, a higher proportion of women with beliefs in early detection reported obtaining cervical tests than those without beliefs. Thus the relationship between belief in benefits and obtaining Papanicolaou tests cannot be explained entirely by differences in social characteristics, and the relationship between social characteristics and obtaining tests cannot be explained entirely by the belief in benefits. Instead the two sets of factors together account best for those who have obtained tests.

Discussion

Despite the availability of a test procedure that is efficient and effective in detecting cancer, we have indicated that many women in the United States have not yet obtained cervical smears, and other women who might actually have obtained tests either do not know they obtained the test or have not understood that the examination was a test for cancer. In addition, we noted, most women who recalled obtaining a cervical test recalled obtaining it only once rather than on a periodic basis.

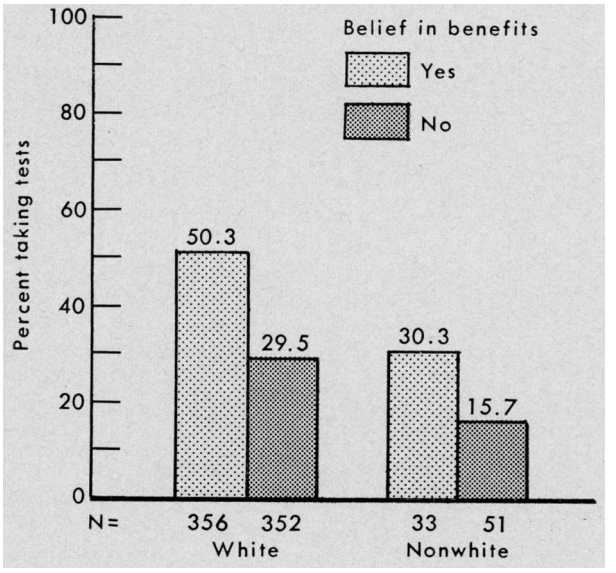
How can we account for these data? To date cervical smears have been taken mainly by private physicians in their offices, and the tests have been included in a set of procedures that were unrelated to cancer detection.

The use of this method for detecting cancer is effective only if (*a*) physicians' offices are visited periodically for examinations, (*b*) physicians who are visited routinely take cervical tests of women, and (*c*) the entire population of women visit physicians' offices for the tests. There is evidence that these conditions are not met. Many physicians do not routinely take cervical smears of their patients. Furthermore, the less educated and those in the lower income and lower occupational groups do not visit physicians' offices frequently.

Our data and those from San Diego and Alameda County show that the lower socioeconomic groups less frequently recall obtaining cervical tests for cancer. It seems logical to say, then, that these data indicate the current activity concerned with cervical cytology is inadequate.

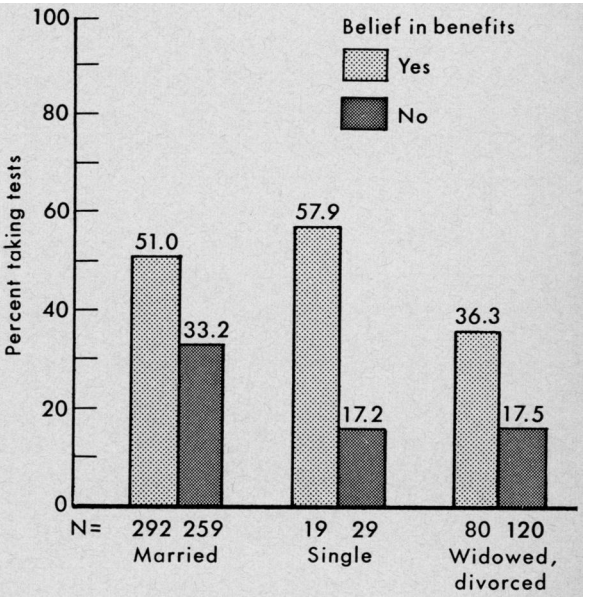
At the same time, within every one of these demographic groupings, the women who believed that professional diagnosis is a more effective method than self-diagnosis for detecting cancer and that early detection makes a real difference in the prognosis obtained more cervical tests than the women who did not have these beliefs. Unfortunately, the present data do not allow the conclusion that the women held these beliefs before obtaining cervical tests. While some women may actually have sought cervical tests or visited physicians who they knew would give cervical tests as a part of their normal office procedures, it is also possible that as many women acquired their beliefs only after having the

