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ABSTRACT

The present study follows up a report by the same author of gender differences in health status of white and nonwhite adolescents. Both studies reported upon secondary analysis of data on a national sample of adolescent subjects from the Health Examination Survey conducted between 1967 and 1970 by the National Center for Health Statistics. Reported here were scales for Health Behavior and Health Care, constructed from items from the parent interview, from the youth questionnaire and from clinical data. Scores for males and females were examined among whites and among nonwhites. Males had higher scores for Health Behavior than females in both race groups at adolescence. The Health Behavior scale was related significantly in all sex-race groups to all scales measuring health status. Correlations were low (r's of .08 to .35): they were consistently higher for nonwhite females than others. When the Health Care scale scores were examined, the differences in this adolescent population were between races, not sexes. In all sex-race groups, amount of health care received was related with low negative r's to measure of health status: for nonwhites most of these correlations were not significant. The measure of socioeconomic status from the HES data was the variable correlated positively in all groups with health care. (Author/MP)

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HEALTH BEHAVIOR, HEALTH CARE AND HEALTH STATUS:

SEX DIFFERENCES AMONG WHITE AND NONWHITE ADOLESCENTS

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ABSTRACT

Health Behavior, Health Care and Health Status:
Sex Differences among White and Nonwhite Adolescents

The present study follows up a report by the same author of gender differences in health status of white and nonwhite adolescents. Both studies reported upon secondary analysis of data on a national sample of adolescent subjects from the Health Examination Survey conducted between 1967 and 1970 by the National Center for Health Statistics. Reported here were scales for Health Behavior and Health Care, constructed from items from the parent interview, from the youth questionnaire and from clinical data. Scores for males and females were examined among whites and among nonwhites. Males had higher scores for Health Behavior than females in both race groups at adolescence. This is in agreement with some but not all of previous studies of differences between the sexes in positive and preventive health actions. None of the previous studies have looked at sex differences in health behavior of adolescents, nor for racial groups separately.

The Health Behavior scale was related significantly in all sex-race groups to all scales measuring health status. Correlations were low (r's of .08 to .35); they were consistently higher for nonwhite females than others. This is of special importance given the facts that nonwhite females had the poorest scores for health as well as the lowest scores for Health Behavior. When the Health Care scale scores were examined, the differences in this adolescent population were between races, not sexes. In all sex-race groups, amount of health care received was related with low negative r's to measure of health status; for nonwhites most of these correlations were not significant. The measure of socioeconomic status from the HES data was the variable correlated positively in all groups with health care.

This article is the third in a series reporting on sex differences in the health of adolescents surveyed in the Health Examination Survey (NCHS, 1969). The first article (Landsberger, 1980a) presented evidence of the unique picture of the separate sex-race groups (white male, white female, nonwhite male, and nonwhite female) from such health indices as mortality by leading causes, and some morbidity rates. On the basis of that evidence, it was decided to look at sex differences among whites and nonwhites separately, using the data from the Health Examination Survey (HES) (Landsberger, 1980a; 1980b).

The large national sample of 12 to 17-year-olds in the HES contained over 900 nonwhite subjects, though the vast majority of the 7,400 subjects were whites. Using data from that large population made it possible to examine sex differences in health among nonwhites separately from the differences among whites. Furthermore, health-related data came from several sources, making it possible to have several views of each subject's health. These sources were the clinical examinations, the parent interview, the youth questionnaire, and an official in the youth's school. Approximately six items from each source were combined to make a scale representing the view of the subject's health from that source. The Exam Scale was based upon the clinical-technical view, derived from the physician's exam, the dental exam, and various laboratory tests. The Home Scale was based on the interview with the youth's parents and included questions on current health status and events in the past. The Youth Scale was based on items from the questionnaire completed by the subject her/himself. Finally, included as a single item was the professional educator's rating of the youth's School Adjustment. The Health Status scale furnished a single score representing the sum of the Exam,

Home, Youth, and School health scale scores. These scales were described in a second article in the present series (Landsberger, 1980b). The distribution of scores on the scales by sex groups within racial group and the correlation of particular items with the total scales were also presented in that second article (Landsberger, 1980b). The findings regarding these adolescents showed health of the females to be slightly poorer than the health of males among both whites and nonwhite subjects. Using agreement with objective views of their health as a criterion, the females were found to be somewhat more accurate than males in the judgment they made of their own health. This was true among nonwhites and whites.

These findings bear upon controversial topics about which conflicting evidence has been reported in the recent literature regarding sex differences in health (Gove and Hughes, 1979; 1980; Verbrugge, 1980; and Mechanic, 1980). In fact, the present findings are the first regarding sex differences for whites and nonwhites separately, and for the adolescent period. They also represent the first time that accuracy of self-reports of health could be measured by checking against several other assessments of the subjects' health.

