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UNIVERSITETET I AGDER

High screen time is associated with unhealthy eating behavior, low levels of physical activity, delayed bedtime and poorer school performance among adolescents

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Universitetet i Agder, 2013

Fakultetet for helse- og idrettsvitenskap

Institutt for folkehelse, idrett og ernæring

Summary

This present study aimed to (1) examine screen time among Norwegian adolescents in high schools in the south of Norway, and (2) investigate the relationship between screen time activity and physical activity level, meal pattern, dietary habits, bedtime habits, school performance, smoking, snuffing, overweight/obesity, and paternal- and maternal education.

The master thesis includes an introduction part, an elaboration of the theoretical and methodical aspects of the study and discussion of methodology, and finally the article that summarizes the results. In the introduction a brief elaboration is described of the development and accessibility of screen time activity and the way screen time behavior is associated with physical- and mental health aspects, detrimental behaviors, and other health related factors. After introduction, national and international prevalence rates of screen time activity among adolescents is presented, followed by a presentation of the different factors analyzed in the present study, and in what way they affected with health aspects, and determinates of influence.

At the end of this master thesis follows an article, which is prepared according to the guidelines for submission to BMC Public Health.

Key word: Adolescent, screen time activity, physical activity, eating behavior, bedtime, school performance, associations.

Sammendrag

Hensikten med denne studien var å undersøke (1) TV/PC bruk blant Norske ungdom ved videregående skoler på Sørlandet, og (2) undersøke sammenhengen mellom TV/PC bruk og fysisk aktivitets nivå, måltidsvaner, kostholdsvaner, leggetids vaner, skole karakterer, røyking, snusing, overvekt/fedme, og far- og mors utdannelse.

Sammenbindingen inkluderer en innledning, en utdypning av teoretiske og metodologiske aspekter ved studien, og tilslutt artikkelen som er planlagt innlevert til tidsskriftet BMC Public Health. I innledningen blir utvikling og tilgang til skjerm bruk kort beskrevet, og videre hvilken sammenheng skjerm bruk har til fysisk-og psykiske aspekter, skadelig atferd, og andre helse relaterte faktorer. Etter introduksjonen, følger en beskrivelse av nasjonale og internasjonale data for skjerm bruk, blant ungdom. For de resterende faktorene i denne studien, vil det bli beskrevet hvordan disse påvirker ulike helse aspekter og determinanter som kan ses i sammenheng.

Etter sammenbindingen følger en artikkel, utarbeidet i henhold til gjeldende forskrifter til tidsskriftet BMC Public Health. Vedlegg til denne sammenbindingen følger til slutt.

Nøkkelord: Ungdom, skjermtid, fysisk aktivitet, spise atferd, leggetid, skole karakterer, sammenhenger.

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1.0 Introduction

There has been a dramatic increase in the accessibility of screen based technological products the last two decades [1, 2] and during the same time period, several studies have reported increased screen time activity among children and adolescents [3, 4]. According to Roberts et al [4], the recent increase in media use among children and adolescents is largely driven by the access to mobile devices like cell phones and iPods. These products have a lot of the same features as a computer and have become multi media devices that allowing children and adolescents a 24-hour media access [4]. According to the authors [4], online services like different network sites also contribute to the recent increase in media use. Roberts and coworkers [4] also reported that only three out of ten children and adolescents had rules concerning the amount of time they were allowed to spend on screen time activities. A huge decrease in screen time activity was reported between 2005 and 2010 among those who had rules of screen time activity, set by their parents [4].

Screen-based sedentary behaviors are likely to have a negative impact on many different aspects of youth health and development [5, 6]. A study by Iannotti et al [7], found screen based media use inversely related to most of the positive health indicators (health status, self-image, quality of life, and quality of family and peer relationship), and positively related to several of the negative health indicators (health complaints, physical aggression, smoking, drinking, and marijuana use). According to a recent review by Salmon et al [8], high screen time has an adverse effect on both physical health, health behavior and socio-cognitive outcomes. This latter mentioned review concluded that a growing body of evidence supports the development of public health recommendations to limit time spent on screen based behaviors among children and adolescents [8].

A study among overweight and obese adolescents demonstrated that seated video gaming were independently associated with elevated blood pressure and blood lipids, which are risk factors of cardiovascular disease [9]. In addition TV viewing has been associated with elevated risk of diabetes in a study among overweight and obese adolescents [10]. Another study among adolescents showed that getting into physical fights and bullying were associated with video gaming and computer use [11]. Furthermore, several previously published studies have shown that high screen time activity has been associated with low levels of physical activity [12, 13],

unhealthy food consumption [14, 15], late bedtimes [16, 17], poorer academic performance [4, 18], increased risk of initiate smoking or being a current smoker [19-21], risk at being overweight/obese [3, 6, 22-26], and low parental education [27].

According to our knowledge, few other studies have investigated the association between screen time activity and a large variety of important health related lifestyle factors among adolescents. As previous studies have reported increased accessibility and increased use of screen based technological products [1-2, 4], it is important to continuously monitor screen time activity and explore relationship with multiple behavioral components and potential health effects.

1.1 Aim of the study

Based on the above mentioned, the main aim of this present study were:

1. To investigate screen time activity among Norwegian adolescents from the southern part of Norway.
2. To investigate the relationship between screen time activity and physical activity, meal pattern, dietary intake, bedtime habits, school performance, obesity, smoking, snuffing, and paternal- and maternal education.

2.0 Theoretical background

2.1 Screen time activity

2.1.1 National and international prevalence of screen time activity

The American Academy of Pediatrics and the Australian Government has recommended that parents should limit children`s total media time to no more than 2 hours a day [28, 29]. Norwegian or European guidelines for screen time activity among children and adolescents have not yet been developed, but a study among Norwegian adolescents (15-16 years old) showed that 23 % of the boys and 14 % of the girls spent five hours or more per day on screen time activities [30]. A study among Norwegian adolescents, 12-15 years old, showed that that a large proportion of the participants were engaged in high screen time activity ass 79.4 % of the boys and 63.8 % of the girls reported to be engaged in such activities ≥ 2 hours per day [23]. Another Norwegian study among 13 year olds showed that 73.4 % (boys) and 72.7 % (girls) reported to engage in screen time activities ≥ 2 hours per day [25]. These latter mentioned results from Norway are in line with results from a large study among adolescents from Europe and North America, where 80 % of the adolescents from the Nordic countries (Norway=78 %), 79 % from the region of North America, and 72 % from central Europe were spending more than 2 hours per day on screen time activities [12]. Furthermore, a large Canadian study showed that 6th to 12th grade students were spending an average of 7.8 hours on screen time per day [21]. This is in line with result with a survey from America, which reported that 8-18 years olds devote an average of 7 hours and 38 minutes on screen time activity per day [4]. These reported screen time activity levels are a lot higher than results from a study conducted from six countries in Europe among 10-12 year olds, where boys report spending about 2.5 hours and girls somewhat less than 2 hours on screen-viewing activities per day [31].

2.2 Physical activity

2.2.1 Physical activity levels among adolescent

According to national and international guidelines, children and adolescents should participate in 60 minutes of moderate to vigorous physical activity (MVPA) per day [32, 33]. A WHO [34] report has shown that totally 60 % of the world population does not meet the recommendations for daily physical activity. A study among US adolescents (12-19 years old) showed that only 8 % meet the guidelines of 60 minutes of physical activity per day [35]. Furthermore, this study demonstrated that children at the age of 6-11 year olds were significantly more physical active than the adolescents [35]. This result is in line with trends reported by a Norwegian study, where children at the age of 9 years old were 42 % more physically active than 15 year olds [36]. Studies among Norwegian adolescents have also reported that only half of a group of 15 years old met the recommendations for daily physical activity [36, 37]. Results from a large study among adolescents from Europe and North America, showed that Norwegian adolescents were meeting a cumulative 60 minutes of MVPA 4.07 days per week (mean), whereas the mean reported MVPA was 4.31 days per week based on results from all Nordic countries [12]. The region of North America reported 4.51 days/week and central Europe 4.03 days/week of MVPA, and adolescents from southern Europe reported the lowest score of MVPA in this study (3.86 days/week).

In a study by Lopes et al [38], girls (15-18 years old) from Portugal reported significant lower levels of physical activity than the boys in the same age group [38]. This is in line with another study by Trost et al [39], which reported higher levels of physical activity among boys than girls in grade 1-12 from America. These latter mentioned results are also consistent with the results from two Norwegian studies among children and adolescents, where girls reported to be significantly less physical active compared to boys [37, 40].

2.2.2 Benefits of physical activity

Physical activity is associated with more favorable biological cardiovascular disease risk factors in children and adolescent [41], and there are possible long-term benefits of early physical activity, affecting habits into adulthood [42, 43]. In most cases, an increased level of physical activity will improve the balance between intake and consumption of energy and may therefore prevent overweight and obesity [44]. This relationship can to some extent be explained by the positive influences physical activity has on metabolism and muscle mass [45, 46]. Physical activity has also an impact on increased fat oxidation during exercise [47]. In addition to reducing risk of obesity, an active lifestyle with regular physical activity has been associated with reduced risk of coronary heart disease, type 2 diabetes, cancer, arthritis, sexual dysfunction, depression and cognitive impairment [7]. A review by Larun et al [48] found indications that exercise may also reduce depression and anxiety among children and adolescents. Another review found exercise to have a positive short-term effect on self-esteem in children and young [49].

2.3 Nutrition

2.3.1 Eating habits among children and adolescents

The Norwegian government has initiated a nutrition intervention program recommend a daily intake of five portions of fruits and vegetables (FV) [50]. However, few Norwegian children seems to meet these national recommendations [51] and one study have reported that children eat less than half of the recommended intake of FV [52]. Furthermore, a decrease in consumption of unhealthy snacks (soda, candy, and potato chips) was reported in Norway from 2001 to 2008 [53]. This study reported a largest decrease in consumption of unhealthy snacks in schools included in the national free school fruit program [53]. Another national study showed that boys had a lower intake of fruits and vegetables, and higher consumption in sugar-sweetened soft drinks compared with girls [54]. This result is in line with result from a review by Rasmussen et al [55], where girls reported to have a higher intake of FV than boys. In this review by Rasmussen et al [55], they also found socio-economic position, preferences, parental intake, and home availability/accessibility to be positively associated with intake of FV among children and adolescents.

Longitudinal trends have reported a decline in intake of FV from early to late adolescents [56]. Dietary habit among children and adolescents do now includes more sweetened carbonated beverages, fruit juices with added sugars, fast food and other foods rich in fat, sugar and salt, than previously decades [57]. According to WHO [58], is better nutrition related to improved human health, stronger immune systems, lower risk of diabetes and cardiovascular disease, and longevity, while poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity. There is also convincing evidence that food high in fats and sugar promotes obesity, compared to intake of FV [59].

In Norway, breakfast, lunch, dinner and supper is common, although supper is not common in other European countries, probably because they eat dinner at a later time compared to what is normal in Norway (16.00-18.00 hours) [54]. Two cross-sectional studies (2001 and 2008) among 6th and 7th grade pupils in Norway showed no changes in meal pattern in this period [54]. According to Overby et al [54], more than 90 % of the participants reported that they had breakfast, while 95% had lunch, 94 % had dinner and 82 % had supper the day before filling out a questionnaire. Another study among healthy children and adolescents in Norway reported that a total of 15 % of them were skipping breakfast and 30 % of them were skipping lunch twice a week or more often [60]. Eating breakfast has been associated with several positive health benefits (e.g. body weight) [54], and several studies have found skipping breakfast to be associated with an increased likelihood of being overweight or obese [61-63]. Furthermore, having family meals together is found to be associated with better dietary eating habits in adolescents, and regular family meal may establish positive eating behavior later in life [64].

