

Television and Video Viewing Time Among Children Aged 2 Years — Oregon, 2006–2007

Excessive exposure of children to television and videos (viewing time) is associated with impaired childhood development (1) and childhood obesity (2). In 2001, the American Academy of Pediatrics (AAP) recommended that children watch no more than 1 to 2 hours of “quality programming” per day, and that televisions be removed from children’s bedrooms (3). To determine the risk for excessive viewing time among children aged 2 years, CDC and the Oregon Public Health Division analyzed 2006 and 2007 data from the Oregon Pregnancy Risk Assessment Monitoring Survey follow-back survey (Oregon PRAMS-2), which was used to re-interview mothers who had participated in PRAMS. This report summarizes the results of that analysis, which indicated that, on a typical day, 19.6% of children aged 2 years spent ≥ 2 hours watching television or videos. A total of 18.2% of children had a television in their bedroom; these children were more likely to have ≥ 2 hours viewing time compared with children without a television in the bedroom (34.1% versus 16.3%). In multivariable analysis, ≥ 2 hours of viewing time was positively associated with the presence of a television in the child’s bedroom, non-Hispanic black maternal race/ethnicity, fewer than four outings with the child during the preceding week, and was negatively associated with obtaining child care in a child care center. In Oregon, these findings support the AAP recommendations that health professionals, parents, and caregivers recognize the extent of children’s media consumption, and that televisions be removed from children’s bedrooms. Other states should consider conducting similar surveys.

PRAMS is a population-based surveillance system that collects data on maternal attitudes and experiences before, during, and immediately after delivery of a live infant. Mail and telephone surveys are administered by state health departments with support from CDC. Oregon has collected PRAMS data continuously since 1998. Since 2006, the Oregon Public Health Division has been re-interviewing Oregon PRAMS respondents when their children reach age 2 years. The Oregon PRAMS-2 survey includes questions on maternal and child health, health-care access and utilization, health-related attitudes and behaviors; and social

conditions.* The mean age of children at time of survey completion was 25.1 months (range: 23.4–30.2 months).

Viewing time was based on response to the question, “In a typical day, how much time does your two-year-old spend watching TV or videos?” Possible responses included “None,” “Less than 2 hours,” and “2 hours or more.” Viewing time was dichotomized to “ ≥ 2 hours” or “ < 2 hours” (combining the responses of “None” and “Less than 2 hours”). Mothers also were asked, “Is there a TV in your two-year-old’s bedroom?” Possible associations with viewing time were tested for a group of selected characteristics, all of which were based on results from the Oregon PRAMS-2 survey except for race/ethnicity, which was derived from the birth certificate.† All responses were weighted to account for the complex survey design, nonresponse, and noncoverage. Multiple logistic regression was used to calculate adjusted prevalence ratios (APRs), which were estimated by adjusted odds ratios, and 95% confidence intervals for ≥ 2 hours viewing time. Variables were selected for the model based on significance (with $p < 0.05$) in unadjusted prevalence ratios; additionally, mother’s age was controlled for in the model. Statistical software was used to account for the complex sampling strategy.

The Oregon PRAMS-2 weighted survey response rate was 51.1% during 2006 and 62.5% during 2007. Among 1,911

* The survey instrument is available at <http://www.oregon.gov/dhs/ph/pnh/prams/docs/prams2.pdf>.

† For this report, maternal depressive symptoms were determined to be present if the mother reported ≥ 2 weeks during the preceding 12 months when she “felt sad, blue or depressed for most of the day” or “lost interest or pleasure in most things [she] usually cared about or enjoyed.”

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Oregon PRAMS-2 surveys conducted in 2006 and 2007, a total of 39 surveys were excluded because the viewing time question was not answered. An additional four surveys, in which the mother's age at the time of Oregon PRAMS-2 survey completion was <18 years, were excluded to restrict the analysis and conclusions to households with adult mothers. The total number of respondents for analysis was 1,868.