Figure 4. Percent of 884 respondents who reported having obtained at least one Papanicolaou test, by belief in benefits and race



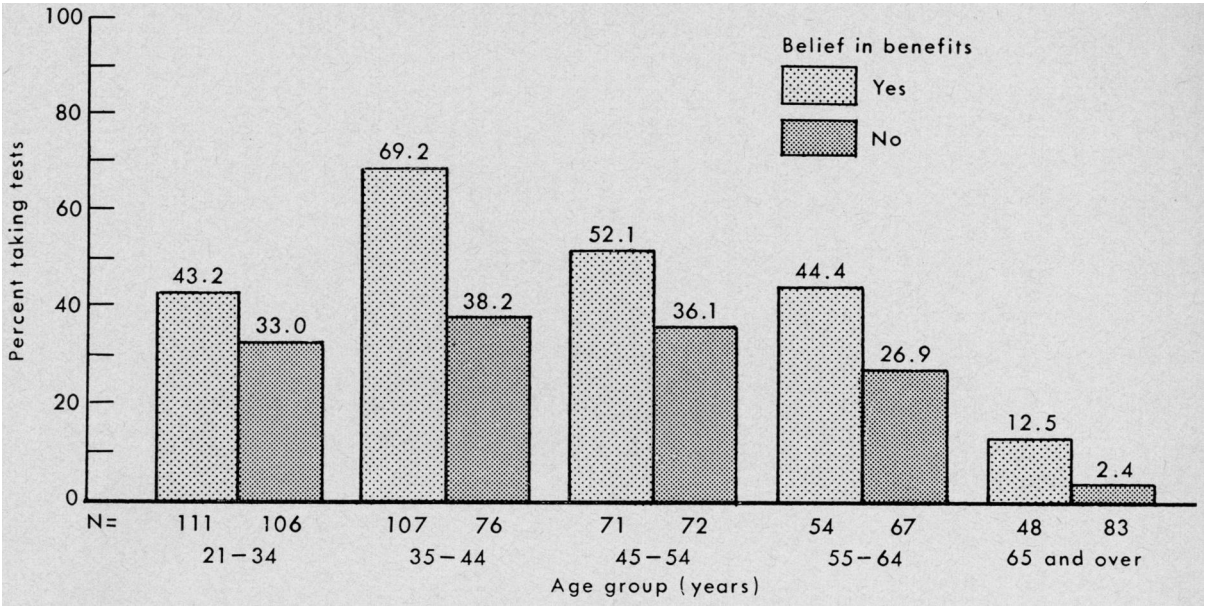
NOTE: Excludes 92 respondents: 42 for lack of data on tests, 42 for lack of data on beliefs, and 8 for lack of data on race.

Figure 5. Percent of 884 respondents who reported having obtained at least one Papanicolaou test, by belief in benefits and marital status



NOTE: Excludes 85 respondents: 42 for lack of data on tests, 42 for lack of data on beliefs, and 1 for lack of data on marital status.

Figure 6. Percent of 884 respondents who reported having obtained at least one Papanicolaou test, by belief in benefits and age



NOTE: Excludes 89 respondents: 42 for lack of data on tests, 42 for lack of data on beliefs, and 5 for lack of data on age.

test. Either way, whether their beliefs led the women to seek the tests or whether their beliefs were acquired as a result of being tested under specific circumstances, these beliefs seem particularly relevant to obtaining cervical tests.

It seems quite likely that most women without these beliefs would not purposively obtain periodic cervical tests. As soon as they failed to have other reasons for seeing their physicians (for instance, having completed their families), they would be unlikely to obtain the tests.

A study reported by Hochbaum (*8*) has particular relevance to our data. Hochbaum divided into two groups the respondents who obtained prior compulsory X-rays. The respondents of one group had obtained their original compulsory X-rays under conditions incidental to the detection of tuberculosis. The respondents of the second group obtained their compulsory X-rays within the context of an explicit educational program. A much higher proportion of persons from the educational group than the incidental group had subsequent voluntary X-rays.

The action implications of these data seem quite clear. It seems essential to imbed cervical cytology tests within an educational context during the occasions when women visit physicians and clinics. Physicians need to take cervical smears and to tell women why they are making the tests, how frequently the tests should be obtained, and the benefits of early detection.

