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Reproducibility of a health risk behavior questionnaire among high school students in Okinawa, Japan

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ABSTRACT

Objectives: This study examined the test-retest reliability of a health-risk behavior questionnaire among high school students in Okinawa, Japan. Methods: A sample of 120 students in grades 10 and 11 (ages 15-17) at a public senior high school in Okinawa, Japan, completed a self-administered anonymous questionnaire on two occasions, two weeks apart, for test-retest reliability assessment. Health-risk behaviors were measured using question items adapted from the Youth Risk Behavior Survey developed by the US Centers for Disease Control and Prevention. Kappa statistics and percentage agreement of the question items were assessed. Results: Kappa statistics ranged from 0.20 to 1.0, with a mean of 0.63. 56% of the items had "substantial" reliability (kappas≧61%), and 89% of the items had at least "moderate" reliability (kappas≧41%). Percentage agreement ranged from 75% to 100%, with a mean of 92.9%. 90% of the items revealed over 80% agreement. The values of kappa and percentage agreement did not differ by gender and grade. Seven-day recall questions had lower reliability compared with other time frames. Conclusion: The health-risk behavior questions had acceptable test-retest reliability. *Ryukyu Med. J., 22(3,4) 95〜101, 2003*

Key words: reliability, risk factor, behavior, adolescent, data collection

INTRODUCTION

Today, major causes of death in Japan are occupied by lifestyle-related diseases such as cancer, cardiovascular disease, and cerebrovascular disease[1]. It is also well-known that a large portion of premature deaths among Japanese young people result from unintentional accidents including motor vehicle accidents and suicide[1]. In addition, among school-aged children serious modern health issues such as drug abuse, sexually deviant behavior, bullying, missing school and lifestyle-related diseases in childhood, have emerged and are getting worse[2]. The US Centers for Disease Prevention and Control (CDC) shows that these health problems are closely linked to a number of health-risk behaviors categorized in six areas: behaviors contributing to unintentional injuries and violence; tobacco use; alcohol and other drug use; sexual behaviors contributing to unintended pregnancy and sexually transmitted disease; unhealthy dietary behaviors; and physical inactivity[3].

In the United States, several nationwide surveys are periodically conducted to monitor health-risk behaviors among youth and young adults. For instance, the Youth Risk Behavior Surveillance (YRBS) conducted every two years by CDC is a national school-based survey on six categories of priority health-risk behaviors among students in grades 9 through 12[4]. Monitoring the Future and the National Household Survey on Drug Abuse provide data on tobacco use, alcohol use and other drug use among youth[5,6]. In Europe, the Health Behavior in School-aged Children Survey is conducted every four years in collaboration with the World Health Organization's Regional Office for Europe to explore lifestyle among children and young people[7].

It is crucial for the assessment of health-risk

behaviors whether data on these behaviors are reliable or not. Previous studies have attempted to verify psychometric properties of measurements of adolescent substance use, sexual behavior, and physical inactivity[8-10]. For various categories of health-risk behaviors, CDC has confirmed the test-retest reliability of the YRBS questionnaire[11,12]. They provided in-depth data on the reliability by demographic and question characteristics.

Epidemiological studies of various health-risk behaviors and reliability studies of questionnaires have seldom been carried out among Japanese adolescents. Recently, Nozu et al.[13] conducted a national school-based survey to investigate the prevalence and correlates of health-risk behaviors among Japanese high school students. They showed the reliability of scales measuring the relevant factors but they did not report on the reliability of questions relating to health-risk behavior. To enhance the quality of studies on adolescent health-risk behaviors in Japan, detailed examinations of psychometric properties of the questions from a variety of samples are needed.

This study aimed at examining the test-retest reliability of health-risk behavior questions, derived from the original YRBS, among Japanese high school students.

MATERIALS and METHODS

Subjects and Data Collection Procedures

A convenience sample of 120 grade 10 and 11 students (ages 15-17) of a public senior high school in an urban area of Okinawa, Japan were used for this study with the consent of their school principal. Using written instructions provided by researchers, classroom teachers conducted a self-administered anonymous questionnaire survey in a classroom setting in February 2001. Students were informed of the nature and intent of the study both in writing and verbally before they answered to the questionnaire. Those who did not want to participate in the study were allowed to decline. In all, three students declined to participate and 11 students were absent from school at the first and second surveys. A total of 106 students (45 males, 60 females, 1 unknown; 35 in the 10th grade, 71 in the 11th grade) completed the questionnaires which was administered on two occasions two weeks apart.

