BSc in Psychology

Emotional Problems, Bullying and Quality of Life among Obese Children in Iceland

The Negative Affect of Bullying

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Foreword

Submitted in partial fulfillment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.
Abstract

There are many researches that indicate that obese children experience lower quality of life compared to healthy weight children. The main goal of this study was to find out if emotional symptoms, bullying or teasing, prosocial behavior and BMI-SDS were predictors for obese children’s quality of life. Two hypotheses were put forward in the research: obese children that were victims of bullying or teasing experienced lower quality of life than obese children who did not and obese girls show better prosocial behavior scores than obese boys. It was possible to reject both null hypothesis. The participants were 153 parents of obese children, 83 girls and 70 boys and the children were 5 – 14 years old. About 50% were a victims of bullying, 38% experienced emotional problems and about 20% showed low prosocial behavior. To examine the goal of the research multiple regression was used which showed that emotional symptoms, bullying or teasing, prosocial behavior and BMI-SDS predicted 43% of the PedsQL scores. To ensure obese children's rights it is necessary to research their quality of life in clinical sample which could enhance our understanding about the role of mental and behavioral factors among obese children. Key word: Children’s obesity, BMI, SDQ, PedsQL, Bullying

Útdráttur

Það eru margar rannsóknir sem gefa til kynna að tengsl séu á milli offitu barna og lágra lífsgæða samanbordið við börn sem eru í kjörþyngð. Meginmarkmið þessarar rannsóknar var að komast að því hvort tilfinningaleg vandamál, einelti eða stríðni, félagsþærfi og BMI-SDS hefðu áhrif á lífsgæði barna sem eru að glíma við offitu. Tvær tilgátur voru settar fram í rannsókninni: Upplifa börn sem eru fórnarlömb eineltis eða stríðni lægri lífsgæði en of feit börn sem ekki verða fyrir einelti eða stríðni. Sýna stúlkur sem glíma við offitu betri félagsþærfi en of feitir strákar. Báðar tilgáturnar stóðust og hægt var að hafna null tilgátuni. Þáttakendur voru 153 foreldrar of feitra barna, börnin voru á aldrinum 5 – 14 ára, 83 stúlkur og 70 strákar. Um það bil helmingur barnanna eða 50% voru fórnarlömb eineltis, 38% þeirra höfðu upplifað tilfinningaleg vandamál og um 20% sýndu litla félagsþærfi. Til að kanna markmið rannsóknarinnar var notað margvíð aðhvarfsgreining sem sýndi að tilfinningaleg einkenni, einelti eða stríðni, félagsþærfi og BMI-SDS höfðu áhrif á 43% lífsgæða á PedsQL kvarðanum. Til að tryggja réttindi offeitra barna er nauðsynleg að rannsaka lífsgæði þeirra fyrir klínískt þýði sem gæti aukið skilning okkar á hlutverki andlegar og hegðunarlegrar virkni meðal þeirra. Lykilord: offita barna, BMI, SDQ, PedsQL, einelti
Emotional problems, bullying and quality of life among obese children in Iceland

Obesity among children is a condition when a child gains abnormal weight and it has negative effects on their health (Jensen et al., 2013). The Directorate of Health in Iceland (2013) reported that the prevalence of obesity among children in Iceland has increased from 1% to 5% in the last 30 years but has been stable from 1998 - 2012 (Helgason, 2011; Jónsson et al., 2013). Since the prevalence of obesity started to increase researchers have found out that obesity can be associated with lack of physical, emotional and behavioral functions (Han, Lawlor, & Kimm, 2010; Centers for Disease Control and Prevention, 2017). The high prevalence of obesity and the negative effect it has on health has made obesity one of the major health problems in the world (Kosti, 2006; Uzogara, 2017). Because obesity often starts during childhood, therefore preventive measures should focus on children (Kretchmer, 1990).

Physical and emotional problems among obese children

As mentioned above there have been found a connection between obesity and physical problems, researches show that obese children experience often breathing difficulties, high blood pressure and more joint and musculoskeletal pain (Reilly et al., 2003). Obese children are also in greater risk of developing non-communicable diseases such as heart attacks, stroke, cancers and diabetes (Reilly & Kelly, 2011; Skinner, Perrin, Moss, & Skelton, 2015).

The mental health among children dealing with obesity is often worse than among healthy weight children both in clinical and public sample (Vila et al., 2004). Researches show that they experience lower self-esteem, lack of social confidence, more impulsivity,
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anxiety and depression (Ajilore et al., 2007; Cornette, 2008; Griffiths, Parsons, & Hill, 2010; Puder & Munsch, 2010; Griffiths, Dezateux, & Hill, 2011).

In addition to obesity there are other things that can affect mental health among children, for example lack of physical activity, poor sleep quality, and being a victim of bullying (Bradshaw, 2016; Evans-Lacko et al., 2017; Gu, Chang, & Solmon, 2016; Uzogara, 2017; van Geel, Vedder, & Tanilon, 2014). These things are also common among obese children, they experience more often low sleep quality, negative attitude toward physical activities and are significantly often a victim of bullying than children in a healthy weight range (Beccuti & Pannain, 2011; Gu et al., 2016; D. Neumark-Sztainer et al., 2002; Uzogara, 2017) In a research by Zellers and colleagues (2008) the results showed that obese children were less likely to be nominated as a best friend and had lower peer acceptance than healthy weight children (Zeller, Reiter-Purtill, & Ramey, 2008). Other reasearches have shown similar results were healthy weight children have negative views of obese children (van Geel et al., 2014; Kraig & Keel, 2001; Zeller, Reiter-Purtill, & Ramey, 2008). These negative views and low peer acceptancy can increase the risk for obese children of becoming a victim of bullying.

