

Prevalence and trends in screen time from 2014-2019, among Norwegian adolescents

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Abstract

Background: The widespread use of screen-based activities is a public health challenge because of its associations with negative health outcomes such as obesity, lower cardiorespiratory fitness and lower insulin sensitivity. The aim of this study was to examine prevalence, trends and correlates of screen time from 2014 to 2019 in a representative sample of Norwegian adolescents.

Methods: This study is based on 6 cross-sectional examinations completed between 2014 and 2019 with a total sample of 219 806 junior high school students (grade 8-10, age 13-16 years old) and 155 791 high school students (grade 11-13, age 16-18 years old), N = 375 597. Screen time was dichotomized into ≥ 2 hours per day (high screen time) and ≤ 2 hours per day (low screen time) before analyses. Correlates included are school level, gender, physical activity levels, parental education and study year.

Results: The prevalence of high screen time was 80.6% for boys and 78.3% for girls in junior high school and 84.6% for boys and 82.9% for girls in high school, and screen time was higher among boys, compared to girls ($p < 0.001$). Adolescents with low physical activity showed increased odds of high screen time in junior high school 1.48 (1.45 to 1.52) and high school 1.53 (1.49 to 1.58). Compared to low parental education, only medium parental education in junior high school showed decreased odds of high screen time 0.87 (0.84 to 0.89), whereas medium parental education in high school 1.05 (1.01 to 1.08) and high parental education in junior high school 1.06 (1.02 to 1.10) and high school 1.11 (1.06 to 1.15) showed increased odds. When compared to 2014, the odds of high screen time increased significantly from 2016 1.16 (1.11 to 1.20) and 1.11 (1.06 to 1.17) to 2019 2.21 (2.13 to 2.30) and 1.79 (1.70 to 1.88) in junior high school and high school, respectively.

Conclusions: The estimated prevalence of high screen time has steadily increased from 2014 to 2019 among Norwegian boys and girls in junior high school and high school. Boys had overall higher screen time than girls, across school levels. Low parental education was not associated with high screen time, whereas low physical activity levels were associated with higher screen time across genders and school level.

Keywords

Screen time, trends, gender, parental education, physical activity, school level

Sammendrag

Bakgrunn: Økningen i bruk av skjermbaserte aktiviteter er ansett som en folkehelseutfordring på grunn av sammenhengen med negative helseutfall som fedme, dårligere fysisk form og insulin sensitivitet. Hensikten med denne studien var å undersøke prevalens og trender i skjermtid fra 2014 til 2019 blant et nasjonalt representativt utvalg av norske ungdommer ved ungdomsskolen og videregående skole, i forhold til studieår, kjønn og foreldres utdanning.

Metode: Denne studien er basert på 6 tverrsnitt studier gjennomført hvert år fra 2014 til 2019 med et totalt utvalg av 219 806 ungdomsskoleelever og 155 791 videregåendeskkoleelever (totalt 375 597). Skjermtid ble dikotomisert til ≥ 2 timer per dag (høy skjermtid) og ≤ 2 timer per dag (lav skjermtid) før analyser. Korrelater inkludert er skolenivå, kjønn, fysisk aktivitetsnivå, foreldres utdanning og år.

Resultater: Andelen med høy skjermtid var 80.6% blant gutter og 78.3% blant jenter på ungdomsskolen og 84.6% blant gutter og 82.9% blant jenter på videregående skole, og gutter hadde høyere skjermtid sammenliknet med jenter ($p < 0.001$). Ungdommer med lavt fysisk aktivitetsnivå hadde økt odds for høy skjermtid på ungdomsskolen 1.48 (1.45 til 1.52) og videregående skole 1.53 (1.49 til 1.58). Sammenliknet med lav foreldreutdanning, var det bare medium foreldreutdanning på ungdomsskolen 0.87 (0.84 til 0.89) som viste redusert odds for høy skjermtid. Mens medium utdanning på videregående 1.05 (1.01 til 1.08) og høy utdanning på ungdomsskole 1.06 (1.02 til 1.10) og videregående skole 1.11 (1.06 til 1.15), viste økte odds. Sammenliknet med 2014, økte oddsen for høy skjermtid signifikant fra 2016 1.16 (1.11 til 1.20) til 2019 2.21 (2.13 til 2.30) på ungdomsskolen og fra 2016 1.11 (1.06 til 1.17) til 2019 1.79 (1.70 til 1.88) på videregående skole.

Konklusjon: Andelen med høy skjermtid (≥ 2 timer per dag) har hatt en stadig økning fra 2014 til 2019 blant Norske gutter og jenter på ungdoms- og videregående skole. Gutter hadde høyere skjermtid, sammenliknet med jenter, på tvers av skolenivå. Lav foreldreutdanning var ikke assosiert med høy skjermtid, men lavt fysisk aktivitetsnivå var assosiert med høy skjermtid på tvers av kjønn og skolenivå.

Nøkkelord

Skjermtid, trender, kjønn, foreldres utdanning, fysisk aktivitet, skolenivå

Acknowledgement

This master's thesis concludes 5 years of studying public health. It's kind of bitter-sweet, as this subject has been a pleasure to learn about. One thing that is for sure, is during the writing of this I have very frequently exceeded screen time recommendations.

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1. Introduction

Screen time is a common sedentary behavior, and includes watching tv, playing videogames, computer and smartphone use (1). Sedentary behavior is defined as “any waking behavior characterized by an energy expenditure ≤ 1.5 METs while in a sitting or reclining posture” (2). Increases in use of screen-based media is considered a public health challenge because of its associations with negative health outcomes such as obesity, lower cardiorespiratory fitness and lower insulin sensitivity (1).

According to recommendations set by The American Academy of Pediatrics, The Canadian Paediatric Society and Australian Government Department of Health, daily screen time for adolescents should be limited to 2 hours or less per day. (3, 4, 5). Norway does not have specific guidelines for screen time, but the Norwegian Directorate of Health recommends reducing daily sedentary behavior (6).

Some Norwegian studies exist on trends in screen time, one is examining children (6th and 7th grade) from 2001 to 2008, finding a significant decrease in overall screen time (7). Another is a longitudinal cohort from 2007 to 2009 (11 to 13 years old), finding a significant increase in overall screen time (8). A comprehensive international study examining trends in screen time among 11, 13 and 15-year-olds found a significant decrease in tv viewing, but a sharp increase in computer use (for gaming and non-gaming), these findings was true for Norway as well (9).

Research has shown screen time to be associated with metabolic syndrome in a dose-response manner (10), and more daily physical activity combined with less screen time, is associated with lower prevalence of mental health problems in adolescents (11). Excessive screen time among children and adolescents can hamper sound psychosocial resilience (12), and is associated with increased odds of depressive symptoms (13, 14). Adolescents from low socioeconomic backgrounds, are more likely to have high screen time, compared to adolescents from high socioeconomic backgrounds (15), and high parental education is associated with less overall screen time among Norwegian adolescents (16, 17).

There are limitations in the body of research regarding screen-based activities among adolescents (18), and there are not many recently published Norwegian studies examining trends in screen time (7, 8, 9). Much of the current literature on screen time uses a single cross-sectional surveys, and there is a need for studies using more robust designs, e.g. experimental and longitudinal (18). The availability of different screen-based technology has increased (mobile phones, tablets), and there has been advancements in ways to watch non-interactive entertainment and partake in interactive entertainment (online streaming, time-shifted tv viewing, video games) during the recent years, which may have contributed to further increases in screen-based activities (19). Thus, the importance of continued

monitoring of screen time habits among adolescents and the ability to identify groups that are particularly vulnerable to excessive screen time, increases.

The purpose of this study was to examine prevalence, trends and correlates of screen time from 2014 to 2019 in a representative sample of Norwegian adolescents.

2.0 Theoretical framework

2.1 Screen time and sedentary behavior definitions

Screen time is indicated by the time spent on screen-based behaviors, and includes watching tv, playing videogames, computer and smartphone use (1). Screen time is divided into categories such as recreational screen time (television, computer, smartphone use outside of school and work), stationary screen time (while being stationary in any context), sedentary screen time (while not being stationary in any context) and active screen time (while not being stationary in any context) (20). These general definitions is applicable to all age and ability groups (20). Sedentary screen time is the type most typically examined in relation to negative health outcomes (1). There has been a lot of debates about the suitable Metabolic equivalent of task (MET) threshold when describing or identifying sedentary behaviors, currently the most common definition is “any waking behavior characterized by an energy expenditure ≤ 1.5 METs while in a sitting or reclining posture”, and this definition is widely recommended and accepted on research in adults (21, 22). The same threshold has been found to be applicable for a variety of sedentary behaviors in children and adolescents (23, 24, 25). Some researchers however, have found this threshold to be too low for some behaviors displayed by young children, that may be considered sedentary (26, 27). Researchers generally acknowledge that when measuring METs in children, a standard of VO_2 levels higher than 3.5 ml/kg/min should be used (28), and when this is implemented, there is wide agreement for the ≤ 1.5 MET threshold for children and adolescents (24, 25).

2.2 Measurements of screen time

Subjective methods in the form of self-reported questionnaires is commonly used in studies examining screen time, and much of the current literature has focused on tv viewing as a main measurement of sedentary behavior (18, 29, 30). This does however not appear to be an accurate assessment of overall sedentary behavior (31,32). A systematic review found studies which has included computer use or total screen time, to be prevalent measures (33). This suggest that more detailed questionnaires is needed to accurately assess sedentary behavior, although single-item questionnaires may be more appropriate when examining individual behaviors in health related epidemiological research (34). There is limited literature on objective measures for screen time, wearable cameras have been suggested as a potential method (35, 36). This method of data collection poses challenges in terms of ethics and participation burden, as well as researcher burden, when compared to self-reported screen time (37). In terms of sedentary behavior research, not focusing primarily on screen time, objective

measures is frequently used, and includes accelerometers, heart rate monitors, and movement sensors (34).

2.3 Screen time and health related risk factors

2.3.1 Obesity

The World Health Organization reports that prevalence of being overweight and obese has grown globally from 4% in 1975 to 18% in 2016, and is caused by increases in energy dense foods, physical inactivity and more sedentary behavior (38). A recent Norwegian publication found that among 15-year-olds, 13.9% of girls and 9.4% of boys were classified as overweight, and 4% of girls and 1.4% of boys were classified as obese (39).

Associations between screen time and obesity is a topic the scientific community have tried to explain, and a longitudinal study showed that high screen time (25 hours/week) was associated with increased prevalence of obesity in early adulthood and low screen time (4 hours) was associated with 20% and 40% reduced odds of being obese in adulthood among men and women, respectively (40). Researchers have discussed whether the association between screen time and obesity may be explained by displacement of physical activity and sleep as a study have shown that each additional hour of screen time per day was associated with a 13-minute decrease in MVPA, a 12-minute reduction in sport and play and a 10-minute reduction in sleep (41). A Norwegian study showed children and adolescents exceeding ≥ 2 hours of screen time per day had increased odds of being overweight (odds ratio 1.25; $p=0.02$) and obese (odds ratio 1.12; $p=0.02$) (15).

A systematic review of 26 longitudinal studies examining the relationship between sedentary behavior (tv viewing and computer use) and BMI/ BMI z-score, concluded that there is insufficient evidence to support an independent association between self-reported screen time and high BMI in adolescents (42). Other studies have reported a weak association between increased screen time and higher BMI in adolescents (43) and girls only (44), another study reported no significant association in girls (45). There are however studies with cross-sectional data (46) and longitudinal data (47) showing that screen time is to a higher degree associated with BMI at the upper tail of the BMI distribution. A US study (mean age 15 years old) reported that tv viewing and time spent doing homework was positively associated with BMI ($p<0.05$), while tv viewing and computer use was positively associated with BMI ($p<0.05$) among girls (48)

According to cross-sectional and longitudinal findings, video game playing is not strongly associated with obesity (49). Some factors which can explain this is that less time is devoted to playing games than watching tv, videogames require both hands used at the same time, this eliminates the possibility

for snacking, lastly playing videogames has a higher energy expenditure, when compared to tv viewing (49).

2.3.2 Insulin resistance

With diabetes and obesity reaching epidemic proportions in developed countries, the role of insulin resistance is gaining traction, and is defined as where normal or elevated insulin levels produce an attenuated biological response, most commonly referring to as impaired sensitivity to insulin mediated glucose disposal (50). Knowledge of how screen time influences type 2 diabetes markers, particularly insulin resistance, can be important for public health in terms of providing evidence-based screen time recommendations (51). In children, researchers found an association between screen time and insulin resistance, when adjusted for socioeconomic markers, pubertal status and objectively measured physical activity (51). A cross sectional study examining relationship between screen time and metabolic risk factors in adolescent boys found that having 2 hours or more screen time on weekdays doubled the risk of abnormal levels of insulin and HOMA-IR (homeostatic model assessment for insulin resistance), which suggests there is an increased risk of insulin resistance among adolescent boys who do not meet screen time guidelines (≥ 2 hours of screen time/ day) (52). Another study investigating associations between screen time and diabetes risk factors in overweight and obese adolescents found a positive association between tv viewing, fasting glucose and HOMA-IR, after adjusting for age, gender, waist-to-hip-ratio, caloric intake, carbohydrate intake, physical activity and intensity of physical activity (53).

2.3.3 Hypertension

Elevated blood pressure in adolescents and children is a growing concern, as the prevalence is increasing and it often goes undiagnosed (54). Epidemiological research shows blood pressure in childhood is associated with blood pressure later in life (55). Additionally, hypertension during adolescence has a strong correlation with mortality rate and morbidity in adulthood (56). A study investigating associations between tv viewing and hypertension in obese children and adolescents found that more time spent watching tv was associated with both hypertension and severity of obesity (53). Furthermore, increased odds of having high diastolic blood pressure has been observed in boys exceeding the frequently recommended (≥ 2 hours per day) of screen time (52). Another study examining screen time and physical fitness as correlates of weight status and blood pressure in 11 to 15-year-olds found that those who met screen time recommendations, had lower BMI percentile and

systolic blood pressure, compared to the group exceeding recommendations, independent of cardiorespiratory fitness performance (57).