Data collection included procedures that allowed researchers to link the first test and retest questionnaires without knowing each student's name. During the first survey, the students were requested to complete the questionnaire and seal it in an envelope. Additionally, students who wanted to take part in the second survey were asked to write their names across the seal. During the second survey, each student received the envelope with his or her name across the seal. After they completed the second questionnaire, they took out the first questionnaire by themselves and then put it together with the second questionnaire anonymously in a big envelope. The study protocol was approved by the Medical Ethical Review Board at University of the Ryukyus.

Measures

In light of current health trends in Japanese adolescents, we selected 31 questions with six categories adopted from the original YRBS questionnaire developed by CDC in 2001[4]. These questions were translated into Japanese by the research team, which included a bilingual speaker (see Appendix). The wordings of the following items were just a bit modified to adapt to Japanese culture and to make the questionnaire simpler. For the inhalant use question, "glue, paints or sprays" used in the original questionnaire were changed into "thinner" (Appendix No.17). Although the question for offer of illegal drugs asked about the act specifically on school property, this study asked it regardless of place (Appendix No.18). About vegetable intake, the original YRBS questioned the consumption of green salad, potatoes, carrots, and other vegetables separately. We simply used a question about vegetables in general (Appendix No.29). These questions were reviewed for content validity by the school principal, teachers, school nurses, and researchers. Although many questions were multiple-choice, these items were re-categorized into a dichotomous scale, in which the standard YRBS reports were used, depending on whether it was considered to be at risk or not[4].

The number of questions asked in each behavioral category was as follows: injury-related behaviors-seven items; tobacco use-five items; alcohol and other drug use-six items; sexual behaviors-five items; unhealthy dietary behaviors-six items; and physical inactivity-two items. Questions assessing "lifetime" as the reference period contained five items. Questions responding "the past 12 months," "the past 30 days," and "the past seven days" had

six, nine, and four items respectively. Those responding "current" or "last time" use were four items. Three other questions reported age at onset behavior.

Analysis

The test-retest reliability of each question was assessed using Cohen's kappa statistic. Skewed binomial data, that is, a substantial imbalance in the marginal totals of a 2 ×2 table, can give rise to incorrectly low values of kappa[10, 14, 15]. Thus, percentage agreement for each item was computed as the number of students at risk at both survey 1 and survey 2 plus the number of students at no risk at both survey 1 and survey 2 as a proportion of the total number of students[10]. In addition, prevalence rates of each behavior at survey 1 and survey 2 were calculated. Differences between these statistics were considered statistically significant if their 90% confidence intervals (CI) did not overlap. All computations were performed using the SPSS 11.5 statistical package.

RESULTS

Table 1 contains kappa statistics, percentage agreement, prevalence rates and 90% CIs at survey 1 and survey 2 for each behavior. Kappas ranged from 0.20 to 1.0, with a mean of 0.63. According to qualitative labels for values of kappa proposed by Landis and Koch[16], 15 items (56%) had at least "substantial" reliability (kappas ≧ 61%), and 24 items (89%) had at least "moderate" reliability (kappas ≧ 41%). The values of percentage agreement ranged from 75% to 100%, with a mean of 92.9%. 28 items (90%) revealed more than 80% of agreement. Although kappa statistics for "physical fighting," "suicidal ideation," and "vomiting or taking laxatives" showed considerably low values (0.39 or less), the values of percentage agreement for them were high, exceeding 92%. The prevalence rates of "smoking > 10 cigarettes per day," "thinner use," "offer of illegal drugs", and "alcohol or drug use at last sexual intercourse" were zero, and therefore kappas of them could not be calculated. However, their percentage agreements were extremely high, ranging from 98% to 100%. In addition, the prevalence rates at survey 1 and survey 2 for all items demonstrated no significant differences except for "offer of illegal drugs".