2.4 Sleeping habits

2.4.1 Sleeping habits among Norwegian adolescents

A large recent Norwegian study (n=10220), which examined sleep pattern and insomnia among adolescents, reported that short sleep duration, long sleep onset latency and insomnia was highly prevalent among most adolescents [65]. The adolescents included in this study reported average sleep duration of 6.25 hours during weekdays (boys: 6.28 hours and girls: 6.22 hours). Average bedtime for boys was 23:26 am. and 23:10 am. for girls, whereas 65 % of the adolescents

reported sleep onset latency of more than 30 min [65]. This study reveal that because of reduced sleep during the weekends, adolescents have shown a circadian offset rhythm of 4.5 hours during the weekends. Furthermore, insomnia prevalence rates among the adolescents ranged from a total prevalence of 23.8 % (DSM-IV criteria), 18.5 % (DSM-V criteria) and 13.6% (quantitative criteria for insomnia) [65].

2.4.2 Sleeping habits and health related implications

According to Olds et al [16], are people that go to bed late more likely to wake up later in the morning than those going to bed early, and these classification are based on chronotypes of sleep pattern which most individuals lie within. This sleep pattern preference is distinct from sleep pattern behavior, which is under influences of both preferences and external factors, such as parental regulation and need of wake up early to attend school [16]. The independent effect of bedtime and sleep duration is difficult to disentangle [16].

Short sleep duration has been associated with increased weight status in several reviews [66-68]. Furthermore, sleep restriction has been found to alter the levels of hormones cortisol, ghrelin and leptin [69-73], and increased appetite and risk of diabetes [74]. Sleep restriction has also been linked to high consumption of snacks and other high calorie food and beverages [75-77], in addition to depressive symptoms and mental health problems [78]. According to Hysing et al [65], media influence on adolescents and the relationship with sleeping pattern should be further investigated to better understand the different mechanisms leading to shorter sleep.

2.5 School performance

2.5.1 School performance and health related factors

According to Ministry of Education in Norway [79], there have been only small changes in academic performance between 2009 and 2012, in high schools. As previously reported, girls are still performing better than the boys in most subjects [79]. Furthermore, of nearly 30 000 students that were drawn to conduct exam in Norwegian language, Aust- and Vest Agder students reported an average of 3.4 and 3.2 points, while the range from the total samples of counties in Norway, were between 2.9 – 3.4 points [79]. This report also showed that 3 % of the

students from Aust-Agder and 3.6 % from Vest-Agder were getting a score of 1 in this Norwegian language exam, whereas 2.4 % and 6.2 % was the range that was reported among all counties in Norway [79].

High academic performance is important in order to prepare adolescents for their incorporation into adult life [80]. A national study among children and adolescents found that a positive learning environment was associated with increased school performance [81]. Such learning environment included a positive physical environment, personal well-being, absence of bullying, support from the family, a positive relation between students and teachers, and organized assistance of homework [81]. Parental education has a strong relationship with student's academic achievement, and is well documented in both national and international studies [82-86]. A considerable amount of previously published studies have found an association between childhood and adolescents overweight and poorer school performance [87-93]. Furthermore, a recent study by Ingles et al [80], demonstrated that adolescents who abuse tobacco and alcohol showed higher rates of poor academic performance, and thus suggest that such health variables should be addressed to improve academic performance in adolescents.

2.6 Overweight/obesity

2.6.1 Prevalence and definition of overweight/obesity

According to WHO [94], obesity has nearly doubled since 1980 worldwide, and is the fifth leading risk for global deaths. The prevalence of childhood overweight and obesity has increased in most of the developed countries the recent years [57], including Norway [23, 95]. This trend seems to be leveling off in many countries, and this change may be partly explained by the introduction of different health promoting intervention programs [23]. Reports from the Norwegian Directorate of Health showed that 13 % of girls and 13.6 % boys age 15 years were overweight or obese in 2008 [96].

According to Lee [97], childhood obesity is associated with significant morbidities, which not only have immediate impact on the health of the obese children, but also significantly increased risk of morbidities in adulthood. The authors explain that the consequences of childhood obesity can broadly be classified into medical and psychosocial consequences. Medical consequences

include metabolic complications such as diabetes mellitus, hypertension, dyslipidemia and non-alcoholic fatty liver disease, and mechanical problems such as obstructive sleep apnea syndrome, and orthopedic disorders [97].

WHO define overweight/obesity as abnormal or excessive accumulation of fat, which is caused (fundamentally) by an energy imbalance between calories consumed and calories expended [94]. Body mass index (BMI) is used as a simple index to classify overweight/obesity among people. BMI greater than or equal to 25 is considering overweight, and obesity is classified as greater or equal to 30 [94]. However, it is important to be aware that because BMI is a measure of body mass rather than excess body fatness, some individuals may have high BMI due to a relative large lean body mass, rather than excess adiposity [94].

As children grow, their amount of body fat and their BMI changes, and these changes makes child obesity difficult to define [98]. In 2000, Cole and coworkers [98] constructed a growth reference for children and adolescents between 2 and 18 years old. Based on these standards, Cole et al [98], provided cut off points that were less arbitrary and more internationally based than current alternatives, and that provided internationally comparable prevalence rates of overweight and obesity among children and adolescents.

2.7 Smoking

2.7.1 Prevalence, health impact and predictors of smoking

Studies have shown that smoking rates has declined in both US and Norway [99-101]. In the age group of 16-24 year olds (Norway) there has been a decrease of daily smokers from 29 % in 2000 to 7 % in 2012, although a smaller decrease was reported when a broader age group (16-74 years) was included [102]. A study among American and European adolescents, aged 13-15 years old, reported that 23 % boys and 21 % girls in America were current tobacco users, whereas 20 % boys and 15 % girls in Europa were currently using tobacco [103]. Furthermore, the Norwegian Longitudinal Health Behavior Study (NLHB), reported an increase in smoking from 3 % to 31 % between age 13 to age 18 [104]. Snuff use is also common among Norwegian smokers, and one in five adolescents have reported to use snuff on daily basis [102].

According to WHO [105] is the tobacco use one of the biggest public health threats the world has ever faced. Tobacco products, which are intended to be smoked, sucked, chewed or snuffed, are the main risk factor for a number of chronic diseases, including cancer, lung diseases, and cardiovascular diseases [105]. Despite extensively regarding of the danger of tobacco, relatively few tobacco users worldwide understand the risk to their health, to full extent [106]. The most effective way to decrease tobacco use and encourage current user to quit, is by increase the price of tobacco products through tax increase [106].

Several studies show that having friends who smoke is associated with high risk of smoking initiation [104, 107-111]. Furthermore, socioeconomic status (SES) is a well establishes factor related to smoking among adults [112-114]. A study among Norwegian adolescents has shown that parents' SES was inversely associated with risk of smoking initiation [104].

2.8 Snuffing

2.8.1 Prevalence of snuffing and health implications

Snuffing has increased over the last decades in Norway and Scandinavia [101, 115, 116]. Among Norwegian young adults, the use of snuff is nowadays more common than smoking, and daily us of snuff, has more than doubled from 2008-2011 (5 % to 11 %) among young women (16-24 years old) [117]. This latter study also reported an increased use of snuff from 17 % in 2008 to 25 % in 2011 among men in the same age group [117]. In contrast to Sweden, where nearly all users of snuff are daily users, almost half of Norwegian snuff users have reported to use snuff only occasionally [118]. Several studies have also shown that a high proportion of snuff users are former smokers [118-120]. This switch towards using snuff which is a less harmful nicotine product, has resulted in a discussion about whether to ban this tobacco product or not [101, 118]. A study among adolescents by Severson et al [121], found that snuffers have increased risk at start smoking later in their lives, compared with non-users of snuff.

A Finnish study, conducting data from 1999-2010 among adolescent and young adult, reported that high involvement in sports was positively associated with snuffing, and inversely associated with smoking [116]. Research suggests that health risks associated with the use of snuff are considerably smaller than health risks associated with cigarette smoking [118, 122]. There are a variety of smokeless tobacco products worldwide, with a range of health hazards that differ in

magnitude [123]. According to a review by WHO [123], some brands of smokeless tobacco from Asia, America, Africa and Saudi Arabia have been found to increase the risk of oral cancer, although two Swedish studies did not find an association [124, 125]. The evidence of a association between smokeless tobacco use and other cancers is inconclusive [126]. Furthermore, three Swedish studies provide conflicting findings of the association between smokeless tobacco and cardiovascular disease [127-129].

2.9 Socioeconomic status (SES)

2.9.1 SES and related factors

According to American Psychological Association [130], socioeconomic status (SES) is a commonly conceptualized social standing or class of an individual or group, and is often measured as a combination of education, income and occupation. The inequity in the distribution of wealth and resources is increasing globally, and there are societal benefits to reduce the gap in SES [130]. SES affects several aspects of a human's life, such as development across the life span, and both psychological and physical health. Hence, this is affecting the quality of lives of the children, youth and families [130].

A study among Norwegian children and adolescents found that high parental education was related to participation in sports, higher intake of FV, less consumption of sweets, soft drinks and fast food, and more regular meals [23]. A review by Rasmussen et al [55], did also report an positive association between intake of FV and SES among children and adolescents. Furthermore, lower levels of SES has been found to be associated with obesity and depression among adolescents in America [131].

3.0 Methods

3.1 Design

3.1.1 The main project

The present study is part of “Active and Healthy Youth”, which is a school based cluster randomized intervention study (RTC), conducted in two neighbor counties from the southern part of Norway. The project was initiated by the Center for Sport in Agder (KIA) in partnership with University of Agder (UIA), the hospital in south of Norway/department of Child and Adolescent Mental Health (ABUP), and Vest-Agder and Aust-Agder Council County. The main goal of the project was to promote healthy diet- and activity patterns and prevent eating disorders among adolescents in the South of Norway.

The target group of this intervention study was the entire student population in all high schools in this region. The data collection was conducted within one year, between 2010-2011 and the participating students replied the same questionnaire at three events: pretest, posttest 1 (14 days) and posttest 2 (three months). Between pretest and posttest 1, trained project members held a three-hour seminar for the participants at the interventions schools.

The project was approved by the Regional Committee for Medical Research Ethics in the south of Norway (appendix 2).

3.1.2 The present study

In the present study, baseline data from the intervention study is used in order to (1) examine the prevalence of screen time activity among Norwegian adolescents, and (2) investigate the relationship between screen time activity and physical activity level, meal pattern, dietary habits, school performance, smoking, snuffing, obesity, and paternal- and maternal education level. The main study and the present study are illustrated in figure 1.