2.3.4 Metabolic syndrome

Metabolic syndrome refers to the clustering of various metabolic risk factors that include abdominal obesity, dyslipidemia, hypertension and hyperglycemia (58). The prevalence of metabolic syndrome in the world is increasing, and it is considered a public health concern because of associations with cardiovascular disease and type 2 diabetes (58). A systematic review and meta-analysis of available observational studies concluded that low levels of physical activity, low indices of cardiorespiratory fitness and sedentary behavior (represented by <2 hours screen time per day on weekends), were significantly associated with the development of metabolic syndrome in adolescence (59). Researchers have speculated whether the risk of metabolic syndrome, increases with higher screen time, and a study found a dose response relationship between high screen time and metabolic syndrome, independent of physical activity, diet, gender and race (60). The recommended screen time of 2 hours or less seemed to be a bit restrictive, at least regarding metabolic syndrome, as 3 hours of daily screen time was the cut-off for borderline significant association ($P < 0.06$) (60). The mechanism behind this independent association is hypothesized to be a lack of measurement of low intensity activity in studies, another is that energy expenditure is lower while watching television than at rest (60). A Korean study of nationally representative children and adolescents also found an independent association between screen time and increased prevalence risk of metabolic syndrome (61). Objectively measured sedentary behavior has also been shown to increase odds of metabolic syndrome, independent of moderate to vigorous physical activity, age and gender (62).

2.3.5 Cholesterol

A meta-analysis and systematic review examining the relationship between screen time and biomedical health indicators in children and adolescents under 18 years old found moderate to strong association between overall sedentary behavior and HDL-cholesterol levels (63). Another study found video game playing as the only screen-based activity associated with lower HDL in obese adolescents (aged 14 to 18 years old) (64). Furthermore, a study investigating excessive tv viewing and cardiovascular disease risk factors among adolescents (aged 13 to 18 years old), concluded that over 3 hours of daily screen time is significantly associated with decreased HDL-cholesterol (65).

2.4 Trends in screen time

An article examining international trends in screen time from 2002-2010 used tv viewing, nongaming computer use, and computer use for gaming to determine how much time was spent on each behavior and calculating an estimate for total screen time (9). Results showed that tv viewing had decreased significantly among boys and girls from most countries, whereas computer use for gaming and nongaming had a sharp increase across all countries (9). Norwegian numbers from this study showed a significant negative trend in tv viewing, and a significant positive trend in computer use (gaming and non-gaming) (9). The body of literature regarding Norwegian trends in screen time is quite small, some studies does however exist (7, 8). One uses two cross-sectional examinations (2001 and 2008), examining children (6th and 7th grade), finding a significant decrease in overall screen time (7). Another is a longitudinal cohort (2007 to 2009) among 11 to 13 years olds, finding a significant increase in overall screen time (8). An American study investigating decreases in self-reported sleep duration and associations with new media screen time found a significant increase in overall screen time (from 35% to 41% and from 37% to 43%) (66). Furthermore a study examining temporal trends in overweight and obesity, physical activity and screen time among Czech adolescents from 2002 to 2014, found that the proportion with excessive screen time (more than 2 hours per day) had increased (67). A Chinese study also found a significant increase in screen time from 1997 to 2004, but interestingly pointed out more studying before and after school, in addition to more tv viewing, as important contributing factors to total sedentary behavior (68). An English 5-year longitudinal cohort among 11-12-year-old children starting in 1999 found an increase in self-reported television viewing and computer gaming (69).

2.5 Screen time and gender

A common finding in the literature examining screen time is boys having overall higher screen time, compared to girls, which is shown in multiple studies (16, 41, 69, 9, 70). In the English cohort referred to in the last section boys reported more hours of screen time than girls throughout the study ($P < 0.01$), with an average weekly increase of 2.52 hours among boys and 2.81 hours among girls in the 5-year period (68). A study investigating associations between screen time and physical activity among Spanish adolescents found boys to have higher overall screen time, compared to girls (70). Another study found boys to have higher screen time than girls (260 vs 190 minutes daily, $P < 0.001$) (41). A Norwegian study examining associations between tv viewing and obesity found that high screen time (2 hours or more per day) were more prevalent in boys, compared to girls ($P < 0.001$) (16). In the article examining international trends in screen time, boys reported more hours of screen time, they also reported slightly larger decrease in tv viewing and slightly larger increase in computer use (9). A US

study found boys reporting spending approximately 15 minutes more every day watching television, compared to girls (49).

2.6 Screen time and age

A common finding in the literature is adolescents having higher prevalence of screen time compared to children (71, 16, 41). A Norwegian study conducted in 2013 found that prevalence of screen time was higher in adolescents, compared to children (16). Boys between 12 to 15 years old, had significantly higher probability of exceeding the frequently recommended ≥ 2 hours of daily screen time, compared to boys between 6 to 8 years old, similarly girls between 12 to 15 years old, had significantly higher probability of exceeding ≥ 2 hours of daily screen time, compared to girls between 6 to 8 years old. (16). Results from another Norwegian cross-sectional study showed higher screen time among 15-year-olds compared to 9-year-olds, with 81.3% and 53.5% respectively exceeding the recommendations. (71). Another study found 13-year-olds to have higher screen time than 10-year-olds, with daily screen time increasing by 16 minutes per year of age (41). A US study from 1998-1999 however, found younger adolescents (13 years or younger) spending between 15 and 30 minutes more on screen based behaviors, compared to older adolescents (14 to 18 years old) (48).

2.7 Screen time and parental education

The socioeconomic status of parents is reportedly closely related to digital screen usage among children and adolescents (72). A meta-analysis examining socioeconomic correlates of screen time in adolescents found that in high income countries, adolescents from low socioeconomic backgrounds were more likely to have high screen time, compared to their high socioeconomic counterpart (73). Multiple studies have found higher parental education being associated with less screen time, compared to low parental education (16, 17, 70). Neighborhood socioeconomic status has been shown to have a relationship with screen time as students from lower socioeconomic neighborhoods report higher levels of sedentary behavior (measured by screen time) (69).

2.8 Screen time and mental health

Less screen time and more frequent vigorous physical activity is associated with lower risk of reporting negative mental health symptoms among adolescents (74). A literature review concluded that excessive and addictive use of digital media by children and adolescents appears to compromise the development of sound psychophysiological resilience (75). A meta-analysis found a non-linear

dose-response relationship between overall high screen time (over two hours per day) and depressive symptoms, among children and adolescents aged 5 to 18 years old (76). Several studies has also linked high overall screen time to anxiety, depressive symptoms and low self-esteem (77, 78). A 2020 systematic review found tv viewing is less likely to be associated with depressive symptoms, compared to computer and videogame playing, this suggests certain screen based sedentary behaviors are more likely to explain the link between screen time and internalizing symptoms (79).

The last couple of years, research has started to focus on associations between screen time and quality of life (Qol), which is defined as a measure of the physical and psychosocial dimension of health (80). In a large study of nationally representative school aged children in America (n = 14 818) and Canada (n= 7266), they found screen time being negatively associated with quality of life (81). A study examining associations between physical activity, sedentary behavior and quality of life, found that lower quality of life scores were observed among participants who spent the most time in screen-viewing activities (82). The authors hypothesized that the decrease In quality of life could be related to passive nature of screen time (82).

2.9 Screen time and physical activity

The recommendations for physical activity in Norway for children and young people is at least 60 minutes of moderate to vigorous activity every day (83), The World health Organization has similar guidelines (84). The correlation between overall screen time and physical activity seems to be weak, as researchers suggests that there is time for both, and one doesn't necessarily exclude the other (85). Tv viewing and video-game playing appears to be largely uncorrelated with physical activity (85). A Finnish nationally representative study examining physical activity and sedentary behavior in adolescents, showed an inverse relationship between screen time and physical activity, meaning higher screen time equals lower physical activity levels (86). Results from a Spanish study confirmed that boys who reported 4 hours or more of total daily screen time, had significantly lower probability of being sufficiently active according to recommendations (70). An Australian study have shown that each additional hour of screen time per day was associated with a 13-minute decrease in MVPA and a 12-minute reduction in sport and play (41). A meta-analysis investigating relationships between media use, body fatness and physical activity in children and adolescents also found a small but negative association between overall screen time and time spent being physically active (87). Participation in a range of physical activity behaviors, in particular the ones represented by high parental sports/ exercise involvement, was associated with positive adolescent risk profiles, and high tv/video viewership was associated with less favorable risk behavior outcomes (88).

As more research examining physical activity and sedentary behavior using objective measures has emerged, it is hypothesized among scientists whether moderate to vigorous physical activity can have a protective effect on the negative health outcomes associated with sedentary behavior and screen time, as a study has shown that higher levels of physical activity by children and adolescents was associated with better cardiometabolic risk factors regardless of the amount of sedentary time (89). Research also confirms that moderate to vigorous physical activity has an inverse association with measures of adiposity in children, independent of self-reported sedentary behavior (90) and a relationship with better physical fitness in adolescence (91).

2.10 Screen time and nutrition

A hypothesis among researchers is that the association between screen time and obesity comes from an increase in caloric intake, perhaps in the form of snacking (92). A cross-sectional study in Dutch adolescents (aged 11 to 16 years old), found tentative evidence that linked restrained and emotional eating to tv viewing and snacking (93). A study examining associations between screen time, snacking and overall diet quality in school aged children, found screen time to be the largest predictor for large evening snack portion sizes, having a diet in need of improvement, and a lower likelihood of having an overall good diet quality (94). Another study examining the “couch potato” hypothesis, which entails increased energy consumption with increased television viewing, found a clear link between tv viewing and a high consumption of snacks and drinking of soft drinks and alcohol (95). Furthermore, these calorie consuming habits that is accompanied by tv viewing, was found more regularly in heavy viewers, compared to lighter viewers, which suggest a relationship between amount of tv viewing and energy intake (95). A US study found boys reporting high tv viewing/ computer use consumed almost 400 more calories per day, similarly girls reporting high computer use consumed more than 300 calories per day, compared to reporting low use (48). Boys and girls in the high television/ video group were also significantly more likely to consume a higher percentage of energy from fat and more dietary fat (48).

2.11 Screen time recommendations

America, Canada and Australia has created screen time recommendations to limit daily screen time to 2 hours or less per day (96, 97, 98). The argumentation for the recommendations, is somewhat different though. The article containing the American recommendations have a thorough focus on the negative aspects of high screen time children and adolescents can be exposed to, such as violence and

aggressive behavior, sex and sexuality, tobacco and alcohol use and lastly the associations with poor nutrition and obesity (96). The recommendations for parents extend beyond just limiting screen time to ≥ 2 hours per day, it also touches on subjects like participating in selection of what is being viewed, viewing together with their children, having an emphasis on alternate activities and to not use television as a “babysitter” (96). In Canada, recommendations for screen time (≥ 2 hours per day) is a part of overall guidelines for sedentary behavior among children and adolescents, and also include limiting motorized transport, indoor time and extended sitting in the context of family, school and community activities (97). Australian screen time recommendations are part of an overall 24-hour movement guide for children and adolescents and include guidelines for physical activity, sedentary behavior and sleep (98). The recommendations are based on results from a systematic review of the relationships between sedentary behaviors and health indicators in children and adolescents (99), and 32 studies added for the 2018 guideline update process (98).

3.0 Methodological discussion

3.1 Study design

The current study is based on 6 repeated cross-sectional examinations completed each year from 2014 to 2019 in the large Youngdata study (which is a direct translation from Norwegian). Youngdata is considered to be the most comprehensive Norwegian source of information on health and well-being among adolescents at the municipal and national levels, and is used for research, municipal planning, work related to public health and preventative measures aimed at young people (100). A study is cross-sectional when the investigator measures outcomes and exposures of the study participants at the same time, the participants are selected based on inclusion and exclusion criteria, and these studies can be used to measure prevalence and to calculate OR for a measure of association (101). Limitations of cross-sectional research includes difficulty in deriving causal relationships and sensitivity to certain biases, which means one have to be careful about interpreting associations and direction of associations (101). The strength of the repeated cross-sectional design comes from drawing a new sample for each examination, which ensures a steady level of reliability for each successive sample, when under stable sampling conditions (102). Consequently, the repeated cross-sectional design does not suffer from cumulative losses in respondents and is therefore a better reflection of the changing community (103). For collection of individual-level data repeated at regular intervals, the repeated cross-sectional data structure can be very useful by adding a dynamic component to the study of cross-sectional units, which allows for investigation of time-varying relationships (104). Weaknesses of a repeated cross-sectional study, when compared to a longitudinal study includes less statistical power and fewer ways to estimate the probability of one event occurring with a relationship to one or multiple other events (102).

3.2 Questionnaire

All participants filled out an online self-administered survey questionnaire at school with instructions from teachers. Self-report questionnaires are commonly used in research on screen time (33). Completion of examinations takes approximately 30-45 minutes. The questionnaire is split into three parts. One obligatory module, which is completed by all participants in the study. One module where municipalities and county municipalities can add pre-existing questions they wish to include. Finally, questions which are unique to local situations, can be added. The questionnaire is designed in a matter which makes completion within a single school hour, possible. Because of the obligatory module all participating schools complete, comparisons between municipalities and results from the entire country can be performed.

3.3 Population and sample

The planning phase of epidemiological studies includes the calculation of the sample size needed to carry out the study (105, s.52). Three criteria are usually needed to be specified to determine sample size: The level of precision, the level of risk and the degree of variability in the attributes being measured (106). A population is all individuals or objects with mutual, defining characteristics, and it is of essence to specify these for quantitative researchers (107, s.71). The population in this study included Norwegian adolescents attending junior high school (grade 8-10, age 13-16 years old) and high school (grade 11-13, age 16-18 years old). The total participants in the study from 2014 to 2019 was 487 129. After excluding 111 532 participants with incomplete responses, the sample consisted of 375 597, (219 806 in junior high school) and (155 791 in high school). The total participants per year in junior high school was 2014 (31 000), 2015 (44 500), 2016 (43 700), 2017 (64 400), 2018 (40 600) and 2019 (63 600). Total participants per year in high school was in 2014 (15 100), 2015 (29 400), 2016 (25 800), 2017 (43 200), 2018 (30 400) and 2019 (55 000). From 2014 to 2016, response rates in junior high school and high school were respectively 82% and 66%. From 2017 to 2019 response rates in junior high school and high school were respectively 87% and 73%. With a large sample size, we are easier able to achieve generalization, which is the criterion used in quantitative research to determine to which extent the findings can be applied to other groups and settings (107, s.71). A large sample size will always be better than a smaller one, in quantitative studies, there are however some fallacies which must be taken into consideration when dealing with large sample sizes (108). Statistical significance is often treated as practical significance, however statistically significant results, does not necessarily mean they have practical importance or consequence (108). When the sample size is large enough, all differences and dependencies will be statistically significant, even though the effect sizes may be too small to have any practical significance (108). In the present study, a way to mitigate the possibility of this bias, is to split the sample into smaller groups like “boys and girls” in “junior high school and high school” and year of examination.