Table 2 shows the mean values and 90% CIs of kappa statistics and percentage agreement by demographic characteristics and question reference periods. There were no significant differences in mean values of kappa and percentage agreement values by gender and grade. For mean kappa statistics by reference periods, questions assessing "lifetime" and "current or last time" had high values of 0.81 or more, while questions asking in "the past 12 months," "the past 30 days," "the past seven days," and "age at onset" had low values ranging form 0.49 to 0.61. A significant difference between questions that used "lifetime" and those that used "in the past seven days" was seen. Mean percentage agreement for "lifetime," "current or last time," "in the past 12 months," "in the past 30 days," and "age at onset" exceeded 93%. Questions responding "in the past seven days" had significantly lower mean percentage agreement than other questions except for "age at onset".

DISCUSSION

The findings of this study show that, at least among limited high school students in Okinawa, the health-risk behavior questions had acceptable test-retest reliability. Using kappa statistics, it was seen that most of the questions had moderate and over half had substantial or high reliability. Although a few items indicated slight or fair reliability, the values of percentage agreement for each item were more than 90%, suggesting extremely high concordance. This paradox results from a phenomenon that causes high values of the observed proportion of agreement to drastically lower the kappa value when the table's marginal totals are highly imbalanced[14, 15]. Given the characteristics of this data, percentage agreement may provide a better indicator of test-retest reliability[10]. We therefore, considered these items had good reliability.

The reliability studies of the original YRBS questions have previously been conducted twice, using the 1992 and 1999 questionnaires[11, 12]. Both studies concluded that adolescents appeared to report health-risk behaviors reliably at 2 weeks intervals. The mean kappa of 0.61 for the 1999 questions was almost comparable to the mean shown in this study. Furthermore, the present findings that questions related to sexual behavior and tobacco use demonstrated relatively high reliability were also

Table 1 Kappa statistics, percent agreement, and prevalence rates at Survey 1 and Survey 2 for questionnaire items

Item	n	Kappa	% agreement	Survey 1 prevalence			Survey 2 prevalence		
				%	SE	90%CI	%	SE	90%CI
Behaviors contributing to unintentional and intentional injuries									
Rarely or never wore a helmet when riding a motorcycle in the past 12 months	88	0.66	98.9	1.1	1.1	±1.8	3.1	1.8	±3.0
Rarely or never wore seatbelts when riding in a car driven by someone else	100	0.66	86.0	29.8	4.6	±7.5	28.4	4.58	±7.4
Rode with a drinking driver during the past 30 days	100	0.53	95.0	8.7	2.8	±4.6	2.9	1.78	±2.8
Carried a weapon ≧1 day during the past 30 days	101	0.53	95.0	8.6	2.8	±4.6	3.0	1.78	±2.8
In a physical fight ≧1 time during the past 12 months	101	0.20	93.1	6.7	2.5	±4.1	2.0	1.4	±2.3
Felt sad or hopeless almost everyday for ≧2 weeks during the past 12 months	102	0.45	87.3	17.0	3.7	±6.1	9.8	2.9	±4.8
Seriously considered attempting suicide during the past 12 months	101	0.39	92.1	6.7	2.5	±4.1	6.9	2.5	±4.1
Tobacco use									
Ever used cigarettes	101	0.77	91.1	23.6	4.2	±7.0	27.7	4.5	±7.3
Smoked a whole cigarette before the age of 13 years	87	0.71	96.6	6.4	2.6	±4.3	6.6	2.7	±4.4
Smoked cigarettes on ≧1 day of the past 30 days	91	0.65	96.7	5.2	2.3	±3.8	4.1	2.1	±3.4
Smoked > 10 cigarettes per day during the past 30 days	81	—	98.8	0.0	0.0	±0.0	1.1	1.2	±1.9
Tried to quit smoking cigarettes during the past 12 months	98	0.74	98.0	3.9	2.0	±3.2	4.0	2.0	±3.3
Alcohol and other drug use									
Ever used alcohol	97	0.69	85.6	71.6	4.6	±7.5	60.0	5.0	±8.2
Drank alcohol before the age of 13 years	92	0.45	83.7	17.8	4.0	±6.6	17.9	4.0	±6.6
Drank alcohol on ≧1 day of the past 30 days	96	0.51	82.3	28.7	4.6	±7.6	18.2	3.9	±6.5
Drank ≧5 drinks in a row on ≧1 day of the past 30 days	94	0.63	93.6	13.1	3.5	±5.7	7.1	2.6	±4.4
Ever used thinner	97	—	100.0	0.0	0.0	±0.0	0.0	0.0	±0.0
"Offered, sold, or given an illegal drug during the past 12 months"	95	—	97.9	3.1	1.8	±2.9	0.0	0.0	±0.0
Sexual behaviors									
Ever had sexual intercourse	97	0.91	97.9	12.0	3.3	±5.4	11.9	3.3	±5.4
First sexual intercourse before the age of 13 years	93	0.66	98.9	2.0	1.5	±2.4	1.0	1.0	±1.7
Had ≧4 sex partners during lifetime	96	1.00	100.0	1.0	1.0	±1.7	1.0	1.0	±1.7
Used alcohol or drugs at last sexual intercourse	96	—	97.9	0.0	0.0	±0.0	2.0	1.4	±2.4
Used a condom during last sexual intercourse	96	0.95	99.0	10.9	3.2	±5.2	12.2	3.3	±5.5
Unhealthy dietary behaviors									
Perceived self as overweight	98	0.85	96.9	12.6	3.4	±5.5	10.0	3.0	±5.0
Fasted to lose or keep from gaining weight during the past 30 days	97	0.49	97.9	3.9	2.0	±3.2	1.0	1.0	±1.7
Took diet pills to lose or keep from gaining weight during the past 30 days	98	1.00	100.0	1.0	1.0	±1.7	1.0	1.0	±1.7
Vomited or took laxatives to lose or keep from gaining weight during the past 30 days	98	0.39	96.9	2.9	1.7	±2.8	2.0	1.4	±2.3
Ate fruits <1time per day during the past 7 days	96	0.68	88.5	77.2	4.3	±7.0	77.0	4.3	±7.1
Ate vegetables <1time per day during the past 7 days	97	0.45	79.4	21.0	4.1	±6.8	28.4	4.6	±7.5
Physical inactivity									
Participated in vigorous physical activities on <3 day of the past 7 days	99	0.58	78.8	51.0	5.0	±8.3	51.0	5.0	±8.3
Participated in strengthening exercises on <3 day of the past 7 days	99	0.43	74.7	68.6	4.7	±7.7	64.7	4.8	±7.9