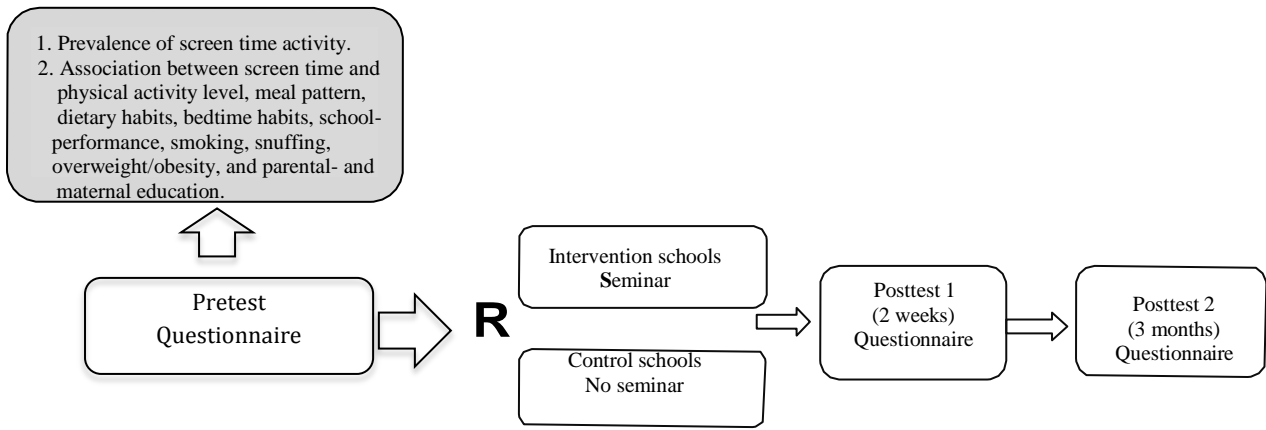


Figure 1 Design of the "Active and Healthy Youth" study, with illustration of the different aspects investigated in the present study (marked with light grey color).

3.2 Study sample

3.2.1 Inclusion and exclusion

The target group of this study was students aged 15-17 years old at all high-schools in the south of Norway (n=4047). A total of 17 out of 23 schools agreed to participate (73.9%). The school principals from six schools turned down the offer, either from lack of time (n=5) or they did participate in another study (n=1). The 17 participating schools constituted of 2875 students. 222 students had either quit school or did or were not present at the first examination, leaving 2653 student with an offer to participate in the study. A total of 2619 out of 2653 eligible students agreed to participate (98.7 %) and responded to the questionnaire. When analyzing data, 168 students were excluded due to age above 17 years old. Thus, a total of 2445 participating students were included in the final analyzes (figure 2).

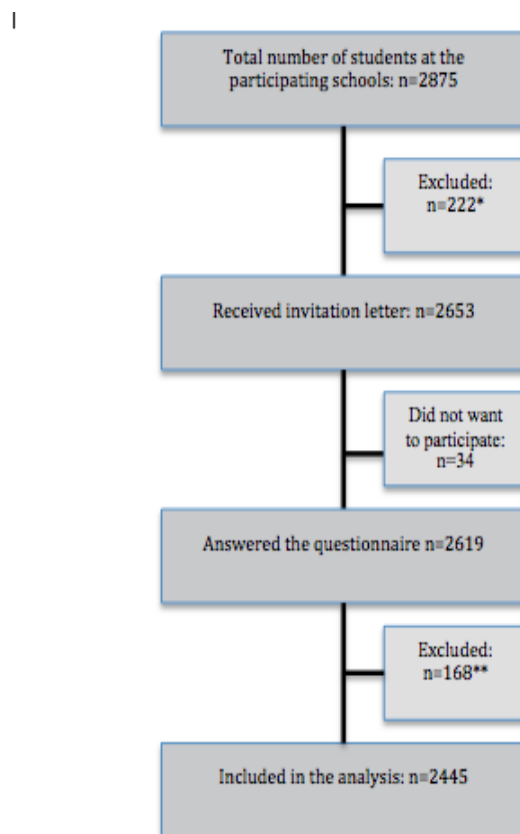


Figure 2 Flowchart showing inclusion and exclusion of participants in the study and classification of the participating sample. *Had dropped out from school, school classes that participated on excursions/project work or absence due to illness, travel or other unknown reasons. **Age > 17

3.3 Data collection

3.3.1 Procedure

The students were given both written and oral informed about the study by members of the project team at their schools. Students either agreed or disagreed to participate in the study by answering “yes” or “no” on a consent form. Those who agreed to participate were given instructions on how to fill out the questionnaire. For those who refused to participate in the study, alternative lessons were given, or they had to wait in the classroom/auditorium until the participants had completed the questionnaire. The replies given in the questionnaires were anonymous, but all participants received an identification number (ID) in order to analyze possible intervention effects from the main study. At least one member from the project was available for the students, if any question were needed to reply the approximately 30 min long questionnaire. Approximately 45 minutes was given to the whole procedure, including information, reading and answering the content form, and return the questionnaire.

3.3.2 Measurements

3.3.2.1 Questionnaire

The 15 pages questionnaire used in the main study “Active and Healthy Youth” included 72 questions focusing on the following subjects; physical activity habits, dietary habits, and weight and weight regulation and symptoms related to disordered eating. This study used both standardized test and self-developed questions witch were either open or closed.

The present study included questions about screen time activity, eating habits, exercise habits, smoking- and snuff use, sleep habits, body weight, height, school performance, and paternal- and maternal education. These questions are given in Appendix 1.

3.3.2.3 Pilot study: test-retest feasibility

In order to test the reliability of the questions used in the present study, a section of the questionnaire was test-retested in a pilot study ahead of data collection in the main study. The pilot study involved thirty-seven adolescents (20 girls, 17 boys) between the ages of 15-17 years

olds (mean: 16.4 years, SD: 1.1 years). They completed the questionnaire twice, with 7 days between the test and the retest. This test provided feedback on the feasibility of the questionnaire, including time needed on responding to the questions, and whether the questions were adequately formulated.

Results from the pilot study demonstrated satisfactory reliability (Table 1). The intraclass correlation coefficient (ICC) was 0.70, which indicates that 70 % of the variance in answer at time 1 and time 2 was explained by differences between individuals, whereas 30 % of the variation was due to other factors.

Table 1. Test retest reliability (n=37).

Questions	Test (%)	Retest (%)	ICC ²	P value ³
PC/TV use ¹			0.701 (0.493, 0.841)	<0.001
I don't watch TV/PC	5.7	5.7		
Less than 1 hour/day	5.7	2.9		
1 hour/day	25.7	22.9		
2 hour/day	45.7	42.9		
3 hour/day	8.6	14.3		
4 hour/day	8.6	8.6		
5 hour/day or more	0	2.9		

¹ Question number 20 in the questionnaire.

² Single measure intraclass correlation and 95 % CI.

³ Signification level on correlation between test and retest in an ICC test.

4.0 Discussion of methodology

4.1 Design

This study is based on a cross-sectional design, which is the most common design when large groups are studied [132]. Although this design do not control for confounding factors and therefore are unable to prove a relationship of cause and effect, it provides information that can be used in order to test covariance between different variables [132]. As the present study involved various variables and sought to provide occurrences on a given time, this design seems to be the most appropriate [132]. However, the nature of this design does not allow us to make any causal inferences of whether screen time leads to any unhealthy lifestyle behavior or poorer school performance, or whether it is a consequence thereof.

4.2 Study sample

The target group for this study was the total population (n=4047) of student in the 1th grade at high schools in south of Norway. A total of 17 out of 23 schools agreed to participate and the response rate among the eligible students were 98.7 % in the present study. External validity (generalizability) involves the extent to which the results of a study can be generalized to the rest of the population. The generalizability of the results from the present study seems to be high. Firstly because the present study did not identify any geographical differences between the participating schools and the six schools which chose not to participate in the study. Furthermore, it was the principal's decision not to participate, and the reasons to refuse were either due to lack of time or capacity. Secondly, the school sized ranged from small (n=26) to several hundreds, and based on these terms, the project manager consider this study to be randomly distributed between the total populations of the students and the non-participating schools.

This project was a well planned and carried out, with an appropriated design, secured data collection and the statistics analyses were performed by renowned utility software program (PASW. 19.0). Furthermore, a scanning of the questionnaires was offered the project, and this process ruled out possible error compared to manual coding. Six responses were double coded

and therefore excluded, and the reason may be that it was scanned twice. However, these numbers of excluded responses is a very low rate compared the total samples, and hence not affects the result.

4.3 Procedure

Classrooms were mostly used to conduct the data collection but in some cases, larger premises were also used in the present study. Some schools were using auditoriums and one school used a sport facility arena, were the students would conduct the questionnaire. Due to the space to each other and less overview from the project worker and teacher, these situations might have given an opportunity to watch each other's responses, and may have effect some of the answers at these specific data collection. However, it is reason to believe that this would have happened to a very small degree, since the presents of project worker and teachers, and thus not affect the answers notably.

Although a project worker and teachers were present when filling out the questionnaires, students that didn't participate in the study may have distracted the participants, since they were in the same room during the execution of the questionnaire. The estimated time spend on conducting the questionnaire had some margin (test: 23.3 min, retest: 20 min), although the students were most likely to be busy answering the approximately 30 minutes long questionnaire. Taking into consideration that only 34 students chose not to participate (1.3 %), this possible problem is likely to have no affect on the answers. Furthermore, a few of the students complained about the use of IDs and that they felt their answers were not anonymous. This insecurity may have led some of the informants to retain the answers, especially the sensitive ones, but considering these few complain, this would not affect the answers. Another complain of the procedure was that some schools arranged the execution of the questionnaire in between two ordinary school classes. This use of the student's leisure time was mentioned from some of the respondents, and this unfortunate situation may have affected some of the respondent to hurried throw, when answering the questionnaire. Since this was a voluntary study, there is reason to believe that these students felt an obligation to carry on with the questionnaire, and answer in an honest way.

4.4 Questionnaire

Prevalence studies provide useful information for planning health services [133]. Questionnaire is a time saving and cost-efficient method and are suitable for large groups [132], and furthermore, this method may help preserve anonymity for participants. [134]. Furthermore, this method of data-collection was appropriate for this present study, as we wanted to investigate a large group of informants and the association between several variables [132].

Atkins et al. 2012 has presented a narrative overview of the sedentary behavior measurement literature, whereas the use of questionnaire demonstrated moderate reliability but slight to moderate validity, when used as a measurement of TV viewing or other screen-based behaviors [135]. According to Vereecken et al [136], there is some evidence that adolescents may overestimate TV viewing time from self-reported questionnaire, compared to TV viewing items, although this validation work has been restricted to one country to this date. A study by Vereecken et al [136], demonstrated no systematic difference between test and retest in a self-reported 7-day TV viewing [136]. This is in line with the test-retest in the present study.

The participants used approximately 30 min to reply the questionnaire, which included 15 pages and 72 questions. This is clearly a comprehensive questionnaire, and the time necessary to complete may have negatively affected the concentrations of some of the informants. However, there are reasons to believe that students at this level are used to exhausting exam periods and lectures. Thus, this situation should not represent an insurmountable challenge. Furthermore, participation in the study voluntary, and therefore, it is expected that the participants responded honestly to most questions.

5.0 Reference list

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High screen time is associated with unhealthy eating behavior, low levels of physical activity, delayed bedtime and poorer school performance among adolescents

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Abstract

Background: A dramatic increase in screen-based communication over the last decades, and high screen time has been linked to negative health consequences among children and adolescents. This present study aimed to (1) examine screen time among Norwegian adolescents, and (2) investigate the relationship between screen time activity and physical activity level, meal pattern, dietary habits, bedtime habits, school performance, smoking, snuffing, overweight/obesity, and paternal- and maternal education.