For a typical day, respondent mothers reported that 19.6% of children aged 2 years had ≥ 2 hours of viewing time (Table). Compared with non-Hispanic white mothers, non-Hispanic black mothers were significantly more likely to report ≥ 2 hours viewing time by their children (18.6% versus 35.9%, respectively). Children with a television in the bedroom (reported by 18.2% of mothers) were significantly more likely to have ≥ 2 hours of viewing time (34.1%) compared with children without a television in the bedroom (16.3%). Children who went on fewer than four outings[§] during the preceding week were significantly more likely to have ≥ 2 hours of viewing time (22.8%) compared with children who went on four or more

outings (14.5%). Children who spent any time in a child care center were significantly less likely to have ≥ 2 hours viewing time (7.8%), compared with children not in child care (23.2%) and children who had other child care (18.6%).[¶] Household income, maternal depressive symptoms, maternal body mass index (Table), marital status, maternal birthplace in the United States, maternal and spouse/partner employment status, sex of the child, and urban/rural residence were not significantly associated with the amount of viewing time.

The multivariable model included age, race/ethnicity, and education of the mother, the presence of a television in the child's bedroom, the number of outings with the child, reading to the child, and child care. Two or more hours of viewing time was positively associated with having a television in the child's bedroom (APR = 2.9), being a non-Hispanic black mother (APR = 1.9), and taking the child on fewer outings (APR = 1.6); viewing time was negatively associated with obtaining child care in a child care center (APR = 0.3). No significant interactions were

[§]The number of outings during the preceding week was based on response to the question, "How many times in the past week have you or any family member taken your two-year-old on any kind of outing, such as to a park, playground, library, or other children's program or activity?"

[¶]Other child care included a nonrelative's home; paid care in the respondent's own home; the respondent's older child; the child's grandparent; another relative; a babysitter, friend, or neighbor; or other forms of child care not listed.

The *MMWR* series of publications is published by the Office of Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30333.

Suggested citation: Centers for Disease Control and Prevention. [Article title]. *MMWR* 2010;59:[inclusive page numbers].

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TABLE. Television and video viewing time among children aged 2 years (N = 1,868) in a typical day,* by selected characteristics — Oregon Pregnancy Risk Assessment Monitoring System follow-back survey, 2006–2007

Characteristic	Total %†	≥2 hours viewing time		PR [¶] of ≥2 hours viewing time				
				Bivariate			Multivariable model	
		%	(95% CI) [§]	PR	(95% CI)	p-value	APR**	(95% CI)
Total	100	19.6	(16.9–22.3)					
Maternal age group (yrs)								
18–24	21	17.2	(11.2–23.1)	1.0	Referent	—	1.0	Referent
25–34	55	20.7	(17.0–24.5)	1.2	(0.8–1.8)	0.34	1.6	(0.9–2.7)
≥35	24	19.2	(13.8–24.5)	1.1	(0.7–1.7)	0.63	1.7	(0.9–3.1)
Maternal race/ethnicity								
White, non-Hispanic	71	18.6	(14.9–22.2)	1.0	Referent	—	1.0	Referent
Hispanic	20	20.1	(15.6–24.7)	1.1	(0.8–1.5)	0.59	0.7	(0.4–1.1)
Black, non-Hispanic	2	35.9	(28.4–43.4)	1.9	(1.4–2.6)	<0.001	1.9	(1.2–3.0)
Asian/Pacific Islander, non-Hispanic	6	25.2	(19.7–30.6)	1.4	(1.0–1.8)	0.04	1.3	(0.9–2.0)
American Indian/Alaska Native, non-Hispanic	2	25.4	(19.3–31.6)	1.4	(1.0–1.9)	0.05	1.4	(0.9–2.2)
Maternal education								
More than 12th grade	61	17.8	(14.5–21.1)	1.0	Referent	—	1.0	Referent
12th grade or equivalent	25	25.3	(18.6–32.1)	1.4	(1.0–2.0)	0.04	1.2	(0.7–2.0)
Less than 12th grade	14	16.6	(11.3–21.9)	0.9	(0.6–1.4)	0.72	0.6	(0.4–1.1)
Television in child's bedroom								
No	82	16.3	(13.5–19.1)	1.0	Referent	—	1.0	Referent
Yes	18	34.1	(26.8–41.5)	2.1	(1.6–2.8)	<0.001	2.9	(1.8–4.5)
Outings during preceding week^{††}								
≥4	38	14.5	(10.6–18.5)	1.0	Referent	—	1.0	Referent
<4	62	22.8	(19.1–26.5)	1.6	(1.1–2.1)	0.004	1.6	(1.1–2.4)
Book or story read to child								
Every day	63	17.1	(13.7–20.5)	1.0	Referent	—	1.0	Referent
Less than every day	37	24.0	(19.4–28.6)	1.4	(1.1–1.8)	0.02	1.2	(0.8–1.8)
Child care								
No child care	49	23.2	(19.1–27.4)	1.0	Referent	—	1.0	Referent
Child care center	11	7.8	(2.3–13.4)	0.3	(0.2–0.7)	0.001	0.3	(0.1–0.7)
Other child care ^{§§}	41	18.6	(14.2–22.9)	0.8	(0.6–1.1)	0.13	0.7	(0.5–1.1)
Annual household income								
<\$20,000	31	21.0	(15.9–26.0)	1.0	Referent	—		
\$20,000–\$49,999	49	20.9	(16.6–25.2)	1.0	(0.7–1.4)	0.99		
≥\$50,000	20	14.6	(9.7–19.5)	0.7	(0.5–1.1)	0.09		
Maternal depressive symptoms^{¶¶}								
No	78	18.3	(15.2–21.4)	1.0	Referent	—		
Yes	22	24.0	(17.8–30.2)	1.3	(1.0–1.8)	0.09		
Maternal BMI^{***}								
<30	73	18.5	(15.2–21.9)	1.0	Referent	—		
≥30	27	24.0	(17.6–30.4)	1.3	(0.9–1.8)	0.12		