3.4 Measurements

3.4.1 Screen time

In the present study self-report was used for all variables. Screen time were measured using a single question; “Outside of school, how much time do you usually spend on activities in front of a screen (TV, PC, tablet, phone) per day?” Response categories ranged from no time, less than an hour, 1-2 hours, 2-3 hours, 3-4 hours, 4-6 hours to more than 6 hours. Before analyses, screen time was

dichotomized into 2 hours or more per day (High screen time) and 2 hours or less per day (Low screen time), according to recommendations set by The American academy of Paediatrics, The Canadian Paediatric Society and Australian Government Department of Health (3, 4, 5). USA, Canada and Australia have independently summarized the available literature on this subject, and concluded over 2 hours is where adverse health outcomes becomes prevalent (3, 4, 5).

Self-reported tv-viewing is frequently used as a measure for sedentary behavior in epidemiological research, studies also use total time spent in front of electronic screens (e.g sum of time watching tv, using computer, playing video games), and other studies categorize participants into specific screen time groups (e.g ≤ 2 or > 2 h/d) (1). In the current study, the latter methodology was used, and participants were divided into groups based on either having high screen time (> 2 h/d) or low screen time (≤ 2 h/d). Dichotomization refers to the transformation of a continuous outcome (response) to binary outcome and is argued to be potentially harmful in terms of statistical estimation and hypothesis testing (109). However, dichotomization can still be found in a lot of research, and the reason is some researchers suggest that particular variables or relationships between variables, can be better examined using dichotomized indicators (110). Furthermore, dichotomization makes conducting analysis easier, and analysis carried out with dichotomized indicators may better match the theoretical purpose of the research (110). In the present study we created a dichotomized indicator, which is categorical variables created by dichotomizing the observed variable (110).

3.4.2 Physical activity

Physical activity was assessed using a single question; “How often are you physically active to the level of getting warm and breathless?” Response categories ranged from never, rarely, 1-2 times a month, 1-2 times per week, 3-4 times per week to at least 5 times per week. Before analyses, Physical activity was dichotomized into being physically active to the point of becoming warm and breathless 3 or more times per week (High physical activity) and being physically active to the point of becoming warm and breathless less than 3 times per week. The cut off for physical activity is arbitrary. There was no way to create a dichotomous variable for physical activity recommendations set by The Norwegian Directorate of Health (83) and WHO (84) with the available data, therefore some analyses not included in the article will be present as additional results, primarily focusing on physical activity. There are several positive and negative sides of using self-report as method for collecting physical activity data. A study examining the difference in data collected from either objective measures or self-report, on finding out if individuals are sufficiently active or inactive, found that self-reported prevalence’s of physical activity were higher than those of objective measures. Self-report also had a harder time identifying individuals as inactive (111).

3.4.3 Parental education

To assess parental education a single question was used; “Does your parents have education from university or college? Put a cross for each parent. If you’re not in contact with one or two parents, skip the question regarding this parent. The options were father, yes/no and mother yes/no. The data for parental education were categorized as low, medium and high before performing analyses. High: both parents have education from university or college, medium: one out of two parents have education from university or college, low = no parents have education from university or college.

Problems related to measurements of socioeconomic status frequently used in public health studies as a control variable, as opposed to variable of interest, could affect research findings and conclusions, with implications for policymakers (112) Adolescents reporting parental education is often used as a measure of socioeconomic status in health research. The quality of such report can be questionable though, because of associations between parental education and other confounding variables (113). A meta-analysis of socioeconomic correlates of sedentary behavior (measured by screen time) found the most common ways to measure socioeconomic status was paternal, maternal or parental education, resources and parental occupation (114).

3.4.4 Gender, school level and study year

Gender was assessed with a single question; Are you boy or girl? Response options were “Boy” and “Girl”. In the present study, gender was used as a binary dependent variable, trend analyses were split between boys and girls. School level was assessed with a single question called “School level”. Response options were junior high school and high school. School level was used in the present study, to split the sample. All analyses were conducted with split file “school level”. Survey year was assessed by participants writing down year of examination. Year was used as a dependent variable in the binary logistic regression analysis and used to split the sample to examine trends.

3.5 Validity and reliability of self-reported sedentary behavior measures

Reliability is the consistency of a response either across multiple trials within a single administration, usually called internal consistency, or across multiple assessments, generally called test-retest or stability reliability (115). A study examining the reliability and validity of a self-reported screen time based sedentary behavior questionnaire found it to be reliable for use in adolescents, however to a higher degree in boys, compared with girls (116).

Validity is the extent to which an instrument measures what it’s supposed to measure, there are various types of validity which is relevant to measurement of sedentary behavior (content, criterion,

concurrent) (115). Content validity can be explained as the degree to which an instrument's content is able to capture the construct, meaning whether a complex instrument has the appropriate sample of items for the construct being measured (107, s.176). Criterion validity refers to the extent the scores on a measure are a good reflection of a "gold standard", meaning criterion is considered an ideal measure of the construct (107, s.176). A major limitation regarding self-report measures is that they frequently demonstrate poor validity, one of the main challenges of establishing validity is the lack of an accepted "gold standard" measure of sedentary behavior (117). Concurrent validity is defined as the degree to which an instrument is correlated with scores on an exterior criterion, measured at the same time (107, s.398). While objective measures of sedentary behavior seem to be the most valid, self-report measures have the advantage of being low cost, relatively low participation burden, and easier to administer to large-scale populations (115).

A review looking into validity and reliability of measures of television viewing time and other non-occupational sedentary behavior in adults, found that reliability coefficients were in general fair to high, but concurrent validity was very variable (29). A study investigating absolute validity found self-reported tv viewing to be significantly lower than objective measures (118). A systematic review of the validity and reliability of sedentary behavior measures used with children and adolescents, found that reliability results were mixed and less reliable, compared to objective measures (33). The same review reported lack of consistency in validity results, because some studies tried to establish concurrent validity by comparing a method of unknown validity against another measure of unknown validity (33).

3.6 Strengths and weaknesses of self-report measures

When using self-report as method for data collection, there are several biases to take into consideration. Social desirability bias can occur when participants are answering questions which may concern private or sensitive topics (119), examples of these topics included in the present study are physical activity levels, parental education and screen time. Recall bias refers to the participants ability to accurately remember the information they are asked to give (119), which should not be a major weakness in our study, as participants report "a usual day" compared to a specific day. Social desirability bias has been shown to be associated with self-reported sedentary behavior measures in adolescent males (120).

A strength of an online self-administered questionnaire is the limited "social presence", which can lead to answers less influenced by social desirability bias, compared to telephone or in-person interviews (121). Furthermore, the interactive aspect of the survey may lead respondents to be more engaged than

they would be with standard off-line questionnaires, this may in turn lead respondents to complete more items, make fewer mistakes and disclose more about themselves ([121](#)).

3.6 Statistical analysis

Statistical analyses were performed using IBM SPSS statistics version 25. Significant level was set to $P < 0.05$. All analyses were set to split file “school level”, meaning one group for junior high school and one group for high school. Frequency tables were used to estimate prevalence (N) of the entire sample, as well as percentages. Chi-square tests were conducted to examine if differences were significant in screen time across school level and gender. The Chi-square statistic is a non-parametric tool designed to analyze differences between groups when the independent variable is measured on a nominal level, and does not require equal variance among groups in the study or homoscedasticity in the data ([122](#)).

To examine trends in screen time, binary logistic regression was used. Screen time dichotomized between high/ low was used as the independent variable. The continuous variable “Year” was made into a categorical variable where each year represents a score. Furthermore, the categorized variable for parental education and the dichotomized variables for gender and physical activity were included in the regression analysis. Logistic regression is used to yield information about the relationship between individual risk/ protective factors and the outcome ([123](#)). Beta coefficients can be interpreted as odds ratios, a measure of relative risk ([123](#)).

Bootstrap method was used for all descriptive confidence intervals. Bootstrap is statistical technique that allows researchers to make inferences from data without making strong distributional assumptions, this makes it possible to estimate confidence intervals for statistics that do not have simple sampling distributions ([124](#)). All analyses were performed using IBM SPSS Statistics for Windows, V.25 (Armonk, NY: IBM Corp). Threshold for significant findings were set to $p < 0.05$.

3.7 Ethical considerations

The Nova research center of Norwegian Social Research, Oslo and Akershus University College of Applied Sciences, holds academic and legal responsibility to make sure data collection is completed in agreement with laws, rules and ethical guidelines for the young data survey. The study was conducted in line with the declaration of Helsinki, which is a statement of ethical principles for medical research involving human subjects, including research on identifiable human material and data ([125](#)). All participants gave informed consent, children (usually under 17) do not have the ability to provide informed consent, as such parents must give permission for interventions, this is called “informed permission” ([125](#)). Parents were given information regarding the survey, and opportunity to withdraw

their children from participation. Data collection was anonymous, and researchers independent of collection performed data analysis. The Faculty ethical committee at the University of Agder approved this study.

As this study includes no personal details about participants, according to the Norwegian Personal Data act, which says “The purpose of this Act is to protect natural persons from violation of their right to privacy through the processing of personal data” (126) The Act shall help to ensure that personal data are processed in accordance with fundamental respect for the right to privacy, including the need to protect personal integrity and private life and ensure that personal data are of adequate quality” (126), Thus, approval by the Norwegian Centre for Research Data (NSD) was not required for data collection in this study.

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Additional results: Prevalence and trends in physical activity

Statistical analysis

Descriptive statistics was used present prevalence of high physical activity level according to school level, for the entire sample. Chi-square tests were conducted to analyze differences between boys and girls in junior high school and high school, and differences across years. To examine trends, frequency tables were used to estimate prevalence of low physical activity from 2014 to 2019, according to year of survey. Binary logistic regression models were used to examine odds ratio (OR) and 95% confidence intervals of low physical activity level (< 3 times/ week) among Norwegian junior high school and high school students according to study year, screen time, gender and parental education. Bootstrap method was used for descriptive confidence intervals. All analyses were performed using IBM SPSS Statistics for Windows, V.25 (Armonk, NY: IBM Corp). Threshold for significant findings were set to $p < 0.05$.

Table 1 shows that a total of 65,3% and 57% of boys in junior high school and high school, respectively spent ≥ 3 times/week being physically active to the point of being warm and breathless ($p < 0.001$). Among girls, 56,6% and 45,3% of those attending junior high school and high school, were respectively classified as having high physical activity levels ($p < 0.001$). Significant differences were also observed between boys and girls, across school levels ($p < 0.001$ for both).

Figure 1 and 2 presents prevalence of physical activity with 95% confidence intervals among boys and girls in junior high school and high school. Around 10 percent of boys and girls attending junior high school and high school, reported “never” or “rarely” being physically active. The highest reported scores among boys in high school (29.8%) and both genders in junior high school (33.7% for boys and 35.8% for girls) was “3-4 times per week”, girls in high school (34.4%) reported “1-2” times per week most frequently. Boys reported “ ≥ 5 times per week” more frequently in both junior high school and high school, compared to girls.

Figure 3 presents crude trends in being physically active less than three times per week among Norwegian adolescents in junior high school and high school from 2014-2019. The estimated prevalence increased from 37% in 2014 to 39% in 2019 among adolescents in junior high school and from 46% in 2014 to 49% in 2019 among adolescents in high school. Significant differences were observed between school levels every year ($p < 0.001$).

Table 2 presents odds ratio and 95% CI of low physical activity level (< 3 times/ week) among Norwegian junior high school and high school students according to study year, screen time, gender and parental education. Compared with boys, girls showed increased odds of low physical activity in junior high school 1.47 (1.45 to 1.50) and 1.62 (1.59 to 1.66) in high school. Compared with low screen time, having high screen time increased the odds of low physical activity by 1.48 (1.45 to 1.51)

in junior high school and 1.53 (1.49 to 1.58) in high school. Compared to those with low parental education, adolescents having medium parental education showed increased odds by 1.98 (1.93 to 2.03) in junior high school and 1.90 (1.85 to 1.95). Additionally, having high parental education increased odds by 1.43 (1.38 to 1.47) in junior high school and 1.39 (1.59 to 1.66) in high school.

We observe a slight negative trend in the prevalence of low physical activity from 2014 to 2019. In adolescents attending junior high school, the odds of having low physical activity decreased significantly in 2015 0.88 (0.85 to 0.91) and 0.82 (0.79 to 0.86) in high school, 2016 0.91 (0.88 to 0.94) in junior high school and 0.87 (0.83 to 0.91) in high school, in 2017 0.99 (0.96 to 1.03) in junior high school and 0.96 (0.92 to 1.01), in 2018 0.84 (0.81 to 0.87) in junior high school and 0.82 (0.79 to 0.86) in high school and 2019 0.93 (0.90 to 0.96) in junior high school and 0.92 (0.89 to 0.96) in high school.

Tables and figures: Additional results

Table 1: Prevalence of high physical activity among boys and girls in junior high school and high school.

Table 2: Adjusted odds ratio and 95% CI of low physical activity level (< 3 times/ week) among Norwegian junior high school and high school students according to study year, screen time, gender and parental education.

Figure 1: Prevalence of high physical activity with 95% confidence intervals among boys and girls in junior high school, based on the original distribution of scores.

Figure 2: Prevalence of high physical activity with 95% confidence intervals among boys and girls in high school, based on the original distribution of scores.

Figure 3: Crude trends in being physically active less than three times per week among Norwegian adolescents in junior high school and high school from 2014-2019.