Bullying

Bullying can have many negative effects on an obese child’s life. Children who are victims of bullying can develop a reduced ability to make a social and psychological adjustment (Gouveia, Frontini, Canavarro, & Moreira, 2014). They can also experience more loneliness, lower self-esteem, higher levels of body dissatisfaction and lower quality of life than children who are not victims of bullying (Eisenberg et al., 2003; Gouveia et al., 2014; Hayden-Wade et al., 2005; Dianne Neumark-Sztainer et al., 2006; Storch et al., 2007).
Bullying does not only affect the mental health of obese children, it also affects their perception on health which is significantly different compared with their healthy weight peers (Storch et al., 2007). They have more weight concerns, are more likely to diet, express often negative attitudes towards sports and often spend greater amount of time in isolative sedentary activities (Faith, Leone, Ayers, Heo, & Pietrobelli, 2002; Hayden-Wade et al., 2005; Thompson et al., 2007). Some studies indicate that obese children are three times more likely to be a subject of bullying compared to average weight children (Neumark-Sztainer et al., 2002). When summarizing the results above, it can be concluded that obese children who are victims of bullying are in a greater risk of developing a negative life style which can maintain the obesity.

**Prosocial functions among obese children**

Prosocial behavior can be described as when a person feels empathy and concern for others and wants to help others. Children who score higher on prosocial behavior measures are often found to have a better peer relationship (Di Angelantonio et al., 2016; Gilbert, Fiske, & Lindzey, 1998; Hayden-Wade et al., 2005; Storch et al., 2007; Viner et al., 2006). Obese children show significantly lower prosocial function and poor social skills compared to healthy weight children (Buttitta, Iliescu, Rousseau, & Guerrien, 2014; Gibson et al., 2008; Xie et al., 2005). Researches on public samples show that obese boys have significantly lower prosocial functions and more hyperactivity than obese girls (Lucy J Griffiths et al., 2011; Morrison, Shin, Tarnopolsky, & Taylor, 2015; Morrison et al., 2015; Seçer, Gülay Ogelman, & Önder, 2015). However, obesity can have more negative effects on girls self-esteem and can cause a lower physical activity level compared to obese boys (Wisniewski & Chernausek, 2009; Stradmeijer, Bosch, Koops, & Seidell, 2000). This finding indicates that
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Obesity can have different consequences for boys and girls and can affect how they deal with their obesity (Buttitta et al., 2014; Cornette, 2008; Puder & Munsch, 2010; Russell-Mayhew, McVey, Bardick, & Ireland, 2012). There are few researches that have examined the prosocial behavior difference among obese children in a clinical sample regarding their gender.

Quality of life among obese children

Quality of life (QOL) is a multidimensional component and preface to the general well-being of individual (Schalock, 1997). The QOL of children encompasses several domains that consider behavioral, emotional and physical function among children (Liu et al., 2016; Naughton & Shumaker, 2003; Pinhas-Hamiel et al., 2005). There are many obstacles that obese children can experience in life which can have a negative impact on their quality of life. The quality of children’s lives can depend on many things like family structure, prosocial status, physical activity and weight status (Buttitta et al., 2014; Gu et al., 2016; Stradmeijer et al., 2000; Uzogara, 2017).

Research has shown that there is a connection between obesity and the perception of low quality of life among children where obese children report significantly lower overall scores in health related quality of life (HRQOL), in comparison to normal weight children (Liu et al., 2016; Pinhas-Hamiel et al., 2005; Ravens-Sieberer, Redegeld, & Bullinger, 2001; Shoup, Gattshall, Dandamudi, & Estabrooks, 2008). Williams and colleagues (2005) studied HRQOL among children and found out that as soon as children were above average weight their HRQOL began to decline (Williams et al., 2005). Varni and colleagues (2007) examined the HRQOL of obese children compared with children who were diagnosed with cancer (Varni et al., 2007). The results showed that obese children reported similar quality of
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life as children with cancer (James W Varni et al., 2007). By researching the quality of life among obese children it might be possible to increase the understanding of the emotional and behavioral impact that obese children experience (Hughes, Farewell, Harris, & Reilly, 2006; Pinhas-Hamiel et al., 2005).

The Department of Pediatrics

In this research, the data was obtained from The Department of Pediatrics at Landspítali University Hospital in Iceland which has been a treatment center for obese children in since 2011 (Gunnarsdottir, Sigurdardottir, Njardvik, Olafsdottir, & Bjarnason, 2011). It consists of a multidisciplinary team of professionals who are constantly working to develop the treatment currently offered. The treatment center was initially developed and led by Dr. Þrúður Gunnarsdóttir psychologist amongst other researchers (Gunnarsdóttir et al., 2014). It was founded on Epstein’s family-based behavioral treatment and it has reported good results with a wide range of positive effects on body weight, mental and physical well-being in post study as well as at follow up (Epstein et al., 2012; Epstein, Paluch, Roemmich, & Beecher, 2007; Golan, Weizman, Apter, & Fainaru, 1998; Gunnarsdóttir et al., 2014).