* Viewing time was based on response to the question, "In a typical day, how much time does your two-year-old spend watching TV or videos?" The survey instrument is available at <http://www.oregon.gov/dhs/ph/pnh/prams/docs/prams2.pdf>.

† All data are weighted to state population data. Percentages might not add to 100% because of rounding.

§ Confidence interval

¶ Prevalence ratio. In the multivariable model, variables are adjusted for the other variables included in the model.

** Adjusted prevalence ratio, estimated based on adjusted odds ratio.

†† The number of outings during the preceding week was based on response to the question, "How many times in the past week have you or any family member taken your two-year-old on any kind of outing, such as to a park, playground, library, or other children's program or activity?"

§§ Other child care included a nonrelative's home; paid care in the respondent's own home; the respondent's older child; the child's grandparent; another relative; a babysitter, friend, or neighbor; or other forms of child care not listed.

¶¶ Maternal depressive symptoms were determined present if the mother reported ≥2 weeks during the preceding 12 months when she "felt sad, blue or depressed for most of the day" or "lost interest or pleasure in most things [she] usually cared about or enjoyed."

*** Body mass index. Missing 10.7% of data (mostly foreign-born Hispanic mothers).

observed between race/ethnicity and education that were associated with the amount of viewing time.

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Editorial Note

Despite AAP's 2001 recommendation to limit children's total exposure time to television and videos to no more than 1 to 2 hours of "quality programming" per day, approximately one fifth of Oregon children aged 2 years spent ≥ 2 hours watching television or videos in a typical day during 2006–2007. These findings are comparable to a telephone survey of parents in Minnesota and Washington, which found that by age 2 years, 90% of children regularly watched television or videos, and the average viewing time among those who watched was more than 1.5 hours per day (4). The findings in this report also indicate that maternal race/ethnicity was associated with greater viewing time, with 35.9% of children with non-Hispanic black mothers viewing ≥ 2 hours per day. A study of low-income children in New York also noted racial/ethnic differences in viewing time; 56.1% of children aged 2 years with non-Hispanic black mothers watched > 2 hours television per day, compared with 34.8% of children with non-Hispanic white mothers (2). A study on low-income children in Vermont found that greater television viewing was significantly associated with maternal depressive symptoms and maternal obesity (5); the analysis described in this report found similar trends, but the associations were not statistically significant.

AAP also recommends that television sets be removed from children's bedrooms (3). Nearly one fifth of Oregon children aged 2 years had a television in the bedroom, which was the strongest positive predictor of viewing time in multivariable analysis. Similarly, 40% of low-income preschool children in New York had a television in the bedroom, and they spent an additional 4.6 hours per week watching television and videos compared with children without a television in the bedroom (2).