Purpose

The purpose of the present study was to make use of other information from the Health Examination Survey to explore sex differences in Health Behavior and Health Care of adolescents. Scales for each of these variables were constructed from the parent interview, from the youth questionnaire, and from clinical data. Scores for the sexes were examined separately for whites and nonwhites. The relationships of these scales to the Health Status of the adolescent subjects were then examined. An additional dimension of the relationship between Health Status and these two scales--Health Behavior and Health Care--was included in the form of the index of socio-economic status developed as a part of the HES data, the SIS score (NCHS, 1977).

Methods and Findings

Items which constituted the Health Behavior Scale were the following:

1. Oral hygiene index (from dental exam)
2. Youth's estimate that he eats "the right amount"
3. As an index of fitness, the differential in pulse rate after five minutes of exercise (from physical examination)
4. Youth's own report of the usual hour of going to bed on week nights--specifically, whether this is by 10 p.m. or later than 10.
5. Youth's report on smoking of cigarettes.

Verbrugge (1980) pointed out that what she calls "preventive health behavior" consists of a) positive health habits to prevent health problems; b) avoidance of harmful substances and c) preventive health care. Four items in the Health Behavior Scale are of the "A" type; the last item, smoking, is type "B" (harmful substances avoidance).

The Pearson correlations of these items were checked, and they appeared to give a fairly consistent picture across the sex-race groups. Most of the intercorrelations were small, but significant. In Table 1 are shown the correlations of the separate items with the total score on the Health Behavior Scale. These are presented for males and females separately among whites and among nonwhites.

- - Table 1 goes here - -

With very few exceptions, males and females were alike in the extent to which the particular items making up the scale were related to the total score for Health Behavior. The correlations were very similar also for whites and nonwhites. The only notable exceptions were the Exercise-effect item, which was higher for females, especially among whites; and, the Bedtime item, which was especially higher for nonwhite females.

The scores of the different sex-race groups and differences between them are shown in Table 2.

- - Table 2 goes here - -

TABLE 1. CORRELATIONS OF ITEMS WITH TOTAL HEALTH BEHAVIOR SCORE: DIFFERENCES BY GENDER WITHIN RACE GROUPS

Health Behavior Scale With	Correlations of Items With Total Scale*			
	WHITE		NONWHITE	
	MALE	FEMALE	MALE	FEMALE
Oral Hygiene Index	.451	.347	.367	.376
Eat Right Amount	.468	.488	.451	.490
Exercise Effect	.328	.517	.352	.404
Bedtime	.493	.518	.498	.609
Smoking	.543	.563	.500	.503

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*Correlations are significant beyond .0001 level.

TABLE 2: HEALTH BEHAVIOR SCALE:
DIFFERENCES BY RACE WITHIN GENDER GROUPS AND
DIFFERENCES BY GENDER WITHIN RACE GROUPS

GENDER GROUPS	No.	Mean	S.D.	RACIAL GROUPS	No.	Mean	S.D.
Male				White			
White	2821	3.39	1.03	Male	2821	3.39	1.03
Nonwhite	432	3.19	.99	Female	2435	3.21	1.16
Difference		.20		Difference		.18	
t=		3.777	p<.001	t=		5.958	p<.0001
Female				Nonwhite			
White	2435	3.21	1.16	Male	432	3.19	.99
Nonwhite	432	2.80	1.13	Female	432	2.80	1.13
Difference		.41		Difference		.39	
t=		6.796	p<.0001	t=		5.395	p<.0001

Whites had a higher score on the Health Behavior Scale than nonwhites. The mean scores were 3.31 vs 3.00 and Standard Deviations 1.09 and 1.08 respectively. The t-test for this difference of .31 was highly significant. The difference between the races was greater among females than among males, as the figures on Table 2 show: .41 for females vs .20 for males. Furthermore, males had scores significantly higher for the Health Behavior measure than females among both whites and nonwhites, but the size of the difference was greater among nonwhites. As the foregoing observations indicate, the sex-race group with the score notably lower than the others was the nonwhite female group. Their mean score of 2.80 was significantly below nonwhite as well as white males and significantly below white females.

Health Care

The Health Care Scale was made up of the following items:

1. youth's report as to whether he/she had received treatment from a physician in the past year,
2. youth's report regarding whether he/she had had a check-up by a physician during the past year,
3. youth's report as to whether he/she had been to a dentist for a check-up during the past year,
4. parent report as to whether youth had ever received care from a psychiatrist or psychologist,
5. youth's response regarding whether he/she would want to talk to a doctor about a health problem he/she had,
6. parent report regarding whether youth's birth took place in a hospital.