Current research

Previous researches show that obese children experience more bullying and show lower prosocial functions which can affect their mental health and quality of life (Hughes et al., 2006; Storch et al., 2007; van Geel et al., 2014). The convention of child right states that children should all have equal opportunities to enjoy life, should not experience social stigma of any kind and have the right to get the help that suits them (Unicef, 1992). In order to ensure obese children's rights it is necessary to research their quality of life in clinical
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sample. There are quite few researches that have been published in Iceland that explore the effects of bullying on quality of life among clinical sample. Research by Hughes and colleagues shows that obese children in clinical samples often experience impaired quality of life compared to healthy weight children (Hughes et al., 2006). In the research they conclude that the impairment is likely to be greatest when assessed using the parents perspective (Hughes et al., 2006). By researching a clinical sample in Iceland, it could increase the understanding of the mental health among obese children as well as tailor obesity treatment to the needs of each child.

The aim of this research was to find out if emotional problems, teasing or bullying, BMI-SDS and prosocial behavior did affect quality of life among clinical sample of obese children in Iceland. Based on previous researches two hypotheses were put forward:

1. Obese children who are victims of bullying or teasing report a lower quality of life compared to obese children who are not victims of bullying or teasing.
2. Obese girls show better prosocial behavior scores than obese boys.

Method

Participants

In this retrospective study, the participants were 153 obese children accompanied by a parent. They attended an outpatient behavior based family treatment for childhood obesity at the Department of Pediatrics, Landspíitali University Hospital, in Iceland in 2011-2016. There were 54.2% girls and 45.8% boys, 142 were from Iceland, 10 from other countries and one person did not provide his/her origin. The children were between 5 and 14 years of age and the mean age was 10 years ($M=10.55$, $SD= 1.73$). The children were all referred for obesity treatment by a parent or a healthcare personnel and all attended group sessions as a treatment
option. A license for the study was approved by the National Bioethics Committee (VSNb2013010026/03.07)

**Apparatus and Materials**

At the beginning of the treatment in the Department of Pediatrics the child and its parent underwent a screening interview where the parent answered a background information questionnaire in order to get demographic information. During the interview the height of the children was measured with a digital wall-mounted stadiometer (Ulmer Stadiometer, Prof. Heinze). To measure their weight a digital weight scale was used (Marel, type C2). The children wore light clothing and no shoes. The measures where used to calculate the child’s BMI-SDS.

**BMI.** Body Mass Index (BMI) is widely used and has been recommended for evaluating overweight and obesity among children in clinical setting (Barlow, 2007; Monasta et al., 2011). The Department of Pediatrics uses BMI to evaluate whether children are suitable candidates for their program. BMI is defined as people’s weight divided by their squared height and is a good screening tool (Stella G Uzogara, 2016). The BMI is used standardized (BMI-SDS) for children and shows the average weight and height adjusted for their age and sex (Cole, Freeman, & Preece, 1995; Cole et al., 2000). The obese cut point for children from 5-19-years-old is BMI greater than 2 standard deviations above the World Health Organization (WHO) growth reference median (WHO, n.d.). The BMI-SDS for the children was divided into two categories where the cut point was the BMS-SDS mean ($M = 3.49$). Therefore, it was possible to investigate the difference between those children who had BMI-SDS between 2.3-3.49 and the children with BMI-SDS of 3.5 and higher.
Pediatric Quality of Life. Pediatric Quality of Life Inventory 4.0 (PedsQL) is one of the more promising measures regarding health related quality of life (HRQOL) among 2-18 years old children (J. W. Varni, Seid, & Kurtin, 2001; J. W. Varni, Seid, & Rode, 1999; Eiser & Morse, 2001; James W Varni et al., 2007). There are two versions of the questionnaire, one is designed for children to do a self-report and the other is for the parent to answer regarding their child mental and physical function (James W. Varni, 1998a). Parent and children answered the list separately, providing the practitioner information of their individual perspectives (James W. Varni, 1998b). The results of this study are only based on answers from parents of 8-12-year-old obese children.

The list comprises 23 items and is divided into four subscales: physical functioning: “walking more than one block”, emotional functioning: “feeling afraid or scared”, social functioning: “getting along with other children” and school functioning “forgetting things”. In the emotional, social and school functioning subscales there are 5 questions in each and 8 questions in the physical functioning subscale. The answers were on a five point Likert scale and ranged from “never” to “almost always” (Varni, Seid, & Rode, 1999). To calculate the score for each subscale the scores were summarized and divided by number of items in that subscale. To find out the total score for quality of life, all the means were summarized and divided again with the number of subscales. The results ranged from 0-100 where the 0 indicates the lowest quality of life and 100 the highest (James W. Varni, 1998a).

Research has shown that the psychometric properties for PedsQL 4.0 parent proxy report for 8-12-year-old children have been good and acceptable (Bastiaansen, Koot, Bongers, Varni, & Verhulst, 2004; J. W. Varni et al., 2001). The internal reliability evaluates the consistency of the results and is measured with Cronbach alpha ($\alpha$). Researches have shown that the Cronbach alpha is between 0.8 - 0.9 which is considered as good internal reliability (James W. Varni, Limbers, Bryant, & Wilson, 2010; Varni, Seid, & Kurtin, 2001).
The validity of PedsQL has also been tested and researches shows that parents of healthy children report significant higher scores on PedQL compared to parents of children that suffer from diseases (Bastiaansen et al., 2004; Doostfatemeh, Ayatollahi, & Jafari, 2015; James W Varni et al., 2006). The PedsQL questionnaire has been translated in multiple languages including Icelandic (Appendix C) and can be used in research, clinical practice, and community populations (J. W. Varni et al., 2001; James W. Varni, 1998a).