Methods: This cross-sectional study included 2445 students from 17 high schools between the ages of 15-17 years (participation rate= 98.7 %). A self-reported questionnaire was used to measure the variables of interest.

Results: Mean time spent on screen activities was 2.6 hours per day (95 % CI: 2.5 - 2.7). A total of 78.1 % of the students reported two hours or more of screen time activity per day whereas 11.5% of the students reported five hours or more per day of screen time activity. A positive association between high screen time activity and intake of salt snack (OR: 1.44, 95 % CI: 1.32-1.60), candy (OR: 1.30, 95 % CI: 1.21-1.40) and late bedtime (OR: 1.22, 95 % CI: 1.15-1.29) was identified. An inverse association was shown between high screen time activity and physical activity (OR: 0.90, CI: 0.87-0.93), regular meal pattern (OR: 0.63, CI: 0.50-0.80), intake of fruit (OR: 0.90, CI: 0.86-0.93), vegetables (OR: 0.93, CI: 0.89-0.97) and school performance (OR: 0.84, CI: 0.76-0.94). Smoking, snuffing, overweight/obesity, and paternal- and maternal education were not associated with screen time activity.

Conclusion: High screen time activity was associated with unhealthy lifestyle behaviors and poorer school performance. Results from the present study indicate that screen time sedentary behaviors should be addressed in health promotion activities among adolescents.

Keywords: Adolescents, screen time activity, eating behavior, physical activity, bedtime, school performance, associations

Background

There has been a dramatic increase in the accessibility of screen based technological products the last two decades [1-3] and during the same time period, several studies have reported increased screen time among children and adolescents [3, 4]. Furthermore, high screen time activity has been associated with low levels of physical activity [5, 6], unhealthy dietary habits [7] [8], late bedtime [9, 10], poor academic performance [3, 11], increased risk of initiate smoking or being a current smoker [12-14], risk at being overweight/obese [15-20] and lower levels of parental education [21].

The American Academy of Pediatrics and the Australian Government has recommended that parents should limit children`s total media time to no more than 2 hours a day [22, 23].

Norwegian or European guidelines for screen time activity among children and adolescents have not yet been developed, but a study of 15-16 year old Norwegian adolescents, have reported that 23 % (boys) and 14 % (girls) spent five hours or more per day on screen time activity [24]. A recent Norwegian study showed that 79.4 % of the boys and 62.8 % of the girls between 12 and 15 years, spent 2 hours or more on screen time activity per day [18]. Among 13 years olds from another recent Norwegian study, 73.4 % of the boys and 72.7 % of the girls reported similar levels of screen time activity [19]. Results from these two Norwegian studies are in line with results from a large study among adolescents from Europe and North America, where 80 % of the participants from the Nordic countries (Norway=78 %), 79 % from the region of North America, and 72 % from central Europe were spending more than 2 hours per day on screen time activity [5].

A large cross sectional study in Europe and North America, showed that exceeding 2 hours of daily total screen time, was inversely associated with “moderate to vigorous physical activity” for both boys and girls, and inversely associated with “vigorous physical activity” for girls [5]. In the Nordic countries, this study showed a higher level of physical activity and a stronger inverse relationship between time used on screen time activity and physical activity than in the other countries that were included in the study [5]. Other studies have also reported an inverse

association between screen time activity and physical activity level among adolescents in North America [6] and Australia [25].

Several studies have shown an association between screen time behavior and unhealthy dietary behaviors among adolescents [26, 27]. A large study among European adolescents found that increased television viewing/computer/Internet use during adolescence, was associated with lower odds of fruit consumption [28]. Furthermore, a Norwegian study among adolescents reported that high TV/PC use was associated with less frequent meal pattern (not having four meals per day) [29].

Increased media use during the evening, having a television in the bedroom and watching violent content have been shown to negatively affect children's sleep [30]. However, few studies have investigated the relationship between screen time activities and sleep pattern among adolescents. A study conducted in Australia found high screen time to be associated with adolescent going to bed late and wake up late [9]. Similar findings were reported from a study among Israeli adolescents, as increased screen time activity was associated with late bedtime [10].

Few studies have explored the relationship between screen time activity and school performance. A study among American middle school students (grades 5-8) concluded that screen time was independently and inversely associated with school performance [11]. These results are in line with a recent study among American children and adolescent (8-18 years), reporting that heavy media users were getting lower grades compared to light media users [3].

A recent Norwegian study among children and adolescents reported that higher parental education was associated with less screen time [18]. This is in line with a Spanish study, which showed that watching TV was inversely associated with parental education among boys between 13-19 years [21]. A longitudinal study conducted in Norway found that high parental education was inversely related to increased screen time, between baseline (11 years old) and the second follow-up (13 years old) among girls [19]. Furthermore, another Norwegian study

identified decreased screen time activity between 2001 and 2008 among 6th and 7th grade pupils [31]. In this latter study a greater decrease was observed among children with parents with higher education, compared to those with parents without higher education.

A dramatic increase in overweight during the last three decades has raised public health concerns [18]. A recent study showed that screen time was associated with overweight and obesity in Norwegian children and adolescents [18]. A review conducted by Rey-Lopez et al (15) suggested that in terms of obesity risk, playing video games and using computers do not represent such a high risk compared to watching TV. According to a review by Van Der Horst et al [32], body mass index (BMI) was positively associated with watching TV and video among adolescents.

The use of snuff is increasing, whereas smoking rates are declining among Norwegian and Finnish adolescents [33-35]. A study among US adolescents (10 to 15 years olds) showed that those watching TV 5 hours or more per day were more likely to initiate smoking behavior than those watching TV less than 2 hours per day (OR=5.99) [12]. High TV and PC use among 6th to 10th grade students in Canada were associated with increased engagement in risk behaviors, such as smoking, drunkenness, not wearing seatbelts, cannabis use, illicit drug use or not using condoms [13]. Another Canadian study among 6th to 12th grade students showed that current smokers were more likely watch more than 2 hours TV, videos or playing video games per day compared to non-smokers [14]. To our knowledge there are no studies that have investigated the relationship between screen time activity and snuffing among adolescents.

According to our knowledge, few other studies have investigated the association between screen time activity and a large variety of important health related lifestyle factors among adolescents. As previous studies have reported increased accessibility and increased use of screen based technological products [1-3], it is important to continuously monitor screen time activity and explore relationship with multiple behavioral components and potential health effects.

Thus, the aims of this present study were to investigate screen time among Norwegian adolescents and the relationship between screen time activity and physical activity, meal pattern, dietary intake, bedtime habits, school performance, overweight/obesity, smoking, snuffing, and paternal- and maternal education.

Methods

Design and participants

This cross-sectional study is part of a larger cluster randomized intervention study in two neighbor counties in the southern part of Norway. The main aim of the intervention was to promote healthy diet- and activity patterns and prevent disordered eating among adolescents [36].

The target group of this study was students aged 15-17 years old at all high-schools in the south of Norway (n=4047). A total of 17 out of 23 schools agreed to participate (73.9%). The school principals from six schools turned down the offer, either due to lack of time (n=5) or participation in another study (n=1). The 17 participating schools constituted of 2875 students. 222 of these students had either quit school or were not present at the first examination. A total of 2619 out of 2653 eligible students agreed to participate (98.7 %) and responded to the questionnaire. When analyzing data, 168 students were excluded because they were above the age of 17. Thus, a total of 2445 participating students were included in the final data-analyses. Figure 1 presents the exclusion and inclusion of subjects in this study.

All students in the target group of the study received both oral and written information about the study at their schools, before a declaration of consent was signed by the participating students. Human involvement procedures were approved by the Regional Committee for Medical Research Ethics in the south of Norway.

Measurement methods and procedures

The participants were asked to complete a 15 pages long questionnaire. The present study included questions about screen time activity, exercise habits, eating habits, school performance, sleep habits, smoking- and snuff use, body weight, height, and paternal- and maternal education level.

The questionnaire included one question on screen time: *“Excluding school hours on a regular weekday, how many hours do you watch TV or using PC/games.”* Response alternatives were: *“I don’t watch TV or do gaming activity on a regular weekday, less than one hour a day, one hour a day, two hours a day, three hours a day, four hours a day and five hours or more a day.”* This variable was dichotomized into less than 5 hour/day (0) and 5 hour/day or more (1). Screen time was in addition dichotomized into less than 2 hours/day (0) and 2 hours/day or more (1), according to the American Academy of Pediatrics’ recommendation of screen time limits for children and adolescents [22]. Physical activity was estimated by asking: *“How many hours per week do you spend on doing sports/physical activity, in the way that make you breathing heavy or being sweat?”* Response alternatives were: *“0 hour, 1-2 hours, 3-4 hours, 5-7 hours, 8-10 hours and 11 hours or more”*. Diet habits were assessed by asking four questions: *“How often within a week do you eat fruits/berries, vegetables (included salad), salt snack (potato chips, peanuts etc.), or candy (chocolate, mixt candy etc.)?”* Response alternatives for all four questions were: *“never, less than 1 time/week, 1 time/week, 2 times/week, 3 times/week, 4 times/week, 5 times/week, 6 times/week, every day or several times/day.”* Bedtime habit was estimated by the following question: *“Before a school day, when do you go to bed?”* Response alternatives were: *“before 20.00, between 20.00 and 21.00, between 21.00 and 22.00, between 22.00 and 23.00, between 23.00 and 24.00, and after midnight”*. School performance was estimated using one question: *“In the last semester, what were your points in English, mathematics, Norwegian and physical education?”* Response alternatives were: *“0, 1, 2, 3, 4, 5 and 6.”* These grades in each subject were merged into one variable for statistical analyses. Further, the questionnaire included one question on meal pattern: *“How often do you eat the following meals: breakfast, lunch, dinner or supper?”* Response alternatives were: *“Never, 1-2 times/week, 3-4 times/week, 5-6 times/week and every day.”* These four variables were merged into one variable, and further dichotomized into skipper (0) and non-skippers (1). Meal skippers refer to consuming fewer than four meals 7 days a week. Two questions assessed smoking and snuffing habits: *“Do you smoke/use snuff?”* Response alternatives were: *“Have never smoked/snuffed, have tried smoke/snuff but not anymore, have smoked/snuffed regularly but not anymore, smoking/snuffing but not regular and smoking/snuffing regular and about ___*

cigarettes/day.” Both smoking and snuffing was dichotomized into yes (0) or no (1). Parental education was estimated using one question: “*What is your father and mothers educational level?*” Response alternatives were: “*elementary school, high school, university, and I don’t know*”. Education levels of father and mother were dichotomized into low (0) and high (1). Self-reported weight and height were used to calculate body mass index (BMI) (kg/m²), measured out of height in centimeters and weight in kilogram. BMI was classified according to the cut off points proposed by Cole et al [37]. Weight was dichotomized into underweight/normal weight (0) and overweight/obese (1).

Statistical analyses

All statistical analyses have been performed by using PASW (Predictive Analytics Software) Statistics, version 19.0 (PASW Inc., Chicago, IL, USA). Accepted significant level was set at $p < 0.05$.