Several possible items for health care were not included, either because of very small frequencies in the total sample, or because intercorrelations were inconsistent across the race-sex groups. The correlations of the items listed above with the total score for each of the different sex-race groups appear in Table 3.

- - Table 3 goes here - -

TABLE 3. CORRELATIONS OF ITEMS WITH TOTAL HEALTH CARE SCORE: DIFFERENCES BY GENDER WITHIN RACE GROUPS.

Health Care Scale With	Correlations of Items With Total Scale*			
	WHITE		NONWHITE	
	MALE	FEMALE	MALE	FEMALE
Dr. Treatment Recently	.65	.66	.68	.68
Dr. Check-up Recently	.68	.70	.72	.70
Dental Check-up Recently	.62	.59	.56	.59
Ever Seen By Psychiatrist or Psychol.	.31	.26	.26	.17 (.002 level)
Would Want To Talk To Dr. About Problem	.28	.29	.26	.36
Born In Hospital	.36	.32	.53	.47

*Correlations are significant beyond .0001 level unless indicated differently.

There were similar and fairly high correlations of the items with the total Health Care Scale. Some items were similar and fairly high. Those items were "recent doctor treatment," "recent doctor check-up," and "recent dental check-up." As the data in Table 3 indicate, almost all of the r's between those items and the Health Care Scale were between approximately 60 and 70, for all four sex-race groups. The correlations for the other three items, however, were much smaller--roughly between 26 and 36, with few exceptions. Notice that correlations for "born in hospital" were relatively high among nonwhites and slightly higher for males than females. Among both race groups, correlations for whether the youth had been seen by a psychiatrist or psychologist were somewhat higher for males than females. The only other noticeable difference between the sexes was that the correlation for "would want to talk to a doctor about problem" was larger for non-white females than for nonwhite males and white males and females.

- - Table 4 goes here - -

Scores on the Health Care Scale ranged from 0 to 6 points. The mean score for the various sex-race groups are shown in Table 4. Differences between races within gender groups are shown, together with differences between males and females within each race group. The mean score for white males at 2.94 was highest of the four groups. Differences between whites and nonwhites were highly significant among females and males alike, with very large "t's." The white males were higher than white females, with a large value of t for the difference of .11 between those groups. There was virtually no difference in Health Care scores between males and females among nonwhites.

TABLE 4. HEALTH CARE SCALE: DIFFERENCES BY RACE WITHIN GENDER GROUPS AND DIFFERENCES BY GENDER WITHIN RACE GROUPS

	Race Differences Within Gender Groups		
Male	N	Mean	S.D.
White	2185	2.94	1.21
Nonwhite	270	2.20	1.36
Difference		.74	
t=		9.346 p<.0001	
Female			
White	1929	2.83	1.18
Nonwhite	282	2.22	1.37
Difference		.61	
t=		7.934 p<.0001	

	Sex Differences Within Race Groups		
White	N	Mean	S.D.
Male	2185	2.94	1.21
Female	1929	2.83	1.18
Difference		.11	
t=		4.299 p=.0001	
Nonwhite			
Male	270	2.20	1.36
Female	282	2.22	1.37
Difference		-.02	
t=		0.172 NS	

CORRELATIONS OF THE HEALTH BEHAVIOR AND HEALTH CARE SCALES WITH HEALTH SCALE AND WITH THE INDEX OF SOCIOECONOMIC STATUS.

The various scales representing the health of these adolescent subjects were described at the beginning of this article. In this section, the relationships between Health Behavior and Health Care and those measures of the subjects' health will be examined. The relationships of Health Behavior and Health Care scores to the index of socio-economic status will also be investigated.

Health Behavior Scale. The correlations between the Health Scales and the Health Behavior Scale, as well as between Health Behavior and the socio-economic index, for all sex-race groups are presented in Table 5. These correlations were significant at the .0001 level unless otherwise indicated in the table.

- - Table 5 goes here - -

Although never very high, virtually all correlations were significant. The correlation with Health Status was higher for females than for males. The sex difference was especially large among nonwhites: .357 vs. .165. Among whites Health Behavior and the Health Scales were otherwise related almost exactly the same for males and females, excepting for the Youth Scale. This correlation, as with Health Status, was higher for females than for males: .266 vs. .190. Among nonwhite males there were consistently lower correlations between Health Behavior and the various Health measures; significance levels less than the .0001 level were attained for all r's for the other three groups. In contrast, the r's for nonwhite females were largest of all the sex-race groups except in School Adjustment where the r was very slightly smaller than the others.

The relationship of Health Behavior to socio-economic level was significant only among white males. That r was .11. In other groups, levels of Health Behavior were unrelated to family socio-economic level.

RELATIONSHIP OF HEALTH CARE TO HEALTH AND HEALTH BEHAVIOR.