**Strengths and Difficulties Questionnaire.** Strengths and Difficulties Questionnaire (SDQ) is a questionnaire for screening mental and behavioral problems among 4–16-year-old children. Robert Goodman child psychiatrist designed the SDQ and introduced it in 1997 (Robert Goodman, 1997). The list is short and comprehensible and is in three versions, one for parents of children aged 4-16 year-old, another for teachers of pupils aged 4-16-year-old and the third one is designed for children aged 11–16-year-old to self-report their experience (Goodman et al., 2003; Goodman, 1997; Hrafnsdóttir, 2006). In this research the parent version was only used. The questionnaire contains 25 assertions which are divided equally into five subscales: conduct problems, emotional symptoms, hyperactivity, peer problems and prosocial behavior (Robert Goodman, 1997). As well as eight questions which are related to the child’s learning, stress, emotional and social function.

In the instructions of the questionnaire the parent is required to answer the assertion based on their child’s behavior last 6-12 months. Each assertion is answered on a three-point scale that goes from 0 to 2 with the options: “not true”, “somewhat true” and “certainly true” (Goodman et al., 2003). There are 15 negative assertions and 10 positive, because of that the answer “not true” can either give 0 or 2 points based on the assertions (Muris, Meesters, & van den Berg, 2003). The score for each subscale can range from 0 to 10 and to find out the total SDQ score the results for all conduct problems, emotional symptoms, hyperactivity and peer problems are summarized. The prosocial subscale differs from the other subscales.
because it screens for positive psychological function of the child and is therefore not used in the total score (Stone, Otten, Engels, Vermulst, & Janssens, 2010).

Stone and colleagues studied the psychometric properties of the SDQ for 4 to 12-year-old children. Their results indicated that the psychometric properties were better for the teacher version of the questionnaire compared to the parent version (Stone et al., 2010). Researches show that there is a connection between the total score in the parent version of SDQ and other comparable screening lists ($r = 0.7 – 0.87$) (Becker et al., 2006; Janssens & Deboutte, 2009; Syed, Hussein, Azam, & Khan, 2009). When the validity was examined for each subscale the results showed that it is weaker compared to the total score (Stone et al., 2010). The internal consistencies for the total score of the parent version of SDQ was around 0.8 ($\alpha = 0.69 – 0.87$) and for the subscales it was between 0.53 and 0.76 (Becker, Woerner, Hasselhorn, Banaschewski, & Rothenberger, 2004; Robert Goodman, 2001; Stone, Otten, Engels, Vermulst, & Janssens, 2010; Becker et al., 2006; Robert Goodman, 2001; Koskelainen, Sourander, & Kaljonen, 2000; Vogels, Crone, Hoekstra, & Reijneveld, 2009). The highest alpha was for the hyperactivity subscale and the lowest was for conduct problem and peer problem (Becker et al., 2006; Stone et al., 2010; Vogels et al., 2009).

The SDQ has been translated into over 80 languages including Icelandic (Stolk, Kaplan, & Szwarc, 2017). There are few researches that examine the psychometric properties of the Icelandic version of SDQ. In 2006 the psychologist Agnes Huld Hrafnsdóttir examined the psychometric properties of SDQ among parents of five year old children. The results show similar psychometric properties as for the questionnaire in other languages where the internal consistency is below 0.8 ($\alpha = 0.41 – 0.74$) (Hrafnsdóttir, 2006).

In this research, only two subscales from the SDQ list were used as independent variables (Appendix B) i.e.: emotional symptoms: “Nervous or clingy in new situations, easily loses confidence ” and prosocial behavior: “Shares readily with other children (treats,
toys, pencils, etc.)”. The scores for the subscales are divided into three: normal, borderline and abnormal (Meltzer, Gatward, Goodman, & Ford, 2003). In addition, the answer to the assumption “Picked on or bullied by other children” was used as a third independent variable (Appendix B). The variable bullying or teasing was divided into two groups where the parents who answered that it was “somewhat true” and “certainly true” that their children had been “Picked on or bullied by other children” were in one group and those who answered that it was “not true” were in the other group.

**Design**

The study was a quasi-experiment and the methodology was quantitative i.e. based on statistical analysis of data. The statistic was conducted by a healthcare personnel in a screening interview at the Department of Pediatrics. License for using the data was applied to the National Bioethics Committee in Iceland. After the application has been approved the statistical analysis was initiated.

In this research, there were four independent variables e.i: emotional symptoms, prosocial function, BMI-SDS, and bullying or teasing. The dependent variable was the parents report of their child’s quality of life.

**Procedure**

Department of Pediatrics offers an individual and group treatment for obese children (Gunnarsdóttir et al., 2014). At the beginning of the treatment the child and its parent meet a doctor and a nurse. In the interview, the lifestyle of the child and its medical history was discussed and the treatment at the Department of Pediatrics presented. The child and its parent answered the PedsQL questionnaire separately to get their individual perspectives.
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The parent also answered a background questionnaire as well as the SDQ (Appendix A and B). In the interview the blood pressure, weight, height and circumference of the child was measured. After the interview the need for treatment is evaluated. In this research all the children receive a family-based behavioral group treatment where both parent and child are required to attend three times a week on a six week period. During the treatment, they receive education on healthy lifestyle and importance of good nutrition and physical activity.