The results are expressed as mean value and 95 % CI for continuous data, and percentage for categorical data. Difference between screen time activity among girls and boys were analyzed using independent t-test (Table 1). A binary logistic regression model was used to explore the association between screen time activity and selected healthy/unhealthy lifestyle behaviors factors, school performance, and paternal- and maternal education (Table 2). The dependent variable was dichotomized into high (≥ 2 hours/day) and low screen time (< 2 hours/day). The significant associated variables in the latter mentioned test were further included in a linear regression model with screen time as continuous dependent variable (Table 3). All regression models were adjusted for sex.

Results

The boys in this study reported 2.7 hours (95 % CI: 2.6-2.7) of screen time activity per day, whereas the girl's reported to spend 2.5 hours (95 % CI: 2.5-2.6) of screen time activity per day ($p=0.020$) (Table 1). A total of 78.1 % of the students reported to spend two hours or more on screen time activities per day, whereas a total of 11.5% reported to spend five hours or more on screen time activities per day (Table 1).

A binary logistic regression model (Table 2) showed a positive association between high screen time activity (≥ 2 hours/day) and intake of salt snack (OR: 1.44, 95 % CI: 1.32-1.60) and candy (OR: 1.30, 95 % CI: 1.21-1.40), and late bedtime (OR: 1.22, 95 % CI: 1.15-1.29). Furthermore, high screen time activity (≥ 2 hours/day) was inversely significant associated with physical activity (OR: 0.90, 95 % CI: 0.87-0.93), having a regular meal pattern (OR: 0.63, 95 % CI: 0.50-0.80), intake of fruits (OR: 0.90, 95 % CI: 0.86-0.93), vegetables (OR: 0.93, 95 % CI: 0.89-0.97), and school performance (OR: 0.84, 95 % CI: 0.76-0.94). The results showed no significant relationship between screen time activity and smoking or snuffing habits, overweight/obesity, or paternal- and maternal education level.

Result from the linear regression analysis (Table 3) showed a positive association between screen time activity and intake of salt snack ($p<0.001$) and candy ($p<0.001$), and late bedtime ($p<0.001$). An inverse association was shown between screen time activity and intake of fruit ($p=0.004$), vegetables ($p=0.042$), physical activity level ($p<0.001$), having a regular meal pattern ($p=0.008$), and school performance ($p<0.001$).

Discussion

In the present study, a total of 13.4 % boys and 9.7% girl spent 5 hours or more per day on screen time activity, which is less than a previously published study among adolescent from six other counties in Norway, where 23 % of the boys and 14 % of the girls spent 5 hours or more per day on screen time activity [24]. Furthermore, results from the present study showed that as many as 78.7 % of the boys and 77.5 % of the girls spent 2 hours or more per day on screen time activity. These results are in line with two recent Norwegian studies, where 79.4 % boys and 62.8 % girls between 12 and 15 years [18] and 73.4 % boys and 72.7 % girls at 13 years of age [19], spent 2 hours or more on screen time activity per day. Similar results is reported from a large study among adolescents from Europe and North America, where 80 % from the Nordic countries (Norway=78 %), 79 % from the region of North America, and 72 % from central Europe were spending more than 2 hours per day on screen time activity. Results from the above mentioned studies, shows that a large proportion of the adolescents from Norway, Europe and North America, exceed screen time recommendation (≤ 2 hours/day) set by The American Academy of Pediatrics [22].

The present study found an inverse relationship between screen time activity and physical activity. This is in line with results of a large study conducted among adolescents in Europe and North America, although the relationship was more pronounced in the Nordic countries compared to the other countries [5]. Other studies in both North America and Australia also support results from the present study [6, 25]. On the other hand, several other studies have not been able to identify any correlation between watching TV, computer or video and physical activity for children and adolescents [17, 32, 38, 39]. According to Rey-Lopez et al [15], no evidence is suggesting that sedentary behavior, such as playing digital games, using computer and watching television displaces physical activity levels. Based on the different findings between screen time activity and physical activity levels, it seems that these behaviors may have different implications on adolescents, depending on geographic and cultural differences.

Intake of fruits and vegetables was inversely associated with screen time activity in the present study, while intake of salty snack and candy were positively associated with screen time activity. These results support previously published studies, which has demonstrated that increased screen time activities are associated with unhealthy dietary behaviors [26-28]. The inverse association between screen time activity and skipping meals found in the present study are consistent with a previously published study, which showed an association between high screen time and not having four meals per day [29]. To our knowledge, no other studies have investigated the association between screen time activity and meal skipping among adolescents.

In our study high screen time activity was also associated with late bedtime. This result is supported by previously published studies among adolescents in both Australia and Israel [9, 10]. Based on the results from present study and these latter studies it is plausible that increased screen time may delay bedtime.

Furthermore, the present study showed an inverse association between screen time activity and school performance. There is a lack of studies that have investigated this relationship, but two other studies have also demonstrated an inverse association between screen time and school performance [3, 11]. Researchers have suggested that screen time “displaces” time that students normally would spend on doing schoolwork, and thus affecting school performance [11]. This relationship is supported by studies that have shown an inverse relation between screen time and time spent reading and doing homework [40, 41]. A study has also shown that content, such as R-rated (a motion picture rating system) movies, increased the odds of poorer school performance [11].

Overweight/obesity was not associated with screen time activity in the present study. This results diverge from another recently published study, which demonstrated a positive association between screen time activity and overweight/obesity among Norwegian children and adolescents [18]. In the review by Ray-Lopez et al. (15), obesity was found to be positively related to screen time activity in only about half of the 27 studies from 1990-2007 [15]. Another

review by Van Der Horst et al [32], found BMI to be a positively associated with watching TV and video. A recently published review by Chinapaw et al [42] concluded however, that there are insufficient evidence for a longitudinal positive relationship between “sedentary time”, mainly TV viewing, and BMI. Although the present study and other studies have used BMI to classify the prevalence of obesity, it is a controversy, as pointed out by Barnett et al [43], in regard to which measure of body fat or body composition (i.e., body mass index, percent body fat, waist circumference, skinfold thickness, etc.) best capture the health related aspects of adiposity. BMI does not, for example, distinguish muscle from fat, and therefore muscular individuals might be classified as overweight [43].

The present study showed no relationship between screen time activity and smoking. Relatively little research has examined this relationship, but one longitudinal study found that US adolescents engaging in high TV viewing (≥ 5 hours/day) was likely to initiate smoking nearly 6 times more, compared to a those who watched less TV (< 2 hours/day) [12]. Furthermore, a recent study among Canadian adolescent showed that high PC use was associated with 50% increase of engagement in risk behavior such as smoking, whereas watching much TV was only modestly associated with these risk behaviors [13]. Increased time watching TV, videos or playing video games was also positively related to being a current smoker among Canadian adolescents [14].

Results from our study did not identify any relationship between screen time activity and snuffing. To our knowledge, no other study has investigated the relationship between screen time activity and snuffing among adolescents.

The present study did not show any relationship between screen time activity and paternal or maternal education levels. In contrast, a previously published Norwegian study among children and adolescents reported that high parental education was associated with less screen time [18]. A Spanish study reported an inverse association between TV and parental education, but only among boys [21]. Furthermore, two Norwegian studies did report a relation between parental

education and screen time [19, 31], although this relationship was significant among females in one of these studies.

Strengths and limitations

This is a large study in Norway and the participation rate among the adolescents was high and involved the majority of the schools that were asked to participate in this region. The results presented from this study are therefore likely to represent adolescents from the southern part of Norway in general. Furthermore, few other studies have investigated the association between screen time activity and such a variety of health related lifestyle factors in addition to school performance, as the present one.

This is a cross sectional study and the nature of this design does not allow us to make any causal inferences of whether screen time leads to any unhealthy lifestyle behavior or poorer school performance, or whether it is a consequence thereof. Self-reporting measurement represents a bias, although this method allowed us to investigate a large number of informants. This study used one question to assess screen time activity, leaving out opportunities to investigate several separate activities, such as television, computer, gaming and internet surfing. Data from this question only estimated screen time activity after a regular school day. This limitation leaves a different basis of comparison that must be taken into consideration, as young people are more likely to engage in screen time activity during the weekend than on weekdays [39].

Conclusions

The prevalence of Norwegian adolescents engaging in screen time activity outside of school is high. High screen time was associated with unhealthy lifestyle behaviors and poorer school performance, but not associated with smoking and snuffing, overweight/obesity, and paternal- and maternal education. Results from the present study indicate that screen time sedentary behaviors should be addressed in health promotion activities among adolescents.

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Table 1 Screen time activity among boys and girls participating in the study

	All (n=2420)	Girls (n=1244)	Boys (n=1176)	<i>P</i> value *
Screen time ¹ (Hours/day)	2.59 (2.53, 2.64)	2.5 (2.5, 2.6)	2.7 (2.6, 2.7)	0.020
0 hour/day ²	1.8 (1.3, 2.4)	1.8 (1.1, 2.5)	1.8 (1.0, 2.7)	
30 min/day ²	6.9 (5.9, 8.0)	6.8 (5.3, 8.2)	7.2 (5.8, 8.6)	
1 hour/day ²	13.2 (11.7, 14.5)	13.9 (12.0, 15.9)	12.3 (10.3, 14.2)	
2 hours/day ²	27.6 (25.9, 29.4)	28.6 (25.9, 30.9)	26.6 (24.1, 29.3)	
3 hours/day ²	26.1 (24.3, 27.9)	27.1 (24.7,29.8)	25.1 (22.7, 27.5)	
4 hours/day ²	12.9 (11.6, 14.3)	12.1 (10.2, 14.1)	13.5 (11.6, 15.5)	
5 hours/day ²	11.5 (10.1, 12.8)	9.7 (8.0, 11.4)	13.4 (11.5, 15.4)	

¹ Mean and 95% CI.

² Percentages and 95% CI.

* Difference in mean screen time was analyzed using the independent sample t-test.

Tables 2 Logistic regression analyzes showing adjusted odds ratio (AOR) of health related factors and school grades by screen time activity on an average school night.*

High screen time activity (≥ 2 hours/day)¹			
Covariates	B	Odds ratio (95% CI)	P value
Physical activity (hours/week)	-0.105	0.90 (0.87-0.93)	<0.001
School performance (mean grade)	-0.171	0.84 (0.76-0.94)	<0.001
Meal pattern (regular, all 4 meals)	-0.461	0.63 (0.50-0.80)	<0.001
Fruits (portions per day)	-0.108	0.90 (0.86-0.93)	<0.001
Vegetables (portions per day)	-0.073	0.93 (0.89-0.97)	0.002
Salt snack (times a week)	0.362	1.44 (1.32-1.60)	<0.001
Candy (times a week)	0.256	1.30 (1.21-1.40)	<0.001
Late bedtime	0.196	1.22 (1.15-1.29)	<0.001
Overweight/obese	0.187	1.21 (0.92-1.60)	0.184
Smoking	-0.006	1.00 (0.76-1.30)	0.965
Snuffing	0.146	1.16 (0.88-1.53)	0.305
Paternal education	-0.060	0.94 (0.75-1.20)	0.607
Maternal education	-0.128	0.88 (0.70-1.11)	0.280

¹ Association between the high screen time activity level (≥ 2 hours/day) and physical activity, school performance, meal pattern, fruits, vegetables, salt snack, candy, bedtime habit, overweight/obese, smoking, snuffing, and paternal- and maternal education.

* Binary logistic regression model was adjusted for sex and compared to the total sample.