Table 1: Prevalence of high physical activity among boys and girls in junior high school and high school

| | Boys (n = 184 053) | | | Girls (n = 191 544) | | |
|-------------------------------------|------------------------------|--------------------|-----------------|-------------------------------|--------------------|-----------------|
| | Junior high school | High school | p-value* | Junior high school | High school | p-value* |
| PA ≥3 times/week¹ | 65.3%* | 57.0%* | <0.001 | 56.6%* | 45.3%* | <0.001 |
| Percentage (CI 95%) | (65.0 to 65.6) | (56.7 to 57.3) | | (56.3 to 56.8) | (45.0 to 45.7) | |

¹**High physical activity:** ≥3 times/week to the level of getting warm and breathless

*Gender stratified differences in physical activity between adolescents attending junior high and high school were analyzed using the χ^2 test.

Table 2: Adjusted odds ratio and 95% CI of low physical activity level (< 3 times/ week) among Norwegian junior high school and high school students according to study year, screen time, gender and parental education

| | Junior high school | High school |
|---------------------------------------|---------------------------|----------------------|
| Screen time¹ | | |
| Low | 1 (Reference) | 1 (Reference) |
| High | 1.48 (1.45, 1.51)*** | 1.53 (1.49, 1.58)*** |
| Parental education² | | |
| Low | 1 (Reference) | 1 (Reference) |
| Medium | 1.98 (1.93, 2.03)*** | 1.90 (1.85, 1.95)*** |
| High | 1.43 (1.38, 1.47)*** | 1.39 (1.35, 1.43)*** |
| Gender | | |
| Boys | 1 (Reference) | 1 (Reference) |
| Girls | 1.47 (1.45, 1.50)*** | 1.62 (1.59, 1.66)*** |
| Year | | |
| 2014 | 1 (Reference) | 1 (Reference) |
| 2015 | 0.88 (0.85, 0.91)*** | 0.82 (0.79, 0.86)*** |
| 2016 | 0.91 (0.88, 0.94)*** | 0.87 (0.83, 0.91)*** |
| 2017 | 0.99 (0.96, 1.03) | 0.96 (0.92, 1.01) |
| 2018 | 0.84 (0.81, 0.87)*** | 0.82 (0.79, 0.86)*** |
| 2019 | 0.93 (0.90, 0.96)*** | 0.92 (0.89, 0.96)*** |

¹Screen time; high: ≥ 2 hours/day, low: ≤ 2 hours/day

²Parental education; high: both parents have education from university or college, medium: one out of two parents have education from university or college, low = no parents have education from university or college

*p<0.05, **p<0.01, ***p<0.001

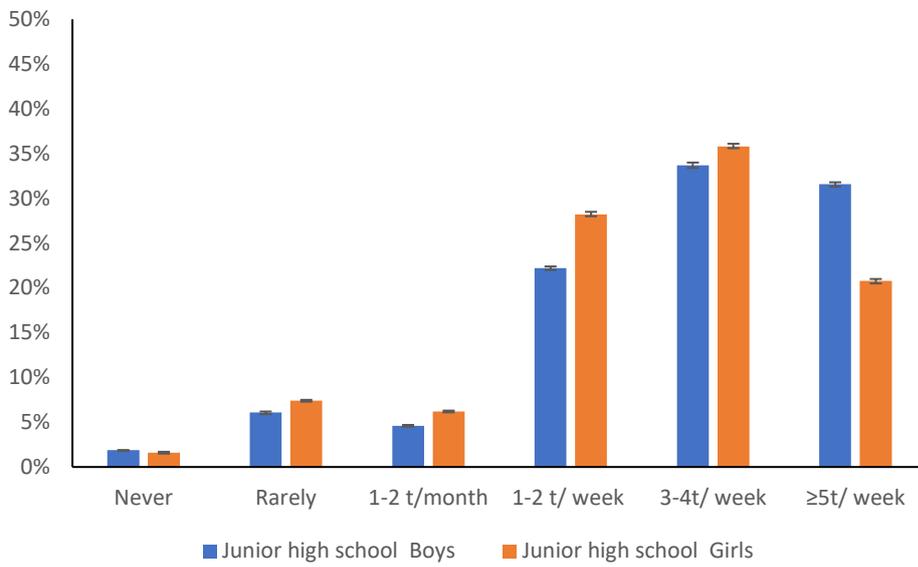


Figure 1. Prevalence of high physical activity with 95% confidence intervals among boys and girls in junior high school, based on the original distribution of scores

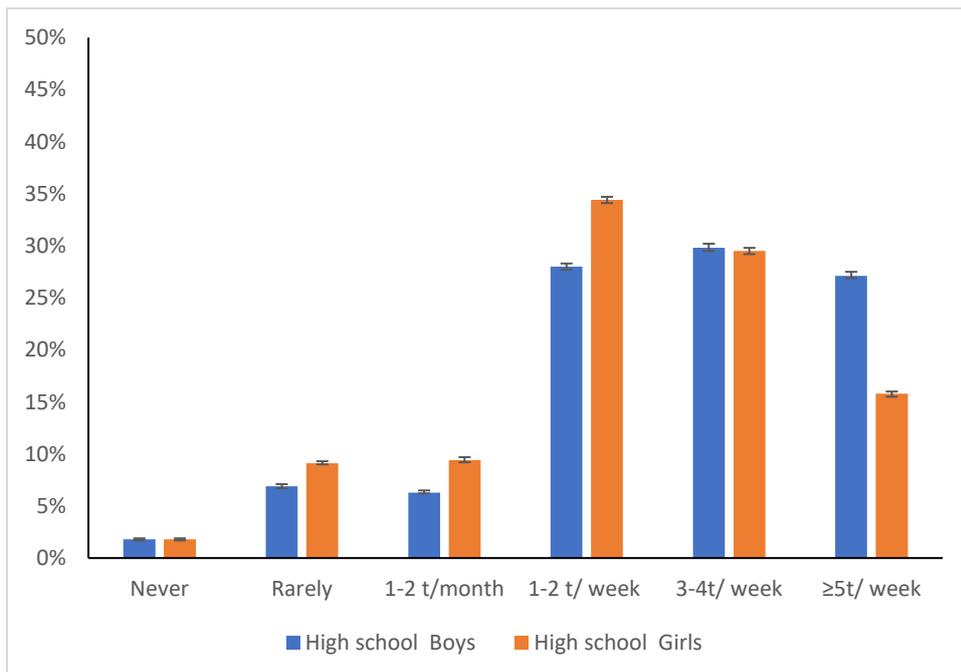


Figure 2. Prevalence of high physical activity with 95% confidence intervals among boys and girls in high school, based on the original distribution of scores

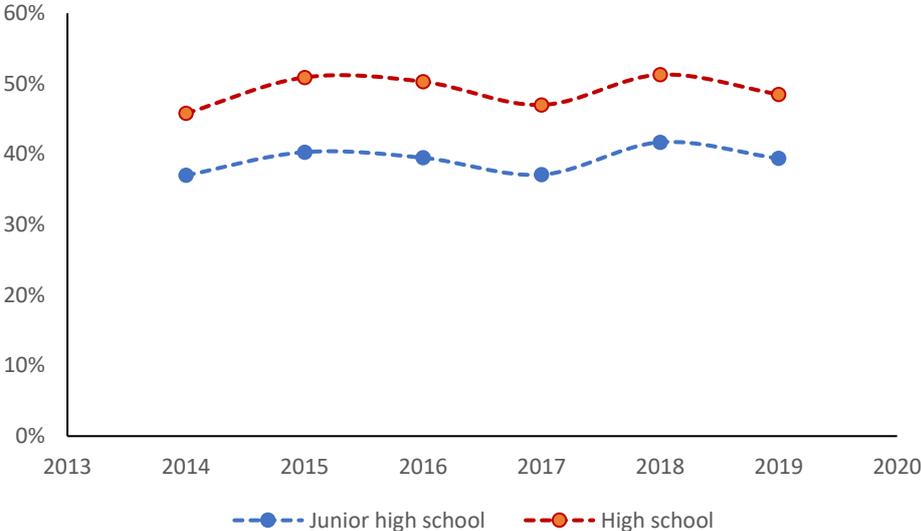


Figure 3. Crude trends in being physically active less than three times per week among Norwegian adolescents in junior high school and high school from 2014-2019

The research article

Prevalence and trends in screen time from 2014-2019, among Norwegian adolescents

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1 **Abstract**

2 **Background:** The widespread use of screen-based activities is a public health challenge because of its
3 associations with negative health outcomes such as obesity, lower cardiorespiratory fitness and lower
4 insulin sensitivity. The aim of this study was to examine prevalence, trends and correlates of screen
5 time from 2014 to 2019 in a representative sample of Norwegian adolescents.

6 **Methods:** This study is based on 6 cross-sectional examinations completed between 2014 and 2019
7 with a total sample of 219 806 junior high school students (grade 8-10, age 13-16 years old) and
8 155 791 high school students (grade 11-13, age 16-18 years old), N = 375 597. Screen time was
9 dichotomized into ≥ 2 hours per day (high screen time) and ≤ 2 hours per day (low screen time) before
10 analyses. Correlates included are school level, gender, physical activity levels, parental education and
11 study year.

12 **Results:** The prevalence of high screen time was 80.6% for boys and 78.3% for girls in junior high
13 school and 84.6% for boys and 82.9% for girls in high school, and screen time was higher among
14 boys, compared to girls ($p < 0.001$). Adolescents with low physical activity showed increased odds of
15 high screen time in junior high school 1.48 (1.45 to 1.52) and high school 1.53 (1.49 to 1.58).
16 Compared to low parental education, only medium parental education in junior high school showed
17 decreased odds of high screen time 0.87 (0.84 to 0.89), whereas medium parental education in high
18 school 1.05 (1.01 to 1.08) and high parental education in junior high school 1.06 (1.02 to 1.10) and
19 high school 1.11 (1.06 to 1.15) showed increased odds. When compared to 2014, the odds of high
20 screen time increased significantly from 2016 1.16 (1.11 to 1.20) and 1.11 (1.06 to 1.17) to 2019 2.21
21 (2.13 to 2.30) and 1.79 (1.70 to 1.88) in junior high school and high school, respectively.

22 **Conclusions:** The estimated prevalence of high screen time has steadily increased from 2014 to 2019
23 among Norwegian boys and girls in junior high school and high school. Boys had overall higher
24 screen time than girls, across school levels. Low parental education was not associated with high
25 screen time, whereas low physical activity levels were associated with higher screen time across
26 genders and school level.

27

28

29

30 **Keywords:**

31 Screen time, trends, gender, parental education, physical activity

32 **Background**

33 The widespread use of screen-based activities among adolescents is considered a public health
34 challenge because of its associations with adverse health effects such as obesity, lower
35 cardiorespiratory fitness and lower insulin sensitivity (1, 2, 3). A dose-response relationship has also
36 been identified between screen time (television and computer use) and risk of metabolic syndrome (4),
37 whereas less screen time and more frequent vigorous physical activity has been associated with lower
38 risk of reporting mental health problems among adolescents (5). Furthermore, high screen time in
39 children and adolescents is associated with health related risk factors such as insulin resistance (6, 7),
40 hypertension (8, 7) and decreased HDL-cholesterol (9, 10). A literature review concluded that
41 excessive digital media use by children and adolescents appears to hamper the formation of sound
42 psychophysiological resilience (11). High screen time activity is also associated with increased odds of
43 depressive symptoms (12), especially in boys (13,14).

44 Due to the relative consistency of the findings linking high screen time to adverse health outcomes,
45 USA, Canada and Australia has created national guidelines to limit recreational screen time to ≥ 2
46 hours per day (15, 16, 17). Norway does not have specific guidelines for screen time, but the
47 Norwegian Directorate of Health recommends reducing sedentary behavior and having a limit for
48 daily screen time, E.g 2 hours (18).

49 A comprehensive study examining international trends in screen time among children (aged 11 to 15
50 years old) from 2002 to 2010 found that tv viewing decreased slightly, whereas a sharp increase in
51 computer use was observed during this time period (19). Boys reported more hours of screen time,
52 compared with girls, and both girls and boys reported higher screen time on weekend days compared
53 to weekdays (19). Results from a Spanish study confirmed higher screen time use among boys, and
54 that boys who reported 4 hours or more of total screen time, had significantly lower probability of
55 being sufficiently active according to recommendations (20). Results from Norwegian studies
56 examining trends in screen time shows somewhat contradictory findings between children and
57 adolescents, as a Norwegian study examining screen time from 2002 to 2008 in children (6th and 7th

58 grade) found a significant reduction in overall screen time outside of school (21), and a longitudinal
59 study examining changes in screen time in 11 to 13 year-olds from 2007 to 2009 found a significant
60 increase (22). A Norwegian study showed that prevalence of screen time use increased with age as
61 adolescent boys and girls (aged 12 to 15 years old), had significantly higher screen time use than
62 children (6 to 8 years old) (23). Similar findings has been shown in another Norwegian study showing
63 that children has lower prevalence of high screen time, compared to adolescents (24).

64 A meta-analysis concluded that odds of high screen time was 11% lower in adolescents from high
65 socioeconomic groups, compared to low socioeconomic groups (25). Multiple studies have also
66 confirmed that high screen time is more prevalent among adolescents with low parental education,
67 compared to high parental education (23, 24, 26).

68 To our knowledge, no recent Norwegian studies has examined trends in screen time, among
69 adolescents. Given the rapidly changing scene with regards to availability of different screen-based
70 technologies (mobile phones, tablets), and new and evolving ways of accessing entertainment (online
71 streaming, time-shifted tv viewing) the recent years, this may have contributed to further increases in
72 screen-based activities (27). Thus, screen time represent an important behavior to monitor due to its
73 inherent potentially negative health effects.

74 The purpose of this study was to examine prevalence, trends and correlates of screen time from 2014
75 to 2019 in a representative sample of Norwegian adolescents.

76

77 **Methods**

78 The present study is based on 6 repeated cross-sectional data collections in 21 Norwegian
79 municipalities from 2014 to 2019 in the comprehensive Young Data study. Young data is local
80 examinations for adolescents, which are offered free of charge to all municipalities and county
81 councils in Norway. This nationally representative study provides information on health, living
82 conditions and lifestyle habits among Norwegian adolescents (28).