The amount of Health Care received may be viewed as dependent upon the state of health or as the independent variable upon which good health depends, or as working sometimes in one way, sometimes the other. Or, there may be no consistent relationship between health and health care. Table 6 presents the correlations for the relationships of Health Care to the other variables for the subjects of this study.

- - Table 6 goes here - -

The fact that in this population almost all correlations are negative, with the exception of an r of .09 for the Health Exam Scale and the Health Care Scale among white males, indicates that higher scores for Health Care were associated with lower scores for Health. The correlations were small, but significant for whites of both sexes. Among nonwhites, the correlations for both males and females among nonwhites were usually not significant (though the sign was negative for those few which were significant, at levels indicated on the table).

Correlations between Health Care and Health Behavior were very small for whites and were not significant for nonwhites. The only correlations of substantial size for Health Care were with the index of socio-economic status. More Health Care was related to higher socio-economic level. Among whites, this was especially high for males with an r of .41 vs. .34 for females. Among nonwhites, r's for males and females were close together: .30 vs. .285.

For all sex-race groups, the data on Health Care for these adolescents leaves one with the clear impression that the amount of health care received depended not on how poor their health was, but on their family socio-economic level. Among whites of both sexes, the level of Health Behavior was only very weakly related to the amount of Health Care received. Among nonwhites, this relationship was not significant for either sex.

TABLE 5. CORRELATIONS OF HEALTH BEHAVIOR SCALE WITH HEALTH SCALES BY SEX-RACE GROUPS

Health Behavior Scale With	WHITE		NONWHITE	
	MALES	FEMALES	MALES	FEMALES
Health Status	.225	.261	.165 (.001 level)	.357
Exam Scale	.183	.183	.144 (.001)	.185
Home Scale	.087	.092	.083 (.04)	.181
Youth Scale	.190	.266	.134 (.003)	.267
School Adjustment	.133	.129	.083 (NS)	.128
SIS (Index of Family socio-economic status)	.113	.003 (NS)	.01 (NS)	.049 (NS)

Note: Correlations significant at .0001 level unless indicated.

TABLE 6. CORRELATIONS OF HEALTH CARE SCALE WITH HEALTH SCALES AND HEALTH BEHAVIOR BY SEX-RACE GROUPS

Health Care Scale With	WHITE		NONWHITE	
	MALE	FEMALE	MALE	FEMALE
Health Status	-.09	-.145	-.14 (.01 level)	-.07 (NS)
Exam Scale	.09	.01 (NS)	.03 (NS)	-.01 (NS)
Home Scale	-.11	-.146	-.147 (.007 level)	-.089 (NS)
Youth Scale	-.14	-.175	-.01 (NS)	-.16 (.003 level)
School Adjustment	-.008 (NS)	.009 (NS)	-.186	-.01 (NS)
Health Behavior	.069 (.001 level)	-.06 (.002 level)	.005 (NS)	-.07 (NS)
SIS (Index of socio-economic status)	.415	.343	.30	.285

Note: Correlations significant at .0001 level unless indicated.

Discussion

There are some interesting points in these findings about sex differences in health behavior and health care among adolescents surveyed in the Health Examination Survey. First, they tell us something about health behavior. Male adolescents had considerably higher scores for health behavior than did females, among both whites and nonwhites. The Health Behavior scores of nonwhite females were especially low. Furthermore, the Health Behavior scale was related significantly to all of the health scales in all sex-race groups. The correlations are relatively low ones, running from .08 to .35; but among nonwhite females, they tend to be somewhat higher for every scale. Health Behavior scores in general were unrelated to the socio-economic level of the family.

The finding that adolescent males have better health behavior than adolescent females, especially in regard to the "positive health habits" represented by eating, exercise, oral hygiene, and adequate sleep, agrees with the findings for males and females of all ages cited by Verbrugge (1980).

The most important point to note is the Health Behavior of the nonwhite female group. Their scores were especially low, and these were related to the health scales more closely than was the case for the other sex-race groups. This, together with the finding reported earlier that the health status of nonwhite females is poorest of the four sex-race groups, certainly supports targeting health improvement efforts toward nonwhite females. Their health behavior scores are lowest, their health status is lowest, and the relationship of health behavior to health status is higher for them than for the other sex-race groups.

In this sample, the difference in health care received was between nonwhites and whites. While there was little difference between the sexes among nonwhites, white females were behind white males in health care. There were significant relationships between health care and health only in the case of whites, and

these correlations were very small. In both racial groups, the relationships were usually negative, indicating that health care accompanied poor health, not good health. This is not an unexpected finding. Unfortunately, however, it must be viewed along with the relatively high correlations between health care and soci-economic level of the adolescents' families. Higher scores for health care in all sex-race groups were related to the measure of socio-economic status much more than to any other measure.

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