Table 3 Linear regression model describing the association between time used on screen time activity and other lifestyle habits*

Predictors ¹	B	P value
Physical activity	-0.060	<0.001
School performance	-0.057	<0.001
Regular meal	-0.179	0.008
Fruits	-0.037	0.004
Vegetables	-0.030	0.042
Salt snack	0.118	<0.001
Candy	0.081	<0.001
Late Bedtime	0.136	<0.001

R²= 15.5

¹ Association between screen time activity (dependent variable) and physical activity, school performance, meal pattern, fruits, vegetables, salt snack, candy and bedtime habit.

* Linear regression model was adjusted for sex and compared to the rest of the total sample.

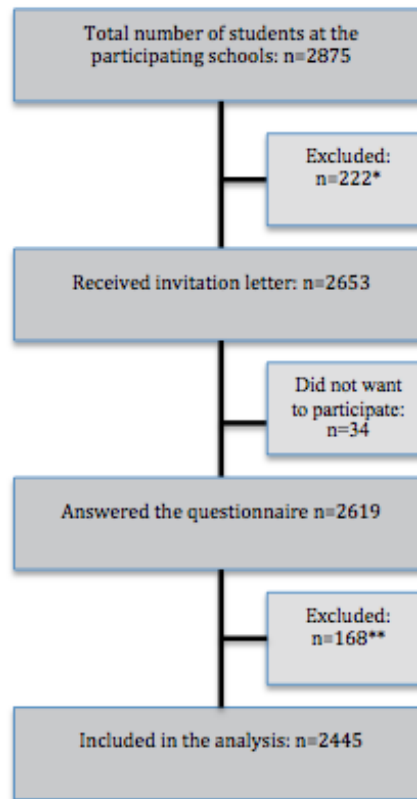


Figure 1

Flowchart showing inclusion and exclusion of participants in the study and classification of the participating sample. *Had dropped out from school, school classes that participated on excursions/project work or absence due to illness, travel or other unknown reasons. **Age > 17

Prosjekt

”Aktiv Ungdom med Overskudd”



http://s3.hubimg.com/u/2371578_f496.jpg

Spørreskjema

Kjære elev! Les dette først!

Vi synes det er flott at du vil delta i prosjektet "Aktiv Ungdom med Overskudd"!

På de neste sidene følger noen spørsmål om fysisk aktivitet, kosthold, kropp og helse. Du skal sette kryss ved det svaret som passer best for deg. Det er viktig at du leser spørsmålet og svarene nøye før du setter kryss.

Vær oppmerksom på at spørreskjemaet har spørsmål på begge sider av arket.

Dersom du ønsker å forandre et svar etter at du har satt kryss, – sett da strek over krysset, og sett et nytt kryss på det svaret som passer best.

Husk dette før du setter i gang: ***Vær ærlig! Det er ingen svar som er mer riktige enn andre, og ingen får vite hva du har svart.***

Lykke til med utfyllingen av spørreskjemaet, det vil ta deg ca. 20 minutter!



http://static-p3.fotolia.com/jpg/00/07/82/96/400_F_7829651_CywicsBRzx2e6GnNObyCAzaCkP3L40R7.jpg

Matematikk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Norsk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kroppsøving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spørsmål om fysisk aktivitet

6. Hvordan vil du beskrive ditt eget fysiske aktivitetsnivå? (*Passiv betyr inaktiv/lite hverdagsbevegelse*)

- Meget aktiv Middels Noe aktiv Litt passiv Meget passiv

7. Hvordan vil du beskrive din mors fysiske aktivitetsnivå?

- Meget aktiv Middels Noe aktiv Litt passiv Meget passiv

8. Hvordan vil du beskrive din fars fysiske aktivitetsnivå?

- Meget aktiv Middels Noe aktiv Litt passiv Meget passiv

9. Hvordan kommer du deg vanligvis til/fra skolen?

Går

Sykler

Buss

Bil

Motorsykkkel, scooter eller moped

Annet, _____

10. Hvor lang tid bruker du vanligvis til skolen?

Mindre enn 5 minutter

6 til 15 minutter

16 til 30 minutter

31 minutter til 1 time



Mer enn 1 time

De neste spørsmålene dreier seg om fysisk aktivitet som du gjør på FRITIDEN (for eksempel i helgene, på ettermiddag/kveld og i ferier), IKKE når du er på

11. Utenom skoletid: Hvor mange ganger i uka driver du idrett/mosjon slik at du blir andpusten eller svett?

ganger per uke

12. Omtrent hvor mange timer til sammen per uke bruker du på dette?

0 timer

1-2 timer

3-4 timer

5-7 timer

8-10 timer

11 timer eller mer

13. Hvor anstrengende pleier idretts-/mosjonsaktivitetene du driver å være? (Sett bare ett kryss)

Driver ikke idrett/mosjon

Litt anstrengende

Ganske anstrengende

Meget anstrengende

Svært anstrengende

14. Hvor ofte har du i gjennomsnitt drevet med følgende treningsaktiviteter i løpet av de siste 12 måneder? (Sett ett kryss for hver aktivitetsgruppe)

	Aldri	Under	1	Flere	
			1 gang pr uke	gang pr uke	ganger pr uke
Utholdenhetsidrett (feks løp, sykling, langrenn, svømming).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lag-/ballidretter (feks squash, håndball, fotball, ishockey).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Styrkeidrett (feks bryting, vekttrening).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kampsport (feks judo, karate, taekwondo).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tekniske idretter (feks ridning, alpint, telemark, friidrett, snowboard, golf, rullebrett/skøyter).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risikoidrett (feks elvepadling, fjellklatring, paragliding).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annet, spesifiser _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I det neste spørsmålet brukes begrepet REGELMESSIG. Da mener vi 3 ganger

15. Hvilket av disse passer best for deg? (Sett ett kryss)

For tiden er jeg ikke fysisk aktiv, og jeg har ingen planer om å bli det i løpet av de neste 6 måneder

For tiden er jeg ikke fysisk aktiv, men jeg tenker å bli mer fysisk aktiv i løpet av de neste 6 måneder

- For tiden er jeg noe fysisk aktiv, men det er ikke regelmessig
- For tiden er jeg regelmessig fysisk aktiv, men det er først i de siste 6 måneder at jeg har begynt med det
- For tiden er jeg regelmessig fysisk aktiv, og jeg har vært det lengre enn 6 måneder

16. Hvis du er fysisk aktiv, hvorfor driver du med fysisk aktivitet? (Sett et kryss for hvert svaralternativ som rangeres fra helt uenig til helt enig).

		Helt uenig				Helt enig
		1	2	3	4	5
For å forebygge livsstilssykdommer/plager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For å redusere/vedlikeholde vekt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For å øke muskelmassen/bli sterk		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For å bedre mitt utseende		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fordi det er moro		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fordi det er sosialt		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For å være mer motstandsdyktig mot sykdommer/skader		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For å forbedre humøret		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For å få mer overskudd		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vet ikke helt hvorfor jeg er fysisk aktiv		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jeg får dårlig samvittighet hvis jeg ikke er aktiv		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Andre synes at jeg må være fysisk aktiv		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ikke noen bestemt grunn		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Annet, vennligst noter: _____

17. a) Driver du noen form for organisert idrett nå (idrettslag, konkurranser)?

- Ja Nei

Hvis Ja, vennligst spesifiser hvilke(n) idrett(er) _____

Hvis Nei, gå til spørsmål 18.

b) Hvor mye har du trent (totalt, både organisert og egentrening) i snitt i uka de siste 4 ukene?

- Under 3 timer
- 3 - 5 timer
- 6-10 timer
- 11-15 timer
- 16-20 timer
- 21 timer eller mer

18. Når står du vanligvis opp en skoledag?

- Før 6.30
- Mellom 6.30 og 7.00
- Mellom 7.00 og 7.30
- Etter 7.30

19. Når legger du deg vanligvis kvelden før en skoledag?

- Før 20.00
- Mellom 20.00 og 21.00
- Mellom 21.00 og 22.00
- Mellom 22.00 og 23.00
- Mellom 23.00 og 24.00
- Etter midnatt

20. Hvor mange timer ser du på TV eller driver du med PC/dataspill på en *vanlig* ukedag (utenom skoletid)?

- Jeg ser ikke på TV/driver med dataspill på en vanlig ukedag

- Mindre enn 1 time per dag
- 1 time per dag
- 2 timer per dag
- 3 timer per dag
- 4 timer per dag
- 5 timer eller mer per dag

21. Hvilke av følgende aktiviteter vil du definere som fysisk aktivitet? (Her kan du sette flere kryss)

- Jogge
- Svømme
- Klippe plenen
- Gå til skolen
- Se på TV
- Kjøre moped
- Danse
- Spille volleyball

22. Hva tror du er Helsedirektoratets *minimumsanbefalinger* når det gjelder daglig fysisk aktivitet for ungdom? (Sett kun ett kryss).

- 15 minutter
- 30 minutter
- 45 minutter
- 60 minutter
- 90 minutter
- 120 minutter
- Vet ikke

Spørsmål om kosthold

23. Hvor mange hovedmåltider spiser du vanligvis per dag? (mellommåltider er ikke iberegnet)

1-2 måltider

3-4 måltider

5 måltider eller mer

Uregelmessig

24. Spiser du vanligvis noe mellom disse måltidene (mellommåltider)? Ja Nei

25. Hvor ofte spiser du følgende måltider en vanlig uke? Sett ett kryss for hvert måltid.

	Aldri	1-2 ganger pr uke	3-4 ganger pr uke	5-6 ganger pr uke	Hver dag
Frokost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Formiddagsmat/lunsj	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Middag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kveldsmat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mellommåltid/restitusjons- måltid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26. Hvor ofte spiser du frukt og bær? 5 ganger i uken

Aldri 6 ganger i uken

Sjeldnere enn 1 gang i uken Hver dag

1 gang i uken Flere ganger hver dag

2 ganger i uken

3 ganger i uken

4 ganger i uken

27. Hvor ofte spiser du grønnsaker (inkludert salat)?

- | | | | |
|-----------------------------|--------------------------|-----------------------|--------------------------|
| Aldri | <input type="checkbox"/> | 4 ganger i uken | <input type="checkbox"/> |
| Sjeldnere enn 1 gang i uken | <input type="checkbox"/> | 5 ganger i uken | <input type="checkbox"/> |
| 1 gang i uken | <input type="checkbox"/> | 6 ganger i uken | <input type="checkbox"/> |
| 2 ganger i uken | <input type="checkbox"/> | Hver dag | <input type="checkbox"/> |
| 3 ganger i uken | <input type="checkbox"/> | Flere ganger hver dag | <input type="checkbox"/> |

28. Hvor ofte spiser du potet?

- | | | | |
|-----------------------------|--------------------------|-----------------------|--------------------------|
| Aldri | <input type="checkbox"/> | 2 ganger i uken | <input type="checkbox"/> |
| Sjeldnere enn 1 gang i uken | <input type="checkbox"/> | 3 ganger i uken | <input type="checkbox"/> |
| 1 gang i uken | <input type="checkbox"/> | 4 ganger i uken | <input type="checkbox"/> |
| 2 ganger i uken | <input type="checkbox"/> | 5 ganger i uken | <input type="checkbox"/> |
| 3 ganger i uken | <input type="checkbox"/> | 6 ganger i uken | <input type="checkbox"/> |
| 4 ganger i uken | <input type="checkbox"/> | Hver dag | <input type="checkbox"/> |
| 5 ganger i uken | <input type="checkbox"/> | Flere ganger hver dag | <input type="checkbox"/> |
| 6 ganger i uken | <input type="checkbox"/> | | |
| Hver dag | <input type="checkbox"/> | | |
| Flere ganger hver dag | <input type="checkbox"/> | | |