The physicians may decide to keep from their patients the fact that they have collected cervical smears to forestall undue anxiety about cervical cancer. However, an explanation that the routine Papanicolaou tests are extremely important and beneficial should produce an awareness and effective concern rather than paralyzing anxiety.

Physicians also may fail either to take smears or to advocate Papanicolaou tests because they believe that current virological investigations may show cancer to be a generalized bodily infection that is merely manifested at a particular local site. However, the bulk of professional opinion in public health would seem to suggest that early detection with Papanicolaou tests is considered to be an effective procedure.

It seems likely that the sizable group of women in our survey who believed that professional judgment about the detection of cancer is more important than personal judgment on the basis of self-diagnosed symptoms and that early detection of cancer would make a difference in their prognosis, but who did not obtain cervical tests, just did not happen to visit physicians' offices where cervical tests were given. The data do not indicate whether failure to obtain tests was based on lack of knowledge about the test, lack of finances, or time.

It would seem essential that many more physicians be induced to routinely take cervical smears. However, since so many women do not visit the offices of private physicians routinely, cervical tests in the private physician's office do not provide sufficient opportunity to reach the total public. Since so many women do not now believe in early detection, a mass information effort is needed to teach them the desirability of professional examinations and the benefits and efficacy of early detection of cervical cancer.

Such beliefs may stimulate many women to seek cervical tests on their own. Such information may also lead those who now have the correct general beliefs about cancer but are not aware of the use of cervical tests to seek such tests. As has been noted frequently, mass information efforts tend not to reach many segments of the population (*9*, *10*), and personal solicitation probably is needed to supplement any mass information program. If such efforts are to be successful, providing cervical tests to the patient may have to become a responsibility of those in public health as well as a responsibility of the private physician.

Summary

Data on the experience of women who defined cervical tests as cancer examinations were collected as part of a national study. The 35- to 44-year-old white population reported the greatest use of cervical cytology tests for cancer detection. Few women 65 years old or older reported having obtained the tests. Far fewer Negro than white women reported having obtained Papanicolaou smears.

The higher the woman's education, income, and occupational class, the more likely she was to report obtaining the cervical tests. Few of

those with a grade-school education, an income of less than $3,000, or who were the wives of workers in blue collar and service occupations reported that they had cervical examinations. More married than single women reported obtaining the Papanicolaou tests. Most tests were obtained at the offices of private physicians, primarily as a part of visits for other examination procedures.

The experience with cervical tests reported in our survey was comparable in a number of ways with the results of two studies in Alameda County and San Diego City. However, as expected, the recognition questions used by the two local studies that identified the Papanicolaou smear test for the respondents gained a higher proportion of reported tests than the recall question used in the national study. The national sample showed that the women obtained far fewer multiple cervical tests than the women in either Alameda County or San Diego. Thus the same groups of women who failed to define a cervical test as a cancer detection device tended not to report having had the test at all.

The beliefs of these women in regard to cancer then were analyzed. It was found that the cervical tests were obtained by a significantly greater number of women who believed that professional judgment is better than self-diagnosis and that early diagnosis of cancer is beneficial than those who did not have these beliefs. Within every demographic classification, more women who held these beliefs reported obtaining cervical tests than the women without these beliefs.

It was concluded that one could not easily impute causality to these data. It is just as possible that women gained their beliefs as a result of being tested as it is that the women with beliefs sought cervical tests. However, it was noted that the fortuitous circumstances of obtaining tests while in physicians' offices for reasons quite unrelated to cancer detection was not a dependable means for increasing the periodic use of cervical examinations, for our data showed that many women do not periodically visit physicians' offices. It also showed that many women held the correct general beliefs about cancer but did not report obtaining cervical tests.

Four separate but interrelated programs were proposed to increase the use of cervical cytology tests: (*a*) the necessity of inducing more private physicians to take cervical smears, (*b*) the continuing use of cervical tests in the offices of physicians supplemented by a clear explanation to patients of the benefits of periodic cervical examination, (*c*) a mass-information program alerting women to the need of professional diagnosis and the benefits of early diagnosis of cervical cancer, and (*d*) person-to-person solicitation of those women who were not likely to be reached by mass communications. It was suggested that the means for providing cervical cytology tests to women who do not regularly visit physicians may need to be organized on a public health basis.

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