Data analyses

To analyze the data the software, *Statistical Package for the Social Sciences* (SPSS version 24) was used and Microsoft Excel was used to create the tables and figures. The statistical analysis of the data was based on 95% confidence interval.

Before statistical analyzing the BMI-SDS variable was divided into two categories as mentioned above. The bullying or teasing variable was divided into two groups as well. Descriptive statistics was given for means, standard deviation and percentage. In the results presentation two independent t-tests were presented. The first t-test compared the quality of life among children who were victims of bullying or teasing to those who were not. The second t-test compared the prosocial function of obese girls with the prosocial function of obese boys. A Person correlation was used to find if there was a connection between the independent variables and the dependent variable. In the presentation of the results a Multiple regression was used to examine if the independent variables can predict the results of the dependent variable, e.i: quality of life. Before the multiple regression was performed the eight assumptions for it was examined they are for example Durbin-Watson statistic, Tolerance and VIF values. A significant level of $p < .5$ was used for the data analysis in this current research.
Results

Descriptive statistics

In table one the descriptive statistics is presented for the answers of the background questionnaire, BMI-SDS and the total scores of qualities of life. Table one indicates that 87% of the parents that answered the background questionnaire were mothers and most of the parents were Icelandic, in a job and married. There were 35% of the parents that reported that their children were diagnosed with other disorders such as anxiety, depression, ADHD, autism and learning disabilities. The descriptive statistics for the parent proxy PedsQL 4.0 scale showed that the mean score was 69 ($M = 68.8$, $SD = 17.4$) and ranged from 25 to 100 for all the participants.

Table 1

The descriptive statistics show the characteristics of the children and its parent in the current research

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total (N=153) Mean or %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children gender</strong></td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>54.2%</td>
</tr>
<tr>
<td>Boys</td>
<td>45.8%</td>
</tr>
<tr>
<td><strong>Answered by</strong></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>87.1%</td>
</tr>
<tr>
<td>Father</td>
<td>12.9%</td>
</tr>
<tr>
<td><strong>Parents’ education</strong></td>
<td></td>
</tr>
<tr>
<td>Middle school</td>
<td>26.4%</td>
</tr>
<tr>
<td>College</td>
<td>34.7%</td>
</tr>
<tr>
<td>University degree (BA, BS)</td>
<td>31.9%</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>6.9%</td>
</tr>
<tr>
<td><strong>Parents’ profession</strong></td>
<td></td>
</tr>
<tr>
<td>In a job</td>
<td>70%</td>
</tr>
</tbody>
</table>
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Homestead 6.3%
Unemployed 1.3%
Studying 10%
Disabled 12.5%

**Parents marital status**

In a relationship 8.5%
Married 47.5%
Divorced 19.5%
Divorced but are in a relationship now 12.7%
Single parent 9.3%
Getting a divorce 1.7%

**Ethnicity**

Icelandic 92.8%
Foreign 6.5%

**Disorders (e.g; ADHD, autism, anxiety and depression)**

Yes 35.9%
No 56.9%

**Children’s age**

10.6 (1.73)

**BMI-SDS**

3.49 (0.78)

BMI-SDS between 2.3 and 3.5 58.4%
BMI-SDS between 3.5 and 6.4 41.6%

**Total quality of life (PedsQL)**

68.8 (17.4)

For the emotional and prosocial subscales of the SDQ the scores were divided into three categories: normal, borderline and abnormal. There were 118 parents who answered the emotional and prosocial part of the list and 35 were missing. Figure one shows that most of the parents reported normal emotional symptoms ($N=61$) for their children as well as normal prosocial behavior ($N=85$).
Figure 1: The parent’s answers from the prosocial behavior and the emotional problems subscale in the SDQ

SDQ was also used to screen bullying and teasing, 117 parents answered that assertion and 36 were missing. Figure two indicates that nearly half of the parents reported that it was somewhat true that their child had experienced bullying or teasing in the last 6-12 months or 48.7% (N=57).

Figure 2: Answers to the assertion "Picked on or bullied by other children"
Independent t-tests

The first independent t-test was conducted to compare the quality of life among children who were a victim of bullying or teasing and those who did not. Figure three shows the difference in PedsQL scores between those who report that their children were a victim of bullying or teasing ($M = 65.6, SD = 16.6$) and those who did not ($M = 74.8, SD = 17.8$). There was a significant difference in the PedsQL score between the groups $t(64) = 2.25, p = .027$. Parents of those children who were a victim of bullying or teasing rated their children with significantly lower quality of life than the parents of the children who were not.

![Figure 3](image)

*Figure 3*: The mean PedsQL scores for children that reported peer problem and for those who did not ($N=76$).