29. Hvor ofte spiser du potetgull, peanøtter o.l.?

- | | |
|-----------------------------|--------------------------|
| Aldri | <input type="checkbox"/> |
| Sjeldnere enn 1 gang i uken | <input type="checkbox"/> |
| 1 gang i uken | <input type="checkbox"/> |

30. Hvor ofte spiser du godterier (sjokolade, blandet godt osv.)?

- | | |
|-----------------------------|--------------------------|
| Aldri | <input type="checkbox"/> |
| Sjeldnere enn 1 gang i uken | <input type="checkbox"/> |
| 1 gang i uken | <input type="checkbox"/> |
| 2 ganger i uken | <input type="checkbox"/> |
| 3 ganger i uken | <input type="checkbox"/> |
| 4 ganger i uken | <input type="checkbox"/> |
| 5 ganger i uken | <input type="checkbox"/> |
| 6 ganger i uken | <input type="checkbox"/> |

Hver dag

Flere ganger hver dag

31. Hvor ofte drikker du juice?

Aldri

Sjeldnere enn 1 gang i uken

1 gang i uken

2 ganger i uken

3 ganger i uken

4 ganger i uken

5 ganger i uken

6 ganger i uken

Hver dag

Flere ganger hver dag

4 ganger i uken

5 ganger i uken

32. Hvor ofte drikker du saft MED sukker?

Aldri

Sjeldnere enn 1 gang i uken

1 gang i uken

2 ganger i uken

3 ganger i uken

4 ganger i uken

5 ganger i uken

6 ganger i uken

Hver dag

Flere ganger hver dag

6 ganger i uken

Hver dag

Flere ganger hver dag

36. Hvor ofte drikker du vann fra springen?

Aldri

Sjeldnere enn 1 gang i uken

1 gang i uken

2 ganger i uken

3 ganger i uken

4 ganger i uken

5 ganger i uken

6 ganger i uken

34. Hvor ofte drikker du brus MED sukker?

Aldri

Sjeldnere enn 1 gang i uken

1 gang i uken

2 ganger i uken

3 ganger i uken

33. Hvor ofte drikker du saft UTEN sukker

Aldri

- | | | | |
|-----------------------------|--------------------------|-----------------------|--------------------------|
| Sjeldnere enn 1 gang i uken | <input type="checkbox"/> | 3 ganger i uken | <input type="checkbox"/> |
| 1 gang i uken | <input type="checkbox"/> | 4 ganger i uken | <input type="checkbox"/> |
| 2 ganger i uken | <input type="checkbox"/> | 5 ganger i uken | <input type="checkbox"/> |
| 3 ganger i uken | <input type="checkbox"/> | 6 ganger i uken | <input type="checkbox"/> |
| 4 ganger i uken | <input type="checkbox"/> | Hver dag | <input type="checkbox"/> |
| 5 ganger i uken | <input type="checkbox"/> | Flere ganger hver dag | <input type="checkbox"/> |
| 6 ganger i uken | <input type="checkbox"/> | | |
| Hver dag | <input type="checkbox"/> | | |
| Flere ganger hver dag | <input type="checkbox"/> | | |

35. Hvor ofte drikker du brus UTEN sukker?

- | | |
|-----------------------------|--------------------------|
| Aldri | <input type="checkbox"/> |
| Sjeldnere enn 1 gang i uken | <input type="checkbox"/> |
| 1 gang i uken | <input type="checkbox"/> |
| 2 ganger i uken | <input type="checkbox"/> |
| Hver dag | <input type="checkbox"/> |
| Flere ganger hver dag | <input type="checkbox"/> |

37. Hvor ofte drikker du rent kjøpevann uten kullsyre og smak?

- Aldri
- Sjeldnere enn 1 gang i uken
- 1 gang i uken
- 2 ganger i uken
- 3 ganger i uken
- 4 ganger i uken
- 5 ganger i uken
- 6 ganger i uken
- Hver dag
- Flere ganger hver dag

- 3 ganger i uken
- 4 ganger i uken
- 5 ganger i uken
- 6 ganger i uken
- Hver dag
- Flere ganger hver dag

39. Hvor mange porsjoner frukt og grønnsaker tror du at du spiser hver dag?

- Ingen
- 1
- 2
- 3
- 4
- 5
- Mer enn 5

40. Hvor mange porsjoner frukt og grønnsaker tror du at en på din alder bør spise hver dag?

- Ingen
- 1
- 2
- 3
- 4
- 5
- Mer enn 5

38. Hvor ofte drikker du kjøpevann med kullsyre og/eller smak?

- Aldri
- Sjeldnere enn 1 gang i uken
- 1 gang i uken
- 2 ganger i uken

41. Bruker du vanligvis margarin/smør på brødkiven? Ja Nei

42. Kryss av for om du mener disse påstandene er riktige eller gale (HUSK kun ett kryss for hvert spørsmål)

	Riktig	Galt	Vet ikke
Karbohydrater er den viktigste kilden til energi for kroppen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fett er et næringsstoff som kroppen egentlig ikke trenger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
"Fem om dagen" betyr at jeg bør spise 5 måltider om dagen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fem agurkskiver på brødet teller som en porsjon frukt og grønnsaker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Et jevnt matinntak gir bedre konsentrasjonsevne og økt forbrenning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blodsukkeret påvirkes både av hva jeg spiser og hvor ofte jeg spiser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Antioksidanter er stoffer som skader kroppen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kroppen min trenger mat så ofte som hver 3. – 4. time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

De neste 3 spørsmålene dreier seg om røyking, snusing og alkohol. Det er

43. Røyker du?

Har aldri røykt

Har prøvd, men røyker ikke i det hele tatt nå

Har røykt fast, men har sluttet helt nå

Røyker, men ikke daglig

Røyker daglig, omtrent ____ sigaretter per dag

44. Snuser du?

Har aldri snust

Har prøvd, men snuser ikke i det hele tatt nå

Har snust fast, men har sluttet helt nå

Snuser, men ikke daglig

Snuser daglig, omtrent

____poser/priser per dag

45. Har du noen gang drukket øl, vin eller brennevin?

Ja Nei

Hvis ja, gjennomsnittlig hvor ofte? (Kryss av for det svaret som passer best til ditt forbruk).

Jeg har så vidt smakt alkohol

Drikker ca. 1 gang per måned

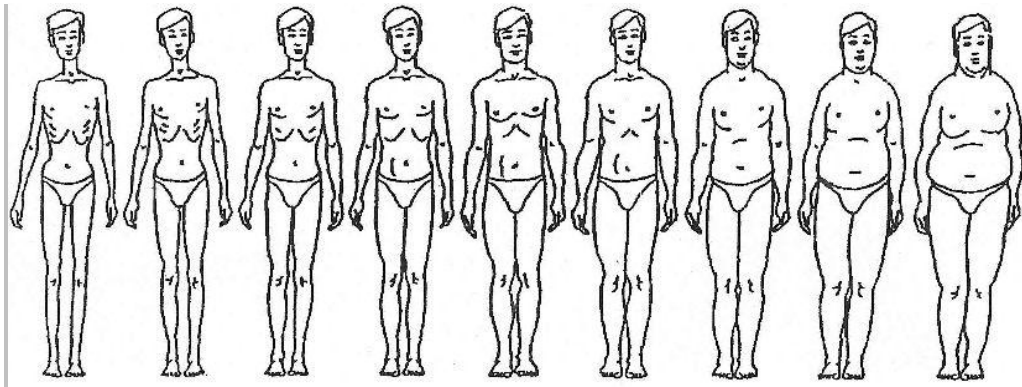
Drikker ca. 1 gang per uke

Drikker mer enn en gang per uke

Spørsmål om vekt og helse

Spørsmål 46 og 47 skal kun besvares av gutter, mens spørsmål 48

GUTTER:



1. 2. 3. 4. 5. 6. 7. 8. 9.

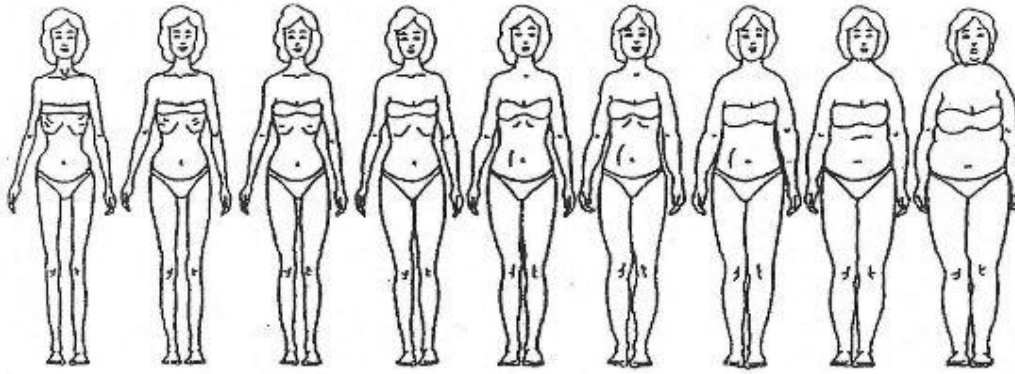
46. Hvilket av bildene over illustrerer best din nåværende kroppsfigur?

Bilde nummer: 1 2 3 4 5 6 7 8 9

47. Hvilket av bildene over illustrerer best den kroppsfiguren som du ønsker deg?

Bilde nummer: 1 2 3 4 5 6 7 8 9

JENTER:



1. 2. 3. 4. 5. 6. 7. 8. 9.

48. Hvilket av bildene over illustrerer best din nåværende kroppsfigur?

Bilde nummer: 1 2 3 4 5 6 7 8 9

49. Hvilket av bildene over illustrerer best den kroppsfiguren som du ønsker deg?

Bilde nummer: 1 2 3 4 5 6 7 8 9

50.

a) Hvor høy er du?

			Cm

b) Hva er din nåværende vekt

			Kg

51. Hva mener du at din vekt bør være for;

a) å ha det godt med deg selv?

			Kg

b) å prestere bra i din idrett? (dersom du driver organisert idrett)

			Kg

52. Har du noen gang forsøkt å gå opp i vekt? Ja Nei

53. Har du noen gang forsøkt å sikre at du ikke har gått ned i vekt? Ja Nei

54. Prøver du å gå opp i vekt nå? Ja Nei

Hvis nei på spørsmål 52, 53 og 54, gå videre til spørsmål 57.

55. Her følger noen påstander om hvorfor du ønsker/ønsket å gå opp i vekt. Stemmer disse for deg? Sett kryss.

	Ja	Nei
For tynn		
For lett/svak		
For lite muskelmasse ("muskler")		
Prestere bedre i min idrett		
Se bedre ut		

Helsesøster mener/mente at jeg bør/burde gå opp i vekt		
Legen mener/mente at jeg bør/burde gå opp i vekt		
Trener mener/mente jeg bør/burde gå opp i vekt		
Lærer mener/mente jeg bør/burde gå opp i vekt		
Familiemedlem mener/mente at jeg bør/burde gå opp i vekt		
Venner/kjæreste mener/mente at jeg burde gå opp i vekt		
Lagkamerater/andre utøvere mener/mente jeg bør/burde gå opp i vekt		
Annet: _____ _____		

56. Hvilke av følgende metoder har du eventuelt brukt/bruker du for å gå opp i vekt?

	Alltid	Vanligvis	Ofte	Iblant	Sjelden	Aldri
Økt kalori/energi inntak						
Økt treningsmengde						
Økt treningsintensitet						
Økt treningshyppighet						
Mer styrketrening						
Bruk av kosttilskudd						
Selvkomponert diett						
Diett fra ernæringsfysiolog						
Diett fra andre; _____						
Annen metode: vennligst utdyp: _____ _____						

57. Har du noen gang forsøkt å gå ned i vekt? Ja Nei

58. Har du noen gang forsøkt å sikre at du ikke har gått opp i vekt? Ja Nei

59. Forsøker du å gå ned i vekt nå? Ja Nei

Hvis Nei på spørsmål 57, 58 og 59, gå til spørsmål 64

60. Hvor gammel var du første gang du forsøkte å gå ned i vekt?

		År
--	--	----

61. Hvor mange ganger har du forsøkt å gå ned i vekt?

1-2 ganger

3-5 ganger

Mer enn 5 ganger

62. Her følger noen påstander om hvorfor du ønsker/ønsket å gå ned i vekt. Stemmer disse for deg? Sett kryss.

	Ja	Nei
For tung		
For tykk		
Prestere bedre i min idrett (Dersom du driver organisert idrett)		
Se bedre ut		
Helsesøster mener/mente at jeg bør/burde gå ned i vekt		
Legen mener/mente at jeg bør/burde gå ned i vekt		
Lærer mener/mente jeg bør/burde gå ned i vekt		
Trener mener/mente jeg bør/burde gå ned i vekt		
Familiemedlem mener/mente at jeg bør/burde gå ned i vekt		
Venner/kjæreste mener/mente at jeg bør/burde gå ned i vekt		
Lagkamerater/andre utøvere mener/mente jeg bør/burde gå ned i vekt		
Annet: _____ _____		

63. Hvilke av følgende metoder har du eventuelt brukt/bruker du for å gå ned i vekt?

	Alltid	Vanligvis	Ofte	Iblant	Sjelden	Aldri
Økt treningsintensitet						
Økt treningsmengde						
Økt treningshyppighet						
Redusert kalori/energi inntak						
Avføringsmidler						
Oppkast						
Slankepiller/pulver						
Vanndrivende midler						
Badstue						
Selvkomponert diett						
Diett fra ernæringsfysiolog						
Diett fra andre; _____ _____						
Annen metode, vennligst utdyp: _____ _____						

64. Hvor mange år var du da du fikk din første menstruasjon? (Dette spørsmålet besvares kun av jentene).

--	--

År

--

Har ikke fått min første menstruasjon ennå

65.

a) Mener du selv du har hatt et spiseproblem? Ja Nei Vet ikke

Hvis ja,

b) Fikk du behandling/oppfølging? Ja Nei

66.

a) Mener du selv at du har et spiseproblem? Ja Nei Vet ikke

Hvis ja,

b) Tror du noen vet at du har det? Ja Nei Vet ikke

Hvis ja,

c) Hvem tror du vet det? (*Her kan du sette flere kryss*).

Venner

Utøvere i idrettsmiljøet du deltar i (hvis du er utøver selv)

Lærer

Helsesøster

Trener

Familie

Andre _____

67. Har du noen gang blitt fortalt av lege eller psykolog at du har en spiseforstyrrelse?

Ja Nei

68. Ønsker du å motta tilbud om veiledning i forhold til spiseproblemer?

Ja Nei Vet ikke

69. Kjenner du til andre elever på skolen som har eller du antar har en spiseforstyrrelse?

Ja Nei Vet ikke

70. Hvilke av følgende påstander mener du er riktige eller gale? (Sett kun ett kryss for hver påstand).

	RIKTIG	GALT	VET IKKE
Spiseforstyrrelser er en sykdom som kun handler om mat og spising	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spiseforstyrrelser er en jente/kvinnelidelse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spiseforstyrrelser er en psykisk lidelse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
De som har spiseforstyrrelser er veldig tynne	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Man kan bli helt frisk av en spiseforstyrrelse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Idrettsutøvere har redusert risiko for å få spiseforstyrrelser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jenter har mer kroppsfett enn gutter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Selvillitt er det samme som "tillitt til egen dyktighet"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Nå kommer siste del av spørreskjemaet – hold konsentrasjonen oppe 😊 😊

I punktene videre spørres det om dine holdninger, følelser og atferd. Noen av punktene handler om mat og spising. Andre punkter dreier seg om dine følelser i forhold til deg selv. Du skal ved hvert punkt bestemme deg for i hvilken grad utsagnet passer på deg: ALLTID, VANLIGVIS, OFTE, IBLANT, SJELDEN eller ALDRI.

71. For hver påstand, vennligst sett kryss for det alternativet som passer

	Alltid	Vanligvis	Ofte	Iblant	Sjelden	Aldri
1. Jeg spiser søtsaker og karbohydrater uten å bli engstelig						
2. Jeg mener magen min er for stor						
3. Jeg spiser når jeg blir opprørt						
4. Jeg stapper i meg mat						
5. Jeg tenker på slanking						
6. Jeg synes lårene mine er for tykke						
7. Jeg får dårlig samvittighet når jeg har spist for mye						
8. Jeg mener at magen min er passe stor						
9. Jeg er livredd for å legge på meg						
10. Jeg er fornøyd med figuren min						
11. Jeg overvurderer vektens betydning (veldig opptatt av selve kroppsvekten min)						
	Alltid	Vanligvis	Ofte	Iblant	Sjelden	Aldri
12. Jeg har hatt spiseorgier hvor jeg har følt at jeg ikke har kunnet slutte						
13. Jeg er godt fornøyd med overkroppens proporsjoner (hvordan den ser ut)						
14. Jeg liker fasongen på rumpen min						
15. Jeg er svært opptatt av å bli tynnere						
16. Jeg tenker på det å overspise						
17. Jeg mener at hoftene mine er for brede						
18. Sammen med andre spiser jeg moderat, og						

stapper i meg når jeg er alene						
19. Hvis jeg går opp noen hundre gram i vekt er jeg redd for at jeg vil fortsette å gå opp						
20. Jeg kan få det for meg at jeg skal kaste opp for å gå ned i vekt						
21. Jeg føler at lårene mine er passe store						
22. Jeg mener overkroppen min er for spinkel						
23. Jeg mener at rumpen min er for stor						
24. Jeg spiser eller drikker i hemmelighet						
25. Jeg mener at hoftene mine er akkurat passe brede						
26. Jeg skulle ønske jeg var mer muskuløs						
27. Jeg løfter vekter for å bygge muskler						
28. Jeg bruker proteintilskudd eller andre kosttilskudd						
29. Jeg drikker proteinshaker eller andre energishaker						
30. Jeg prøver å spise så mye jeg kan hver dag						
31. Jeg får dårlig samvittighet hvis jeg mister en treningsøkt						
32. Jeg ville følt meg mer selvsikker hvis jeg hadde større muskler						
33. Andre mennesker synes jeg trener for ofte med vekter						
34. Jeg ville sett bedre ut hvis jeg la på meg mer muskelmasse						
35. Styrketreningsøktene mine gjør at jeg må droppe andre ting i livet mitt						
36. Jeg synes at armene mine ikke er muskuløse nok						

37. Jeg synes at brystkassen min ikke er muskuløs nok						
38. Jeg synes at beina mine ikke er muskuløse nok						

72. Hva synes du egentlig om deg selv? Kryss av for det som passer best for deg (ett kryss for hvert utsagn).

	Stemmer svært dårlig	Stemmer nokså dårlig	Stemmer nokså godt	Stemmer svært godt
a) Jeg synes jeg er like smart som andre på min alder				
b) Jeg synes det er ganske vanskelig å få venner				
c) Jeg gjør det bra i all slags sport				
d) Jeg er ofte skuffet over meg selv				
e) Jeg er ganske sein med å bli ferdig med skolearbeidet				
f) Jeg har mange venner				
g) Jeg tror jeg kan gjøre det bra i nesten hvilken som helst ny sport				
h) Jeg liker ikke den måten jeg lever livet mitt på				
i) Jeg gjør det svært godt på skolen				
j) Andre ungdommer har vanskelig for å like meg				
k) Jeg synes jeg er bedre i sport enn andre på min alder				
l) Jeg er stort sett fornøyd med hvordan jeg oppfører meg				
m) Jeg er stort sett fornøyd med meg selv				
n) Jeg har vansker med å svare riktig på skolen				
o) Jeg er populær blant jevnaldrende				

p) Jeg gjør det ikke så godt i nye øvelser i kroppsøvingstimen				
q) Jeg liker meg selv slik jeg er				
r) Jeg betrakter meg selv som ganske intelligent				
s) Jeg føler at jevnaldrende godtar meg				
t) Jeg er svært fornøyd med hvordan jeg er				

TUSEN TAKK FOR AT DU TOK DEG TID TIL
UTFYLLING AV SPØRRESKJEMAET!



Appendix 1

Førstamanuensis Monica K. Torstveit
Fakultet for helseog idrett
LiA
Serviceboks 422
4604 Kristiansand

Nasjonalt helsefaglig forskningsnettverk og helseforskningstiltak 2009-11 B (BEK.soc.nsl.S)
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Nettside: <http://helseforsknet.helse.no>

Dato: 22.12.09

Deres ref:

Vdr.ref.: 2009/1348b

2009/1348b **Aktiv Ungdom med Overskudd**

Prosjektleder: Monica K. Torstveit
Forskningsansvarlig: Universitetet i Agder

Søknad om godkjenning av forskningsprosjektet **Aktiv Ungdom med Overskudd** ble sendt inn til fristen 07.09.09. Komiteen vurderte søknaden i sitt møte 29. september 2009. Komiteen hadde merknader til søknaden som er besvart i brev datert 22.10.09 med vedlegg. Komiteen vurderte søknaden og svar på komiteens merknader i sitt møte 09.12.09 med hjemmel i helseforskningsloven § 10, jf. forskningsetikkløven § 4.

Komiteen ser at prosjektet er i tråd med loven og at sperrerisikoen er redusert i tråd med komiteens merknader.

Komiteen har ingen fagspesifikke merknader til den foreliggende søknaden.

Vedtatt

Prosjektet godkjennes.

Tillatelsen er gitt under forutsetning av at prosjektet gjennomføres slik det er beskrevet i søknad og protokollen med de endringer som nå er foretatt, og de bestemmelsene som følger av helseforskningsloven med forskrifter.

Forskningsprosjektets data skal oppbevares forsvarlig, se personopplysningsforskriften kap. 2, og Helsedirektoratets veileder for "Personvern og informasjonssikkerhet i forskningsprosjekter innenfor helse- og omsorgssektorene" (http://www.helseidirektoratet.no/infomassjussikkerhet/norm_for_informasjonssikkerhet_i_helsesektorene_232354)

Tillatelsen gjelder til 31.12. 2011. Prosjektet skal sende sluttmelding på eget skjema (se helseforskningsloven § 12) senest et halvt år etter avsluttet prosjektarbeid.