83 **Population and sample**

84 The population in this study included Norwegian adolescents attending junior high school (grade 8-10,
85 age 13-16 years old) and high school (grade 11-13, age 16-18 years old). A total of 1 576 224
86 adolescents attended junior high school and high school (grades 8-13) from 2014 to 2019 (29, 30).
87 However, every school in Norway did not participate in the survey. The total number of participants in
88 this study was 487 129, which is 30.9% of all adolescents attending junior high school and high
89 school. From 2014 to 2016, response rates in junior high school and high school were 82% and 66%,
90 respectively. From 2017 to 2019 response rates in junior high school and high school were 87% and
91 73%, respectively. Data from 111 532 participants were removed due to incomplete responses, leaving
92 219 806 junior high school students and 155 791 high school students (N = 375 597), upon which
93 analyses were conducted.

94

95 **Questionnaire**

96 All participants filled out an online self-administered survey questionnaire at school with instructions
97 from teachers. Surveys were completed during spring semesters from February to April. Completion
98 of examinations takes approximately 30-45 minutes. The questionnaire is split into three parts. One
99 obligatory module, one where pre-existing questions can be added, and one for questions that are
100 unique to local situations.

101

102 **Ethics**

103 The Nova research center of Norwegian Social Research, Oslo and Akershus University College of
104 Applied Sciences, holds legal responsibility for the young data survey. The study was conducted in
105 line with the declaration of Helsinki. All participants gave informed consent, parents were given
106 information regarding the survey, and opportunity to withdraw their children from participation. Data

107 collection was anonymous, and researchers independent of collection performed data analysis. The
108 Faculty ethical committee at the University of Agder approved this study.

109

110 **Variables**

111 Screen time were assessed using a single question; “Outside of school, how much time do you usually
112 spend on activities in front of a screen (TV, PC, tablet, phone) per day?” Response categories ranged
113 from no time, less than an hour, 1-2 hours, 2-3 hours, 3-4 hours, 4-6 hours to more than 6 hours.
114 Before analyses, screen time was dichotomized into 2 hours or more per day (High screen time) and 2
115 hours or less per day (Low screen time), according to recommendations set by The American academy
116 of Paediatrics, The Canadian Paediatric Society and Australian Government Department of Health ([15](#),
117 [16](#), [17](#)).

118 Physical activity was assessed using a single question; “How often are you physically active to the
119 level of getting warm and breathless?” Response categories ranged from never, rarely, 1-2 times a
120 month, 1-2 times per week, 3-4 times per week to at least 5 times per week. Before analyses, Physical
121 activity was dichotomized into being physically active to the point of becoming warm and breathless 3
122 or more times per week (High physical activity) and being physically active to the point of becoming
123 warm and breathless less than 3 times per week. The cut off for physical activity is arbitrary.

124 To assess parental education a single question was used; “Does your parents have education from
125 university or college? Put a cross for each parent. If you’re not in contact with one or two parents, skip
126 the question regarding this parent. The options were father, yes/no and mother yes/no. The data for
127 parental education were categorized as low, medium and high before performing analyses. High: both
128 parents have education from university or college, medium: one out of two parents have education
129 from university or college, low = no parents have education from university or college.

130 Gender was assessed with a single question; Are you boy or girl? School level was assessed with a
131 single question called “School level”. Response options were Junior high school and high school. Year
132 of survey was assessed by the participants telling which year they were surveyed.

133 **Statistical analyses**

134 Descriptive statistics was used present data on screen time, distribution of gender, parental education
135 and study year, according to school level for the entire sample. Chi-square tests were conducted to
136 analyze differences in screen time, physical activity, parental education and gender between
137 adolescents in junior high school and high school, and differences across years. To examine trends,
138 frequency tables were used to estimate prevalence of high screen time from 2014 to 2019, according to
139 year of survey. Binary logistic regression models were used to examine odds ratio (OR) and 95%
140 confidence intervals for high screen time (≥ 2 hours of screen time/ day) according to study year, PA
141 level, gender and parental education. Bootstrap method was used for all descriptive confidence
142 intervals. All analyses were performed using IBM SPSS Statistics for Windows, V.25 (Armonk, NY:
143 IBM Corp). Threshold for significant findings were set to $p < 0.05$.

144

145 **Results**

146 Table 1 presents characteristics of study participants (gender, parental education and study year)
147 according to school level. The sample included a total of 375 597 individuals, including 219 806
148 adolescents attending junior high school (50.5% girls) and 155 791 adolescents attending high school
149 (51.6% girls). A majority of the participants in both junior high school and high school had high
150 parental education (64.2% and 49.5%, respectively), whereas less of the participants had medium
151 (19.9% and 25.8%, respectively) and low parental education (14.9% and 24.7%, respectively).

152 Results from table 2 showed that the prevalence of high screen time was 80.6% for boys and 78.3%
153 for girls in junior high school. A total of 84.6% of boys and 82.8% of girls in high school reported
154 high screen time. Significant differences were observed across school levels and gender ($p < 0.001$).

155 Figure 1 and 2 shows distribution of daily screen time among boys and girls in junior high school and
156 high school, respectively. Around 6% of boys and girls in junior high school reported no screen time
157 and less than one hour per day. The highest reported score for girls (26.1%) and boys (25.7%) were 3-

158 4 hours. Boys were more prevalent in the higher screen time categories. For high school, around 5% of
159 boys and girls reported no screen time and less than an hour. The highest reported score for girls
160 (27.6%) and boys (25.6%) were 3-4 hours.

161 Figure 3 presents crude trends in high screen time (≥ 2 hours/day) among boys and girls in junior high
162 school from 2014-2019. The estimated prevalence of high screen time increased from 75% in 2014 to
163 85.6% in 2019 among boys and 70.2% in 2014 to 85.0% among girls (difference = $p < 0.001$).

164 Figure 4 presents crude trends in high screen time (≥ 2 hours/day) among boys and girls in high school
165 from 2014-2019. The estimated prevalence of high screen time increased from 81.8% in 2014 to
166 87.4% in 2019 among boys, and 76.7% in 2014 to 86.7% in 2019 among girls (difference = $p < 0.001$).

167 Table 3 presents odds ratio and 95% CI of high screen time (≥ 2 hours of screen time/ day) among
168 Norwegian junior high school and high school students according to study year, PA level, gender and
169 parental education. Compared with girls, boys showed increased odds of high screen time in junior
170 high school 1.20 (1.17 to 1.22) and high school 1.21 (1.17 to 1.24). Low level of physical activity was
171 also associated with increased odds of high screen time among adolescents attending junior high
172 school 1.48 (1.45 to 1.52) and high school 1.53 (1.49 to 1.58). Compared to those with low parental
173 education, adolescents with medium parental education showed decreased odds 0.87 (0.84 to 0.89) in
174 junior high school, but increased odds of high screen time in high school 1.05 (1.01 to 1.08).

175 Furthermore, high parental education was associated with increased odds of high screen time among
176 both adolescents in junior high school 1.06 (1.02 to 1.10) and high school 1.11 (1.06 to 1.15).

177 We observe a trend of increased prevalence of high screen time in the period 2014 to 2019. In
178 adolescents attending junior high school, the odds of reporting high screen time increased significantly
179 in 2016 1.16 (1.11 to 1.20) and 1.11 (1.06 to 1.17) in high school, 2017 1.68 (1.62 to 1.74) in junior
180 high school and 1.44 (1.37 to 1.52) in high school, 2018 1.83 (1.76 to 1.91) in junior high school and
181 1.58 (1.49 to 1.67) in high school and 2019 2.21 (2.13 to 2.30) in junior high school and 1.79 (1.70 to
182 1.88) in high school.

183

184 Discussion

185 In this nationally representative sample of Norwegian adolescents, the estimated prevalence of having
186 daily screen time of two hours or more, were over 80% among boys and around 80% among girls.

187 High screen time was more prevalent across genders in high school, compared to junior high school
188 ($p < 0.001$), which is in compliance with 2 Norwegian studies, one in 6-8, 9-11 and 12-15 year-olds
189 (23), in 9 and 15-year-olds (24), an Australian (31), and a US study (32).

190 Our data suggests boys having overall higher prevalence of screen time than girls, which has been
191 shown in an international study of 11-15 year-olds (19), a Spanish cross-sectional study examining 14-
192 18 year-olds (20) and an Australian cross-sectional study of 10-13 year-olds (31). Boys had higher
193 odds of exceeding screen time recommendations in junior high school 1.20 (1.17 to 1.22) and high
194 school 1.21 (1.17 to 1.24), compared to girls, similar results exist in other studies (33). The present
195 study also shows higher increases in screen time from 2014 to 2019 among girls (14.5% increase) in
196 junior high school and (10.5% increase) in high school, compared to boys in junior high school
197 (10.5% increase) and high school (5.6% increase), which is in compliance with an 5-year English
198 cohort finding larger increases in screen time among girls compared to boys (34). The present study
199 suggests having lower levels of physical activity increases odds of having high screen time in junior
200 high school 1.48 (1.45 to 1.52) and high school 1.53 (1.49 to 1.58). Previously published studies have
201 found that higher screen time is associated with lower levels of physical activity in children and
202 adolescents (31, 35), adolescent boys (20) and adolescent girls (36). Our findings suggest low parental
203 education to not increase odds of high screen time. Only students with medium parental education in
204 junior high school, showed decreased odds 0.87 (0.84 to 0.89), while medium parental education in
205 high school and high parental education, showed slightly increased odds. A meta-analysis on
206 socioeconomic correlates screen time in adolescents found in 39 studies, the odds of high screen time
207 were 11% lower in high socioeconomic groups, meaning some of the studies showed a negative
208 association (25).

209 Individuals reporting high screen time increased every year from 2014 to 2019 among students
210 attending junior high school and high school. The odds of reporting high screen time increased
211 significantly in 2016 1.16 (1.11 to 1.20) in junior high school and 1.11 (1.06 to 1.17) in high school
212 and increased each year to 2019 2.21 (2.13 to 2.30) in junior high school and 1.79 (1.70 to 1.88) in
213 high school. These findings suggest an upward trend in high screen time among Norwegian
214 adolescents in junior high school and high school, and corroborates other national (21) and
215 international studies (19, 37, 38).

216

217 **Strengths and weaknesses**

218 One of the major strengths of the present study lies in the high participation rate (84% in junior high
219 school and 69% in high school), which serves as a strong indicator of representativeness of the results.
220 The advantage of using independent repeated cross-sectional examinations, which means a new
221 sample is drawn every year, ensures a steady level of reliability for each successive sample when
222 under stable sampling conditions (39). Thus, the repeated cross-sectional design does not suffer from
223 cumulative losses in respondents and is therefore a better reflection of changes in the community (40).
224 Weaknesses of a repeated cross-sectional study compared to a longitudinal study includes less
225 statistical power and fewer ways to estimate the probability of one event occurring with a relationship
226 to one or multiple other events (39). The fact that we had to remove participants from the study with
227 incomplete responses, can also alter results because it is unknown in which categories they would fit.
228 When using self-report as method for data collection, there are several biases to take into
229 consideration. Social desirability bias can occur when participants are answering questions which may
230 concern private or sensitive topics (41), examples of these topics included in the present study are
231 physical activity levels, parental education and screen time. Recall bias refers to the participants ability
232 to accurately remember the information they are asked to give (41), which should not be a major
233 weakness in our study, as participants report “a usual day” compared to a specific day. A systematic
234 review reported mixed reliability results and lack of consistent validity results in self-reported

235 sedentary measures in children and adolescents (42). The strength of self-reported questionnaires
236 comes from the low cost, relatively low participation burden, and the simplicity in administration to
237 large-scale populations (43).

238 The question used to measure screen time allowed us to create a variable for high (≥ 2 hours/day) and
239 low (≤ 2 hours per day) screen time. Dichotomization of the main dependent variable can potentially
240 lead to some data loss, but gives the opportunity of comparisons to other studies which has used
241 similar cut-offs (33, 44, 45). USA, Canada and Australia has independently created national guidelines
242 to limit recreational screen time to ≥ 2 hours per day, because this is the cut-off where adverse health
243 effects often are observed (15, 16, 17).

244 As more studies using objective measures of sedentary behavior and physical activity has emerged, it
245 is hypothesized among researchers whether moderate to vigorous physical activity can have a
246 protective effect on the negative health outcomes associated with sedentary behavior and screen time,
247 as multiple studies has shown that higher levels of physical activity by children and adolescents was
248 associated with better cardiometabolic risk factors (46), an inverse relationship with adiposity (47) and
249 better physical fitness (48), independent of sedentary time. A possible explanation why this
250 association is more frequently found with objective measures, could be that self-reported measures has
251 demonstrated poor validity, because there is no “gold standard” for self-reported sedentary behavior
252 (49).

253 There are limitations in the body of research available for screen time among adolescents, most of the
254 current literature uses cross-sectional designs, so there is a need for more studies using experimental
255 and longitudinal designs (50). Much of the research on screen time was published before the
256 widespread use of smartphones and tablets became prevalent among adolescents, which may impact
257 total time spent on screen-based activities (50). Thus, the present study adds valuable information
258 about how prevalence and trends in screen time among Norwegian adolescents has evolved during the
259 last few years. Furthermore, our findings provide evidence that should encourage policymakers and
260 researchers to implement measures aimed at reducing screen time in children and adolescents, which
261 previously has been shown to have a positive effect (51).

262 **Conclusions**

263 The estimated prevalence of high screen time (≥ 2 hours per day) has steadily increased from 2014 to
264 2019 among Norwegian boys and girls in junior high school and high school. Overall, boys have
265 higher screen time than girls, across school levels. Low physical activity levels were associated with
266 higher screen time across genders and school level. Our findings show a sharp increase in screen time,
267 and continued monitoring of this behavior is recommended. Future public health interventions should
268 target ways to limit children and adolescent's exposure to sedentary screen-based activities.

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289 **Declarations**

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291 **Ethics approval**

292 As this study includes no personal details about participants, according to the Norwegian Personal
293 Data act, Approval by the Norwegian Centre for Research Data (NSD) was not required.

294 **Availability of data and material**

295 Availability of data and materials in the Ungdata surveys are included in a national database
296 administered by Norwegian Social Research (NOVA). Data is available for research purposes upon
297 application. Information on the questionnaires can also be found from the web page (in Norwegian)
298 (<http://ungdata.no/>).