Reading to a child and taking a child on outings were associated with less viewing time. Whether the reduced viewing time was because these activities did not include television viewing opportunities or these families had stricter controls on viewing time could not be determined. Also, children cared for in child

What is already known on this topic?

Excessive exposure of children to television and videos (viewing time) is associated with impaired childhood development and childhood obesity; the American Academy of Pediatrics (AAP) recommends that children watch no more than 1 to 2 hours of "quality programming" per day.

What does this report add?

Based on data from the 2006 and 2007 Oregon Pregnancy Risk Assessment Monitoring Survey follow-back surveys, 19.6% of children aged 2 years had ≥ 2 hours viewing time in a typical day. In multivariable analysis, higher viewing time was positively associated with a television in the child's bedroom, non-Hispanic black maternal race/ethnicity, fewer than four outings with the child during the preceding week, and was negatively associated with obtaining child care in a child care center.

What are the implications for public health practice?

In Oregon, these findings support the AAP recommendations that health professionals, parents, and caregivers recognize the extent of children's media consumption, and that televisions be removed from children's bedrooms. Other states should consider conducting similar surveys.

care centers had significantly less viewing time compared with children with no child care arrangements. Underestimation of viewing time in child care centers by the mother is unlikely; one recent study of viewing time in child care centers in four states found that 89% of center-based programs did not use television for toddlers and that the mean viewing time was only 0.1 hours per day (6). Further studies are warranted to confirm whether, and to what extent, attendance at child care centers reduces children's viewing time.

Excessive exposure of infants to television and videos is associated with impaired cognitive, language, and emotional development (1) and with irregular sleep schedules (7). Despite the accumulating evidence of the deleterious consequences of excessive television viewing in young children, parents have cited educational value, child enjoyment, and the need to get things done as reasons for having their child watch television or videos (4). Because excessive viewing time in early childhood is associated with excessive viewing time (8) and higher body mass index in middle childhood (9), limiting viewing time in children aged ≤ 2 years might have a role in preventing childhood obesity. Also, reducing viewing time in early childhood might help decrease the large

amount of media use among school-aged children, which now averages 4.5 hours of television content and approximately 7.5 hours of total media use daily (10), and the attendant health risks.

The findings in this report are subject to at least five limitations. First, data from the Oregon PRAMS-2 survey are based on maternal self-report, and viewing time was not validated by direct observation. With the ubiquity of portable and vehicle-mounted DVD players, mothers who estimated television and video time from only household use might have underestimated actual viewing time. Second, the wording of the viewing time question categorized 2 hours of viewing as “2 hours or more.” Because the AAP guidelines recommend “no more than 1 to 2 hours of quality programming per day,” a parent who limited viewing time to exactly 2 hours per day would have adhered to the AAP recommendation. Third, the Oregon PRAMS-2 survey only estimated the quantity of television and video watching, and did not assess the quality or context of programming or address alternative forms of media such as computers or video games. A parent and child viewing high-quality programming together and interacting positively could plausibly be of higher value than the child watching lower-quality programming alone. Fourth, although the results are weighted to the population of women having live births in Oregon, the response rates were suboptimal; because of response bias, actual viewing times among all Oregon children aged 2 years might have differed. Finally, the question assessing the presence of a television in the child’s bedroom did not consider a DVD-only player in the bedroom, and presumed that the child’s “bedroom” was not a common living area that might have contained the family television.

In Oregon, the findings in this report can assist health professionals, parents, and caregivers in recognizing the extent and associations of viewing time in young children, and support the recommendation for parents and caregivers to remove televisions from children’s bedrooms. This report demonstrates a novel use of PRAMS-2 in measuring young children’s viewing time. Advantages of using PRAMS-2 included the population-based sample, the large number of participants, and the breadth of information collected, which allow statewide estimates of viewing time. With the emergence of new forms of engaging media (e.g., Internet-based television and videos, as well as portable DVD players), children’s viewing time likely will continue to evolve. Other states should consider similar surveys of viewing time.

Acknowledgments

The findings in this report are based, in part, on contributions by T Kent, H Murphy, R Stanton, MA, Office of Family Health, Oregon Public Health Div; and S Lyss, MD, Scientific Education and Professional Development Program Office, CDC.

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