Ellipsis indicates inavailability of data due to the absence of cases at either Survey 1 or Survey 2.

Table 2 Mean Kappa statistics and percent agreement by demographic and question characteristics

Characteristics	Kappa			% agreement		
	Mean	SE	90%CI	Mean	SE	90%CI
Total	0.63	0.04	±0.06	92.9	1.3	±2.2
Gender						
Male	0.57	0.05	±0.08	91.2	1.7	±2.8
Female	0.64	0.04	±0.07	94.1	1.1	±1.9
Grade						
10th	0.65	0.06	±0.11	93.9	1.2	±2.1
11th	0.59	0.05	±0.09	92.3	1.4	±2.4
Reference periods						
Current or last time	0.82	0.09	±0.25	95.0	3.0	±7.1
Lifetime	0.84	0.07	±0.16	94.9	2.8	±6.1
Past 12 months	0.49	0.10	±0.21	94.6	1.9	±3.7
Past 30 days	0.59	0.07	±0.12	95.1	1.7	±3.2
Past 7 days	0.53	0.06	±0.14	80.4	2.9	±6.8
Age at onset	0.61	0.08	±0.24	93.1	4.7	±13.8

consistent with the findings of previous studies[12]. Brener *et al.*[12] stated that these behaviors are likely to be more salient to adolescents, and therefore more reliably recalled.

Similarly, rarely occurring items with the prevalence rates of 0% or 1% showed perfect or almost perfect agreement. These behaviors rarely, if ever, occur among ordinary adolescents. It is reasonable to suppose that these behaviors make a deep impression on them, when they happen, and remain in clearly their memory.

In this study, the values of kappa and percentage agreement did not differ by gender and grade. These findings give support to the findings of previous studies that found no relationships between demographic variables and reliability[12,17]. Although the original YRBS questions were intended for use in grades 9 through 12, a reliability study using the 1992 questionnaire was conducted in 7th graders and above, corresponding to junior high school students and above, in Japan[11]. It was shown that responses of the 7th graders were less consistent as compared with those of the higher grades. This suggested that the original YRBS could be useful for students in grade 8 and above[11]. As this study targeted only senior high school students, we can not tell whether junior high school students report health-risk behaviors reliably over time.

Examination of reliability by reference periods showed that 7-day recall questions had lower reliability compared with other question time frames. On the other hand, questions assessing lifetime or current prevalence had high mean kappas, indicat-

ing "almost perfect" reliability. These findings were similar to previous findings of Klein *et al.*[17] who, using a subset of YRBS items, found that adolescents were most reliable in reporting lifetime and current behaviors and were least reliable in reporting behaviors within a week. This is not surprising, given that a 7-day time frame is shorter than a 2-week test-retest interval, and therefore it is likely to be more variable. The reliability studies of the original YRBS eliminated questions not expected to be consistent across a 2-week time frame from the analysis. However, they showed that mean kappas were somewhat, but not significantly, higher for questions that used "lifetime" as a reference period than those that used "the past 30 days" and "the past 12 months"[12].

As pointed out in previous studies[11,12], it is possible that a response change between survey 1 and survey 2 could include an actual change in behavior. However, any inconsistent response in this study was counted as a response error. Therefore, the measures of reliability in this study must be considered to provide conservative estimates.

This study is also limited by our sample selection process. This study was conducted exclusively on students in only one public senior high school in Okinawa whose Principal consented for them to participate in the study. Additionally, these data apply only to grades 10 and 11 students who attended high school. Therefore, our results must be interpreted cautiously and not be generalized. Another limitation in this study is that a back-translation method was not used in the translation process of the ques-

tionnaire. It is not clear whether each question precisely translates from the original one.

Some studies[18,19] showed that school-based surveys produced higher prevalence estimates for adolescent health-risk behaviors, particularly for sensitive behaviors, than did household-based surveys. School-based surveys can be anonymous and provide greater privacy for respondents, but household-based surveys cannot[18]. It is considered that prevalence estimates may increase as privacy and confidentiality increase, and higher prevalence estimates from school-based surveys reflected more accurate reporting rather than over reporting[18,20]. Therefore, school-based surveys are highly important to obtain precise information concerning adolescent health-risk behaviors. This study provides evidence that a measure can be widely used in school-based surveys that has acceptable reliability.

REFERENCES

1) Health and Welfare Statistics Association: Statistical Abstracts on Health and Welfare in Japan 2002. Health and Welfare Statistics Association, Tokyo, 2002.

2) Health and Physical Education Council: How the Education of Health and Promotion of Sports from Now on Should Be in Order to Maintain the Health of the Body and Mind in Lifetime. 1997 (in Japanese).

3) Kann L., Kolbe L.J. and Collins J.L.: Measuring the health behavior of adolescents: The Youth Risk Behavior Surveillance System and recent reports on high-risk adolescents. Public Health Rep. 108(Suppl.1):1-96, 1993.

4) Grunbaum J.A., Kann L., Kinchen S.A., Williams B., Ross J.G., Lowry R. and Kolbe L.: Youth Risk Behavior Surveillance - United States, 2001. MMWR. 51(No. SS-4):1-21, 2002.

5) Johnston L.D., O'Malley P.M. and Bachman J.G.: Monitoring the Future national results on adolescent drug use: Overview of key findings, 2002. (NIH Publication No. 03-5374). National Institute on Drug Abuse, Bethesda, MD, 2003.

6) Substance Abuse and Mental Health Services Administration: Results from the 2001 National Household Survey on Drug Abuse: Volume I. Summary of National Findings (Office of Applied Studies, NHSDA Series H-17, DHHS Publication No. SMA 02-3758). Rockville, MD. 2002.

7) Currie C., Hurrelmann K., Settertobulte W., Smith R. and Todd J.: Health and Health Behaviour among Young People. Health Behaviour in School-aged Children: a WHO Cross-National Study (HBSC) International Report. Health Policy for Children and Adolescents (HEPCA) Series No.1. 132, WHO Regional Office for Europe. Copenhagen. 2000.

8) O'Malley P.M., Bachman J.G. and Johnston L.D.: Reliability and consistency in self-reports of drug use. Int. J. Addict. 18:805-824,1983.

9) Davoli M., Perucci C.A., Sangalli M., Brancato G. and Dell'Uomo G.: Reliability of sexual behavior data among high school students in Rome. Epidemiology. 3:531-535, 1992.

10) Booth M.L., Okely A.D., Chey T. and Bauman A.: The reliability and validity of the physical activity questions in the WHO health behaviour in schoolchildren (HBSC) survey: a population study. Br. J. Sports Med. 35:263-267, 2001.