299 **Consent for publication**

300 Not applicable

301 **Competing interests**

302 No competing interests

303 **Funding**

304 No funding was received to produce this manuscript

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Figure 2: Prevalence of screen time with 95% confidence intervals among Norwegian adolescents in junior high school, split by gender, based on the original distribution of scores.

Figure 3: Crude trends in high screen time (≥ 2 hours/day) with 95% confidence intervals among Norwegian adolescents in junior high school from 2014-2019.

Figure 4: Crude trends in high screen time (≥ 2 hours/day) with 95% confidence intervals among Norwegian adolescents in high school from 2014-2019.

Table 1: Characteristics of participants according to school level

| | Junior high school (n = 219 806) | High school (n = 155 791) | p-value* |
|---|--|-------------------------------------|-----------------|
| Gender, girls, n (%) | 111 095 (50.5%) | 80449 (51.6%) | 0.004 |
| Parental education¹ n (%) | | | |
| High | 143 321 (65.2%) | 77119 (49.5%) | |
| Medium | 43840 (19.9%) | 40161 (25.8%) | |
| Low | 32645 (14.9%) | 38511 (24,7%) | <0.001 |
| Year, n (%) | | | |
| 2014 | 23173 (10.5%) | 11972 (7.7%) | |
| 2015 | 33280 (15.1%) | 23070 (14.8%) | |
| 2016 | 34350 (15.6%) | 17558 (11.3%) | |
| 2017 | 47780 (21.7%) | 33492 (21.5%) | |
| 2018 | 31114 (14.2%) | 24924 (16.0%) | |
| 2019 | 50109 (22.8%) | 44775 (28.7%) | |

¹**Parental education;** high: both parents have education from university or college, medium: one out of two parents have education from university or college, low = no parents have education from university or college

*Differences in parental education and gender among participants in junior high school and high school were analyzed using the χ^2 test.

Table 2. Prevalence of high screen time among boys and girls in junior high school and high school

| | Boys (n = 184 053) | | | Girls (n = 191 544) | | |
|---------------------------|------------------------------|--------------------|-----------------|-------------------------------|--------------------|-----------------|
| | Junior high school | High school | p-value* | Junior high school | High school | p-value* |
| Screen time | | | | | | |
| ≥2 h/d¹ | 80,6%* | 84,6%* | <0.001 | 78,3%* | 82,9%* | <0.001 |
| Percentage (CI 95%) | (80.4 to 80.8) | (84.3 to 84.8) | | (78.1 to 78.5) | (82.7 to 83.2) | |

¹ **High screen time activity:** ≥2 hours screen time per day outside of school

*Gender stratified differences in screen time between adolescents attending junior high and high school were analyzed using the χ^2 test.

Table 3. Adjusted odds ratio and 95% CI of high screen time (≥ 2 hours of screen time/ day) among Norwegian junior high school and high school students according to study year, PA level, gender and parental education

| | Junior high school | High school |
|---------------------------------------|------------------------|------------------------|
| Physical activity¹ | | |
| High | 1 (Reference) | 1 (Reference) |
| Low | 1.48 (1.45 to 1.52)*** | 1.53 (1.49 to 1.58)*** |
| Parental education² | | |
| Low | 1 (Reference) | 1 (Reference) |
| Medium | 0.87 (0.84 to 0.89)*** | 1.05 (1.01 to 1.08)** |
| High | 1.06 (1.02 to 1.10)** | 1.11 (1.06 to 1.15)*** |
| Gender | | |
| Girls | 1 (Reference) | 1 (Reference) |
| Boys | 1.20 (1.17 to 1.22)*** | 1.21 (1.17 to 1.24)*** |
| Year | | |
| 2014 | 1 (Reference) | 1 (Reference) |
| 2015 | 1.01 (0.98, 1.05) | 0.97 (0.91, 1.02) |
| 2016 | 1.16 (1.11, 1.20) *** | 1.11 (1.06, 1.17) *** |
| 2017 | 1.68 (1.62, 1.74) *** | 1.44 (1.37, 1.52) *** |
| 2018 | 1.83 (1.76, 1.91) *** | 1.58 (1.49, 1.67) *** |
| 2019 | 2.21 (2.13, 2.30) *** | 1.79 (1.70, 1.88) *** |

¹Physical activity; high: ≥ 3 times/week, low < 3 times/week

²Parental education; high: both parents have education from university or college, medium: one out of two parents have education from university or college, low = no parents have education from university or college

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

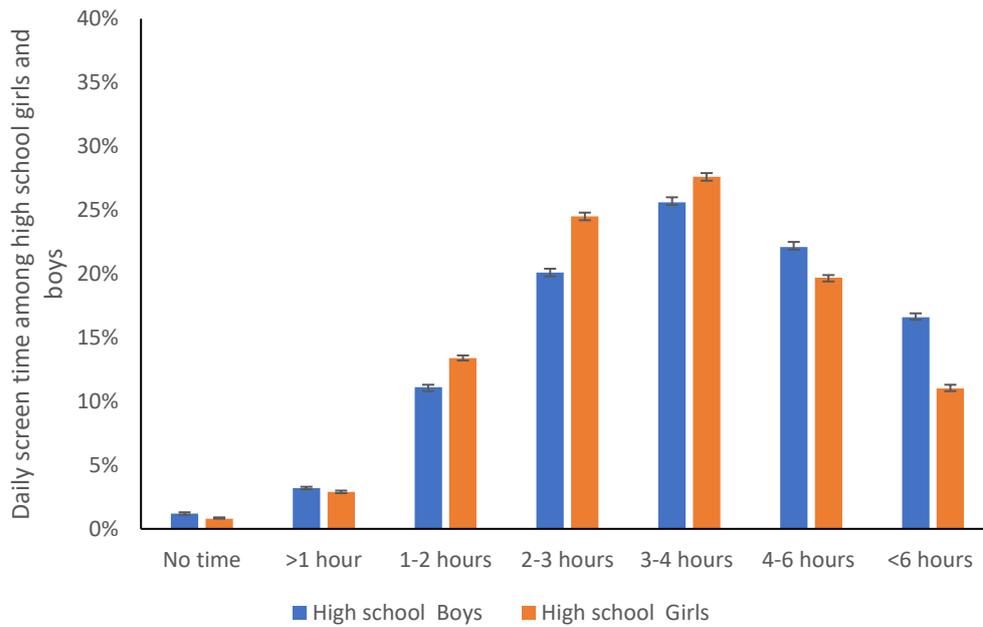


Figure 1. Prevalence of screen time with 95% confidence intervals among Norwegian adolescents in high school, split by gender, based on the original distribution of scores.

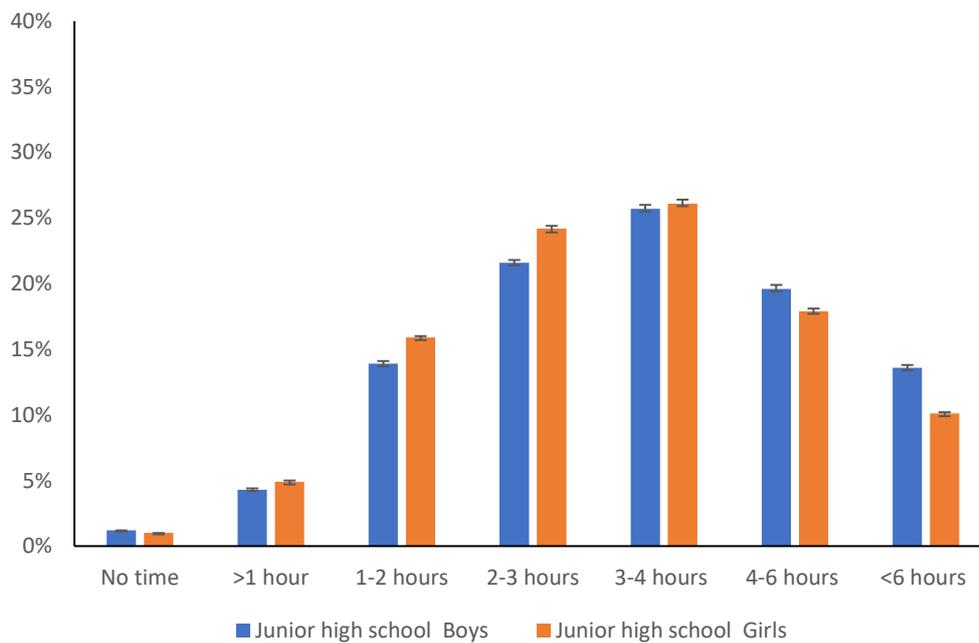


Figure 2. Prevalence of screen time with 95% confidence intervals among Norwegian adolescents in junior high school, split by gender, based on the original distribution of scores.

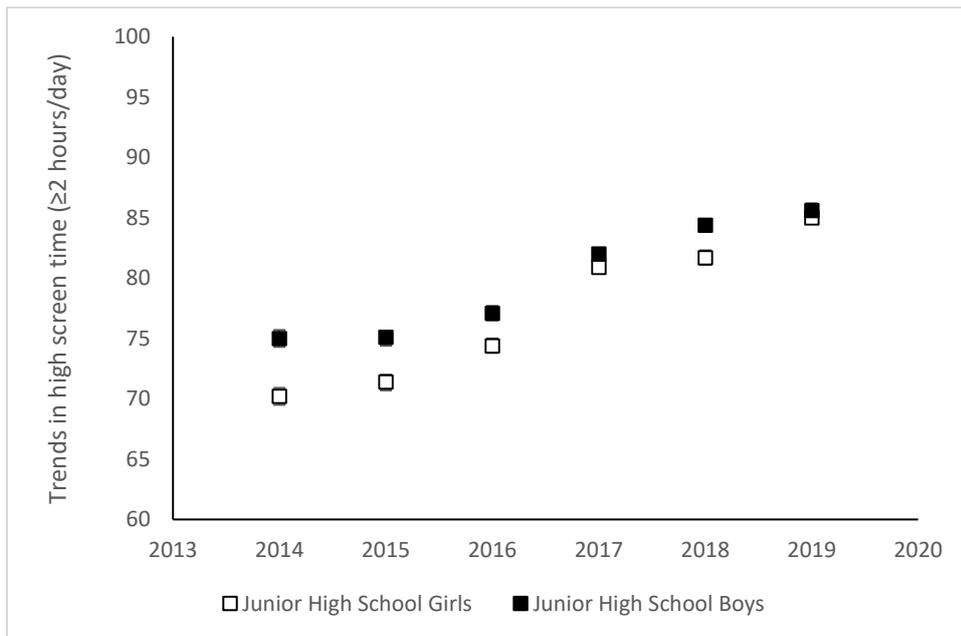


Figure 3. Crude trends in high screen time (≥ 2 hours/day) with 95% confidence intervals among Norwegian adolescents in junior high school from 2014-2019.

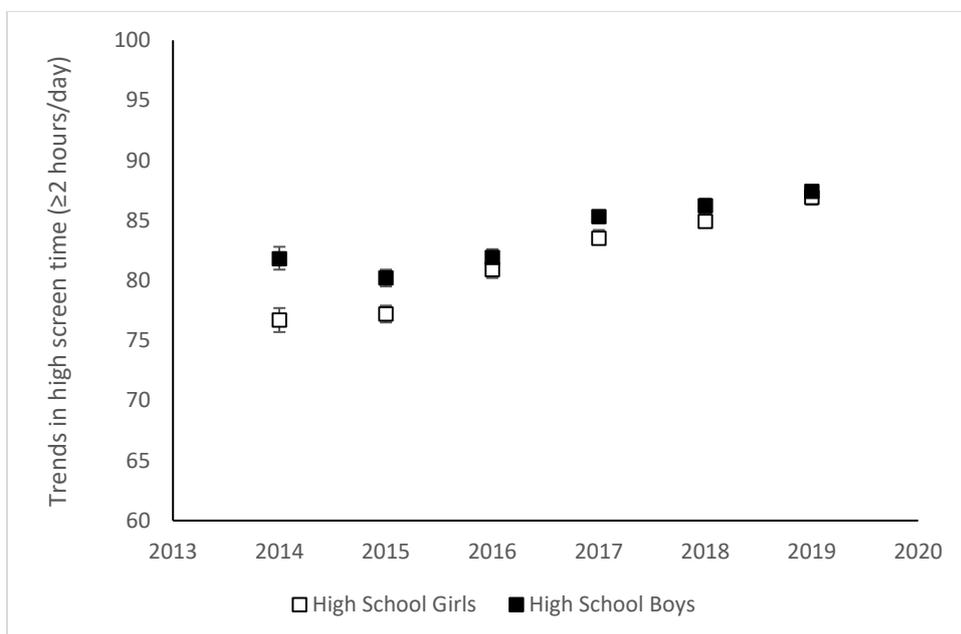


Figure 4. Crude trends in high screen time (≥ 2 hours/day) with 95% confidence intervals among Norwegian adolescents in high school from 2014-2019.

Questionnaire

Ungdata

Spørreskjema 2017 – 2019



Oppbygningen av spørreskjemaet

Spørreskjemaene består av tre typer spørsmål: obligatoriske spørsmål, valgfrie spørsmål og egenkomponerte spørsmål. Det skal ikke ta mer enn 45 minutter for ungdommene å svare på undersøkelsen. Med en slik tidsramme utgjør de obligatoriske spørsmålene litt over halvparten av spørsmålene i spørreskjemaet. I tillegg kommer bakgrunnsspørsmål som kjønn og klassetrinn.

Obligatoriske spørsmål (side 6-36)

Den obligatoriske delen av spørreskjemaet står på side 1-32. Denne inneholder spørsmål om ressurser rundt ungdommene, skole og framtid, fritid, helse og trivsel, tobakk og rus og spørsmål om lovbrudd, vold og annen risikoatferd. Bakgrunnsspørsmålene på side 1-2 er obligatoriske, men i undersøkelser med få respondenter vil NOVA/KoRus vurdere om de må utelates for å ivareta anonymiteten.