The second independent t-test was conducted to compare the prosocial behavior among obese girls and boys. There were 64 parents of obese girls and 54 parents of obese boys that answered both the gender and the prosocial questions of the SDQ. The results showed that there was a significant difference between the prosocial subscale means $t(114) = 2.628, p = .01$, where the mean was higher for girls ($M= 1.69$) than for the boys ($M= 1.3$). Both null hypothesis was therefore rejected in a favor of the alternative hypothesis.
Bivariate correlations

Pearson’s correlation analysis was computed to assess the relationship between the dependent and independent variables. The Pearson correlation coefficient revealed that there were no significant correlations between quality of life and BMI-SDS were it had been divided into two categories ($r = .029, p = .775$). There was a negative and significant correlation between quality of life and the other three independent variables. The highest correlation was between quality of life and emotional symptoms ($r = -.502, p < .01$). For the prosocial behavior and the bullying or teasing variables the correlation with quality of life was lower or around $r = -0.3, p <.01$.

Multiple regression

Multiple regression was calculated to predict quality of life among obese children based on bullying or teasing, emotional symptoms, prosocial behavior, and BMI-SDS. The assumptions for the regression were examined and were all met. The results showed that the independent variables explained 43% of parent rated quality of life among the children ($R^2 = .431, F(5, 69) = 11.287, p <.001$). Table two shows that the two categories of BMI-SDS variable did not predict the quality of life among obese children significantly. It was found that the answers for the assertion “Picked on or bullied by other children” predicted the quality of life significantly ($\beta = -.299 p <.001$), as did emotional symptoms ($\beta = -.48, p <.001$) and prosocial behavior ($\beta = -.298 p <.002$). The strongest predictor for quality of life was the emotional symptoms variable and if emotional symptoms is reduced the quality of life increases by 9.57 points in the PedsQl ($B = -9.57$).
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Table 2

Coefficient variable resulting from multiple regression analyses (N=76)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t-test</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>111.943</td>
<td>7.777</td>
<td>14.394</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>SDQ emotional symptoms</td>
<td>-9.570</td>
<td>1.787</td>
<td>-.483</td>
<td>-5.354</td>
<td>.000</td>
</tr>
<tr>
<td>SDQ bullying or teasing</td>
<td>-7.515</td>
<td>2.270</td>
<td>-.299</td>
<td>-3.310</td>
<td>.001</td>
</tr>
<tr>
<td>SDQ prosocial behaviour</td>
<td>-5.869</td>
<td>1.786</td>
<td>-.298</td>
<td>-3.287</td>
<td>.002</td>
</tr>
<tr>
<td>BMI-SDS*</td>
<td>-1.788</td>
<td>3.180</td>
<td>-.051</td>
<td>-.562</td>
<td>.576</td>
</tr>
</tbody>
</table>

*The BMI-SDS was split into two categories. One category of children with BMI-SDS between 2.3-3.49 and the other with children with BMI-SDS of 3.5 and higher.

Discussion

The aim of this study was to find out if emotional problems, bullying or teasing, prosocial behavior and BMI-SDS were predictors for the quality of life among obese children. The results of the study showed that there was a significant connection between three of the four independent variables and the dependent variable. The main predictor for quality of life among obese children was emotional problems where less emotional problems were associated with better quality of life. The four variables had relatively high predictive value and it shows that less emotional problems, less peer problems and better prosocial behavior can play an important role in improving the quality of life among obese children. However, there are other things that can explain the quality of life among obese children and previous studies indicate that it could be e.g. parent’s education, genetics and low socio-economic backgrounds (Golan et al., 1998; Monteiro, Moura, Conde, & Popkin, 2004; Ruijsbroek et al., 2011).
In line with previous studies two hypotheses were put forward. The first one stated that obese children who experience bullying or teasing show worse quality of life than those who do not experience bullying or teasing. The second hypotheses aimed on gender difference and stated that obese girls showed better prosocial performance than obese boys. The results rejected the null hypothesis and accept the alternative hypothesis and suggest that there can be a gender difference in a clinical sample of obese children regarding their prosocial behavior (Buttitta et al., 2014; Cornette, 2008; Puder & Munsch, 2010).

Previous research shows that obese children have lower quality of life than healthy weight children (Bastiaansen et al., 2004; Eiser & Morse, 2001; Pinhas-Hamiel et al., 2005). The sampling in this study included only clinical sample of children dealing with obesity and according to previous studies they are more likely to experience bullying or teasing which can also have a negative effect on their quality of life (L. J. Griffiths, Wolke, Page, & Horwood, 2006; van Geel et al., 2014; Wille et al., 2010). The first hypothesis was supported, where obese children that had experienced bullying or teasing had significantly lower PedsQL total scores than those who did not. These results are in accordance with results of previous studies. The significant difference between the groups indicate that bullying and teasing can affect obese children's lives. The second hypothesis was also supported where parents of obese girls reported significantly better score on prosocial behavior subscale than parents of obese boys.

The current study had several limitations, one of which was that only the answers from the parents were used. Researchers have shown that the answers from the self-reported list shows often different results (Arman, Amel, & Maracy, 2013). Therefore, the results of the study can only be considered as the behavior the parents experienced rather than the actual internal state of the child. In the screening interview, the parent and children were there to get some help. Therefore, it is not possible to exclude the possibility that the parent
EMOTIONAL PROBLEMS, BULLYING AND QUALITY OF LIFE AMONG OBESE CHILDREN IN ICELAND

exaggerated their answers so that their child would be eligible for the program at the Department of Pediatrics. The SDQ was used to screen for emotional problems, bullying or teasing and prosocial behavior among obese children. The two SDQ subscales that were used are not acceptable in validity and reliability in the Icelandic version and therefore the results must be interpreted with caution. Because this study is retrospective and the timespan ranges from 2011 – 2016 it is not possible to draw causal conclusions about the results and apply them to evaluate the quality of life among obese children in current clinical samples.

The strengths of the research include two questionnaires that the parents had to answer which were short and easy to understand. A relatively large sample promotes significant results (N=153), however, only 49% of the parents answered all the questions that were used in the multiple regression, thereby possibly skewing results.

It is important to know what affects the quality of life among obese children because then we can intervene before their health-related problems intensify. The results of this research provide some indication on the importance of mental health of children with obesity. Where the parent report indicate that emotional problem is the strongest predictor for their obese children. This finding is in contest with previous researches which has shown that obese children experience e.g. often lower self-esteem, more anxiety and depression symptoms and are more often lonely than children in the healthy weight range (Cornette, 2008; Eisenberg et al., 2003; Lucy J Griffiths et al., 2011). These problems are not easily solved when it is not clear what is causing them. It is unknown what the causality is between obesity and mental health and therefore it is necessary to study that with further researches.

In an action plan by Ministry of Welfare in Iceland it is stated that it is important to emphasize mental, social and physical health and well-being of individual without increasing the negative attitude toward obesity (Guðmundsdóttir et al., 2013). It is also important to
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educate children and adults about diverse physical body size to minimize the obesity stigma in society (Kraig & Keel, 2001; Puhl & Heuer, 2009). Whereas obesity stigma can often have negative affect on a obese childs quality of life (Kraig & Keel, 2001). The obesity problem among children is large and complicated and in future research it is necessary to examine which factors maintain the problem in order to prevent and increase children wellbeing (Kretchmer, 1990).
Reference


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https://doi.org/10.3109/17477166.2010.526221


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https://doi.org/06.2009/JCPSP.375379


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https://doi.org/7180284


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Appendix A

Almennar upplýsingar um fjölskylduna

Nafn barns: ____________________________________________

Kennitala barns: _________________________________________

Netfang foreldra: _______________________________________

1. Fyllt út af:

☐ Móður

☐ Föður

☐ Öðrum,

hverjum _______

2. Uppruni:

☐ Íslenzkur

☐ Erlendur

3. Menntun svaranda:

☐ Grunnskóli

☐ Framhaldsskóli /verkmenntaskóli

☐ Háskólapróf (BA, BS)

☐ Framhaldsnám í háskóla

☐ Annað (tilgreinið hvað): _________________________________

4. Fjölskylduhagir:

☐ Í sambúð

☐ Gift(ur)
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- Skilin(n)
- Skilin(n) og í sambúð/gifur(ur) aftur
- Ekkja (ekkill)
- Ekkja (ekkill) og í sambúð/gift(ur) aftur
- Einstætt foreldri

Almennar upplýsingar um barnið.

Kyn barns:
- KVK
- KK

6. Hefur barnið verið greint með eingvers konar röskun/raskanir?
- ADHD
- Kvíði
- Þunglyndi
- Námserfiðleikar
- Einhverfurófsröskun
- Annað (vinsamlegast tilgreinið um hvaða röskun/raskanir er að ræða)

Heilsuskóli Barnaspítalans 2013
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Appendix B

**Spurningar um styrk og vanda (SDQ-Ice)**

Svarið hverri fullryðingu, með því að merkja í einn reit: *Ekki rétt*, *Að nokkr eru rétt* eða *Órugglega rétt*. bið eruð bedin að merkja við allar fullryðingarnar, jafnvæl þótt þið séuð ekki alveg viss, eða þær sýnist heimskulegar! Svarið með tilliti til atferlis barnsins síðustu sex mánuði.

<table>
<thead>
<tr>
<th>Nafn barnsins</th>
<th>Stúlka ( )</th>
<th>Drengur ( )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennitala</td>
<td>Ekki rétt</td>
<td>Að nokkr eru rétt</td>
</tr>
<tr>
<td>Tekur tillit til tilfinninga annarra</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eirðarlaus, ofvirk/ur, getur ekki verið kyr í lengi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kvartar oft um höfuðverk, magaverk eða flókurleika</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delir greiðlega með öðrum børnum (nammi, döti, blöyntum o.s.frv.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fær oft skapofsakost eða er heitt í hamsi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frekar einræn/n, leikur sér oft ein/n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Almennt hlyðin/n, gerir yfirleitt eins og fullorðinir óska</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Áhýggjur af morgu, virðist oft áhýggjufull/ur</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hjalpsamur/söm ef einhver meðbor þegar er í uppnámi eða líður illa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stóðugt með fikt eða á ídi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Á að minnsta kosti einn góðan vin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flygð oft á eða leggur bórni eða einelti</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ótaliðigur söm, langt niðri eða tárawast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Almennt vel þokkaldur/þokkuð af öðrum børnum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auðvelt að stela athygli hans/hennar, einbeiting á flakki.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ótreggur/ur, hangir í foreldrunum við ökunnar aðstæður, missir sjálfstraustr</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Góður við yngri bórni</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lýgur oft eða svinndlar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verður fyrir stróði eða einelti af hálfu annarra barna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Byóst oft til að hjálpa öðrum (foreldrunum, kennrum, öðrum børnum)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hugsar áður en hann/hún framkvæmir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stefur heima, í skóla eða annars staðar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semur betur við fullorðna en önnur bórni</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Óttast margt, verður auðveldlega hreðd/ur</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fylgir verkefnun eftir til enda, heldur góðri athygli</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Frekari athugasemdir eða áhýggjur sem þið kynnuð að hafa:

---

Gerið svo vel að fletta - það eru nokkrar spurningar á næstu síðu
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Almennt sêð, teljîð þið barnið ykkar eiga við erfîðleika að strîða á einu eða fleirum eftirtalinna sviða:
*Tilfînningar, einbeiting, hegðun eða sumspil við adrái?