11) Brener N.D., Collins J.L., Kann L., Warren C.W. and Williams B.I.: Reliability of the Youth Risk Behavior Survey Questionnaire. Am. J. Epidemiol. 141:575-580, 1995.

12) Brener N.D., Kann L., McManus T., Kinchen S.A., Sundberg E.C. and Ross J.G.: Reliability of the 1999 Youth Risk Behavior Survey questionnaire. J. Adolesc. Health. 31:336-342, 2002.

13) Nozu Y., Arakawa O., Ichimura K., Shimomura Y., Watanabe M., Watanabe M., Kuniyoshi K., Kubo M., Sato K., Shibata Y. and Fujiyama H.: Nationwide survey on youth risk behavior in Japan 2001. Jpn. J. Sch. Health. 44(Suppl.):154-155, 2002 (in Japanese).

14) Feinstein A.R. and Cicchetti D.V.: High agreement but low kappa: I. The problems of two paradoxes. J. Clin. Epidemiol. 43:543-549, 1990.

15) Cicchetti D.V. and Feinstein A.R.: High agreement but low kappa: II. Resolving the paradoxes. J. Clin. Epidemiol. 43:551-558, 1990.

16) Landis J.R. and Koch G.G.: The measurement of observer agreement for categorical data. Biometrics. 33:159-174, 1977.

17) Klein J.D., Graff C.A., Santelli J.S., Allan M.J. and Elster A.B.: Improving adolescent health care surveillance. In: Cynamon MA, Kulka RA (eds). Seventh Conference on Health Survey Research Methods. DHHS Pub No. 01-1013. 11-18, National Center for Health Statistics, Hyattsville MD, 2001.

18) Kann L., Brener N.D., Warren C.W., Collins J.L. and Giovino G.A.: An assessment of the effect of data collection setting on the prevalence of health risk behaviors among adolescents. J. Adolesc. Health. 31:327-335, 2002.

19) Gfroerer J., Wright D. and Kopstein A.: Prevalence of youth substance use: the impact of methodological differences between two national surveys. Drug Alcohol Depend. 47:19-30, 1997.

20) Gans J.E. and Brindis C.D.: Choice of research setting in understanding adolescent health problems. J. Adolesc. Health. 17:306-313, 1995.

APPENDIX

1. When you rode a motorcycle during the past 12 months, how often did you wear a helmet?

2. How often do you wear a seat belt when riding in a car driven by someone else?

3. During the past 30 days, how many times did you ride in a car or other vehicle driven by someone who had been drinking alcohol?

4. During the past 30 days, on how many days did you carry a weapon such as a knife, cutter, or club?

5. During the past 12 months, how many times were you in a physical fight?

6. During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?

7. During the past 12 months, did you ever seriously consider attempting suicide?

8. Have you ever tried cigarette smoking, even one or two puffs?

9. How old were you when you smoked a whole cigarette for the first time?

10. During the past 30 days, on how many days did you smoke cigarettes?

11. During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?

12. During the past 12 months, did you ever try to quit smoking cigarettes?

13. During your life, on how many days have you had at least one drink of alcohol?

14. How old were you when you had your first drink of alcohol other than a few sips?

15. During the past 30 days, on how many days did you have at least one drink of alcohol?

16. During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?

17. <u>During your life, how many times have you inhaled thinner?</u>

18. <u>During the past 12 months, has anyone offered, sold, or given you an illegal drug?</u>

19. Have you ever had sexual intercourse?

20. How old were you when you had sexual intercourse for the first time?

21. During your life, with how many people have you had sexual intercourse?

22. The last time you had sexual intercourse, did you drink alcohol or use drugs?

23. The last time you had sexual intercourse, did you or your partner use a condom?

24. How do you describe your weight?

25. During the past 30 days, did you go without eating for 24 hours or more (also called fasting) to lose weight or to keep from gaining weight?

26. During the past 30 days, did you take any diet pills without a doctor's advice to lose weight or to keep from gaining weight?

27. During the past 30 days, did you vomit or take laxatives to lose weight or to keep from gaining weight?

28. During the past 7 days, how many times did you eat fruit?

29. <u>During the past 7 days, how many times did you eat vegetables?</u>

30. On how many of the past 7 days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activities?

31. On how many of the past 7 days did you do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting?

Underlined items are the modified versions of the original questions (see MATERIALS and METHODS section for details).