Valgfrie spørsmål (side 39-148)

De valgfrie spørsmålene er ordnet i tilsvarende temabolker som de obligatoriske spørsmålene, og er utdypende i forhold til spørsmålene i den obligatoriske delen. Hvert nummer i de ulike delene (A1, A2 osv.) tilsvarer én valgfri modul. Antallet valgfrie spørsmål skal aldri overstige 100, hvor hver enkelt linje i et spørsmålsbatteri teller som ett spørsmål.

| | |
|---|---|
| A. RUSMIDDELBRUK (side 39-64) | B. HELSE OG TRIVSEL (side 65-76) |
| C. KROPP OG SEKSUALITET (side 77-82) | D. KRIMINALITET OG OVERGREP (side 83-86) |
| E. FRITID (side 87-104) | F. FAMILIE OG VENNER (side 105-111) |
| G. SKOLE OG FRAMTID (side 112- 123) | H. RELIGION OG SAMFUNN (side 124- 134) |
| I. TJENESTER (side 135- 141) | J. EVALUERING (side 142) |

Bakgrunnsspørsmål til ungdomstrinnet i tilleggsmodul 1 (side 34-35)

Spørsmålene på side 34-35 kan velges uavhengig av hverandre ett og ett, men kan bare tas med dersom undersøkelsen kan gjennomføres anonymt. NOVA/KoRus vil gjøre en vurdering av hvilke spørsmål som kan inkluderes for å sikre at undersøkelsen er anonym.

Bakgrunnsspørsmål til videregående i tilleggsmodul 2 (side 36-38)

Spørsmålene på side 36-37 (blå spørsmål) er obligatoriske i ikke-anonyme undersøkelser, mens spørsmålene på side 38 er valgbare (gule spørsmål).

Ved gjennomføring av anonyme undersøkelser er alle spørsmål på side 36-38 valgbare. I slike tilfeller vil NOVA/KoRus vil gjøre en vurdering av hvilke spørsmål som kan inkluderes for å ivareta anonymiteten.

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Grunnmodul

UNGDATAS GRUNNMODUL BRUKES I ALLE UNGDATAUNDERSØKELSENE

Velkommen til Ungdata!

Du skal klikke eller krysse av i den ruta som passer best. Er det spørsmål som du synes er vanskelige, eller som du ikke har lyst til å svare på, kan du hoppe over dem.

Takk for at du vil være med i undersøkelsen!

Side 1 Bakgrunnsspørsmål

| |
|-----------------------------|
| Er du gutt eller jente? |
| <input type="radio"/> Gutt |
| <input type="radio"/> Jente |

RUTING: KUN TIL ELEVER PÅ UNGDOMSSKOLEN. * I UNDERSØKELSER MED FÅ RESPONDENTER VIL NOVA VURDERE OM DETTE SPØRSMÅLET KAN INKLUDERES OG SAMTIDIG IVARETA ANONYMITETEN.

| |
|---------------------------------|
| Hvilket klassetrinn går du i? |
| <input type="radio"/> 8. trinn |
| <input type="radio"/> 9. trinn |
| <input type="radio"/> 10. trinn |

RUTING: KUN TIL ELEVER PÅ VIDEREGÅENDE. * I UNDERSØKELSER MED FÅ RESPONDENTER VIL NOVA VURDERE OM DETTE SPØRSMÅLET KAN INKLUDERES OG SAMTIDIG IVARETA ANONYMITETEN.

| |
|--|
| Hvilket klassetrinn går du i? |
| <input type="radio"/> Videregående trinn 1 |
| <input type="radio"/> Videregående trinn 2 |
| <input type="radio"/> Videregående trinn 3 |

| Har foreldrene dine utdanning fra universitet eller høyskole? Sett ett kryss for hver forelder. Hvis du ikke har kontakt med én eller begge av foreldrene dine, hopper du over spørsmålet som gjelder denne forelderen. | Ja | Nei |
|---|-----------------------|-----------------------|
| Far | <input type="radio"/> | <input type="radio"/> |
| Mor | <input type="radio"/> | <input type="radio"/> |

Side 2 Bakgrunnsspørsmål

Nå kommer noen spørsmål om familien din og hjemmet ditt.

Hvis du bor i to ulike hjem, skal du svare for den av foreldrene du bor mest hos. Hvis du bor like mye hos begge foreldrene dine, kan du velge hvilket hjem du svarer for. Hvis du har flyttet hjemmefra eller bor på hybel, skal du svare for hjemmet til foreldrene dine.

| Har familien din bil? |
|--|
| <input type="radio"/> Nei |
| <input type="radio"/> Ja, én |
| <input type="radio"/> Ja, to eller flere |

| Har du eget soverom? |
|---------------------------|
| <input type="radio"/> Ja |
| <input type="radio"/> Nei |

| Hvor mange ganger har du reist et sted på ferie med familien din i løpet av det siste året? |
|---|
| <input type="radio"/> Ingen ganger |
| <input type="radio"/> Én gang |
| <input type="radio"/> To ganger |
| <input type="radio"/> Mer enn to ganger |

| Hvor mange datamaskiner eller nettbrett har familien din? |
|---|
| <input type="radio"/> Ingen |
| <input type="radio"/> Én |
| <input type="radio"/> To |
| <input type="radio"/> Mer enn to |

Side 3 Skole

| Er du enig eller uenig i følgende utsagn om hvordan du har det på skolen? | Helt enig | Litt enig | Litt uenig | Helt uenig |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| Jeg trives på skolen | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lærerne mine bryr seg om meg | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg føler at jeg passer inn blant elevene på skolen | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg kjeder meg på skolen | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg gruer meg ofte til å gå på skolen | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 4 Skole

| Hvor lang tid bruker du gjennomsnittlig per dag på lekser og annet skolearbeid (utenom skoletida)? |
|--|
| <input type="radio"/> Gjør aldri / nesten aldri lekser |
| <input type="radio"/> Mindre enn en halvtime |
| <input type="radio"/> ½–1 time |
| <input type="radio"/> 1–2 timer |
| <input type="radio"/> 2–3 timer |
| <input type="radio"/> 3–4 timer |
| <input type="radio"/> Mer enn 4 timer |

| Hvor ofte har du hatt det slik de siste månedene? | Aldri | Sjelden | Av og til | Ofte | Svært ofte |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Jeg blir stresset av skolearbeidet | <input type="radio"/> |
| Jeg føler meg utslitt på grunn av skolearbeidet | <input type="radio"/> |
| Jeg har mer skolearbeid enn jeg klarer å gjøre | <input type="radio"/> |

Side 5 Foreldre

| Her kommer noen utsagn om hvordan du vil beskrive forholdet ditt til foreldrene dine. | Passer svært godt | Passer ganske godt | Passer ganske dårlig | Passer svært dårlig |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| Foreldrene mine pleier å vite hvor jeg er, og hvem jeg er sammen med i fritida | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Foreldrene mine kjenner de fleste av vennene jeg er sammen med i fritida | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Foreldrene mine kjenner foreldrene til vennene mine | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg krangler ofte med foreldrene mine | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg liker å være sammen med foreldrene mine | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 6 Foreldre

| Har familien din hatt god eller dårlig råd/økonomi de siste to årene? |
|---|
| <input type="radio"/> Vi har hatt god råd hele tida |
| <input type="radio"/> Vi har stort sett hatt god råd |
| <input type="radio"/> Vi har verken hatt god råd eller dårlig råd |
| <input type="radio"/> Vi har stort sett hatt dårlig råd |
| <input type="radio"/> Vi har hatt dårlig råd hele tida |

| | Ingen bøker | Mindre enn 20 bøker | 20–100 bøker | 100–500 bøker | 500–1000 bøker | Mer enn 1000 bøker |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Hvor mange bøker tror du det er hjemme hos dere? NB! Én meter bøker tilsvarer omtrent 50 bøker | <input type="radio"/> |

Side 7 Venner

| |
|--|
| Når du er sammen med venner/kamerater, er du da som oftest sammen med ... |
| <input type="radio"/> Én eller to faste venner |
| <input type="radio"/> Én eller to faste venner som ofte er med i en gruppe andre ungdommer |
| <input type="radio"/> En vennegjeng som holder sammen |
| <input type="radio"/> Nokså tilfeldig hvem jeg er sammen med |
| <input type="radio"/> Er ikke så ofte sammen med jevnaldrende |

| |
|---|
| Har du minst én venn som du kan stole fullstendig på og kan betro deg til om alt mulig? |
| <input type="radio"/> Ja, helt sikkert |
| <input type="radio"/> Ja, det tror jeg |
| <input type="radio"/> Det tror jeg ikke |
| <input type="radio"/> Har ingen jeg ville kalle venner, nå for tida |

| |
|---|
| Har du minst én nær venn som du <u>bare</u> har kontakt med gjennom nettet? |
| <input type="radio"/> Ja, jeg har helt sikkert en eller flere nettvenner |
| <input type="radio"/> Ja, det tror jeg |
| <input type="radio"/> Det tror jeg ikke |
| <input type="radio"/> Har ingen jeg ville kalle nære nettvenner for tiden |

| |
|--|
| Har du en fast kjæreste? |
| <input type="radio"/> Ja, jeg har en kjæreste nå |
| <input type="radio"/> Nei, men jeg har hatt kjæreste tidligere |
| <input type="radio"/> Nei, jeg har aldri hatt fast kjæreste |

Side 8 Seksualitet

ALLE SPØRSMÅL PÅ DENNE SIDEN GÅR KUN TIL ELEVER PÅ VIDEREGÅENDE

Har du hatt samleie med noen (ligget sammen)?

- Ja
- Nei

RUTING: KUN TIL DE SOM SVARTE JA PÅ FØRSTE SPØRSMÅL PÅ DENNE SIDEN

Hvor gammel var du da du hadde samleie første gangen?

- 13 år eller yngre
- 14 år
- 15 år
- 16 år
- 17 år
- 18 år
- 19 år eller eldre

RUTING: KUN TIL DE SOM SVARTE JA PÅ FØRSTE SPØRSMÅL PÅ DENNE SIDEN

Brukte dere prevensjon da du hadde samleie første gang?

- Ja
- Nei
- Usikker/husker ikke

RUTING: KUN TIL DE SOM SVARTE JA PÅ SPØRSMÅL OM PREVENSJON

Brukte dere kondom da du hadde samleie første gang?

- Ja
- Nei
- Usikker/husker ikke

Side 9 Status i vennemiljøet

| Hva er viktig for å få status i ditt vennemiljø? | Øker statusen mye | Øker statusen litt | Har ingen betydning | Minker statusen litt | Minker statusen mye |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Å være god på skolen | <input type="radio"/> |
| Å være flink i idrett | <input type="radio"/> |
| Å ha et bra utseende | <input type="radio"/> |
| Å være til å stole på | <input type="radio"/> |
| Å drikke seg full | <input type="radio"/> |
| Å røyke hasj | <input type="radio"/> |
| Å ha mange følgere og likes på sosiale medier | <input type="radio"/> |

Side 10 Regelbrudd

| Hvor mange ganger har du vært med på eller gjort noe av dette det siste året (de siste 12 månedene)? | Ingen ganger | 1 gang | 2–5 ganger | 6–10 ganger | 11 ganger eller mer |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Tatt med deg varer fra butikk uten å betale | <input type="radio"/> |
| Vært i slåsskamp | <input type="radio"/> |
| Med vilje ødelagt eller knust vindusruter, busseter, postkasser eller lignende (gjort hæverk) | <input type="radio"/> |
| Sprayet eller tagget ulovlig på vegger, bygninger, tog, buss eller lignende | <input type="radio"/> |
| Lurt deg fra å betale kino, idrettsstevner, buss, tog eller lignende | <input type="radio"/> |
| Vært borte en hel natt uten at foreldrene dine visste hvor du var | <input type="radio"/> |
| Skulka skolen | <input type="radio"/> |

Side 11 Mobbing

Hender det at du er med på plaging, trusler eller utfrysing av andre unge på skolen eller i fritida? Sett kryss der det passer best

- Ja, flere ganger i uka
- Ja, omtrent én gang i uka
- Ja, omtrent hver 14. dag
- Ja, omtrent én gang i måneden
- Nesten aldri
- Aldri

Blir du selv utsatt for plaging, trusler eller utfrysing av andre unge på skolen eller i fritida? Sett kryss der det passer best

- Ja, flere ganger i uka
- Ja, omtrent én gang i uka
- Ja, omtrent hver 14. dag
- Ja, omtrent én gang i måneden
- Nesten aldri
- Aldri

Side 12 Sårende opplevelser på nettet

| Har du i løpet av de siste månedene blitt utsatt for noe av det følgende? | Ingen ganger | 1 gang | 2–5 ganger | 6 ganger eller mer |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| At noen via nettet eller mobil har truet deg eller vært slemme mot deg på en måte som gjorde deg sint eller lei deg | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| At noen har lagt ut bilder eller videoer av deg på nettet på en måte som gjorde deg sint eller lei deg | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| At du har blitt stengt ute fra sosiale ting på nettet på en måte som gjorde deg sint eller lei deg | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 13 Vold og trakassering

RUTING: KUN TIL ELEVER PÅ UNGDOMSSKOLEN

| Har du i løpet av de siste 12 månedene blitt utsatt for noe av det følgende? | Ingen ganger | 1 gang | 2–5 ganger | 6 ganger eller mer |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Jeg har blitt utsatt for trusler om vold | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg har blitt slått uten å få synlige merker | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg har fått sår eller skade på grunn av vold uten at jeg trengte legebehandling | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg har blitt skadet så sterkt på grunn av vold at det krevde legebehandling | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

RUTING: KUN TIL ELEVER PÅ VIDEREGÅENDE

| Har du i løpet av de siste 12 månedene blitt utsatt for noe av det følgende? | Ingen ganger | 1 gang | 2–5 ganger | 6 ganger eller mer |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Jeg har blitt utsatt for trusler om vold | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg har blitt slått uten å få synlige merker | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg har fått sår eller skade på grunn av vold uten at jeg trengte legebehandling | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg har blitt skadet så sterkt på grunn av vold at det krevde legebehandling | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg har blitt utsatt for seksuell trakassering | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 14 Faste fritidsaktiviteter

Er du, eller har du tidligere vært, med i noen organisasjoner, klubber, lag eller foreninger etter at du fylte 10 år?