<table>
<thead>
<tr>
<th></th>
<th>Nei</th>
<th>Já-væga erfîðleika</th>
<th>Já-greinilega erfîðleika</th>
<th>Já-alvarlega erfîðleika</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ef var þar "já" gerið þá svo vel að svara eftirfarandi spurningum um þessa erfîðleika?

- Hve lengi hafa þessir erfîðleikar verið til staðar?

<table>
<thead>
<tr>
<th></th>
<th>Minna en mánuð</th>
<th>1-5 mánuð</th>
<th>6-12 mánuð</th>
<th>Meira en ár</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Valda þessir erfîðleikar barninu ykkar hugarangri eða vanlîðan?

<table>
<thead>
<tr>
<th></th>
<th>Alls ekki</th>
<th>Lítils hattar</th>
<th>Í medallagi</th>
<th>Mjög miklið</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Trufla þessir erfîðleikar daglegt líf barnsins á eftirfarandi sviðum:

<table>
<thead>
<tr>
<th></th>
<th>Alls ekki</th>
<th>Lítils hattar</th>
<th>Í medallagi</th>
<th>Mjög miklið</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heimilislið</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vinâttu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nám í skólanum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tømtundaidkun</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Eru þessir erfîðleikar barnsins íþyngandi fyrir þig eða fjölskylduna í heild?

<table>
<thead>
<tr>
<th></th>
<th>Alls ekki</th>
<th>Lítils hattar</th>
<th>Í medallagi</th>
<th>Mjög miklið</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Undirskrift .............................................................. Dagsætning ..............................................

Móðir/þaðir/þærir(tilgreinið):

Kærar þakkir fyrir hjálpina

© Robert Goodwin, 2001
## PedsQL™

Pediatric Quality of Life Inventory

Version 4.0

### Foreldralisti fyrir Börn (aldur 8-12)

<table>
<thead>
<tr>
<th>Leiðbeiningar</th>
<th>0 ef það er aldrei vandi</th>
<th>1 ef það er næstum aldrei vandi</th>
<th>2 ef það er stundum vandi</th>
<th>3 ef það er oft vandi</th>
<th>4 ef það er næstum alltaf vandi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Á næstu blaðslóð er listi yfir atriði sem gætu verið vandi fyrir barn þitt. Vinsamlegast segið okkur hversu mikið hvert atriði hefur verið vandi fyrir barnið þitt síðastilöön einn mánuð með því að setja hring:</td>
<td>0 ef það er aldrei vandi</td>
<td>1 ef það er næstum aldrei vandi</td>
<td>2 ef það er stundum vandi</td>
<td>3 ef það er oft vandi</td>
<td>4 ef það er næstum alltaf vandi</td>
</tr>
<tr>
<td>Pað eru engin rétt eða röng svör</td>
<td>Ef þú skilur ekki spurningu þá vinsamlegast blöðið um aðstoð</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EMOTIONAL PROBLEMS, BULLYING AND QUALITY OF LIFE AMONG OBESE CHILDREN IN ICELAND

<table>
<thead>
<tr>
<th>Lýkaemlega vírknir (vanda með...)</th>
<th>Aldrei</th>
<th>Næstum alrei</th>
<th>Stundum</th>
<th>Oft</th>
<th>Næstum allaf</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Að ganga lengra en nokkrar húsaraðir</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2. Að hlaupa</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3. Að taka bátt í bróttum eða að hringa</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4. Lypa einhverju blanda</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5. Að fara sjálflur í bað eða sturtu</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>6. Að sinna verkum á heimilinu</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>7. Verði meiddur eða með verki</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>8. Litli kraftur</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tilfinningaleg vírknir (vanda með...)</th>
<th>Aldrei</th>
<th>Næstum alrei</th>
<th>Stundum</th>
<th>Oft</th>
<th>Næstum allaf</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Verð óttaslegin(n) eða hræddur</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2. Verði niðurdeglin(n) eða leiður</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3. Verði leiður</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4. Vanði með svefn</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5. Haft óhyggjur af því hvað muni koma fyrir hana/hann</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
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<table>
<thead>
<tr>
<th>Félagleg vörknir (vanda með...)</th>
<th>Aldrei</th>
<th>Næstum alrei</th>
<th>Stundum</th>
<th>Oft</th>
<th>Næstum allaf</th>
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<tbody>
<tr>
<td>1. Að koma illa saman við önnur börn</td>
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<td>2. Önnur börn sem vilja ekki vera vinur/vinkona hannar/hans</td>
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<td>3. Verð stírt af öðrum börnum</td>
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<td>4. Að geta ekki gert hluti sem önnur börn á hannar/hans aldri gerta</td>
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<td>5. Fylgja öðrum börnum eftir í leik</td>
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<th>Skóla vörknir (vanda með...)</th>
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<th>Næstum alrei</th>
<th>Stundum</th>
<th>Oft</th>
<th>Næstum allaf</th>
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<tbody>
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<td>4. Missir úr skóla vegna vanildunar</td>
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