- Ja, jeg er med nå
- Nei, men jeg har vært med tidligere
- Nei, jeg har aldri vært med

| Hvor mange ganger den siste måneden har du vært med på aktiviteter, møter eller øvelser i følgende organisasjoner, klubber eller lag? | Ingen ganger | 1–2 ganger | 3–4 ganger | 5 ganger eller oftere |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| Idrettslag | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Fritidsklubb/ungdomshus/ungdomsklubb | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Religiøs forening | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Korps, kor, orkester | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Kulturskole/musikkskole | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Annen organisasjon, lag eller forening | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 15 Religion

| |
|---|
| Hvor mye betyr religion for hvordan du lever livet ditt til daglig? |
| <input type="radio"/> Det er svært viktig |
| <input type="radio"/> Religion betyr ganske mye for hvordan jeg lever i hverdagen |
| <input type="radio"/> Religion betyr lite for hvordan jeg lever i hverdagen |
| <input type="radio"/> Religion har ingen betydning for hvordan jeg lever livet mitt |

Side 16 Fritidsaktiviteter

| Her blir det nevnt en del aktiviteter som du kan bruke fritida di til. Tenk tilbake på den siste uka (de siste 7 dagene). Hvor mange ganger har du ... | Ingen ganger | 1 gang | 2–5 ganger | 6 ganger eller mer |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Vært sammen med venner hjemme hos meg | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Vært sammen med venner hos dem | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Brukt størstedelen av kvelden ute sammen med venner/kamerater | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Spilt onlinespill med andre størstedelen av kvelden | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Vært sosial på nett eller mobil størstedelen av kvelden (snakket, chattet eller lignende) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Kjørt eller sittet på med bil, motorsykkkel eller moped for moro skyld (kjørt for å kjøre en tur) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Vært hjemme hele kvelden | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Spilt fotball, stått på snowboard eller drevet med annen fysisk aktivitet sammen med venner (ikke i idrettslag) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 17 Nærmiljø

| Tenk på områdene rundt der du bor. Hvordan opplever du at tilbudet til ungdom er når det gjelder ... | Svært bra | Nokså bra | Verken bra eller dårlig | Nokså dårlig | Svært dårlig |
|--|-----------------------|-----------------------|-------------------------|-----------------------|-----------------------|
| Lokaler for å treffe andre unge på fritida (fritidsklubb, ungdomshus eller lignende) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Idrettsanlegg | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Kulturtilbudet (kino, konsertscener, bibliotek eller lignende) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Kollektivtilbudet (buss, tog, trikk, eller lignende) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| Når du er ute om kvelden, opplever du det som trygt å ferdes i nærområdet der du bor? |
|---|
| <input type="radio"/> Ja, svært trygt |
| <input type="radio"/> Ja, ganske trygt |
| <input type="radio"/> Usikker |
| <input type="radio"/> Nei, jeg føler meg utrygg |

| Kan du tenke deg å bo i kommunen din når du blir voksen? |
|--|
| <input type="radio"/> Ja |
| <input type="radio"/> Nei |
| <input type="radio"/> Vet ikke |

Side 18 Tobakk

| Røyker du? |
|--|
| <input type="radio"/> Har aldri røykt |
| <input type="radio"/> Har røykt før, men har sluttet helt nå |
| <input type="radio"/> Røyker sjeldnere enn én gang i uka |
| <input type="radio"/> Røyker ukentlig, men ikke hver dag |
| <input type="radio"/> Røyker daglig |

| Bruker du snus? |
|--|
| <input type="radio"/> Har aldri brukt snus |
| <input type="radio"/> Har brukt før, men har sluttet helt nå |
| <input type="radio"/> Snuser sjeldnere enn én gang i uka |
| <input type="radio"/> Snuser ukentlig, men ikke hver dag |
| <input type="radio"/> Snuser daglig |

Side 19 Alkohol

| |
|--|
| Hender det at du drikker noen form for alkohol? |
| <input type="radio"/> Aldri |
| <input type="radio"/> Har bare smakt noen få ganger |
| <input type="radio"/> Av og til, men ikke så ofte som månedlig |
| <input type="radio"/> Nokså jevnt 1–3 ganger i måneden |
| <input type="radio"/> Hver uke |

| |
|---|
| Får du lov til å drikke alkohol av foreldrene dine? |
| <input type="radio"/> Ja |
| <input type="radio"/> Nei |
| <input type="radio"/> Vet ikke |

Side 20 Rusmidler

RUTING: KUN TIL ELEVER PÅ UNGDOMSSKOLEN

| Hvor mange ganger har du gjort noe av dette det siste året (de siste 12 månedene)? | Ingen ganger | 1 gang | 2–5 ganger | 6–10 ganger | 11 ganger eller mer |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Drukket alkohol | <input type="radio"/> |
| Drukket så mye at du har følt deg tydelig beruset | <input type="radio"/> |
| Brukt hasj/marihuana/cannabis | <input type="radio"/> |

RUTING: KUN TIL ELEVER PÅ VIDEREGÅENDE

| Hvor mange ganger har du gjort noe av dette det siste året (de siste 12 månedene)? | Ingen ganger | 1 gang | 2–5 ganger | 6–10 ganger | 11 ganger eller mer |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Drukket alkohol | <input type="radio"/> |
| Drukket så mye at du har følt deg tydelig beruset | <input type="radio"/> |
| Brukt hasj/marihuana/cannabis | <input type="radio"/> |
| Brukt andre narkotiske stoffer | <input type="radio"/> |

| Har du i løpet av det siste året (de siste 12 månedene) blitt tilbudt hasj eller marihuana? |
|---|
| <input type="radio"/> Ja, flere ganger |
| <input type="radio"/> Ja, én gang |
| <input type="radio"/> Nei, aldri |

Side 21 Nære relasjoner

| Tenk deg at du har et personlig problem. Du føler deg utafør og trist og trenger noen å snakke med. Hvem ville du snakket med eller søkt hjelp hos? | Helt sikkert | Kanskje | Nei |
|---|-----------------------|-----------------------|-----------------------|
| Foreldre | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Andre familiemedlemmer (søsken, besteforeldre eller lignende) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Venner | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Helsesøster eller en annen i skolehelsetjenesten | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lærer eller andre ansatte på skolen | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Andre voksne | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ingen | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 22 Helsetjenester

| Hvor mange ganger har du brukt følgende helsetjenester i løpet av de siste 12 månedene? | Ingen ganger | 1–2 ganger | 3–5 ganger | 6 ganger eller mer |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| Helsesøster på skolen (skolehelsetjenesten) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Helsestasjon for ungdom | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Fastlege | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Psykolog | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Legevakt | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Sykehus | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 23 Helseplager

| Har du hatt noen av disse plagene i løpet av siste måned? | Ingen ganger | Noen ganger | Mange ganger | Daglig |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| Hodepine | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Nakke- og skuldersmerter | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ledd- og muskelsmerter | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Magesmerter | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Kvalme | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Hjertebank | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| Hvor ofte har du brukt reseptfrie medikamenter (Paracet, Ibux og lignende) i løpet av siste måned? |
|--|
| <input type="radio"/> Ingen ganger |
| <input type="radio"/> Sjeldnere enn én gang i uka |
| <input type="radio"/> Minst ukentlig |
| <input type="radio"/> Flere ganger i uka |
| <input type="radio"/> Daglig |

Side 24 Psykiske helseplager

| Har du i løpet av den siste uka vært plaget av noe av dette: | Ikke plaget i det hele tatt | Lite plaget | Ganske mye plaget | Veldig mye plaget |
|--|-----------------------------|-----------------------|-----------------------|-----------------------|
| Følt at alt er et slit | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Hatt søvnproblemer | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Følt deg ulykkelig, trist eller deprimert | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Følt håpløshet med tanke på framtida | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Følt deg stiv eller anspent | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Bekymret deg for mye om ting | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Følt deg ensom | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 25 Psykiske helseplager

| Har du i løpet av den siste uka vært plaget av noe av dette: | Ikke plaget i det hele tatt | Lite plaget | Ganske mye plaget | Veldig mye plaget |
|--|-----------------------------|-----------------------|-----------------------|-----------------------|
| Plutselig redd uten grunn | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Stadig redd eller engstelig | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Nervøsitet, indre uro | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Følt at du ikke er verdt noe | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 26 Kosthold

| Hvor ofte spiser eller drikker du vanligvis noe av det som står under? | Aldri | Mindre enn én gang i uka | 1 gang i uka | 2-3 ganger i uka | 4-6 ganger i uka | Hver dag | Flere ganger daglig |
|--|-----------------------|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Grovbrød eller grove rundstykker | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Frukt og bær | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Grønnsaker og salater | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Fisk til middag eller som pålegg | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Pølser, hamburger, kebab, kjøttboller, lasagne | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Potetgull og salt snacks | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Sjokolade og annet godteri | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Vanlig vann uten kullsyre | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Melk | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Brus, saft, iste eller iskaffe med sukker | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lettbrus, lettsaft eller andre lettdrikker | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Energidrikk (Red Bull, Battery el.) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 27 Fysisk aktivitet og trening

| | Aldri | Sjelden | 1–2 ganger i måned | 1–2 ganger i uka | 3–4 ganger i uka | Minst 5 ganger i uka |
|---|-----------------------|-----------------------|--------------------------|------------------------|------------------------|----------------------------|
| Hvor ofte er du så fysisk aktiv at du blir andpusten eller svett? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| Hvor ofte trener du eller driver du med følgende aktiviteter? | Aldri | Sjelden | 1–2 ganger i måned | 1–2 ganger i uka | 3–4 ganger i uka | Minst 5 ganger i uka |
|--|-----------------------|-----------------------|--------------------------|------------------------|------------------------|----------------------------|
| Trener eller konkurrerer i et idrettslag | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Trener på treningsstudio eller helsestudio | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Driver med annen organisert trening (dans, kampsport eller lignende) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Trener eller trimmer på egen hånd (løper, svømmer, sykler, går tur) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

DET NESTE SPØRSMÅLET GÅR KUN TIL ELEVER PÅ UNGDOMSTRINNET

| Har du noen gang vært med i et idrettslag eller i en idrettsklubb? |
|--|
| <input type="radio"/> Nei |
| <input type="radio"/> Ja, men jeg sluttet på barneskolen |
| <input type="radio"/> Ja, men jeg sluttet på ungdomsskolen |
| <input type="radio"/> Ja, og jeg er fortsatt med |

DET NESTE SPØRSMÅLET GÅR KUN TIL ELEVER PÅ VIDEREGÅENDE

| Har du noen gang vært med i et idrettslag eller i en idrettsklubb? |
|--|
| <input type="radio"/> Nei |
| <input type="radio"/> Ja, men jeg sluttet på barneskolen |
| <input type="radio"/> Ja, men jeg sluttet på ungdomsskolen |
| <input type="radio"/> Ja, men jeg sluttet på videregående |
| <input type="radio"/> Ja, og jeg er fortsatt med |

Side 28 Mediebruk

| Tenk på en gjennomsnittsdag. Hvor lang tid bruker du på følgende: | Ikke noe tid | Under 30 minutter | 30 minutter – 1 time | 1–2 timer | 2–3 timer | Mer enn 3 timer |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Se på TV | <input type="radio"/> |
| Lese bøker (ikke skolebøker) | <input type="radio"/> |
| Se på filmer/serier/Youtube | <input type="radio"/> |
| Spille dataspill/TV-spill | <input type="radio"/> |
| Spille på telefon/nettbrett | <input type="radio"/> |
| Sosiale medier (Facebook, Instagram eller lignende) | <input type="radio"/> |

| Utenom skolen, hvor lang tid bruker du vanligvis på aktiviteter foran en skjerm (TV, data, nettbrett, mobil) i løpet av en dag? |
|---|
| <input type="radio"/> Ikke noe tid |
| <input type="radio"/> Mindre enn 1 time |
| <input type="radio"/> 1–2 timer |
| <input type="radio"/> 2–3 timer |
| <input type="radio"/> 3–4 timer |
| <input type="radio"/> 4–6 timer |
| <input type="radio"/> Mer enn 6 timer |

Side 29 Opplevd press

| Opplever du press i hverdagen din? | Ikke noe press | Litt press | En del press | Mye press | Svært mye press |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Press om å se bra ut eller ha en fin kropp | <input type="radio"/> |
| Press om å gjøre det bra på skolen | <input type="radio"/> |
| Press om å gjøre det bra i idrett | <input type="radio"/> |
| Press om å ha mange følgere og likes på sosiale medier | <input type="radio"/> |
| Press på andre områder | <input type="radio"/> |

| Har du opplevd så mye press den siste uka at du har hatt problemer med å takle det? |
|---|
| <input type="radio"/> Aldri |
| <input type="radio"/> Nesten aldri |
| <input type="radio"/> Noen ganger |
| <input type="radio"/> Ganske ofte |
| <input type="radio"/> Svært ofte |

Side 30 Tanker om framtiden

| Hvordan tror du at framtida di vil bli? Tror du at du ... | Ja | Nei | Vet ikke |
|---|-----------------------|-----------------------|-----------------------|
| Vil komme til å fullføre videregående skole? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Vil komme til å ta utdanning på universitet eller høyskole? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Noen gang vil bli arbeidsledig? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Vil komme til å få et godt og lykkelig liv? | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 31 Selvbilde

| Nedenfor er det noen påstander om hvor fornøyd du er med livet ditt. Kryss av i den ruta som passer best for deg. | Passer svært godt | Passer ganske godt | Passer ganske dårlig | Passer svært dårlig |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| Jeg er svært fornøyd med hvordan jeg er | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg er ofte skuffet over meg selv | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg liker meg selv slik jeg er | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg er fornøyd med hvordan jeg har det | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg opplever at det jeg driver med i livet er meningsfullt | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Jeg synes det er ganske vanskelig å få venner | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Side 32 Fornøydhet med livet

| Hvor fornøyd eller misfornøyd er du med ulike sider ved livet ditt? | Svært misfornøyd | Litt misfornøyd | Verken fornøyd eller misfornøyd | Litt fornøyd | Svært fornøyd |
|---|-----------------------|-----------------------|---------------------------------|-----------------------|-----------------------|
| Foreldrene dine | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Vennene dine | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Skolen du går på | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lokalmiljøet der du bor | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Helsa di | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Utseendet ditt | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |